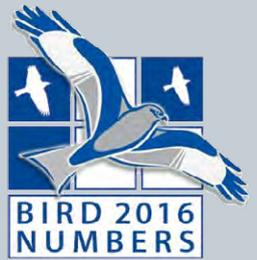


# BirdNumbers 2016

*Birds in a changing world*



Programme and Abstracts



**20<sup>th</sup> Conference of the  
European Bird Census Council**



Supported by the Federal Agency for Nature Conservation (BfN)

## Imprint

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on behalf of the Federation of German Avifaunists

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### Recommended citation

Busch, M. & Gedeon, K. (Eds.) 2016: BirdNumbers 2016: Birds in a changing world. Programme and Abstracts of the 20<sup>th</sup> conference of the European Bird Census Council. Dachverband Deutscher Avifaunisten, Münster.

ISBN: 978-3-9815543-6-6

Printed by: Salzland Druck / Druck-Zuck



### Cover

The Firecrest (*Regulus ignicapilla*) is almost endemic to Europe. Only small isolated populations occur outside of Europe. Germany is located in the center of its distributional range and supports 1.25 – 1.85 million territories representing about 30% of the European population. After the Red Kite the Firecrest is the breeding bird species with the biggest proportion of its world population occurring in Germany. (Photo: T. Hinsche)

**BirdNumbers 2016**  
**Birds in a changing world**

**Halle (Saale) – Germany**  
**5<sup>th</sup> to 9<sup>th</sup> September 2016**

**Programme & Abstracts**



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## Preface

Dear friends and colleagues,

It is our big pleasure to welcome you in Halle (Saale) for our 20<sup>th</sup> Bird Numbers conference. We have an exciting week ahead of us full of interesting talks, workshops and posters. Moreover, we have the chance to meet and talk to each other about research, bird monitoring and atlasing work. People from more than 50, mainly European countries will attend the conference which really highlights the ‘Pan-European’ approach of the EBCC, an important feature for its success. The network function of our conferences will be stimulated by the social events that have been organised. Certainly the nice city of Halle, the good venue and the beautiful surrounding will help us to create the perfect atmosphere for a successful conference. We wish to thank our partners that sponsored this meeting and made this possible.

Have a very enjoyable and fruitful week,

Ruud P. B. Foppen, Chairman  
on behalf of the Board of the European Bird Census Council

Kai Gedeon  
on behalf of the BirdNumbers 2016 National Organising Committee

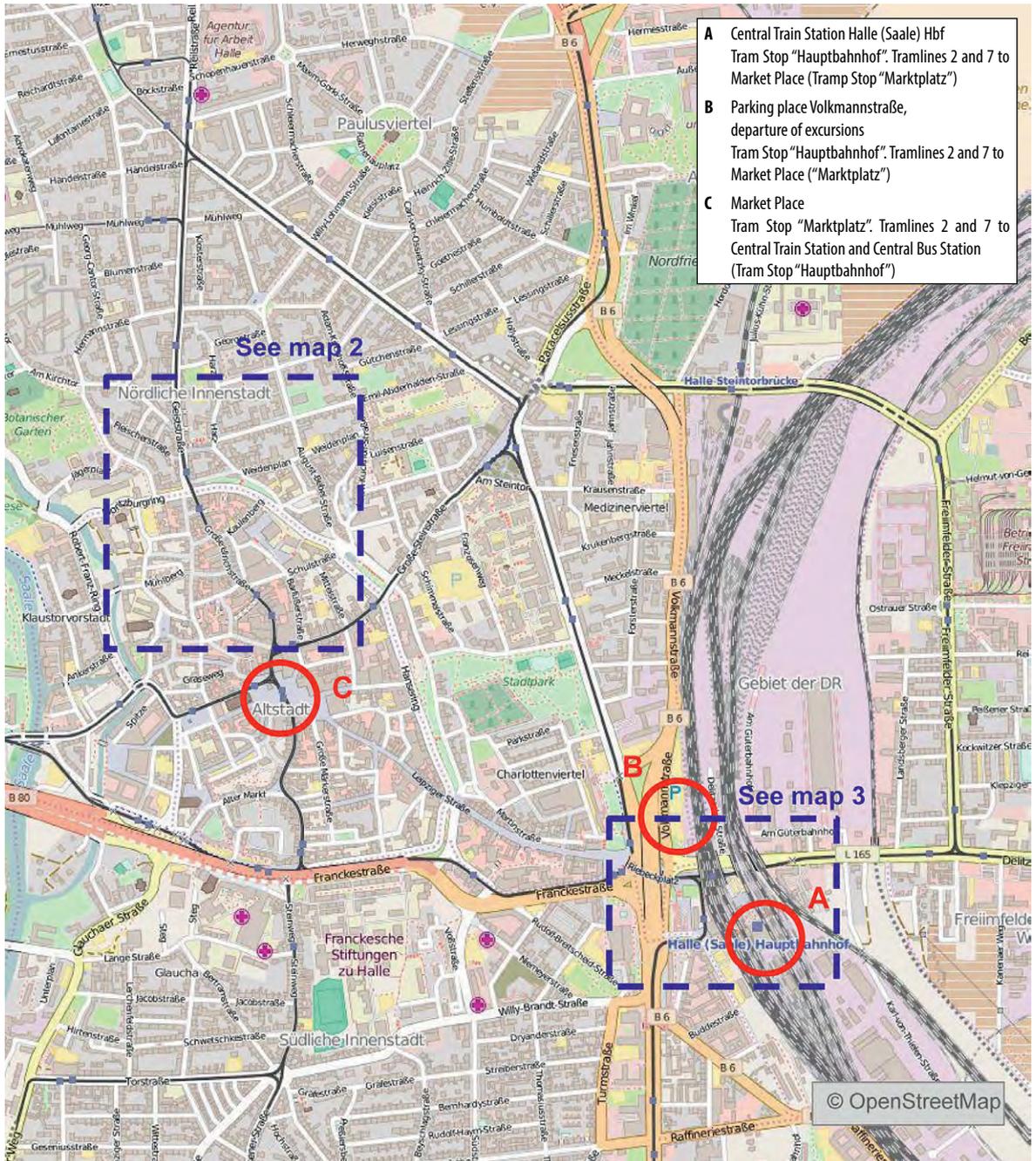
# General Information

## Conference location

The conference will be held at the Martin Luther University Halle-Wittenberg. The lecture halls and the conference office are located in the Audimax building. Here the presentations and in-conference workshops will take place, and also the posters are exhibited here.

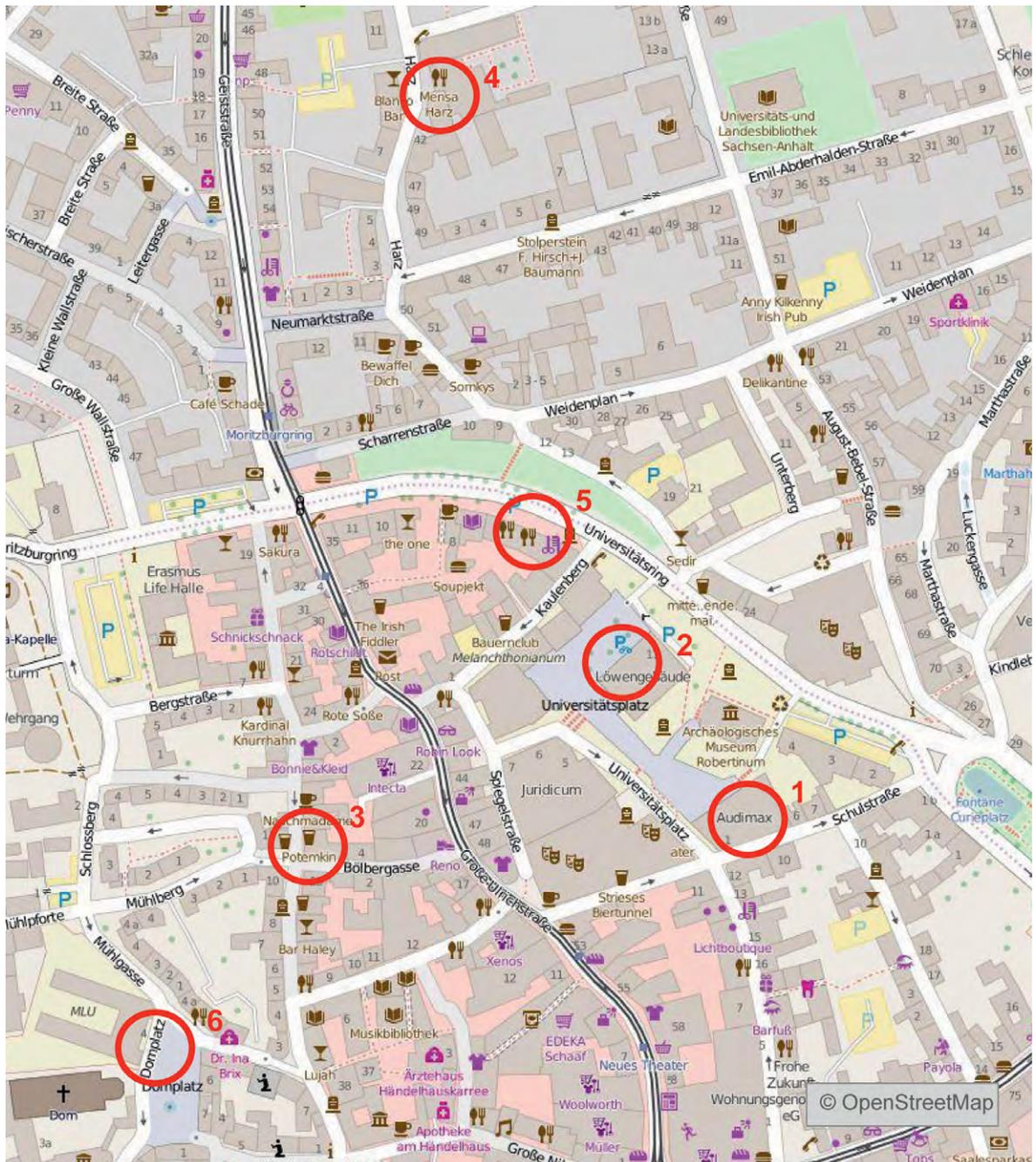
**Address:** Audimax building, Universitätsplatz 1, 06108 Halle (Saale), Germany (see map 2)  
**Coordinates main entrance:** 51 29' 08.95" N, 11 58' 12.15" E

## Map 1: Overview



## Map 2: Conference locations

- 1 Audimax University, Universitätsplatz (conference office and lecture halls)
- 2 Aula University, Universitätsplatz ("Löwengebäude", open plenary on Monday)
- 3 Pub & Restaurant district, Kleine Ullrichstraße (recommended for Monday evening)
- 4 Harzmensa, Harz 41 (lunch on Tuesday, Wednesday and Friday)
- 5 Enchilada, Universitätsring 6 (Conference diner on Thursday)
- 6 University, Zoology building, Domplatz 4 (meeting rooms sign-posted)

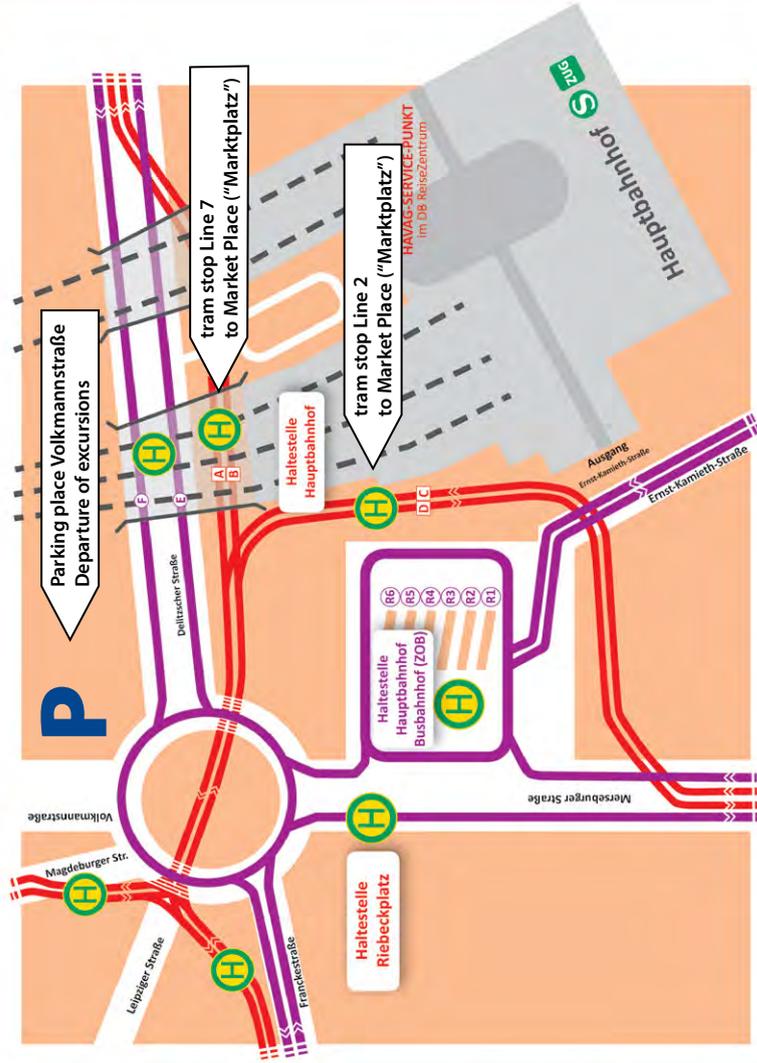


Map 3: Surrounding central station (train, tram and bus)

# Umgebungsplan Hauptbahnhof Halle (Saale)

Map of surrounding area central station Halle (Saale) Halle (Saale)

gültig ab 2. Mai 2016  
valid from 2 May 2016



Haltestelle Hauptbahnhof		Haltestelle Busbahnhof ZOB	
<b>Linien</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
7 9	Krollwitz Göbinger Bogen	30 43	Rannischer Platz Kanena
<b>Linien</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
4 7 9 12	Krollwitz Blüchdorf Am Stenior/Friesenstraße Trotha	352 353 354 355	Peiffen Center-Landsberg Miaschwitz-Brachstedt- Rieds-Zörbig Friedrichsberg-Opfari- Flugplatz-Nürnberg
<b>Linien</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
2 5	Sollauer Straße Krollwitz	351 358 359 360 360	Quois-Landsberg-Reinsdorf Dickkau-Lochau-Grobers Dollbau-Gottzenn Dickkau-Grobers- Günthersdorf (Nova Eventis) Halle Neustadt
<b>Linien</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
2 5	Beesen Ammendorf/bad Dürrenberg	306 306 308 309	Salamünde-Beesenstedt- Johannashall Zaschwitz-Friedeburg Lieskau-Salzmünde- Köllme-Müllersdorf Hollnstedt-Schochwitz
<b>Linie</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
91	Betriebshof Freimfelder Straße (- Am Stenior)	300 301 314 440	Gutenberg-Petersberg- Mösthinsdorf Gurenberg-Lobjün-Schleittau Polleben-Merseburg/ Bad Daudersdorf Eleben
<b>Linie</b>	<b>Abfahrt in Richtung</b>	<b>Linien</b>	<b>Abfahrt in Richtung</b>
91	Göbinger Bogen	302 302 303 312	Brachwitz-Döblitz Wethin-Rothenburg-Kämmern Wallwitz-Lobjün- Rothenburg-Kämmern Teuschenthal-Asendorf-Querfurt

## Conference office & Registration

The conference office is located on the ground floor of the Audimax building (see map 2).

### Opening hours:

Monday (5. September) 15:00 - 19:00

Tuesday (6. September) 08:00 - 21:45

Wednesday (7. September) 08:00 - 21:45

Thursday (8. September) closed

Friday (9. September) 08:00 - 19:00

Please check our website for latest news and changes: [www.birdnumbers2016.de](http://www.birdnumbers2016.de)

Conference office email: [info@birdnumbers2016.de](mailto:info@birdnumbers2016.de)

Contact in urgent cases (from 4 - 11 September): +49 176 45769124

Please visit the conference office after your arrival at the conference venue to register and to receive your conference pack. Please make sure you have signed up via the conference website and have paid the conference fee before your arrival.

## Internet access

During the conference free WiFi internet access will be available to all conference participants in the Audimax building and at the university square. The password will be found in your conference pack.

## Open plenary

The open plenary lecture on Monday, 5<sup>th</sup> September at 18:00 is open to the interested public and can be attended without registration for the conference. Please note that this lecture will be held in the assembly hall (Aula, first floor) of the “lion building” (Löwengebäude) located next to the Audimax.

## Warming up evening

If you are interested in meeting up with other conference participants after the open plenary lecture on Monday evening, we recommend the pub and restaurant district “Kleine Ulrichstraße”. We are sure you will find a nice place for you and your friends in this area even without any table reservation. Also for the other evenings of the conference week this district, as well as the entire city centre, offer a great choice of restaurants.

## Breaks and lunch

During conference breaks drinks and snacks will be available on the ground floor of the Audimax building. For lunch on Tuesday, Wednesday and Friday we invite you to the “Harzmensa” (University cafeteria), Harz 41. During the excursions scheduled for Thursday packed lunches and drinks will be provided. The “Harzmensa” is located about 7 walking minutes away from the Audimax building (see map 2). Catering and lunch are covered by the conference fee.

## Excursions

The mid-conference excursions take place on Thursday, 8<sup>th</sup> September and will last the whole day. Departure: 8:30 am from the parking place Volkmannstraße, near central station (see map 1 and 3). Detailed information on the excursions is provided in section 9 of this booklet. Assignment of the buses will be scheduled on Wednesday, 7<sup>th</sup> September. As short-term changes of excursion plans could be required please pay attention to related announcements or inform yourself at the conference office.

## Conference dinner

On Thursday, 8<sup>th</sup> September and following the excursions on that day we invite you to join the conference dinner (start: 18:00, location: Restaurant Enchilada, Universitätsring 6, only 2 walking minutes from the Audimax). The conference dinner is covered by your conference fee. We have also scheduled a few funny incidents during the dinner, so let yourself be taken by surprise.

## Pre- and post-conference meetings

The EBBC board meeting as well as the workshop on international waterbird monitoring will be held at Domplatz 4, Zoology building, University (see map 2). Please consider separate announcements distributed by the responsible conveners.

## Important notes for speakers

Speakers are required to provide their final presentation to the registration desk (conference office) at the latest one day before they are scheduled (for presentations on Friday latest on Wednesday). Files have to be provided on USB 2.0 sticks. Private notebooks cannot be used. The preferred file format is PPT (Microsoft PowerPoint, Office 2010 or older versions) or PDF. Each speaker will have 20 minutes (15 minutes for the presentation + 5 minutes for questions). Speed talks are shorter (5 minutes, no discussion), plenary talks are longer (between 40 and 60 minutes, including discussion). We urge you to stick to the time slot designated for your presentation. This will also be assured by the respective session chairs. File names must conform to the following pattern: session/plenary/workshop + name of first author + short title (e.g. session10-Nicolas Strebel-Estimating population trends.ppt or plenary-Gabriel Gargallo-Euro Bird Portal.ppt).

## Important notes for posters exhibitors

Posters have to be printed and brought to the conference by the respective author. A provision in electronic form is not required. Once more we refer to the poster specifications on the conference website which have to be followed. For your poster, a board will be provided. It is advisable to bring push pins or Velcro strips, although a limited supply will be available. Posters should be mounted on Monday afternoon or Tuesday morning before the start of the lecture programme. Poster authors are responsible for removal of their posters, at the latest by Friday, 18:00. During the poster session at least one author should be available for questions of interested conference participants. Poster awards for the most informative posters, selected by the Scientific Committee, will be awarded (first place: Checklist HBW Volume I; second and third place: Atlas of German Breeding Birds)

## Proceedings

The conference papers will be published in the conference proceedings (special English issue of the scientific journal "Die Vogelwelt"). We would like to explicitly encourage all authors (including the poster authors) to submit their papers. Please provide your manuscripts on time, i.e. before the conference starts. Submission deadline for manuscripts is 5<sup>th</sup> September 2016. All manuscripts must be submitted online through your conference account.

## Directions to Halle and local transport

### ... by airplane

The Leipzig-Halle airport is situated half way between the two cities and is connected by means of the A9/A14 motorways. The Leipzig/Halle Airport railway station under the terminal complex includes IC, ICE and regional train connections, including an express train ('Flughafen Express') into Halle (Saale) Hbf (central station) every 60 minutes, taking 14 minutes. Single tickets cost 4.40 Euro (price: July 2016). Tickets must be purchased before starting your journey and have to be validated when starting your journey.

Other airports – a bit further away – are

Berlin Tegel International Airport (approx. 170 km)

Berlin Schönefeld International Airport (approx. 170 km)

Dresden International Airport (approx. 150 km)

Erfurt-Weimar Airport (approx. 130 km)

### ... by train, local tram and taxi

The main railway station in Halle (Saale) Hbf is centrally located (see map 1 and 3). Directly next to the station is the Riebeckplatz. This is where a number of trunk roads and tramlines meet thus providing numerous possibilities of travelling to other parts of the town.

Starting from the tram stop "Hauptbahnhof" please use tramline 2 (direction Soltauer Straße) or tramline 7 (direction Kröllwitz) to reach the tram stop "Marktplatz". From here the Audimax, located at Universitätsplatz,

can be reached walking within a few minutes. Single tickets (valid for 1 hour) cost 2.20 Euro, day tickets cost 5.00 Euro (prices: July 2016). Tickets must be purchased before starting your journey and have to be validated when starting your journey.

Taxis are available all around the clock at +49 345 525252 or +49 345 212121 or via Taxi-App.

### **... by car**

Halle is surrounded by four motorways, which are part of the “Central German Loop”.

A 9 → Berlin - Munich

A 14 → Magdeburg - Nossen

A 38 → Göttingen – Halle (“South Harz Motorway“)

Parking cars requires a charge everywhere in the city centre of Halle (also outside of car parks and underground parking). The closest underground parking is located at Hansering 21, 06108 Halle (0.70 Euro for 30 minutes, day ticket 9.00 Euro) about 8 minutes walking distance from the Audimax building at Universitätsplatz.

### **Tourist information**

Marktschlösschen

Marktplatz 13

06108 Halle (Saale)

Opening hours: Monday to Friday 9:00 to 19:00, Weekends: 10:00 to 16:00

Phone: +49 345 122 99 84

If you still require an accommodation you are welcome to contact the staff of the tourist information which will find a suitable room for you.

### **Emergency phone codes**

Emergency doctor and fire brigade: 112

Police: 110

## Programme Overview

The table below provides you with a quick overview of the conference week.

Time	Monday 5 <sup>th</sup> September	Tuesday 6 <sup>th</sup> September	Wednesday 7 <sup>th</sup> September	Thursday 8 <sup>th</sup> September	Friday 9 <sup>th</sup> September	Saturday 10 <sup>th</sup> September	
Forenoon	Arrival	Official opening	Plenary	Mid-conference Excursions	Plenary	Post-conference workshop	
		Plenary	Parallel sessions		Parallel sessions		
		Break	Break		Break		
		Parallel sessions	Parallel sessions		Parallel sessions		
Afternoon	Registration 15:00 - 18:00	Lunch	Lunch	Mid-conference Excursions	Lunch	Post-conference workshop	
		Plenary	Annual general meeting		Parallel sessions		
		Poster session	Plenary		Break		
		Parallel sessions	Parallel sessions		Break		
Evening	Open plenary	Dinner	Dinner	Conference dinner	Official ending		
		In-conference workshop	In-conference workshop				Plenary
		Parallel sessions	Parallel sessions				

## Programme

Monday, September 5 <sup>th</sup>																			
Time																			
15:00 – 18:00	<b>Registration</b> (conference office lecture hall)																		
18:00 – 19:00	<b>Open plenary</b> (University assembly hall - Aula) Nigel Collar - CHANGE AND STABILITY IN THE WORLD LIST OF BIRD SPECIES: THE HBW-BIRDLIFE ENDEAVOUR <i>Introduction: Frank Steinheimer</i>																		
Tuesday, September 6 <sup>th</sup>																			
9:00 – 9:15	<b>Welcome addresses</b> (lecture hall upper floor) Ruud Foppen, EBCC Michael Bron, Martin Luther University Halle-Wittenberg Kai Gedeon, National Organising Committee																		
9:15 – 10:00	<b>Plenary</b> (lecture hall upper floor) Beate Jessel - NATURE CONSERVATION IN GERMANY: CAN WE CHANGE THE WORLD FOR BIRDS?																		
10:00 – 10:40	<b>Plenary</b> (lecture hall upper floor) Aly McCluskie - BIRDS AND RENEWABLE ENERGY, WHY COUNTING COUNTS																		
10:40 – 11:20	Break																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: left;">Session 1 (lecture hall ground floor) <b>Biodiversity indicators</b> <i>Chair: Iván Ramírez</i></th> <th style="width: 50%; text-align: left;">Session 2 (lecture hall upper floor) <b>Causes of change in bird populations and societal responses</b> <i>Chair: Ruud Foppen</i></th> </tr> </thead> <tbody> <tr> <td>11:20 – 11:40</td> <td>Simon Butler, Max Fancourt, Richard Gregory, Petr Vorisek, Taoyang Wu - A TRAIT-BASED APPROACH TO STANDARDISED INDICATOR SPECIES SELECTION</td> </tr> <tr> <td>11:40 – 12:00</td> <td>David Noble - ARE BIRDS GOOD INDICATORS? ASSESSING THE EVIDENCE</td> </tr> <tr> <td>12:00 – 12:20</td> <td>Aleksi Lehikoinen et al. - A COMMON MONTANE BIRD INDICATOR FOR EUROPE</td> </tr> <tr> <td>12:20 – 12:40</td> <td>Tibor Szép, Károly Nagy, Zsolt Nagy, Péter Tóth, Gergő Halmos - DECLINE OF FARMLAND BIODIVERSITY IN HUNGARY AND EFFICIENCY OF AGRI-ENVIRONMENTAL SCHEMES, MEASURED BY FARMLAND BIRD INDICATOR</td> </tr> <tr> <td>12:40 – 13:00</td> <td>Norbert Teufelbauer, Richard Büchsenmeister, Ambros Berger, Benjamin Seaman, Bruno Regner, Simon Butler - DEVELOPING A FOREST BIRD INDICATOR FOR AUSTRIA</td> </tr> <tr> <td>13:00 – 14:30</td> <td>Lunch</td> </tr> <tr> <td>14:30 – 15:10</td> <td><b>Plenary</b> (lecture hall upper floor) Gabriel Gargallo - A SYSTEMATIC APPROACH TO UNSYSTEMATIC DATA: THE EUROBIIRDPORTAL PROJECT AND VISIONS BEYOND</td> </tr> <tr> <td>15:10 – 16:10</td> <td><b>Poster session</b> (lobby ground floor)</td> </tr> </tbody> </table>	Session 1 (lecture hall ground floor) <b>Biodiversity indicators</b> <i>Chair: Iván Ramírez</i>	Session 2 (lecture hall upper floor) <b>Causes of change in bird populations and societal responses</b> <i>Chair: Ruud Foppen</i>	11:20 – 11:40	Simon Butler, Max Fancourt, Richard Gregory, Petr Vorisek, Taoyang Wu - A TRAIT-BASED APPROACH TO STANDARDISED INDICATOR SPECIES SELECTION	11:40 – 12:00	David Noble - ARE BIRDS GOOD INDICATORS? ASSESSING THE EVIDENCE	12:00 – 12:20	Aleksi Lehikoinen et al. - A COMMON MONTANE BIRD INDICATOR FOR EUROPE	12:20 – 12:40	Tibor Szép, Károly Nagy, Zsolt Nagy, Péter Tóth, Gergő Halmos - DECLINE OF FARMLAND BIODIVERSITY IN HUNGARY AND EFFICIENCY OF AGRI-ENVIRONMENTAL SCHEMES, MEASURED BY FARMLAND BIRD INDICATOR	12:40 – 13:00	Norbert Teufelbauer, Richard Büchsenmeister, Ambros Berger, Benjamin Seaman, Bruno Regner, Simon Butler - DEVELOPING A FOREST BIRD INDICATOR FOR AUSTRIA	13:00 – 14:30	Lunch	14:30 – 15:10	<b>Plenary</b> (lecture hall upper floor) Gabriel Gargallo - A SYSTEMATIC APPROACH TO UNSYSTEMATIC DATA: THE EUROBIIRDPORTAL PROJECT AND VISIONS BEYOND	15:10 – 16:10	<b>Poster session</b> (lobby ground floor)
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	<b>Session 3</b> (lecture hall ground floor) <b>Online portal observations: Developments and challenges</b> <i>Chair: Chris van Turnhout</i>	<b>Session 4</b> (lecture hall upper floor) <b>Speed talks</b> (only lead authors are specified below) <i>Chairs: Verena Keller/Hans-Günther Bauer</i>
16:20 – 16:40	Stephen Baillie, Lluís Brotons, Ruud Foppen, Carlos Godinho, Jean-Yves Paquet, Hans Schmid, Nicolas Titeux, Peter Uppstu, Gabriel Gargallo - EUROBIIRD-PORTAL - MODELLING THE YEAR ROUND DISTRIBUTION AND PHENOLOGY OF EUROPEAN BIRDS	Robin Gailly - ARE CHRISTMAS TREE PLANTATIONS A SUITABLE HABITAT FOR FARMLAND BIRDS? Ainars Aunins - FIELD AND LANDSCAPE SCALE EFFECTS ON ABUNDANCE OF FARMLAND BIRDS AND BIRD COMMUNITIES IN THE LATVIAN FARMLAND
16:40 – 17:00	David Martí Pino, Gabriel Gargallo, Verena Keller, Petr Vorisek, Jana Škorpilová, Sergi Herrando - NEW ON-LINE DATABASES AS TOOLS FOR BETTER USE OF BIRD OBSERVATION AND MONITORING DATA AT LARGE SPATIAL SCALES: EXAMPLES FROM EBP, EBBA2 AND PECBMS	Jaanus Elts - 29 YEARS OF MAINLAND WINTER BIRD COUNTS IN ESTONIA André van Kleunen - RED LIST OF MIGRATORY NON-BREEDING BIRD POPULATIONS IN THE NETHERLANDS Vladimír Bejček - THE FOURTH MAPPING OF THE BREEDING BIRD DISTRIBUTION IN THE CZECH REPUBLIC - 2014-2017 Laura Dami - NEEDS AND PROSPECTS FOR WATER-BIRD MONITORING IN THE MEDITERRANEAN Michalis Dretakis - THE BREEDING AND WINTERING AVIFAUNA OF CRETAN WETLANDS
17:00 – 17:40	Break	
17:40 – 18:00	Gerard Troost - TREKTELLEN.ORG, AN EXPANDING PLATFORM FOR RECORDING MIGRATION COUNTS ACROSS CONTINENTS	Kiraz Erciyas Yavuz - A NEW SIGNIFICANT POPULATION NUCLEUS OF EGYPTIAN VULTURES FOUND IN ÇORUM, TURKEY
18:00 – 18:20	Wesley Hochachka, Daniel Fink, Steve Kelling - CONTROLLING FOR BIRDWATCHERS' BEHAVIOUR WHEN ANALYSING DATA FROM INFORMAL BIRD SURVEYS	Lorenzo Fornasari - REVISION OF COMMON BIRDS LIST INDEXED BY THE MITO2000 PROGRAMME IN ITALY Jana Sabrina Jerrentrup - IMPACTS OF POLICY INDUCED LAND-USE CHANGES ON FARMLAND BIRDS IN LOWER SAXONY, GERMANY
18:20 – 18:40	Jerome Ainsley, Les Underhill - GAMIFICATION (PERSUASIVE DESIGN) IN THE SOUTHERN AFRICAN BIRD ATLAS PROJECT (SABAP2)	Ulf Lieden, Joost Brouwer - THE WEST AFRICAN BIRD DATABASE Edward Klun - BREEDING PHENOLOGICAL RESPONSE TO WEATHER CONDITIONS IN COMMON FINNISH BIRDS Primož Kmecl - THE IMPACT OF GRAZING AND FOREST SUCCESSION ON BIRD COMMUNITIES IN THE SUBMEDITERRANEAN LANDSCAPE OF SW SLOVENIA Michele Panuccio - SEASONAL DIFFERENCES IN RAPTOR MIGRATION OVER THE STRAIT OF MESSINA Ülo Väli - RAPTOR MONITORING IN ESTONIA: LINKING BREEDING AND WINTERING NUMBERS Peter Knaus - 60 YEARS OF ‚ATLASSING‘ IN SWITZERLAND: ILLUSTRATING BROAD-SCALE CHANGES AND THE NEED FOR MONITORING OF DENSITY
18:40 – 20:00	Dinner	
20:00 – 21:30	<b>Workshop</b> (lecture hall ground floor) A practical method to test for trends in multi-species indicators <i>Convener: Leo Soldaat</i>	

<b>Wednesday, September 7<sup>th</sup></b>			
09:00 – 09:45	<b>Plenary</b> (lecture hall upper floor) Verena Keller - ATLAS AS A TOOL TO DOCUMENT CHANGES IN DISTRIBUTION AND ABUNDANCE OF BIRDS		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"><b>Session 5</b> (lecture hall ground floor) <b>Climate Change impacts</b> <i>Chair: Anny Anselin</i></td> <td style="width: 50%;"><b>Session 6</b> (lecture hall upper floor) <b>New atlas studies</b> <i>Chair: Petr Voříšek</i></td> </tr> </table>	<b>Session 5</b> (lecture hall ground floor) <b>Climate Change impacts</b> <i>Chair: Anny Anselin</i>	<b>Session 6</b> (lecture hall upper floor) <b>New atlas studies</b> <i>Chair: Petr Voříšek</i>
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10:00 – 10:20	Sylvain Antoniazza, Nicolas Strebel, Jérôme Guélat, Samuel Wechsler, Peter Knaus, Thomas Sattler - DECREASES IN THE LOWLANDS, INCREASES AT HIGHER ELEVATION - RAPID CHANGES IN ALTITUDINAL DISTRIBUTION OF BREEDING BIRDS		
10:20 – 10:40	Elie Gaget, Thomas Galewski, Frederic Jiguet, Isabelle Le Viol - WINTERING IN A GLOBAL WARMING CONTEXT: THE RESPONSE OF WATERBIRD COMMUNITIES OF THE MEDITERRANEAN FLYWAY		
10:40 – 11:00	Simon Rolland, Cyril Eraud, Denis Roux, Frédéric Jiguet - WINTER DISTRIBUTION SHIFT IN A SHORT-DISTANCE MIGRATORY BIRD: WHAT IMPLICATIONS FOR CONSERVATION UNDER CLIMATE CHANGE?		
11:00 – 11:40	Break		
11:40 – 12:00	Maria V. Matantseva, Nikolay V. Lapshin, Sergey A. Simonov - CHANGES IN NUMBER AND SEX RATIO IN POPULATIONS OF SYLVIA AND PHYLLOSCOPUS WARBLERS AT THE NORTHERN PERIPHERY OF THEIR RANGES		
12:00 – 12:20	Oleg Askeyev, Arthur Askeyev, Igor Askeyev - BIRD WINTER POPULATION DYNAMICS IN THE EASTERN EDGE OF EUROPE		
12:20 – 12:40	Mark Holling, Mark Eaton - EFFECTS OF CLIMATE CHANGE ON RARE BREEDING BIRDS IN THE UK		
12:40 – 13:00	Oskars Keiss - CHANGE IN CLIMATE OR OTHER FACTORS - WHAT CAN WE TELL BY ANALYZING NUMBERS OF MIGRATING BIRDS AND BATS AT PAPE, LATVIA 1966-2015		
13:00 – 14:15	Lunch		
14:15 – 15:00	<b>EBCC Annual General Meeting</b> (lecture hall upper floor)		
15:10 – 15:50	<b>Plenary</b> (lecture hall upper floor) Ariel Brunner - BIRDS AND COMMON AGRICULTURAL POLICY: WHAT HAS TO BE CHANGED?		
	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%;"><b>Session 7</b> (lecture hall ground floor) <b>Species Distribution Modelling</b> <i>Chair: David Noble</i></td> <td style="width: 50%;"><b>Session 8</b> (lecture hall upper floor) <b>Land use change impacts, on farmland, in woodland and in other habitats</b> <i>Chair: Danae Portolou</i></td> </tr> </table>	<b>Session 7</b> (lecture hall ground floor) <b>Species Distribution Modelling</b> <i>Chair: David Noble</i>	<b>Session 8</b> (lecture hall upper floor) <b>Land use change impacts, on farmland, in woodland and in other habitats</b> <i>Chair: Danae Portolou</i>
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16:00 – 16:20	Nader Habibzadeh - MODELING THE POTENTIAL DISTRIBUTION OF CAUCASIAN GROUSE BREEDING DISPLAY HABITAT IN IRAN		
16:20 – 16:40	Ingrid Stirnemann, Ruslan Urazaliev, Paul F. Donald, Matthias Baumann, Tobias Kuemmerle, Johannes Kamp - PLANNING FOR THE FUTURE: USING PREDICTIONS OF STEPPE BIRD ABUNDANCE AND DISTRIBUTION TO INFORM CONSERVATION PRIORITIZATION IN KAZAKHSTAN		

16:40 – 17:00	Olatz Aizpurua, Franck Hollander, Francesc Sardà-Palomera, Jean-Yves Paquet, Xavier Mestdagh, Lluís Brotons, Hans Van Dyck, Nicolas Titeux - SPECIES DISTRIBUTION MODELS MISINFORM ON HABITAT SUITABILITY IN AN ECOLOGICALLY TRAPPED	Hennig Heldbjerg, Anthony Fox - IN SEARCH OF MILLIONS OF LOST STARLINGS STURNUS VULGARIS ACROSS EUROPE: THE RELATION BETWEEN MONITORING, SCIENCE AND CONSERVATION IN A DECLINING SPECIES
17:00 – 17:40	Break	
17:40 – 18:00	Dario Massimino, Alison Johnston, Simon Gillings, Frédéric Jiguet, James Pearce-Higgins - MODELLED FUTURE CLIMATIC SUITABILITY FOR BRITISH BIRDS HIGHLIGHTS THE RISK FOR LARGE DECLINES OF SEVERAL SPECIES THAT ARE ALREADY OF CONSERVATION CONCERN	Susanne Jähnig, Cristina Vallino, Domenico Rosselli, Antonio Rolando, Dan Chamberlain - EFFECTS OF HORIZONTAL AND VERTICAL HABITAT STRUCTURE ON THE BIRD COMMUNITY OF THE ALPINE TREELINE
18:00 – 18:20	Pedro Salgueiro, António Mira, João E. Rabaça, Sara Santos - COMPARING PATCH- AND GRADIENT-BASED LANDSCAPE MODELS TO EVALUATE BIRD RESPONSES TO LANDSCAPE CHANGES	Dafne Ram, Anna-Lena Axelsson, Martin Green, Henrik Smith, Åke Lindström - THE EFFECT OF CHANGING FOREST STRUCTURES ON FOREST BIRD POPULATIONS: A LARGE-SCALE ANALYSIS
18:20 – 18:40	Jérôme Guélat, Marc Kéry - EFFECTS OF SPATIAL AUTOCORRELATION AND IMPERFECT DETECTION ON SPECIES DISTRIBUTION MODELS	Alexander Mischenko, Olga Sukhanova - BIRDS IN RUSSIAN FLOODPLAINS: WINNERS AND LOSERS UNDER CHANGING FARMING AND CLIMATE
18:40 – 20:00	Dinner	
20:00 – 21:30	<b>Workshop</b> (lecture hall ground floor) European Breeding Bird Atlas (EBBA 2) <i>Convener: Verena Keller</i>	
<b>Thursday, September 8<sup>th</sup></b>		
	Mid-conference Excursions (see General Information)	
	Conference Dinner (see General Information)	
<b>Friday, September 9<sup>th</sup></b>		
09:00 – 09:45	<b>Plenary</b> (lecture hall upper floor) Johannes Wahl, Christoph Sudfeldt & Rainer Dröschmeister - EUROPE IN A NUTSHELL: BIRD MONITORING IN A FEDERAL REPUBLIC	
	<b>Session 9</b> (lecture hall ground floor) <b>Surveys and monitoring of breeding birds</b> <i>Chair: Henning Heldbjerg</i>	<b>Session 10</b> (lecture hall upper floor) <b>Methodologies and technologies</b> <i>Chair: Oskars Keišs</i>
10:00 – 10:20	Ruud Foppen, Chris van Turnhout, Arend van Dijk, Arjan Boele, Fred Hustings - RECONSTRUCTING TRENDS IN BIRD POPULATION NUMBERS BY INTEGRATING DATA AND INFORMATION SOURCES	Thierry Onkelinx, Koen Devos, Paul Quataert - HANDLING MISSING OBSERVATIONS WITH MULTIPLE IMPUTATION
10:20 – 10:40	Chris van Turnhout, Jan-Willem Vergeer, Henk Sierdsema, Gerard Troost, Ruud Foppen, Tom van der Meij - ADAPTIVE MANAGEMENT OF DUTCH MONITORING SCHEMES	Samuel Wechsler, Sylvain Antoniazza, Marc Kéry, Peter Knaus, Thomas Sattler, Hans Schmid, Jérôme Guélat - BRINGING MORE QUANTITATIVE DATA INTO ATLASES: EXAMPLES FROM SWITZERLAND
10:40 – 11:00	Szabolcs Nagy - STATUS OF COLONIAL BREEDING BIRD MONITORING IN EUROPE	Sarah Harris et al. - RECORDING DETECTABILITY
11:00 – 11:40	Break	
11:40 – 12:00	Thomas Sattler, Nicolas Strebel, Albert Bassin, François Estoppey, Michael Lanz, Pierre Mollet - IMPROVING TREND ESTIMATES BY ESTABLISHING NATIONAL MONITORING PROGRAMS FOR ELUSIVE NOCTURNAL SPECIES: THE CASE OF THE WOODCOCK IN SWITZERLAND	Sergey A. Simonov, Maria V. Matantseva - UNUSUAL TECHNICAL APPROACHES IN MONITORING OF BIRDS: FROM REMOTELY CONTROLLED SYSTEMS AND THERMAL IMAGING TO AERIAL SURVEYS
12:00 – 12:20	Mikhail Kalyakin, Olga Voltzit, Anthon Morkovin, Ekaterina Preobrazhenskaya, Alexander Mischenko - REVIEW OF INVESTIGATIONS OF BIRD NUMBER AND ITS DYNAMIC IN EUROPEAN RUSSIA	Francesc Sardà Palomera, Gerard Bota, Núria Padilla, Lluís Brotons, Francesc Sardà - AERIAL IMAGERY FROM UAS TECHNOLOGY TO STUDY SPATIAL AND TEMPORAL DYNAMICS OF BIRD COLONIES

12:20 – 12:40	Kees Koffijberg, Bernd Hälterlein, John Frikke, Karsten Laursen, Gerold Lüerßen, Gundolf Reichert, Leo Soldaat - BREEDING BIRDS IN THE WAD-DEN SEA IN TROUBLE	Nicolas Strebel, Marc Kéry, Thomas Sattler - ESTIMATING POPULATION TRENDS FROM MULTIPLE DATA SOURCES IN AN INTEGRATED BINOMIAL MIXTURE MODEL
12:40 – 13:00	Zoltán Szabó, Cristi Domşa, Ede Gábos - COMMON BIRD MONITORING IN ROMANIA BETWEEN 2006-2015	Henk Sierdsema, Christian Kampichler - R-TOOLS FOR CALCULATING TRENDS AND MAKING MAPS
13:00 – 14:30	Lunch	
	<b>Session 11</b> (lecture hall ground floor) <b>Surveys and monitoring of waterbirds</b> <i>Chair: Szabolcs Nagy</i>	<b>Session 12</b> (lecture hall upper floor) <b>Evaluating the effects of conservation action and policy</b> <i>Chair: Aleksii Lehtikainen</i>
14:30 – 14:50	Colette Hall, Richard Hearn, Ib Krag Petersen, Ainars Aunins - DEVELOPING A EUROPEAN SEADUCK MONITORING STRATEGY	Jochen Bellebaum, Kees Koffijberg - DO AGRI-ENVIRONMENT MEASURES STABILISE POPULATIONS OF A HIGHLY SENSITIVE BIRD?
14:50 – 15:10	Foued Hamza, Slaheddine Selmi - FACTORS AFFECTING THE ABUNDANCE OF WATERBIRDS WINTERING IN THE GULF OF GABÈS, SOUTH-EAST TUNISIA	Anna Gamero et al. - EU POLICY EFFECTS ON COMMON FARMLAND BIRDS
15:10 – 15:30	Zuzana Musilova, Petr Musil, Jan Zouhar, Matyáš Adam, Vladimír Bejček - IMPORTANCE OF SPECIAL PROTECTED AREAS FOR WATERBIRDS OVERWINTERING ON THE EDGE OF THEIR WINTERING RANGE	Petteri Lehtikainen, Aleksii Lehtikainen, Markku Mikola-Roos, Kim Jaatinen - MANAGING WETLANDS FOR WATERBIRDS - EVALUATION OF EFFICIENCY
15:30 – 15:50	Coline Canonne, Jean-Baptiste Mouronval, Alain Tamisier, Philippe Vandewalle, Jocelyn Champagnon - SPATIO TEMPORAL DISTRIBUTION OF WATERFOWL WINTERING IN CAMARGUE, SOUTHERN FRANCE	Jean-Yves Paquet, Antoine Derouaux, Jérémy Simar - ARE NATURA 2000 SITES DELIVERING CONSERVATION BENEFIT FOR BIRDS? A CASE STUDY IN WALLONIA (BELGIUM)
15:50 – 16:10	Timothy Coppack, Mark Rehfisch, Stuart Clough - ESTIMATING WINTERING POPULATIONS OF WATERBIRDS BY AERIAL HIGH-RESOLUTION IMAGING	Guido Tellini Florenzano, Tommaso Campedelli, Gianpiero Calvi, Guglielmo Londi - DEMOGRAPHIC TRENDS OF BREEDING BIRDS LEAD TO NICHE CHANGES. CONSERVATION CHALLENGES FROM A CHANGING WORLD
16:10 – 16:50	Break	
16:50 – 17:30	<b>Plenary</b> (lecture hall upper floor) Franz Bairlein - CHANGE OF LANDSCAPE AND CLIMATE IN AFRICA: IMPLICATIONS FOR BIRDS IN EUROPE	
17:30 – 18:00	<b>Official ending</b>	

## Plenary Talks

### Change of landscape and climate in Africa: Implications for birds in Europe

Franz Bairlein

Institute of Avian Research “Vogelwarte Helgoland”, Wilhelmshaven, Germany; [franz.bairlein@ifv-vogelwarte.de](mailto:franz.bairlein@ifv-vogelwarte.de)

Many migratory birds decline in population numbers and this is dis-proportionally so in many long-distance trans-Saharan migrants, revealing that important drivers of population changes act during non-breeding season at African stopover and wintering sites, respectively. Although partly known through the famous relationship between breeding population changes in British whitethroats and some other species and Sahe-

lian rainfall, the role of other drivers such as land use, habitat changes, weather changes, etc. has rarely been considered. This is particularly the case for factors acting at African stopover sites. However, identifying the major drivers is crucial for successful conservation of these migratory species. The talk will summarize our current knowledge on the issue and outline knowledge gaps for future research and conservation.

### Birds and Common Agricultural Policy: What has to be changed?

Ariel Brunner

BirdLife International, Avenue de la Toison d'Or 67, Brussels, Belgium; [Ariel.Brunner@birdlife.org](mailto:Ariel.Brunner@birdlife.org)

It is common knowledge that farmland birds have suffered some of the largest declines in recent decades, as a consequence of major changes in our agricultural systems toward intensified food production. In political terms, the finger of blame has firmly been pointed at the subsidy regime that often pays farmers to intensify their practices, to the detriment of our environment biodiversity. Both funding streams within the policy, the ‘pillar I’ of direct payments to farmers, and ‘pillar II’ of rural development funds are structured so that the larger, intensively managed farms generally benefit most out of the system, and those that produce in a more sustainable way, lose out. Meanwhile, species diversity on European farmland continues to decline.

The most recent CAP reform in 2013 was supposed to rectify those perversions within the policy. ‘Greening’ payments were introduced to the pillar I, as were other options for ‘environmental’ projects within Pillar II. However, the reality is that the reform has been

a catastrophic failure. Findings show that the policy has had very little or no benefit on biodiversity. The Greening payment scheme for farmers is riddled with exemptions, contradictory policies and options for farmers that have no value for the environment. This, alongside a rural development fund which allows more intensified practices to establish, creates a lamentable picture of the policy. In the context of this continuing policy failure, and subsequent declines, Birdlife has been demanding major changes to Europe’s food production system.

In the ever changing context of post-Brexit Europe, the fact that 38% of Europe’s budget is paid into the CAP will come under increasing scrutiny. This paper will question the general narrative that has justified this large amount of spending and outline the potential for reform of the common agricultural policy, by suggesting new objectives for this policy in these politically and ecologically testing times.

## Change and stability in the world list of bird species: The HBW-BirdLife endeavour

Nigel Collar<sup>1,2</sup>

<sup>1</sup> Cambridge University, Department of Zoology, Cambridge, UK

<sup>2</sup> BirdLife International, Cambridge, UK; [Nigel.Collar@birdlife.org](mailto:Nigel.Collar@birdlife.org)

Hundreds of research papers on avian taxonomy (most of them molecular) have appeared in the past 20 years, producing huge changes in our knowledge of the relationships of birds, but also in the number of bird species that we recognise. Unfortunately, however, these papers often use different concepts and standards of judgement when recommending species limits. Consequently BirdLife, which must assess the conservation status of all bird species for the IUCN Red List, has been compelled to develop and operate its own ('Tobias') criteria for the consistent and transparent treatment of all taxa. This system gives scores (minor 1, medium 2, major 3) for individual plumage, metric and vocal characters. With the participation of the Barcelona-based team that produced the Handbook of the Birds of the World, the application of these criteria has moved from a reactive process (responding to other researchers' findings and

recommendations) to a proactive one (addressing as many cases as possible where a taxonomic study appears warranted). The results are being published in the HBW-BirdLife Illustrated Checklist of the Birds of the World, of which the second (passerine) volume will appear in a few months. In the non-passerine volume several hundred original taxonomic revisions were presented, with their justifications. The same will happen in the passerine volume, which has benefited greatly from the inclusion of vocal evidence. Although doubts exist about the validity of the Tobias criteria because they do not score genetic differences, the number of occasions when genetic data and morphological evidence are in conflict is reassuringly limited. No taxonomy lasts long, but the new list is intended to provide a degree of stability for ornithology and conservation in the short term, and a forum for consensus further into the future.

## A systematic approach to unsystematic data: The EuroBirdPortal project and visions beyond

Gabriel Gargallo

Catalan Ornithological Institute, Nat - Museu de Ciències Naturals de Barcelona, Plaça Leonardo da Vinci 4-5, 08019 Barcelona, Spain; [anella@ornitologia.org](mailto:anella@ornitologia.org)

Despite data gathered by online bird portals follow, at most, simple standardised protocols (e.g. complete lists), the vast amount of data contained in these portals and the sheer amplitude of their combined geographical and taxonomic coverage offer great potential to better understand the temporal and spatial distribution of birds across large geographical areas. The EuroBirdPortal (EBP) project aims to make the best use of this information by developing a common data repository that combines data from each of the existing online bird systems in Europe. The initiative currently manages a dataset of aggregated data (by week and 10 x 10 km square) containing species-specific information for a limited number of years (2010-2014) and species (55 species), and involves 69 partner organizations whose local online portals cover a significant, though

still quite skewed, part of the continent (mostly including western and central Europe). During the next three years, the project aims to make a great step forward, creating a new data sharing standard, database repository and data-flow system capable of managing automatically and in near-real-time all data interchange processes, and improving the taxonomical and geographic coverage (to 100 species and include most of the EU) and the quality and relevance of the data collected. Moreover, the current EBP demo viewer ([www.eurobirdportal.org](http://www.eurobirdportal.org)) will be redesigned in order to be able of reliably displaying up-to-date European-wide spatiotemporal patterns of bird distribution in near-real-time. The relevance of these improvements and the potential future synergies with other EBCC initiatives such as PECBMS and EBBA2 will be discussed.

## Nature conservation in Germany: Can we change the world for birds?

Beate Jessel

President of the German Federal Agency for Nature Conservation, Konstantinstr. 110, 53179 Bonn, Germany; [info@bfm.de](mailto:info@bfm.de)

Germany is a country of diverse landscapes, offering a variety of habitats. More than 500 bird species have been recorded in Germany. However, endangered bird species show a varying picture indicating required conservation measures. Among all groups of birds formerly widespread farmland birds show the strongest declines in population trends. The reasons thereof are manifold. Agricultural intensification, increasing cultivation of energy crops accompanied by a loss of insects cause negative impacts on birds. Moreover, the effects of wind farms, redevelopment of buildings, reuse of fallow land and loss of rural gardens lead to negative population trends. On the contrary, the recovery of species, for which conservation strategies have been implemented, is encouraging and demonstrates that protection measures are essential and effective. Obviously, protection of birds and their habitats contribute to nature conservation in a broader context – and vice versa. So, trends in bird populations are good indicators for the state of biodiversity and respective monitoring data are crucial.

The Federal Agency for Nature Conservation (BfN) supports bird monitoring in Germany via cooperation with the Federation of German Avifaunists (DDA). Each year numerous motivated volunteers report their recordings and create an essential data basis for monitoring the state of nature and for nature conservation.

The legal framework and instruments to improve the conservation status of species listed in the Birds- and Habitats-Directive and to meet the targets of the national and the European strategy on biological diversity are given. However, the bird-based indicator “species diversity and landscape quality” of the German National Strategy on Biological Diversity still shows a trend away from the target. It is possible to change this situation – not only for birds. Examples of vital measures are the implementation of management plans for all special protected areas within the Natura 2000 Network, consequent implementation of the German impact mitigation regulation and, referring to successful approaches, cooperation models between nature conservation and agriculture.

## Atlases as a tool to document changes in distribution and abundance of birds

Verena Keller<sup>1,2</sup>

<sup>1</sup> European Bird Census Council

<sup>2</sup> Swiss Ornithological Institute, Switzerland; [verena.keller@vogelwarte.ch](mailto:verena.keller@vogelwarte.ch)

Bird atlases have a long tradition. Projects mapping the distribution of birds on a grid basis started around 1960. Atlas projects characteristically aim at recording the occurrence of all bird species within a spatial unit, usually a country, province or other type of region. The first generation of atlases simply mapped the distribution of species without information on abundance although atlas data were often used to estimate overall population size. Some later atlases presented information on abundance as well, either in the form of abundance estimates per square or by collecting abundance data in sample areas which were used to model relative abundance of species across the study area. In more and more countries atlas work has been repeated usually one or more decades after the publication of the first atlas. While some of these atlases have followed new methodologies, which made comparisons with older atlases difficult, others aimed specifically at documenting changes. Standar-

dised approaches thus allowed to document changes in distribution for many species which could then be put into perspective with changes in land use and climate, or showed the effects of conservation projects or documented colonisation processes. Atlas projects documenting changes in abundance are still rare but modelling approaches are increasingly used to analyse such changes. While repeated atlases allow to document changes retrospectively and are a good basis for further analyses to explain them, modelling also allows to predict changes into the future. This approach has been used at the scale of Europe and at national scales to predict changes in range based on climate-change scenarios, less so by taking into account changes in land-use. The combination of atlas projects with population monitoring programmes and the use of web tools to collect data also offers new possibilities to document and analyse changes in distribution and abundance at different temporal and spatial scales.

## Birds and renewable energy, why counting counts

Aly McCluskie

Royal Society for the Protection of Birds (RSPB), Department for Conservation Science, The Lodge, Potton Road, Sandy, Bedfordshire, UK; [Aly.McCluskie@rspb.org.uk](mailto:Aly.McCluskie@rspb.org.uk)

There has recently been an unprecedented expansion in the development of renewable energy in Europe. Such expansion is crucial if we are to mitigate the effects of climate change. However the impacts on wildlife and in particular birds have not been fully quantified. In the case of wind farm developments, these impacts arise through collision mortality, displacement, (equivalent to habitat loss), and barrier effects. How these impacts affect birds will be species and site specific, and considerable uncertainty exists as to their scale and nature.

Most crucially, there is a need to assess how any potential impacts could create population scale prob-

lems, in other words do these impacts of developments matter? Population models have been used to determine these impacts but their outputs have frequently been misinterpreted. Essentially these models depend on good data on the populations in question, a fundamental component of which are good census data.

Using examples from the UK, of both onshore and offshore wind farm developments, this talk will therefore highlight how our understanding of the potential avian impacts of renewable energy developments is dependent on rigorous and robust information on bird numbers.

## Europe in a nutshell: Bird monitoring in a federal republic

Johannes Wahl<sup>1</sup>, Rainer Dröschmeister<sup>2</sup>, Christoph Sudfeldt<sup>1</sup>

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<sup>2</sup> Federal Nature Conservation Agency (BfN), Konstantinstr. 110, 53179 Bonn, Germany; [rainer.droeschmeister@bfn.de](mailto:rainer.droeschmeister@bfn.de)

Germany is home to a remarkable diversity of native birds, with 248 regularly breeding species in 2013. The number of breeding birds sums to 305 species if 13 extinct, 24 irregular as well as 20 non-native regular breeding species are taken into account.

The report State of the Germanys Breeding Birds reveals troubling declines of bird populations since the late 1990s. During the past 25 years 19 % of all bird species showed negative population trends and further 8 % declined slightly. In the last 12 years the share of bird species with declining population sizes rose to 26 %, including the species with slight population declines this number even amounts to 34 % – a warning signal of the failing health of our ecosystems.

The talk gives an overview on the current bird monitoring programmes in Germany for common and rare breeding birds as well as wintering waterbirds. National bird monitoring underwent an enormous change in the last two decades: NGOs and public agencies built up an effective and trustful cooperation. Being a federal republic with 16 federal states (“Laender”), establishing national monitoring programmes with standardised protocols took lots of resources at all levels involved.

A basic funding procedure at the national level was established in 2008 by the so called administrative agreement (“Verwaltungsvereinbarung Vogelmonitoring”) between bird conservation bodies. Bird monitoring focusses on national and Laender conservation activities like wildlife protection programmes, bird indicators and the effectiveness of conservation areas. Furthermore it serves to fulfil the obligations of international agreements such as the EU Birds Directive.

More than 5,000 volunteers participate in the current national programmes and gained public reputation with their motivated and scientific sound engagement. Bird monitoring is interconnected with other bird recording projects. Therefore we will touch upon atlases, events such as our national birdrace and its aims, the collection of unsystematic data with ornitho.de, how this has changed participation and public awareness and how we try to find additional volunteers using these instruments.

Challenges for the future are improved training and qualification courses for volunteers, the development of online and mobile monitoring techniques and the endorsement of monitoring moderately rare species whilst developing a national SPA monitoring system.

## Oral Presentations

### Bird studies in Armenia: Past, presence, future

Karen Aghababyan

TSE NGO, American University of Armenia, Armenia; [karen@aua.am](mailto:karen@aua.am)

Armenia has a relatively short history of ornithological studies that can conveniently be divided into three periods: (1) descriptive studies, which cover a period from the 1930s to the 1980s; (2) distribution studies, which cover the period from 1992 to 2000; (3) quantitative studies which cover the period from 2002 until today. Each period was determined by such factors as intellectual capacity and socio-economic environment. Thus the first period was characterized by the fact that Russian scientists have been interested in Armenian bird fauna and that the research institutions had serious financial support from the Soviet Government. The second period that started soon after the collapse of the Soviet Union was characterized by lacking financial governmental support and an interest of an individual donor in supporting bird and habitat conservation in Armenia; in such conditions the mapping work for the field guide to birds of Armenia

was implemented. The third period was characterized by understanding the necessity of conservation research and monitoring. Even though the third period started under conditions of serious financial shortage, development of the concept, accompanied by the development of a professional younger generation of ornithologists, helped attract funds for further development. The final results of the studies implemented during the third period will be summarized in the National Atlas (the first for Armenia), and will be used in the European Breeding Bird Atlas 2 (Armenia participating for first time). With the current intensification of industrial activities in Armenia, the future studies of birds in Armenia are envisioned as conservation research, related to study of habitat requirements of bird species and communities, population and habitat modelling, study of birds' role in ecosystem services, and interdisciplinary ecological studies.

### Gamification (persuasive design) in the Southern African Bird Atlas Project (SABAP2)

Jerome Ainsley, Les G. Underhill

Animal Demography Unit, Department of Biological Sciences, University of Cape Town, Rondebosch, 7701 South Africa; [jeromeainsley@ymail.com](mailto:jeromeainsley@ymail.com)

In the context of the bird atlas project, gamification is an approach which engages people and motivates them to achieve the goals of the project. Gamification taps into the basic natural desires of people: socializing, learning, competition, achievement, status and altruism. For the bird atlas project, it leverages participation through the recognition of individual achievements in attaining common goals. Gamification succeeds because it makes chores feel like games.

The design of the sabap2 "coverage map" is an exercise in gamification. The successive colours for the grid cells require more checklists to achieve each level. We discovered how addictive the atlasing "game" was when we found that the citizen scientists involved were planning their holidays around gaps in the coverage map.

Since the outset of the project in 2007, "challenges" to achieve coverage goals have been an integral part of sabap2. A block of four one-degree cells centred on Gauteng, and containing 576 atlasing units, called pentads, was successively the focus of three exercises in gamification: Four Degrees Green (getting four checklists for each

pentad), 747 (getting seven checklists for each pentad in the four degrees within seven months), and Four Degrees Blue (getting 11 checklists per pentad). In addition there is an annual challenge to visit every one of these pentads.

There is a "Turning Kruger Green" project, which involves getting four checklists for each pentad in the Greater Kruger National Park region of northeastern South Africa. Many pentads in this region do not have any public access, and this initiative is done in collaboration with the South African National Parks.

We found early in the project that challenges which involved earning individual points and a leaderboard were unsatisfactory, through being too competitive. Challenges which involve obtaining a common goal through team work were far more motivating.

A cell phone app called BirdLasser has been revolutionary in make atlasing much more fun, through eliminating the two most difficult chores, map reading and data submission. BirdLasser has been a key factor in the 20% compound annual growth rate of data submission since 2014.

## Species distribution models misinform on habitat suitability in an ecologically trapped bird

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Species distribution models (SDMs) aim to predict the likelihood of occurrence of species based on the link between species presence (and absence) and environmental variables. SDMs are often assumed to document habitat suitability and to inform on the ecological requirements of the species. However, habitat occupancy may deviate from habitat suitability in many cases. For instance, a mismatch between habitat suitability and habitat occupancy may result from maladaptive habitat selection, where low-quality habitats are particularly attractive to the species.

In this study we use fitness-related parameters to examine the relevance of applying SDM approaches to estimate habitat suitability in the case of maladaptive habitat selection. A recent study conducted in southern Belgium showed that the Red-backed Shrike (*Lanius collurio*) clearly prefers open areas in forest over tra-

ditional farmland habitat, whereas its reproductive performance was markedly higher in farmland. In the context of this ecological trap, we tested whether SDM outcomes based on distribution records sourced from a breeding bird atlas provided reliable and meaningful estimates of habitat suitability. Our results showed that between-habitat differences in habitat suitability values based on model outcomes were not in line with the differences based on field-collected fitness parameters. In contrast with fitness parameters, SDM approaches predicted higher habitat suitability for the species in forest. Therefore, we conclude that SDM approaches should be used with extreme caution as they could provide unreliable estimates of habitat suitability for ecologically trapped organisms even if they predict their likelihood of occurrence with accuracy.

## The new Dutch Bird Atlas, utilising a bonanza of counts and estimates

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The fieldwork for the Dutch atlas is nearing completion. After the official fieldwork period (2012-2015) the approximately 1800 volunteer observers achieved a coverage of 93 % (wintering birds) and 90 % (breeding birds) respectively of the 1685 atlas squares (5x5 km). The unofficial 'sweep' year 2016 intends to accomplish full coverage. The atlas work delivers a bonanza of counts and estimates, ready for analyses. We will

present some interesting first examples of changes in distribution and density. For breeding birds we can compare the field results with 1973-1977 and 1998-2000 respectively, for wintering birds we can compare with 1978-1982. Finally we will present some actual methodological dilemmas and thoughts on how to address these during the process of the production of the 'physical' atlas.

## Bird atlases in urban areas and their challenges: Experiences from the atlas of the breeding birds of Barcelona 2012-2014

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Planning strategies to maintain or improve urban biodiversity and ecosystem services can be supported by detailed information on where bird species breed. However, the development of breeding bird atlases in metropolitan areas may require the modification of some of the common practices usually employed at larger scales in this type of project. In this context, we show some of the experiences of the Atlas of the breeding birds of Barcelona 2012-2014. Unlike many national or regional atlases where the distribution maps consist of a 10 x 10 km grid, in Barcelona we used a finer geographical approach. Our basic grid was 1 x 1 km and even 500 x 500 m sampling units were used. Urban atlases require the inclusion of biological criteria (territory size) which are important to define the final grid resolution of species-specific maps. Quite intensive fieldwork was required to determine species presence within 531 500 x 500 m squares. Because cities like Barcelona (a very dense built-up city) attract few ornithologists, this lack had to be partially compen-

sated by professional ornithologists and specific training activities to recruit new volunteers. However, the fine-grained grid resolution may still be too coarse for many planning decisions implemented at urban scale. In order to address the challenging goal of finding out where birds actually occur at very precise resolution, a mapping approach was carried out in a randomised sample of 70 500 x 500 m squares. The exact location of birds combined with very detailed environmental information, allowed us to generate MaxEnt habitat suitability models at 50 x 50 m resolution for common birds. Bird abundance was calculated using different techniques. In the case of common birds the number of territories was determined for each of the 70 surveyed squares and these data, combined with information on the distribution and habitat suitability maps, were used to derive estimations of breeding pairs in Barcelona. The book is under publication but the data are already available for local planning and research.

## Decreases in the lowlands, increases at higher elevation – rapid changes in altitudinal distribution of breeding birds

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Altitudinal gradients represent an attractive system to study the consequences of environmental changes. In a European context, the Alps represent a key region to study these effects; they form an island in the middle of the continent and might serve as a refuge for species that suffer a loss of suitable habitat in lower regions due to climate and other environmental changes.

Here, we compare the altitudinal distribution during the breeding season for the entire avian community between the periods 1993-96 and 2013-16. We use the highly standardized territory mapping data of the new Swiss breeding bird atlas and the same dataset from the last breeding bird atlas twenty years ago. Using N-mixture models that consider detectability and habi-

tat variables, we found a strong relationship between population evolution and altitude. Not just renowned cold-adapted habitat specialists such as the rock ptarmigan, but even common breeding birds show a clear increase in the population's mean breeding altitude. Besides increases at the higher range margin we found clear decreases at the lower range margin, even for some typical and abundant lowland species.

This study reveals striking changes in bird abundance related to climate and environmental change in unprecedented detail. It stresses the key role of the Alpine region that is of key conservation value not only for alpine habitat specialists but for a wide range of subalpine and even lowland species in Europe.

## Bird winter population dynamics in the eastern edge of Europe

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Since the 1970s, the climate in Europe has undergone rapid changes, with the greatest observed changes occurring during the winter season. Significant changes in winter conditions are observed in the majority of Russian regions. However, in our view, the question of the role played by the increase in winter temperature in the dynamics of bird populations is still poorly known. The aim of our research was to analyze data on the winter density of 10 bird species. The material for our research was collected during a 25 year period from 1991 to 2015. Bird censuses were carried out using transect counts. Great Tit (*Parus major*), Blue Tit (*Cyanistes caeruleus*), Willow Tit (*Poecile montanus*), Marsh Tit (*Poecile palustris*), Crested Tit (*Lophophanes cristatus*), Nuthatch (*Sitta europea*), Treecreeper (*Certhia familiaris*) and Goldcrest (*Regulus regulus*) showed a significant increase in abundance. None of the 10

investigated species showed a decrease in abundance. The main factors that influence population growth were increased annual temperature, winter temperature and temperature during the breeding season. In other parts of Europe, such as Finland and Sweden, similar abundance dynamics have been observed for some of these species. However, the dynamics of Willow Tit density differed from observations in other parts of Europe. This shows that climatic changes can have a rapid impact on the size of bird populations. Clearly population trends observed in Eastern Europe may significantly differ from those in the western part of the continent. Accordingly, the inclusion of data on population dynamics from a larger sample of European regions would help to more accurately analyse and judge the response of birds to climate change.

## EuroBirdPortal – modelling the year round distribution and phenology of European birds

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Co-ordinated Citizen Science surveys have ensured that the distributions and population trends of European breeding birds are relatively well documented, as are the mid-winter distributions and abundances of wintering waterfowl. However, the majority of European bird populations are migratory and there are huge gaps in our knowledge of their distributions and abundances in the non-breeding season. These gaps place major limitations on our ability to manage populations, sites and landscapes and to tackle applied problems. We outline opportunities to address these issues through EuroBirdPortal, a new initiative that is collating avian occurrence and abundance data from on-line recording schemes across Europe. We review the types of data being gathered, the analytical opportunities and limitations arising from the different data types (incidental observations, counts, complete lists) and consequences of these data gathering protocols for the questions that can be addressed. Recent developments in species distribution modelling, including Spatio Temporal

Exploratory Models and Occupancy Modelling suggest that robust inferences can be drawn from such data. EuroBirdPortal will focus on developing and applying the most appropriate analytical techniques and on promoting best practice with respect to data gathering. The project will enable modelling of large scale patterns of occurrence and phenology throughout the year in relation to climate, land use and other environmental factors. It will provide data relevant to a range of specific applied issues including site networks, the wise use of hunted populations, strategic management of collision hazards, the spread of non-native species and the transmission of avian diseases. The work will also provide opportunities to address ways in which birds contribute to cultural ecosystem services, including health benefits, recreation, tourism and education. While European birds provide our motivating example many of these ideas are applicable to other taxa and to other parts of the world.

## Do agri-environment measures stabilise populations of a highly sensitive bird?

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The Corncrake (*Crex crex*) breeds in grasslands that are mostly agriculturally managed. Its populations are highly sensitive to changes in grassland management. Earlier and more frequent mowing is the main threat causing Corncrake population declines, and due to these declines the species was regarded as globally threatened in the past. To promote Corncrake conservation, agri-environment schemes (AES) were introduced in several countries.

We obtained information on current AES options for Corncrake in 32 regions throughout Europe using a questionnaire. Suitable options were available in the majority of regions, but coverage of the regional Corncrake populations was highly variable and often limited.

A link between introduction of AES and population recovery has been shown before in the UK. Corncrake

population trends from national monitoring schemes on the continent showed large fluctuations and did not show a clear response to the availability of suitable AES options. Limited coverage of Corncrake populations in the most important countries as well as the species' low breeding-site fidelity suggests that the Corncrake's future is not secured by AES. Instead, the species might depend on the future changes of farming systems in Eastern Europe, which are not likely to be favourable in the long term.

This is to our knowledge the first survey of AES and population trends at a European scale. We believe that the conservation of many farmland-breeding European birds should pay more attention to continent-wide changes of breeding conditions in order to be successful.

## A trait-based approach to standardise indicator species selection

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Multi-species indicators are frequently used to assess the state of biodiversity and its response to implemented management. However, generally applicable and objective methodologies to select species for inclusion in such indicators are lacking, meaning the process is frequently based on expert opinion and tuned to context-specific criteria. For example, across Europe, national Farmland Bird Indices (FBI) are currently generated using different species' trends and many countries have multiple national FBIs reflecting different selection criteria. Given that species' composition dictates indicator value, there is therefore a risk that these indicators, which ostensibly reflect the health of the same ecosystem, can report different results. This variation in composition and message has clear implications for cross-country benchmarking and spatial scaling, as well as for engagement with and

interpretation by policy makers and general public alike. Here we develop an objective, trait-based species selection protocol that prioritises representativeness and index sensitivity to environmental change. Using simulated communities, which vary in the proportion of generalist and specialist species they contain, we explore the implications of imposing additional trait-usage and areal coverage thresholds, trait-type resolution and target ecosystem complexity on species selection and indicator characteristics. We also explore the influence of indicator set size on resultant characteristics. Having devised a generic framework for species selection according to community characteristics, we apply it to the European farmland bird community and compare the species selected with the existing indicator set.

## Spatio temporal distribution of waterfowl wintering in Camargue, Southern France

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Situated in Southern France, Camargue is a 150,000 ha wetland of major importance in Europe for wintering Anatidae species and coots. We took advantage of standardized aerial surveys conducted monthly from September to March since 1964 to model the spatio-temporal distribution of Greylag Goose (*Anser anser*), Common Coot (*Fulica atra*) and nine species of ducks, during daytime in Camargue. To take into account potential influence of three successive observers over the last 50 years, we considered longitudinal data from terrestrial surveys that were conducted on the same

species over the last 25 years in four nature reserves. In the end, our model offers a straightforward dynamic picture of the distribution of each species at two time scales: over the winter and over years. In addition, we tested for a common response of species with similar trophic status. Results will be discussed in the context of land-use changes that have profoundly transformed the Camargue over the last decades such as changes in proportions of area covered by ricefields, saltpans, nature reserves and hunting estates.

## Estimating wintering populations of waterbirds by aerial high-resolution imaging

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Estimates of avian populations and their dynamics are highly dependent on the accuracy of the applied census technique and the design of spatial coverage. Most estimates of the wintering populations of waterbirds (and seabirds) have been derived from surveys using observers positioned on the shore, on ships or in low-flying airplanes. Visual aerial surveys have typically been flown beneath 80 m altitude to allow observers to identify the birds. However, at low altitude, there is a significant risk of birds being disturbed and either missed or miscounted. Furthermore, census data collected by visual techniques need to be corrected for distance-related observation bias. Latest developments in digital aerial imaging allow a less invasive census of waterbirds, thereby solving the problem of distance-dependent detectability. From orthogonal high-resolution digital images, it is possible to map locations of individuals and estimate bird population sizes with a high degree of precision. For example, from high resolution digital still aerial surveys it was estimated that 14,161 Red-

throated Divers (*Gavia stellata*) were present in the Outer Thames Estuary, which represents the highest number ever reported for a single site in northwest Europe. It is possible that earlier visual surveys had underestimated the numbers of divers present in this Special Protected Area (SPA). Applying state-of-the-art spatial models (i. e. the Complex Region Spatial Smoother creSS method) to these data suggest that habitat features and anthropogenic factors, such as boat traffic, significantly influence the distribution of divers. These results have major implications for the future design and implementation of surveys for assessing populations of wintering waterbirds in Europe. We discuss the minimum technical and methodological requirements for carrying out digital aerial surveys and develop a conceptual framework based on empirical trials for the calibration of observational and camera-based survey techniques, in order to evaluate the backlog of existing population estimates.

## The effects of large-scale organic farming and conservation-oriented forestry on the population trends of breeding birds: A 20 years study

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A major task of the Unesco Biosphere Reserves is the development, testing and monitoring of ecologically sustainable land use models. In the Schorfheide-Chorin Biosphere Reserve (1,300 km<sup>2</sup>) in Northeast Germany, the largest continuous organic farmland area of Germany has emerged since 1990, with currently more than 14,000 ha of organic arable land and some 5,000 ha of extensive grassland (45% of the total farmland area). In the forests, conservation-sound approaches of beech forest management have been successfully implemented. In a so-called „reference area“ of 100 km<sup>2</sup> in the south-eastern biosphere reserve, the main targets of the biosphere reserve have been fulfilled for more than 15 years. All agriculture was changed to organic farming in the early 1990s, and lowland beech forest management

was changed to conservation-oriented forestry starting in 2001-2002. Since 1995, breeding-bird monitoring in the whole biosphere reserve has been undertaken (using point counts). This study compares the population trends of breeding birds in the reference area, the entire biosphere reserve and in all of Germany. It can be shown, that trends of many species in the biosphere reserve are significantly more positive than in the normal landscape. In the reference area, population trends in most of the species are clearly better than in the entire biosphere reserve and the wider countryside. Species which are threatened at a national scale are particularly supported by modified land use approaches.

## Reconstructing trends in bird population numbers by integrating data and information sources

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From a scientific but also policy perspective it is important to know long-term changes in a population. However, in only a few countries standardized monitoring schemes allow us to reconstruct population trends which cover periods of at least half a century. Although ‘official’ monitoring schemes deliver trend indices covering a quite recent period often we do have various other sources of data and information. We present a method to use and integrate these sources. In the case of a reconstruction of Dutch breeding bird population numbers since 1900 we used as common denominator the yearly estimate of the population. The main sources of information were monitoring scheme

data, old repeated census data, atlas data and expert judgement. The current monitoring schemes deliver data for all Dutch breeding birds since 1990. But before that period we have data on repeated censuses in sample plots. For common birds we were able to reconstruct trend indices from around the 1960s and 1970s. For rare birds during the period 1950-1990 we used atlas data, complete population censuses and expert estimates. The estimates for all species during the first part of the previous century were purely based on expert judgement, for instance based on changes in land use. We will show some examples of summaries across species showing the relevance of these data.

## Contrasting trends in the bird populations of North European peatlands

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Climate change is posing a threat to biodiversity, forcing it to adapt through shifts in species' distributions and thus altering their abundances. Given the prediction of greater temperature increases at high compared to low latitudes, species with restricted range, habitat or climatic niche may face problems. As a further complication, degradation, destruction and fragmentation of natural habitats are clearly increasing the vulnerability of species worldwide. In this context, the relevance of North European (hereinafter 'ne') peatlands lies not only in the role they play in the carbon cycle, but also because they act as biodiversity reservoirs. In this work we investigate the status of ne peatland birds based on data collected in breeding bird monitoring schemes. Using geometric means of common species' population indices, we analyse the state of ne peatland bird populations at both general and regional scales. The general trend of the dec-

line in ne peatland bird populations is mainly driven by Finland, where populations have declined for more than 50% over three decades. Conversely, the Scandinavian populations (Sweden and Norway) remained stable during the last 20 years, whereas the Baltic ones (Estonia and Latvia) show considerable increases, providing a contrast with the Finnish populations. We relate these results with the region-specific historical management of these particular ecosystems. In addition, we further explore which habitat-related variables affect the abundance of peatland species, therefore gaining insight into the target habitats that are more conducive to biodiversity. Our findings call for more effective conservation actions in ne peatland habitats and a deep reconsideration of the current management schemes, particularly in Finland, where the studied populations show the poorest conservation status.

## Wintering in a global warming context: The response of waterbird communities of the Mediterranean flyway

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Mediterranean wetlands are the major wintering areas for a large number of waterbirds of the Western Palaearctic. Birds find there optimal environmental conditions to replenish their body reserves essential for high fitness. However, climate warming affects the ecosystem functioning of Mediterranean wetlands by a change in edaphic conditions. The aim of this study was to investigate the climate change effect on wintering waterbird communities. We used the temporal trend in Community Temperature Index (CTI) to explain the shift in community structure of 103 species for a 21-year period (1991-2012) based on data from winter waterbird censuses (>8000 counting sites, ca. 250

million of individuals counted). For each species, we also calculate a contribution to the change in CTI. We measured the northward shift at the Mediterranean flyway scale and a response to the winter temperature anomalies. Our results highlight the strong response of waterbird communities to climate change with a northward shift of around 300 km in two decades. The results represent major knowledge improvements relevant for the conservation of Mediterranean wintering waterbirds, and notably species currently wintering in sub-Saharan Africa for which the Mediterranean Basin might represent an important wintering area in the future.

## EU policy effects on common farmland birds

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A more sustainable agriculture is a main target of the European Union (EU) strategy to halt biodiversity loss by 2020. We used monitoring data from 1981-2012 from 25 EU countries and 39 bird species to investigate whether two EU environmental policies, i. e. Birds Directive and agri-environmental schemes within EU common agricultural policy, had an effect on farmland bird populations. Specifically, we analyzed how the percentage of agricultural land under agri-environmental schemes (AES), the percentage of agricultural land designated as special protected areas for birds (SPAs), and species being listed in the Annex I of the Birds Directive influenced farmland bird population growth

rates. We found that AES and SPAs had a positive effect on populations of resident and short-distance farmland migrants and SPAs increased population growth rates of Annex I species. This indicates that SPAs are effective in protecting mainly target species and species spending most of their life cycle in the EU. However, common farmland birds continue to decline and the negative effect of agricultural intensification on their population growth rates was evident during the implementation of AES and SPAs. Overall, this suggests that these two EU environmental policies are slowing the declines of common farmland bird populations, but not reversing them.

## Effects of spatial autocorrelation and imperfect detection on species distribution models

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Species distribution models (SDMs) are widely used in ecology and related fields. They are frequently adopted to predict the expected occurrence (presence/absence) or abundance over large spatial scales, i. e., to produce a species distribution map. However, two common problems are (i) interpretational challenges due to the complex observation process (e. g. imperfect detection) and (ii) residual spatial autocorrelation. These may jeopardize our ability to draw inferences and produce underestimates of uncertainty. We explored the effects of imperfect detection and autocorrelation in abundance models by simulating datasets which did or did not contain these two effects and analysing them with four different models that did or did not accommodate them. Specifically, we used a Poisson GLM as a baseline, an N-mixture model (Royle 2004) accounting only for

imperfect detection, and two N-mixture models that accounted for imperfect detection, but differed in their specification of spatial autocorrelation.

In a case study, we also applied these models to Common Redstart (*Phoenicurus phoenicurus*) data from the second Swiss Breeding Bird Atlas (1993–1996) and validated them using an independent monitoring dataset. We found that both imperfect detection and autocorrelation strongly affected the quality and the uncertainty of abundance maps, especially when they occurred together. Spatial N-mixture models were well able to estimate the true abundance maps. Explicit modeling of measurement error *and* spatial autocorrelation can thus greatly improve the quality of SDMs and should not be ignored when producing large-scale abundance or occurrence maps.

## Modeling the potential distribution of Caucasian Grouse breeding display habitat in Iran

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Protecting and monitoring as many Caucasian grouse leks as possible is very important for the better management of this species which is endemic to the Caucasus. Therefore, the identification of suitable habitats is essential. The goal of this study was to explore the potential distribution of Caucasian Grouse by a species distribution modelling approach for the Arasbaran region. The species distribution modelling was based on five different modelling techniques which are finally summarised in an ensemble forecasting approach. We considered six environmental descriptors (land cover and topographic features) which were extracted on 70 hectare spatial extent (472 m radii circle). Unsurpri-

singly, our models confirmed that altitude and slope were the primary influences on grouse distribution in the region. Additionally, lek occurrence was more likely in areas characterized by higher percent cover of the mosaic of mixed deciduous forest (canopy closure  $\geq 50\%$ ) and grassland; and low to moderate percent cover of the mosaic of mixed deciduous forest (canopy closure  $< 50\%$ ) and grassland. The predicted distribution map can be used to select priority areas for conservation and to specify additional survey locations of the species in areas, which so far have been less well sampled.

## Developing a European seaduck monitoring strategy

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The conservation status of several European seaducks has become of increasing concern, with rapid declines observed in a number of populations, most notably in Long-tailed Duck (*Clangula hyemalis*) and Velvet Scoter (*Melanitta fusca*), which are both listed as Vulnerable on the IUCN Red List. Large declines have also been recorded in some populations of Greater Scaup (*Aythya marila*), Common Eider (*Somateria mollissima*) and Red-breasted Merganser (*Mergus serrator*). The largest declines have occurred in populations wintering in the Baltic Sea, the key area for most species; however, declines have also been detected elsewhere in Europe. Though there is some speculation on the factors leading to these declines, such as bycatch in fishing nets, small oil spills, over-harvesting and the impact of non-native species, their relative impacts on seaduck abundance is poorly understood.

Although comprehensive national monitoring schemes exist in some countries, they are not available in most and robust flyway-scale population estimates or trends are not available for most European seaduck populati-

ons. There are also significant gaps in our knowledge of population structure, habitat requirements and general ecology, which limits the interpretation of count and distribution data.

Thus there is an urgent need to improve our knowledge of seaduck status and the demographic drivers of population change. This will require the development of coordinated flyway-scale monitoring in wintering and breeding areas, requiring synchronous aerial and ship surveys, and other surveys. In order to facilitate the development of this, the European Seaduck Working Group<sup>1</sup> has prepared a monitoring strategy that provides a framework for a cost-effective and coordinated monitoring programme, including a harmonized approach to survey methodology, data collation, analysis and reporting, and an assessment of capacity building and training needs.

<sup>1</sup>The European Seaduck Working Group (ESWG) is a working group of the Duck Specialist Group. The group was established in 2013 to facilitate and support the coordination of European seaduck conservation, monitoring, research and management.

## Factors affecting the abundance of waterbirds wintering in the Gulf of Gabès, South-East Tunisia

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Identifying factors affecting waterbird abundance is a major topic in avian ecology, as well as for conservation purposes. Although the Gulf of Gabès (south-eastern Tunisia) is recognized as an important wintering area for Palearctic waterbirds, little is known about the ecological factors shaping the abundance of these bird species in this particular area. During the winter of 2012-2013, we surveyed waterbirds in fifty sites in the central part of the Gulf of Gabès. We also assessed a set of habitat variables (tidal width, number of tidal channels, area covered by seagrass, mud content and organic matter of the sediment) and counted the number of people using these intertidal areas. Using multiple linear regressions, we investigated the relationships of habitat features and human presence with the density of shorebirds and wading birds. We found that the Great Egret (*Casmerodius albus*), Eurasian Spoonbill (*Platalea leucorodia*), Greater Flamingo (*Phoenicopterus roseus*), Grey Plover

(*Pluvialis squatarola*), Dunlin (*Calidris alpina*), Eurasian Curlew (*Numenius arquata*), Spotted Redshank (*Tringa erythropus*), Common Redshank (*Tringa tetanus*) and the Ruddy Turnstone (*Arenaria interpres*) occurred more abundantly in large mudflats compared to narrow sandy beaches, while Sanderling (*Calidris alba*) showed an opposite trend. We also found that the studied sites were frequently visited by local people, mainly for clam-harvesting, thus sharing the intertidal habitats with birds. However, the abundance of most species did not decrease with increasing human presence, suggesting that traditional clam-harvesting activity did not seem to disturb birds. Nonetheless, we believe that further investigations of the interactions between birds and clam-harvesters are needed to better understand the role of traditional clam-harvesting activity in shaping the abundance and diversity of waterbirds wintering in the Gulf of Gabès.

## Recording detectability

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The United Kingdom's BTO/JNCC/RSPB Breeding Bird Survey (BBS) has the potential to provide much more than population trends. Increasingly, there is interest in how population densities vary, whether in relation to landscapes, habitats or climatic gradients. For this, some measure of detectability is needed and the approach used on BBS since it started in 1994 is to record birds in distance bands. These data have been used to estimate densities and population sizes but further information was needed to accommodate differences in detectability between sexes.

In 2014, the option of recording how birds were first detected (song, call or visually) was introduced. In its first year, uptake was remarkable; with 67 % of squares having detection type recorded. In 2015, this figure grew to 74 % of squares.

The first look at the data revealed some predictable patterns, for example, over 90 % of Cetti's Warblers (*Cettia cetti*) and Nightingales (*Luscinia megarhynchos*) were detected by song. It is nevertheless interesting to see how detection type varies between species and, more importantly, with distance. Proportionally, fewer Treecreeper (*Certhia familiaris*) are detected visually the greater the distance from the transect line, whereas Wheatear (*Oenanthe oenanthe*) are mainly detected by sight and over a larger distance.

Many of these results are intuitive but by knowing precisely how detectability changes with distance and habitat in relation to how birds are first detected, it is possible to account for these and improve estimates of density, and population size. This talk will focus on volunteer uptake and the first year's results.

## Population declines in eastern Palearctic passerines

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The East Asian-Australasian flyway is the least studied bird migration route and holds the highest number of globally threatened migratory species, which is especially true for songbirds. Unlike Europe, where standardized monitoring schemes have been established for decades, no international agreements exist to date in East Asia. However, recent studies revealed that some of the once most abundant species have declined dramatically during past decades - e.g. the Yellow-breasted Bunting (*Emberiza aureola*).

In 2011, a bird ringing project was established at Muraviovka Park in Far East Russia, to collect long-term data on population trends of Eastern Palearctic migrants. Many species showed significant declines during the first five years of the study, including the Rustic Bunting (*Emberiza rustica*). A comparative

analysis with time series from Fennoscandia, China and Japan showed that numbers of this long-distance migrant decreased by 72-88 % during the past 30 years. Similar declines have been reported from other *Emberiza* bunting species wintering in Taiwan. The reasons for the demise of the East Asian buntings are still unknown. Change in land use practices and over-harvesting are the most likely drivers for their negative population trends. To investigate survival and migration routes of these less-known species, a study using colour-rings and geolocators was started in 2015.

A broad-scale monitoring scheme is urgently needed to survey songbird populations in East Asia, since many species are heading for extinction while major threats have not been identified yet.

## In search of millions of lost Starlings across Europe: The relation between monitoring, science and conservation in a declining species

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The Starling (*Sturnus vulgaris*) is a widespread and common species, which is declining in large parts of its European range. We analysed and compared breeding population trends across Europe to investigate the causes of the declines. At the continental scale, the European population declined at a mean annual rate of  $-2.01 \pm 0.26\%$  during 1980-2012. We fitted log-linear Poisson regression models to European Bird Census Council data from 27 national breeding bird monitoring schemes across Europe to compare and contrast annual indices of changes in abundance using trim software. The results from national monitoring programmes showed a general cline across Europe, with most severe declines in north and west Europe in contrast to stable or increasing trends in central and eastern Europe. We investigated the drivers behind

the regional variations in Starling abundance within Denmark to investigate the causes of these differences. Using regional agricultural statistics, we demonstrated a strong positive relationship between local Starling density and the intensity of grazing cattle, which explained the variation in trends in relation to contrasting patterns of agricultural across the country. The Danish experience may help explain the contrasting trends between different European countries. Finally, we used light-weight gps-loggers to investigate the foraging habitat preferences in the part of Denmark where the Starling population has the highest density and is declining least, to try to understand factors contributing to the decline of the Starling and hence provide potential policy recommendations to stem the decline.

## High resolution maps for the new European Breeding Bird Atlas: A first provision of standardised data and pilot modelled maps

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One of the objectives of the Second European Breeding Bird Atlas (ebba2) is to provide maps illustrating bird occurrence at a 10x10km resolution for as many species as possible. It is impossible to carry out surveys in all of the 120,000 10x10km squares across the continent. Consequently the only feasible approach to achieve this goal is modelling the probability of bird occurrence by means of i) gathering a sample of standardised data, ii) using these data to model the relation between birds and environment (habitat, climate, etc.) and iii) projecting these models across the whole set of 10x10km squares in Europe. First pilot data consisting of standardised surveys were obtained from national coordinators. More than 100,000 timed surveys from a total of 12,057 10x10km squares from most countries were gathered and the Spatial Modelling Group of the EBCC explored how to generate models and maps with available

data. Here we present different modelling approaches and their advantages and disadvantages to overcome the challenges imposed by the data: 1) There are large differences in coverage across Europe since data are abundant and evenly distributed in many regions of Western Europe but scarce and concentrated in a few areas in the East. 2) Depending on countries, diverse field methodologies were applied. However, the time spent in each survey was recorded in all of them which represents a robust unit of effort to standardise the original data. In this way first preliminary distribution maps for a few species were generated. These pilot maps allow the evaluation of the modelling approaches and guide specific modelling developments. We are convinced that the final data set will be unique for the continent and the distribution models will certainly be of great interest for the scientific and conservation community.

## Controlling for birdwatchers' behaviour when analysing data from informal bird surveys

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The observations collected by birdwatchers can be an important source of information with which to describe the distribution and abundance of birds. This is especially so for regions or times of year for which formal monitoring does not exist. Formal monitoring programmes are designed to reduce or eliminate known sources of bias during data collection, for example by standardizing observation protocols or pre-selecting survey locations. In contrast, using the data from unstructured birdwatching needs to account for such sources of bias after data are collected, as part of the process of analysis. Post-collection statistical controls can be used to model the data-collection process (i. e. describing variation in the probability of detection), and also the biological process of habitat selection by birds. Based on our work with the data from one project that collects birders' checklist information, eBird, we

describe sources of bias and noise whose control can improve the quality of information gained from analyses. Some sources of variation are generally recognized, such as broad-scale spatial biases resulting when birdwatchers watch birds relatively close to their homes, and fine-scale biases in which birdwatchers select habitats containing more bird species. Other sources of variation are not necessarily expected, such as variation in detection rates in different habitats, or with the number of times that an observer visits a specific location. Given the large amounts of data that can be collected by checklist projects, filtering data prior to analyses should be considered in addition to explicitly modelling sources of variation. While accounting for bias and noise adds to the complexity of analyses, appropriate post-collection statistical controls will produce more precise and accurate estimates of bird species' occurrences.

## Effects of climate change on rare breeding birds in the UK

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Predictions of the impact of ongoing climate change upon European biodiversity include a shift of species' ranges in a northwards direction. The Rare Breeding Birds Panel has collected data on rare breeding birds in the UK annually since the early 1970s. These data allow us to test whether birds have responded to climate change as predicted. We examine changes in ranges and populations of species with the southern edge of their

ranges in the UK, which might be expected to have shown range contraction and/or population decline, and species with northern range edges in the UK, which might be expected to have shown range expansion and/or population increase. We test whether both groups have responded as expected, and whether the rate of response has varied between them.

## Effects of horizontal and vertical habitat structure on the bird community of the alpine treeline

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Climate change and the decline of pastoral practices represent major threats to bird diversity in the European Alps, causing an elevational shift of the treeline resulting in a loss of open habitats. While the influence of treeline shifts on birds of Alpine grasslands has been assessed, little is known about key habitat features which promote bird diversity close to the treeline, even though this ‘transition’ zone holds the highest diversity of many species groups along the elevational gradient. The aim of this study was to identify key habitat characteristics for bird diversity in the transition zone in order to develop management strategies that may compensate for potentially negative effects of treeline advance.

We conducted point counts in the transition zone (2000 – 2400 m. a.s.l.) close to the treeline in the Italian Alps. At each point, we estimated the cover of different habitats (‘horizontal’ habitat structure), and the cover of vegetation at different heights, from which we derived an index of structural diversity (‘vertical’ habitat

structure). Data analysis was carried out within a mixed modelling framework.

We found non-linear effects of shrub cover on bird species richness and total abundance. A shrub cover of approximately 60 % provided the optimum for holding the highest number of bird species and points dominated by single habitat types tended to have lower diversity overall. Furthermore, there was a significant positive correlation between structural diversity and both bird species richness and bird diversity.

Future management actions should maintain a shrub cover of *c.* 60 %, and should enhance structural vegetation diversity, in order to maximise bird species richness in the transition zone. Maintaining both horizontal and vertical habitat diversity in the mosaic habitats around the Alpine treeline is likely to be a key conservation tool in addressing impacts of climate and land use change at high altitude.

## Review of investigations of bird number and its dynamic in European Russia

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The European part of Russia is a large area where a comparatively small number of ornithologists follow different approaches to study bird abundance, density, and population dynamics. A general review of the research approaches and methodologies implemented during the last decades will be presented. Special attention will be given to different monitoring schemes and how to combine data from different schemes for a common species across the entire territory of European Russia.

A huge amount of data on abundance and density of birds was collated for this territory during long-term ornithological studies, but a recent review indicated that there is no standardized approach for the collection of ornithological data. The wide range of methods, approaches and objectives of the various investigations make the analysis of these data very difficult and only allow the generation of very “general” results. Several

examples of attempts to implement systematic monitoring approaches as well as examples of the successful implementation of monitoring schemes are described. This includes the mid-winter count of waterbirds in Moscow (already for 30 years) as well as around Moscow (almost ten years) and the winter count of forest birds covering a vast area of European Russia (the program “Parus”, running for 30 years). Attempts to organize “EBCC-type” monitoring during the last ten years as well as future perspectives to achieve this are discussed. It is impossible not to mention the specific circumstances in Russia influencing the perspective to implement comprehensive monitoring schemes: the absence of a state interest to support the collection of data on the abundance of birds and the sustainability of their populations.

## Change in climate or other factors – what can we tell by analyzing numbers of migrating birds and bats at Pape, Latvia 1966 – 2015

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Pape is located at the coast of the Baltic Sea on a narrow land strip between the sea and Lake Pape, making this location a bottleneck for autumn migration of birds and bats. About 1,000,000 birds and 20,000 bats have been captured at Pape ringing station, Latvia during 50 years of research: 1966–2015. The collected data on bird migration is largely unanalyzed and unpublished. Here we analyze all data on bird captures and bat captures in order to detect any trends in migration numbers of particular species. Moreover, the influence of trapping

methods and the duration of captures as well as the impact of temperature and vegetation succession are analyzed. The model species are Goldcrest (*Regulus regulus*) with 300,000 captures, Long-eared Owl (*Asio otus*) with over 6,000 captures during the whole period, including peak nights with over 200 individuals captured within a single night, and over 19,000 captures of Nathusius Bat (*Pipistrellus nathusii*), including several nights with over 1,000 captures of this species.

## Breeding birds in the Wadden Sea in trouble

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The Unesco World Heritage Site of the international Wadden Sea is an important region for many coastal breeding birds. Surveys of breeding birds have been carried out in the cross-border framework of tmap, in which Denmark, Germany and The Netherlands cooperate and survey and data routines have been standardized. Counts follow a mixed strategy of annual total counts and annual counts of sample plots, depending on the abundance of a species. In 2009-10, breeding success has also become part of the monitoring scheme.

Recent results show that 18 out of 29 monitored species are in decline. In the group of species showing “steady” declines, many breeding birds of coastal grasslands are found, of which some are on the brink of extinction as breeding birds, e.g. Dunlin (*Calidris*

*alpina schinzii*). Compared to previous assessments, the number of species showing negative trends has further increased recently. Moreover, the rate of decrease has accelerated in several species, indicating breeding conditions are getting worse.

Data on breeding success show that declining numbers are often associated with persistent low reproduction rates. Especially on the mainland coast, many species suffer from high predation risk, whereas shellfish- and fish-eating breeding birds locally also have to cope with limitations in food provisioning. In addition, all species breeding in areas exposed to the sea are at risk during flooding events. Such events have increased in the past decades during the breeding season, as a result of sea level rise and climate change.

## A common montane bird indicator for Europe

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Biodiversity indicators have become an important tool to monitor changes in the environment both nationally and internationally. In Europe, common bird monitoring data has been used previously to show changes in the forest and farmland bird populations, but other habitat types have so far received less attention. From a point of view of climate change, one of the most vulnerable habitats are alpine habitats. Cold-adapted birds are expected to move upwards with increasing temperatures, however, it remains unclear which habitats do move upward with which speed. Even if habitats increase in elevation, alpine habitats decrease simply due to orology. Already common montane birds have

been shown to be declining in Fennoscandia and in the Alps. Our aim is to combine the existing common bird monitoring data from five European montane regions (Iberian Peninsula, Alps, Giant Mts, British Highlands and Fennoscandia) to produce a common montane bird indicator for Europe. In most of the countries the monitoring of montane birds has been less intensive than in low-land habitats. However, combining small datasets from more than ten countries can improve our knowledge of the status of the montane birds in Europe. We present the current state of the indicator and discuss about future directions.

## Managing wetlands for waterbirds – evaluation of efficiency

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The ecological and economical value of wetlands is remarkable. In contrast due to human activity half of the world's wetlands have been lost in the past century while those remaining have been degraded. The habitat degradation and eutrophication is suggested to account for recent population declines of many waterbirds in Europe. Wetland management can be used to mitigate the negative effects of habitat degradation. Although wetland management is commonly used in many parts of Europe, little evidence based knowledge is available on the best and cost-efficient management actions to enhance conditions for waterbirds. We used count data from 18 managed wetlands in South Finland to evaluate the impacts of site management between 2004 and 2012. Management measures to reduce overgrowth and vegetation by cutting, cattle grazing and dredging were assessed. We used linear mixed models to evaluate the efficiency of management measures for 10 bird guilds during breeding and migratory seasons. Census results revealed that most guilds benefitted from some

of the measures. The only exceptions were piscivorous species that were negatively affected. Overall, management measures appeared to be cost-efficient in creating favorable conditions for dabbling ducks, geese, Black-headed Gull and especially waders, whereas piscivorous species and diving ducks showed negative or no effects in response to the same measures. A separate analysis of endangered species revealed that not only the common species gained benefit from the management measures. Cattle grazing seemed to show best results and it was the only action increasing the numbers of both endangered and Birds Directive Annex I species. We highlight that management measures are important to improve and maintain the value of wetlands for birds, but it is equally important to monitor and evaluate the efficiency of the management actions. Evidence based information is increasingly important to identify the best local management methods to enhance the conditions for waterbirds facing pressures due to environmental and climate change throughout their flyway.

## Danish Bird Atlas 2014-17 – preliminary results

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DOF's ongoing third bird atlas maps the distribution of all breeding birds, and the abundance of the most common breeding and wintering birds in Denmark. The atlas engages > 1200 volunteers, that have contributed 220,000 observations of 200 breeding birds so far.

DOF has previously conducted similar projects in 1971-74 and 1993-96, and this new data set provides a unique opportunity to document changes in the birds'

breeding distributions over four decades. The project has already documented eight new breeding birds and the expansion of the breeding distribution of 22 species since the last atlas.

This presentation will cover results from the project's first three breeding seasons, preliminary abundance maps, as well as an evaluation of the method used for the abundance estimates.

## New on-line databases as tools for better use of bird observation and monitoring data at large spatial scales: Examples from EBP, EBBA2 and PECBMS

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International on-line portals such as Ornitho, BirdTrack, Observation.org and many other portals have greatly improved the way birdwatchers share their observations but also the possibilities to achieve scientific outputs from such huge amounts of data. The three main projects developed by EBCC and its partners are using these technologies, which facilitate fieldwork in many countries. Scientific work using these on-line data is also promoted by the recent appearance of portals capable to store and visualise products in a spatially explicit manner and with a high potential for interaction by users. Here we present the developments carried out so far in the framework of EBP and EBBA2 and those under exploration for PECBMS. The EuroBirdPortal (EBP) has the aim of displaying spatiotemporal patterns of bird distribution across Europe with data provided by birdwatchers into the on-line portals. It uses an efficient and fast rendering

method that allows us to animate data directly on an interactive map, seeing how data has moved or changed over time and space. The Second European Breeding Bird Atlas (EBBA2) is focused on bird distribution. So far its tool has focused on showing pilot data and on enabling data providers to check and correct their own data. It also makes it possible for national coordinators to interact with the maps to discuss data located in cross-border squares. The Pan-European Common Bird Monitoring Scheme (PECBMS) is within a process of reinforcing the role of data at site level. Such precise information, aggregated to certain levels, may provide a wide range of analytical and visualization options for species' population trends (e.g. drawing a polygon or selecting habitats on the map). Using such tools would also pave a road to a new generation of wild bird indicators, and better use of monitoring data for policy purposes and research.

## Modelled future climatic suitability for British birds highlights the risk for large declines of several species that are already of conservation concern

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Predicting future changes in species distribution is fundamental to develop proactive strategies aimed at reducing the impacts of climate change on biodiversity. Although presence-absence or presence-only data have been extensively used for this purpose, modelling changes in abundance rather than range extent may provide a more sensitive tool for assessing species future conservation risk. We modelled abundance data from bird surveys implemented in the United Kingdom and France to predict future climatic suitability for 122 breeding bird species in Great Britain under two different climate change scenarios. Our results indicate that climatic suitability is projected to increase for about half of the species by 2050 or 2080, while it is projected to decline for about a quarter of the species in the same time

frame. Although this balance may appear positive, we show that almost half of the species that are projected to suffer from a decrease in climatic suitability are currently red-listed in the United Kingdom for their severe long-term population declines. In contrast, the great majority of the species that are projected to increase their climatic suitability are green-listed. We also show that changes in climatic suitability are likely to cause net losses of species abundance in upland areas, while lowland areas in the south are expected to see the highest species turnover. The potentially dramatic future decline of several species that are already of conservation concern and the expected loss of species abundance in upland areas indicate that climate change is likely to have largely negative effects for most bird communities in Great Britain.

## Changes in number and sex ratio in populations of *Sylvia* and *Phylloscopus* warblers at the northern periphery of their ranges

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Studies of peripheral populations are relevant due to the fact that these individuals face the most severe environmental conditions under which they may exist and reproduce. Species abilities to spread as well as mechanisms preventing this process can best be revealed at the edges of the distribution range. One priority of such studies is to estimate the population dynamics and sex and age population structure. In Karelia, NW Russia, more than 40% of bird species occur near the range boundaries (Zimin 2001), including *Sylvia* and *Phylloscopus* warblers. Besides specifics of the range periphery, northern environmental conditions influence the birds. In addition, intensive forest management implemented in Karelia during the 20<sup>th</sup> century substantially changed relevant habitats and caused changes in bird distribution and population size. Bird studies including trapping, marking, work with nests, census, observations, and application of molecular genetic techniques have been carried out in this region for more than 40 years. Consi-

derable annual fluctuations in the number of birds (especially females) and sex ratio imbalance in favor of adult males were recorded in the studied populations. To test the hypothesis that there is no original predominance of males in broods of these populations, we determined the sex of offspring via amplification of the *chd* gene. The sex ratio in broods did not differ from 1:1. In turn, the analysis of long-term trapping data indicated the predominance of males among juvenile warblers during post-breeding dispersal and autumn migration in most seasons. Males constantly outnumbered females among adults. In addition to the reasons behind changes in sex ratio and bird numbers, the discussion will address the hypotheses about higher survival rates of males, characteristics of northern range periphery (remoteness from wintering grounds, weather conditions, etc.), and human impact. The study was conducted with the support of RFBR (projects nn 06-05-64368\_a, 15-05-03493\_a, and 12-04-31872).

## Birds in Russian floodplains: Winners and losers under changing farming and climate

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Russian floodplains play an important role for populations of many bird species, thanks to a mosaic of habitats and non-intensive farming. However, a continuous deep depression of farming began between the 1980s and 1990s. It led to the abandonment of floodplain meadows and arable lands and the overgrowth of these areas with tall weeds and bushes. A dry and warm climatic phase between 1990 and 2010 led to a significant decrease in the intensity and duration of spring floods. The influence and interaction of these changes on bird populations was studied in two floodplain areas, typical for the forest zone of European Russia. The monitoring of Vinogradovo Floodplain, Moscow Region was carried out between 1982 and 2014, the monitoring of Ilmen Lake Floodplain, Novgorod Region between 1991 and 2015. The analysis of long-term trends allows determining winners (with some growth of numbers in breeding populations) and losers (with strong decrease of numbers in breeding populations) among the bird species studied. The cluster of 'neutral' species with stable populations is also analyzed. The cluster of "win-

ners" includes bird species able to adapt to habitats with tall and dense terrestrial and water vegetation like Corn-crake (*Crex crex*), Gadwal (*Anas strepera*), Marsh Warbler (*Acrocephalus palustris*) and Booted Warbler (*Hippolais caligata*). Populations of these species were found to be in very good condition, despite the dry climate phase and long migration routes. Among the "losers" are species or subspecies requiring wet short-grass habitats that strongly declined due to the powerful interaction of negative farming and climate factors (Ruff (*Philomachus pugnax*), Dunlin (*Calidris alpina schinzii*), Terek Sandpiper (*Xenus cinereus*), Pintail (*Anas acuta*) as well as species requiring meadows with high plant species diversity, such as Yellow-breasted Bunting (*Emberiza aureola*). All these species are long-distance migrants. Therefore, unfavorable conditions in staging and/or wintering areas strongly worsen the situation. Pilot work to maintain high water levels in Vinogradovo positively influenced the populations of wader and duck species and could be extended to other important floodplain areas.

## Seasonal interactions and rapid population declines in Afro-Palaeartic migratory birds

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Recent, rapid population declines in long-distance migratory bird populations, particularly those wintering in the humid tropics of sub-Saharan Africa, have implicated environmental changes in their wintering grounds. However, substantial within-species variation in population trends across breeding ranges suggests that breeding ground processes could also be involved. There is a pressing need to identify the contribution of breeding and non-breeding season processes to these population declines, in order to target conservation action and resources appropriately.

In order to address this we use census data (PECBMS) to explore the extent of spatial co-variation in species with differing migration strategies across Europe. We then use integrated population models to demonstrate for one species, the Willow Warbler, how combining these trend data with information on productivity, from nest monitoring schemes, and adult survival, from constant effort site ringing, can reveal the demographic processes underlying these patterns and the most fruitful way to reverse population declines.

## Importance of special protected areas for waterbirds overwintering on the edge of their wintering range

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The importance of feedback on conservation policy is recently increasing because climate change causes remarkable shifts in species distribution and could shape the effectiveness of the Special Protected Areas network (SPAs) designed by European Union legislation. Based on a twelve-year period covering the implementation of the Birds Directive (2004–2015), we evaluate the effectiveness of the SPA network for wintering waterbird assemblages. Monitoring data for species wintering in SPAs show that waterbird assemblages at the brink of their wintering range show an increase in numbers. The effect of the respective year and seven species-specific variables was estimated using a multi-level generalized linear model with a logit link function and species-specific random effects. The occurrence of species inside SPAs decreased between 2004 and 2015. Species with lower flyway population size, some of them listed in Annex I, showed a higher preference for SPAs (White-tailed Eagle (*Haliaeetus albicilla*),

Smew (*Mergellus albellus*) and Gadwall (*Anas strepera*)). We found a high preference in geese and a low preference of diving ducks, fish-eaters and Little Grebe (*Tachybaptus ruficollis*), Common Coot (*Fulica atra*), Common Moorhen (*Gallinula chloropus*) and White-throated Dipper (*Cinclus cinclus*). Feeding opportunities in areas outside the protected site network likely exceed the advantage of reduced disturbance within SPAs. The study does not confirm the assumption that SPAs serve as stable “refuges” improving the wintering conditions and facilitating the recent range expansions of waterbirds. Moreover, using long-term monitoring data some gaps in the management of the SPA network were identified. The increasing importance of Central Europe for wintering waterbirds is likely to require a flexible conservation policy where decision making and strategic planning is based on actual monitoring data and international cooperation.

## Status of colonial breeding bird monitoring in Europe

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Colonial breeding water- and seabirds represent a significant proportion of the species protected under the African-Eurasian Waterbird Agreement and the EU Birds Directive. However, annual monitoring data is not available internationally as the common breeding bird or wintering waterbird data through the Pan-European Common Bird Monitoring Scheme or the International Waterbird Census. This limits the

scope and representativeness of wetland and seabird bird indices and their adaptive management under international treaties. Based on the data provided for the European Red List of Birds and interviews with national coordinators and international NGOs, ongoing initiatives are reviewed and options and priorities for coordinated international monitoring of colonial waterbirds are explored.

## Are birds good indicators? Assessing the evidence

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Multi-species measures of change in bird abundance, occurrence and in communities have been widely used in Europe and elsewhere as indicators of change in the environment and of nature more generally. Justification for this approach includes the ecological properties of birds as well as practical issues such as the availability of suitable data, better understanding of mechanisms driving change and the high public profile of birds. There is a societal requirement for cost-effective monitoring of potential problems in the ecosystems upon which we depend and given challenges to current approaches to the use of bird indicators, we need to examine the key issues and more critically assess the evidence for using birds as a proxy for wider biodiversity.

I first briefly summarise the growing evidence in the literature that bird indicators can be highly responsive to key drivers of environmental change such as agricultural intensification, forest management and succes-

sion, and climate change. I then discuss the implications of recent studies testing alternative approaches to developing bird indicators, for example in species selection or by incorporating reference targets, and consider the pros and cons of different types of indices according to their statistical properties. Lastly, I review the evidence for cross-taxonomic similarities in spatial and temporal variation and explore the ecological processes such as dependence on key resources that might drive similar responses between birds and other taxa. The influence of factors such as the spatial and temporal scales at which different taxa operate, differences in physiology, life history traits, and behavioural flexibility are key considerations in these analyses, informing the conclusions on the benefits of using birds as indicators of wider biodiversity as well as for understanding their limitations.

## Handling missing observations with multiple imputation

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Missing observations are unavoidable in long-standing monitoring projects. Currently the Underhill (Underhill & Prys-Jones 1994) or birdSTATs indices (van der Meij 2013) are frequently used in ornithology. However both approaches underestimate the confidence intervals. Instead, we propose multiple imputation (Rubin 1987), the standard in medical and social science, but hardly known in ecology. Our analysis provides insight on the nature of the problems with the Underhill and birdSTATs indices and demonstrates the value of multiple imputation.

Besides a short theoretical introduction, we will present our “multimpur” package (Onkelinx et al

2016). This is a free and open-source R package (R Core Team 2016) which is available at <https://github.com/inbo-BMK/multimpur>.

The “multimpur” package has several benefits:

1. It allows flexible modelling of both the counts at individual sites (required for the imputation) and of the population totals.
2. The models allow for covariates, hence seasonal effects resulting from multiple visits per site can be handled properly.
3. Several probability distributions (e.g. Poisson and negative binomial) are available.

## Are Natura 2000 sites delivering conservation benefit for birds? A case study in Wallonia (Belgium)

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Across the European Union, Natura 2000 sites are designated to ensure the long-term survival of Europe's most valuable and threatened species and habitats, listed under both the Birds Directive and the Habitats Directive. Covering in total 18% of the EU land surface, these sites are not intended to be managed like strict nature reserves; human activities are not excluded, as long as proper management ensures that conservation status of target habitat and species is maintained or improved. EU member states must update, on a regular basis, an assessment of the conservation status of target species and habitat presents in Natura 2000 sites. In Wallonia (Belgium), a complete assessment of Natura 2000 bird species population status for each individual site was conducted in 2015, and compared with the previous complete assessment in 2002. Detailed monitoring of such an extensive site network is made possible by a complementary use of specific monitoring

schemes and valorization of casual observations, which greatly increase in quantity and accuracy thanks to web data portals. Increase of coverage must be accounted for in this comparison exercise. Globally, 8 Natura 2000 species appeared as new breeding birds in the network while only 3 disappeared as breeders, all of which characterized by very small population sizes. Among the 35 species that were present both in 2002 and 2015, 22 increased their population size, while only 8 are in clear decline. However, these population changes are, for most species, correlated to the global situation in Belgium or in neighboring areas, making it hard to disentangle the effect of Natura 2000 site management and large-scale population trend. Nevertheless, a positive effect of large-scale nature restoration projects, such as a meta-project within the Life+ Nature program targeting 4000 ha of headland restoration, is detectable in some species.

## Waterbirds and environmental change: The case study of the breeding community in Finland

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The progressive human-induced alteration of the majority of Earth's ecosystems has been indicated as the most important cause of the global biodiversity loss. Moreover, accumulating evidence shows that climate change is becoming a major threat for most taxa. Waterbirds breeding in the boreal and arctic regions are expected to suffer the most from climate change. Moreover, waterbirds are migratory which makes them more vulnerable to climate change. Indeed, waterbird populations have been declining in Europe in the past decade and disentangling the effect of different aspects of environmental change is essential to better understand their population dynamics. Here, we use a long-time series (1986-2014) on breeding waterbird counts to assess the effect of winter and summer weather conditions as well as habitat type (quality) on the population dynamics of 11 species regularly breeding in Finland. We fitted

four types of mixed models (GLMM *Poisson*, GLMM *Negative Binomial*, GLMM *zip*, GLMM *zinb*) to our count data and ranked them according to AIC. Results show that (1) both winter and summer weather conditions affect the abundance of most breeding waterbirds species in Finland, (2) winter weather conditions have, however, larger impact on the numbers of breeding waterbirds and (3) there is a clear habitat type (quality) effect; in general we found higher abundances in habitats with low eutrophication levels. Our results suggest that weather conditions are becoming more favourable for waterbirds but observed population declines are due to poorer habitat quality. Thus, national and international wetland conservation and restoration policies should be enforced and outcomes closely monitored to assure a comprehensive network of high quality habitat throughout the entire flyway.

## The effect of changing forest structures on forest bird populations: A large-scale analysis

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Modern forestry practices may have large impacts on forest bird populations. However, large-scale comparisons of temporal changes in forest structure and forest bird numbers do not exist. We compared temporal trends from two nationwide long-term monitoring schemes, the Swedish Bird Survey (1998–2015) and the Swedish National Forestry Inventory (1983–2014). Several forest structures that are potentially beneficial to birds, such as the amount of dead wood, retention trees on clear cuts, multi-layer forests, old forest and deciduous forest all increased in abundance in Sweden since the mid-1990s, most likely as a result of legislation changes and increasing areas under forest certification.

At the same time, the population size of 58 forest bird species on average increased. For six regions of Sweden, bird numbers generally increased most in regions where the positive changes in forest structure were largest. From around 2005 the positive trends in both forest structures and bird numbers have levelled out. Although no firm conclusions can be drawn from the correlational type of analyses made here, it is reasonable to assume that the increases in forest structures indeed have had positive effects on forest bird numbers. In light of this it is worrying to see that the positive trends in forest structures seem to have ceased in recent years.

# Invasive plants as drivers of bird population changes: A test for possible mechanisms using non-native Black Locust and Black Pine in the Czech Republic

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Bird populations are known to be affected by various drivers. The effects of the most intensively studied factors such as agricultural intensification and climate change are currently well understood. However, given the widespread distribution of invasive plants and their great impacts on global biodiversity, it is surprising that their effects on bird populations remain poorly known. To fill this knowledge gap, we investigated birds in the stands of two woody plant species, Black Locust (*Robinia pseudacacia*) and Black Pine (*Pinus nigra*), invasive in central Europe. We performed a detailed survey of bird abundance, food supply (measured as moth diversity) and vegetation structure using 1-ha study plots (n=85), sampling both native and non-native stands over a large woodland area of 1200 km<sup>2</sup>. Stands of both non-native trees had complex vegetation

structure and hosted species-rich bird communities, with similar diversity to native woodlands. However, bird community composition differed markedly between the native and non-native stands: habitat specialist birds were strongly associated with native stands, while habitat generalists had higher abundance in non-native stands. Moreover, non-native stands had less diverse food supply for birds. Based on these findings, we suggest that specialist bird species lack some specific food resources in non-native stands. At the same time, habitat generalists are able to exploit the novel habitat and benefit from its complex vegetation structure. Our study thus indicates that the spread of invasive plants may be among the mechanisms accounting for recently observed large-scale decline of habitat specialist birds and increase of generalists across Europe.

# Winter distribution shift in a short-distance migratory bird: What implications for conservation under climate change?

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Most birds are currently forced to shift their breeding range in response to climate change, but migratory birds have to face additional threats during migration and wintering period. This makes migratory species more vulnerable to climate change. Although demographic processes such as annual mortality can be significantly dependent on environmental conditions experienced by birds during migration and wintering, specific impacts of climate change during these stages of the annual cycle remain poorly investigated.

This case study focuses on Eurasian Skylark (*Alauda arvensis*), a common farmland bird showing a continuous decline in Europe. As for other short-distance migrants, we expect its winter distribution to shift northwards in relation to the increase in winter temperatures.

Distribution of skylarks in winter in France was assessed using a combination of INLA Bayesian hierarchical models and generalized additive mixed models. Our analysis is based on count data from a national sur-

vey, covering the whole country with 5,000 point counts sampled each year between 2000 and 2014.

We found that skylark distribution in winter has significantly shifted northwards during the study period. At the same time, there is no significant change in the thermal niche used by the birds. As temperatures have significantly increased, our results suggest that birds are tracking this change in temperatures by wintering further north.

This shift is most likely resulting from a reduction in migration distance, which has been suggested as one of the impacts of climate change on migration and is likely to be found in most short-distant migrants. These species are therefore potentially facing two different distribution shifts, both occurring in ecosystems with anthropogenic pressure in Europe, for farmland birds in particular. Conservation plans should then focus on protecting species habitat in areas with suitable future climatic conditions, not only within the breeding distribution but also within the wintering one.

# Comparing patch- and gradient-based landscape models to evaluate bird responses to landscape changes

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Human-induced landscape changes are accounted as having major consequences on bird species distribution caused by either habitat loss or fragmentation. Understanding how changes in landscapes' spatial arrangement can alter population structure and ecological processes is therefore a priority in order to estimate the extent of the impacts on birds. However, most of the research in this field has set its foundations on patch-based conceptualizations of landscapes. This implicitly assumes that species perceive landscape similarly as patches of suitable and unsuitable habitat. Whilst considered a good proxy for mosaic landscapes, in landscapes without clear boundaries and where changes occur gradually, this approach may inappropriately lead to ineffective strategies with undesirable consequences for conservation.

This study compares different landscape conceptualizations to model bird species distribution along fragmented landscapes. We analyzed bird occurrence data in two different landscape contexts: a savanna-like system, where forest cover density varies gradually without abrupt changes, and a mosaic landscape, where

land uses form well-defined discrete habitat patches. We evaluated how gradients capture landscape complexity comparing with patch-based land use mapping and site-scale (microhabitat) characterization. The main aim was to evaluate which landscape conceptualization best explains bird species distributions while characterizing spatial change in heterogeneous landscapes.

We found that no single landscape conceptualization outperformed another in any situation. Species responded differently to each conceptualization which shows that landscape perception is species-dependent rather than context-dependent, leading to a lack of consistency of bird responses to landscape change characterization. Patch-based conceptualizations provide good proxies to correlate landscape change to birds' distribution but are spatially limited. Gradient-based conceptualizations may provide a better assessment in the future, since the deviation from best fitted models was also generally low. Future research on the collection of gradient-based data at landscape-scale will improve species distribution models.

## Aerial imagery from UAS technology to study spatial and temporal dynamics of bird colonies

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The study of ecological processes often requires continuous field monitoring, but paradoxically, reiterative human presence necessary to obtain monitoring data can disturb both the environment and the study species, and bias study results. A clear example of this phenomenon is the study of the formation and dynamics of seabird colonies; one of the reasons for colony failure is disturbances caused by the presence of researchers or managers during data collection. In this study, an Unmanned Aerial System (UAS) was used throughout the breeding period to study the formation process of a Black-headed Gull (*Chroicocephalus ridibundus*) colony in the interior of a small, difficult-to-access island. This methodology permitted weekly visits to the colony without disturbance, which allowed for each of the nests to

be mapped and for the continuous collection of spatial and temporal data on the process of colony formation and reproductive success. We obtained detailed information about nesting success and its relationship with the distance to the nearest incubating neighbour, as well as the colony boundary during the breeding season. These factors were important to determine hatching failure. Thus, we successfully monitored and identified patterns involved in the spatial and temporal dynamics of a bird colony formation from the air using an UAS. We demonstrate for the first time, the applicability of an UAS based methodology to collect accurate data about patterns and factors affecting bird colony formation without disturbing the study species and its environment.

# Improving trend estimates by establishing national monitoring programs for elusive nocturnal species: The case of the Woodcock in Switzerland

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In the last decades, monitoring schemes for tracking changes in abundance and distribution of breeding birds have become established in many European countries. However, for some species the information obtained by a general scheme is not suitable for deriving confident trend estimates. This is especially true for nocturnal birds that need specialized surveys which are rarely established on a national scale. One of these species is the Woodcock (*Scolopax rusticola*). Little is known about its ecology, and population trends are either based on (self-declared) poor data quality or just on estimates, even in comparatively well-studied Western European countries. Based on such vague information, the status of the species is considered as Least Concern on the European scale mainly thanks to its wide distribution. In Switzerland, however, atlas surveys seem to reveal that the species' breeding distribution halved over 40 years. Therefore, a specialized

long-term monitoring program is necessary to improve data quality for baseline information such as occurrence and population trend for this elusive species. We use the available information from opportunistic observations and survey work to establish a national monitoring program. To do so, we study the effort per site (duration, repetitions) and the number of sites necessary to optimize the effort needed for a national long term program based on volunteer work. Additionally, we also select survey sites based on environmental information and geographic coverage. The analysis is performed in a site occupancy framework. We consider such an approach suitable to convince volunteers to join structured national monitoring schemes also for single species. In this way and on the long run, we expect to obtain trend estimates with higher confidence also for elusive nocturnal species.

## R-tools for calculating trends and making maps

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The statistical programming language R is a very flexible tool to manage and analyse data. R is open-source software used by many thousands of people around the world. Applications made in R can be distributed freely and run on a wide variety of platforms (Windows, Linux and (Mac) OS X).

For trend calculations most monitoring organisations in Europe use the stand-alone programme TRIM, developed by Statistics Netherlands. An Access-application called Birdstats is available as a shell around TRIM. Since 2015 we have been working on R-scripts that prepare the data and command files for TRIM, make maps of the data and process the TRIM-output to get summary tables and trend graphs. These scripts are also easy to use by non-experienced R users.

In 2010 we started we the programming of the application TRIMMAPS to create distribution maps. Creating reliable maps from monitoring data and casual observations requires the use of advanced (geo-)statistical software. In order to provide the EBCC-community with a state-of-the-art programme for the creation of distribution, abundance and change maps we have developed TRIMMAPS. We have successfully used the programme to create abundance maps from monitoring plots, transect data and point counts and probability maps from presence-only data for a wide variety of species. We will also show how trend maps can be made with monitoring data.

## Unusual technical approaches in monitoring of birds: From remotely controlled systems and thermal imaging to aerial surveys

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Investigations of the avifauna of Karelia, NW Russia, have been conducted for more than 40 years using traditional zoological methods and further advanced techniques. Among others, we focus on the investigation of large areas, observations in difficult to access landscapes, and nest finding during route surveys. For these purposes we organized aerial winter surveys covering about 60 % of Karelia. We used a helicopter flying at an average survey altitude of 140 m. Thus, we mapped the winter distribution of grouse across the territory. In addition, many nests of birds of prey were found during the aerial surveys. This would have been more difficult and less successful during the usual spring and summer investigations 'from the ground' without the support of a helicopter. Another interesting tool we constructed and tested ourselves is the 'robotized goose', a remotely controlled observation system mounted in an artificial

body designed to look like a real goose. The tool was very useful for closer observations of geese feeding on fields during spring stopover, identification of color neck bands and looking for the birds hidden in drainage ditches and other relief asperities. The system was installed on an all-terrain platform and comprised a camera with online translation to an operator. Minimal distances between our system and the birds observed varied with species between 2 and 20 m. The third type of advanced equipment we obtained experience with, is the usage of a thermovision camera to help us locating nests during route bird surveys. The camera very effectively supported the detection of nests and hidden birds during our surveys in open and forested landscapes. In our presentation we discuss our experiences in using these approaches and the results obtained.

# Planning for the future: Using predictions of steppe bird abundance and distribution to inform conservation prioritization in Kazakhstan

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The Eurasian steppes stretch from Ukraine to the Altai Mountains. Despite widespread conversion to cropland, very large areas of grassland in a near-natural state remain, especially in Kazakhstan. The Kazakh steppes harbor important populations of endemic and globally threatened steppe birds, such as the Pallid Harrier, the Steppe Eagle, the Sociable Lapwing and the Black Lark.

The Kazakh steppes have been the scene of massive land-use changes, e.g. the abandonment of millions of hectares of cropland, and the collapse in grazing livestock numbers due to the break-up of the Soviet Union in 1991. This decline in anthropogenic activities led to the recovery of many steppe bird populations. However, both recent and further proposed expansion and intensification of agriculture in the region indicate that the development of strategies that reconcile food production and biodiversity conservation are urgently needed.

Here, we used species distribution models to produce maps of modelled abundance and distribution for steppe birds. Based on these, we: i) evaluated if

existing protected areas capture hotspots of predicted bird species richness and abundance, ii) identified suitable areas for new reserves, and iii) identified areas of potential conflict between conservation and expanding agriculture.

Data for the species distribution models were compiled from standardized bird counts on ca. 2,000 line transects in Central and Northern Kazakhstan. We modelled the abundance of species of conservation concern in relation to environmental and land-use variables using hierarchical distance sampling. We also compiled a database with presence-only bird records, including targeted species surveys and citizen science databases. We predicted the distribution of ca. 70 bird species for the entire land area of Kazakhstan using a machine learning approach.

We will discuss our findings in the light of potential future land-use changes, and evaluate the potential for more structured bird monitoring and atlas schemes in Kazakhstan.

## Estimating population trends from multiple data sources in an integrated binomial mixture model

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Bird observation data are usually collected by several different monitoring schemes with varying degree of standardisation, even within a single geographic entity. To avoid the analysis of heterogeneous data, usually just one single source is considered for estimating population trends and consequently, a large part of the available data is simply ignored. In addition, the study period may be limited due to the limited timespan of a single monitoring scheme. Subsequently, assembling trends that are estimated separately based on different monitoring schemes inherits the potential of leading to biases in the trends identified simply due to methodological changes.

We developed a model that allows us to integrate observation data collected in multiple monitoring schemes with different degrees of standardisation. The data considered stems from five different sources ranging from highly standardized breeding bird surveys

to opportunistic presence-only data that lack even an indication of the observation date. Most of these monitoring schemes do not span the entire study period, and observation effort varies tremendously among schemes and over time. Differences in the observation process between schemes are taken into account by specification of separate observation submodels and by inserting the data at different hierarchical levels of the model. Using most of the available observation data, we estimate population density per year and site with a better spatial coverage and for longer time scales than from any single data source alone. We conclude that such an approach brings us closer to the actual trend in the entire geographic area of interest. Potentially, this approach could be used to combine data stemming from varying monitoring schemes from different countries.

## Atlas of breeding birds in Ukraine: Contribution to EBBA2 in 2013–2016

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The ongoing atlas programme in Ukraine was launched in 2013 in order to provide up to date information for the new European Bird Breeding Atlas (EBBA2). Here, we describe how the fieldwork was organized and coordinated, and present some preliminary results. Because of the huge territory (603,700 km<sup>2</sup>) and because of very limited capacities data for the atlas in Ukraine is collected mostly at 50 x 50 km resolution. In total the country comprises 294 of the 50 x 50 km UTM squares. Within each of the 50 x 50 km squares there are 25–35 of the 10 x 10 km squares in which observers are obliged to perform additional timed surveys. During the first three years (2013–2015) we managed to produce species lists for 102 50 x 50 km squares (>1/3) and conducted 225 timed surveys in 10 x 10 km squares. During the preparation period in 2016 we have distributed the

second 1/3 of squares between observers, leaving only 68 left for the third year of the project. The Ukrainian Atlas programme relies mostly on professional ornithologists. During the first three years 45 observers took part in the project. In Ukraine surveyors are free to choose in which 10 x 10 km squares they will conduct timed surveys, as well as their survey routes, as long as squares and routes proportionally represent landscapes and habitats of the 50 x 50 km squares. Timed surveys are undertaken during May and June, when the majority of Ukrainian birds are actively breeding. Lists of species for 50 x 50 km squares are based on data collected in a much broader range of dates and on data obtained since 2013. After conducting field surveys participants are required to fill in the final data form and to provide it to the regional or national coordinator.

## Common bird monitoring in Romania between 2006-2015

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The Common Bird Monitoring scheme was launched in 2006 in Romania. The project is using the point-count method to assess population changes of widespread bird species. Volunteers were asked to indicate an area of approximately 10x10 km around their home from which a 2x2 km square was randomly selected. The survey is carried out twice per season and comprises 10 counting points. Birds are recorded in four distance categories in and around a 100 meter circle. At each point observations are conducted for 5 minutes. For a period of four years the monitoring scheme was also used to provide results for the reporting on the European Union Birds Directive and a national Farm-

land Bird Index. As a result, we significantly extended the spatial and habitat coverage, mainly to farmland, forests and settlements. However, high altitude forests and mountain areas are still poorly represented. The number of annually surveyed sample plots on average is above one hundred. Unfortunately, there are still many sample plots that have been surveyed only once. While population trends can be calculated for 63 species, trends remain relatively uncertain for the majority of species investigated. Generally trends with a solid data base are similar to those observed in neighbouring countries.

## Decline of farmland biodiversity in Hungary and efficiency of agri-environmental schemes, measured by farmland bird indicator

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The Hungarian Common Bird Monitoring (MMM), running since 1999, allows us to investigate the influence of the Common Agricultural Policy (CAP) and effectiveness of Agri-Environmental Schemes (AES) in Hungary, which joined the EU in 2004. The farmland bird indicator (FBI) showed a stable level until 2005. A marked decline started in 2006 and during the last 5 years THE FBI INDEX varied between 60-75%. The speed of decline during the period 2005-2011 was similar (-30% during seven years) to developments observed in many Western European countries during 1980-1986. We investigated the effectiveness of AES by comparing the trends of the FBI in the surveyed 2.5x2.5 km UTM squares where the coverage of agricultural habitats, measured by Corine Land Cover, was above 66.67% (591 squares during 1999-2014). We divided these agricultural squares into three groups, each containing an equal number of squares, on the basis of AES coverage (percentile), 1 - no/minimal coverage

(AES ≤ 4.3%), 2 - average (28.2% ≥ AES ≥ 4.3%), 3 - high (AES ≥ 28.2%). The FBI value showed significant declines in squares with no/minimal and average (AES ≤ 28.2%) AES coverage while the FBI did not decline in squares where AES coverage was high (AES ≥ 28.2%). Further investigations of AES focused on the two largest agricultural types, arable land and meadows. Our study found that the FBI significantly declined in “arable” squares independent of the levels of dedicated arable land AES coverage. In contrast “meadow” squares with high coverage of dedicated meadows AES measures did not show FBI changes different than those observed in squares with no/minimal or average AES coverage. We conclude that current AES cannot halt the decline of farmland biodiversity in Hungary, extension of AES and increased effectiveness of measures focusing on arable land are required for a successful implementation.

# Demographic trends of breeding birds lead to niche changes: Conservation challenges from a changing world

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Distribution and population of European breeding birds are rapidly changing: a general decrease is occurring in farmland birds, coupled with an almost parallel increase in woodland birds. Additionally, in the last years many population trends appear to be affected by climate change. Moreover, specialized rather than generalist birds seem to suffer from these changes.

Starting from the Italian breeding bird monitoring data (Mito2000, >3000 10<sup>3</sup> point counts/year) we measured breadth and structure of the niche of three example species experiencing different demographic trends (2000-2014 period): Roller (*Coracias garrulus*) and Woodpigeon (*Columba palumbus*) strongly increasing, and Skylark (*Alauda arvensis*) sharply declining. For each species we built separate habitat models with data from 2000 to 2004, and with data from 2010 to 2014. All models were built by means of MaxEnt, using

some standard GIS databases as environmental predictors (Corine Land Cover, dem, bioclimatic maps).

By comparing the obtained models we were able to verify the differences between the two periods, both in the niche breadth and in the relative importance of the environmental factors.

As a rule, for all three species the niche breadth followed demography, being higher in the periods of bigger population size. Interestingly, the changes in the importance of factors are not symmetric: some factors change dramatically, others remaining stable. Compared to the first years of the project, today agricultural areas seem to play a more important role for Roller. The same applies to Woodpigeon, a species strictly related to woodland in the past and today widespread also in urban landscapes. The results obtained give important insights into the drivers shaping population trends.

## Developing a forest bird indicator for Austria

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In this talk we report on the development of a forest bird indicator for Austria, which is designed to act as a proxy for the population development of all forest bird species. For the selection of indicator species we used an objective, niche-based approach developed by Butler et al. (Methods Ecol. Evol. 3: 2012) and Wade et al. (PLOS ONE 9: 2014). This selection procedure uses two simple rules: (1) all resources used by birds in forests should be covered by the indicator species set, and (2) the species selected should be the most specialized ones possible. This approach was developed at a European scale, and our work was the first-time application to the forest bird community at a single-country level. The ideal indicator species set was composed of 26 bird species, which were selected from a list comprising all Austrian forest species with at least 200 breeding pairs. As there are currently no population

trend data available for some of these species, we ran the selection procedure, restricting selection to all species with available data. The indicator species finally selected were Stock Dove (*Columba oenas*), Common Cuckoo (*Cuculus canorus*), Black Woodpecker (*Dryocopus martius*), Great Spotted Woodpecker (*Dendrocopos major*), Winter Wren (*Troglodytes troglodytes*), European Robin (*Erithacus rubecula*), Common Nightingale (*Luscinia megarhynchos*), Blackbird (*Turdus merula*), Western Bonelli's Warbler (*Phylloscopus bonelli*), Wood Warbler (*Phylloscopus sibilatrix*), Goldcrest (*Regulus regulus*), Firecrest (*Regulus ignicapillus*), Collared Flycatcher (*Ficedula albicollis*), Marsh Tit (*Parus palustris*), Crested Tit (*Parus cristatus*), Golden Oriole (*Oriolus oriolus*), Jay (*Garrulus glandarius*), Common Crossbill (*Loxia curvirostra*), and, interchangeably, Willow Warbler (*Phylloscopus trochilus*) or Coal Tit (*Parus ater*).

## Causes of population changes in indicator species

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Bird-based indicators are an increasingly important means of conservation. In Germany, the Federation of Germany Avifaunists (DDA) reports the national indicator “Species Diversity and Landscape Quality” which is based on the population trends of 59 bird indicator species representing 6 main habitat classes (agricultural land, forest, urban areas, inland wetlands, coastal/seaside habitats and alpine habitats). The habitat-specific trends of this indicator in particular, are – sometimes controversially – discussed among stakeholders. Furthermore, for many species, aspects of guild affiliation have been shown to profoundly affect population changes.

Thus, a research project was initiated to assess the causes of population changes in bird indicator species. In the course of this project, we present the first results of our analyses for farmland birds. We demonstrate the

utility of including regional and habitat-specific covariates to improve species trend estimates. Furthermore, we quantify through path analysis the contributions of climate, land-use, species traits, species interactions and disturbance measures to guild-specific and bird species trends. The detection of guild’s responses to drivers of change enables us to narrow down important factors for single species within the guilds, and to evaluate the contribution of species to indicator trends.

The results will be implemented in a concise framework which will be used to critically review the indicators.

The work presented is supported by the Federal Agency for Nature Conservation (BfN) with funds provided by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

## Trektellen.org, an expanding platform for recording migration counts across continents

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Since the start of the website and online database of Trektellen in 2002, over 8 million of records of migrating birds have been submitted to the database. At the moment, migration counts from 1000+ sites in 20 countries are entered on a regular basis. In this contribution we will first focus on the history and current status of the Trektellen platform, including developments in participation and website features. What types of users can we distinguish and how do they use the system?

Next, we will present a brief overview of results of the project, mainly focusing on (changes in) migration patterns in The Netherlands. By doing this we hope to demonstrate that these data, although having a relatively low level of standardization, can be used for answering a variety of research questions on timing and inter-annual variation in visible bird migration on an international scale.

## The second Southern African Bird Atlas Project: Protocol, process, product

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The First Southern African Bird Atlas Project (SABAP1), published 1997, provided a snapshot of bird distributions through the 1980s and up to 1991. After a 16-year gap, SABAP2 was initiated in July 2007, and is ongoing. The protocol has a spatial unit of five geographical minutes of latitude and longitude (c 8 km). These grid cells are known as “pentads” and there are 144 pentads per one degree cell. Throughout Africa, biodiversity atlas projects are sensibly based on a geographical grid, because the continent does not stretch too far north or south for the tapering of east-west distance of grid cells to be problematic, as occurs in Europe.

Fieldwork continues throughout the year. A “full-protocol” checklist consists of at least two hours of intensive fieldwork within the pentad, and an observer is not permitted to start a new checklist for a pentad until five days have elapsed. Species are listed in the order in which they are observed, on the understanding that the most abundant species in a pentad will tend

regularly to be among the first species to be recorded. Continuous fieldwork enables the timing of migration to be quantified and compared between years, and between SABAP1 and SABAP2.

Various systems have been designed to capture data into the SABAP2 database. The database is continuously updated, and distribution maps, for example, are continuously available from the live database on demand. By April 2016, eight million records of bird distribution had been captured, and 75 % of the 17,339 pentads in Lesotho, South Africa and Swaziland.

The SABAP2 data have been used for the Red Listing exercise for birds in South Africa and to update the Important Bird Areas. Published papers describe regional changes in the timing of migration to southern Africa from the Palearctic and for intra-African migrants. The new distribution maps will be used for the eighth edition of “Roberts”, the prestige handbook of birds in southern Africa.

## Adaptive management of Dutch monitoring schemes

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A sustainable monitoring scheme that keeps continuous track of population trends heavily relies on a representative coverage and continuity for the long term (Greenwood 2007). However, information needs of e.g. governmental bodies and land managers periodically change, as do the motives, preferences and time budgets of volunteer participants. We see it as our challenge to innovate the schemes to fulfil all new demands as effectively as possible, while simultaneously maintaining the original main objectives (including a broad coverage of species), and guaranteeing the high level of participation by bird watchers. Here, we present some recent developments in the organization and

set-up of breeding bird monitoring in the Netherlands, which has been running since 1984. These include: 1) facilitating observers in their census work (tailor-made mobile devices, automated interpretation and validation of counts), 2) starting new labor-extensive schemes in hitherto undersampled strata, including step-in projects, 3) recruiting new observers through training and education, 4) adjusting sampling strategies (species lists, frequency), 5) increasing feedback to and interaction with observers through multiple communication channels and 6) improving feedback to and interaction with stakeholders and the general public, including the development of new indicators.

## Bringing more quantitative data into atlases: Examples from Switzerland

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Changes in distribution and abundance patterns may differ strongly between species. A species may have decreased drastically but still occurs in most of its distributional range in reduced numbers; this can have strong implications for e.g. its conservation status. For the new Swiss Breeding Bird Atlas 2013–2016 we therefore aim at obtaining spatially explicit abundance information for most species. To reach this goal we grouped the breeding birds into three categories with different field and analytical methods: colony-breeding, widespread, and rare species. For colony-breeding species, a complete census was possible for most species which allows us to draw detailed maps depicting colony size. Widespread species were monitored using territory mapping (usually 3 visits) in 2318 1 x 1 km squares. These 1 x 1 km squares were randomly selected in a stratified way in order to be representative of

the environmental conditions available in Switzerland and to match the previous Swiss Atlas (1993–1996). The selected sampling design allows us to model densities taking into account 1) environmental covariates 2) imperfect detection and 3) spatial autocorrelation. For rare species, collaborators (>2200 volunteers) were asked to visit all potential habitats and note casual observations. We then combined these casual records with territory mapping data using a hierarchical model in order to get density predictions while accounting for imperfect detection and spatial sampling bias. Thanks to this novel combination of data from different sources it will be possible to generate spatially explicit abundance information for more species than ever before in Switzerland – making the Atlas 2013–2016 mostly quantitative.

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## Speed Talks

### Field and landscape scale effects on abundance of farmland birds and bird communities in the Latvian farmland

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The Farmland bird index for Latvia has remained overall stable for the last 20 years despite the fundamental changes in agriculture that took place during this period. The aim of the study was to investigate importance of the land-use and habitat composition at local and multiple landscape scales as well as farming intensity on occurrence and abundance of farmland birds and their communities in the Latvian farmland. The factors governing the species richness and abundance

of different farmland bird species in 1995-1996 and 2004-2005 were compared with those in 2014 and 2015.

The main gradients in the bird communities had not changed considerably during the last decades. However, the abundance of several farmland bird species and its relation to different factors changed considerably. The study relates these changes to changes in the availability of different habitats and landscape elements as a consequence of changes in agriculture.

### The fourth mapping of the breeding bird distribution in the Czech Republic – 2014-2017

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The basis for the fourth mapping of the breeding bird distribution in the Czech Republic (CR) is the same network that successfully implemented the second (1985–1989) and the third (2001–2003) mapping projects. The distribution of sampling squares is based on the KFME grid system: 10' of longitude and 6' of latitude (12 x 11.1 km). Each basic square is further subdivided into sixteen (4 x 4) "smaller" units.

The Faculty of Environmental Sciences coordinates the mapping work, while the Czech Society for Ornithology and the Nature Conservation Agency of the CR represent cooperating institutions. The results of the ongoing mapping work in the CR are reflected in the upcoming European atlas.

In addition to the mapping work, which aims at recording the highest number of breeding species in the highest breeding category, „1-hour monitoring” is carried out in three randomly selected „small” squares of each basic square (for one hour and while walking slowly through the monitoring area each detected spe-

cies is recorded in 10-minutes intervals). These surveys are repeated twice during the breeding season. The results allow to estimate the relative abundance of common bird species. People participating in the mapping work upload field data via an online application. Interactive maps indicate the current occupation of squares and provide information on the number of recorded species. Moreover, up-to-date maps visualizing the distribution of individual species are available.

Preliminary results confirm two new non-native breeding bird species in the CR: Egyptian Goose and Mandarin Duck. Population increases and range expansions are reported for species like e.g. White-tailed Eagle, Goosander, Common Crane, Red Kite, Montagu's Harrier and European Bee-eater. Decreasing trends are recorded for species like e.g. Black-headed Gull, Black-necked Grebe, Barn Owl, Little Owl, Northern Harrier, Black Grouse, Black-tailed Godwit, Crested Lark, Ortolan Bunting.

## Needs and prospects for waterbird monitoring in the Mediterranean

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The International Waterbird Census (IWC), coordinated worldwide by Wetland International, is one of the major global monitoring programs dedicated to wetland conservation, notably through the implementation of the AEWA (African-Eurasian Waterbird Agreement) and the Ramsar Convention. The IWC also constitutes a major support to the work of the Mediterranean Wetlands Observatory (MWO) an international initiative to monitor and assess Mediterranean wetlands in order to advocate their conservation. Indeed, the MWO has defined a set of indicators (e.g. the Living planet index) which rely on monitoring data collected in the field such as the IWC.

Since 2012, Tour du Valat and ONCFS (French National Agency for wildlife and hunting management) have supported a North-African initiative to improve the spatial coverage and the overall quality of IWC. Here we present the results of this initiative and the gaps identified elsewhere in the monitoring scheme implemented in the Mediterranean Basin. We suggest building upon the success of the North-African initiative in order to promote an International Mediterranean Waterbird Network. This network should provide more reliable data on the status and trends of waterbird populations through a more effective collaboration between national NGO's, IWC national coordinators and international conventions and organizations.

## The breeding and wintering avifauna of Cretan wetlands

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This work presents the breeding and wintering birds, including waterbirds and other species depended on wetlands, on Crete. Wintering and breeding bird surveys have been carried for the last 20 years. Moreover, additional surveys were carried out to contribute to the breeding bird atlas coordinated by the Natural History Museum of Crete. The survey work was carried out with the help of volunteers and aimed at covering the complete avifauna of Crete. About 80 wetlands have been surveyed, including 25 reservoirs. Most other wetlands represent small river mouths and saltmarshes along the shoreline. The traditional idea that Crete is poor in wetlands and there is a strong dependence of birds on this small number of wetlands has changed. There are some significant results in breeding passerines knowledge. Interestingly, some species being much more common

in the past, like Nightingale, are now very rare and local. At the same time Blackcap, a relatively new breeding bird species on Crete, is now abundant. Breeding as well as wintering waterbirds strongly depended on the water level of wetlands, with dry years having negative impacts. Artificial wetlands are nowadays hosting the majority of waterbirds on Crete as these wetlands are less disturbed by humans than the natural wetlands. Protection from hunting provides good conditions for birds at most reservoirs. Ferruginous Duck, for an island, form some remarkable wintering flocks. In recent years some wintering bird species, like Pochard and Teal, showed an obvious decline in numbers. Conservation actions for Cretan wetlands are still limited but proposals are on the way.

## 29 years of mainland winter bird counts in Estonia

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Estonia has a long-term monitoring programme for wintering land birds running since 1987. Permanent transect counts without using distance belts are conducted three times during the winter and 30-40 transects are counted annually. During the last 29 years 35 % of species showed a stable trend, while 20 % of species were increasing and 35 % decreasing. In 2012 we calculated for the first time an Estonian winter farmland bird index (WFBI), using only those nine species of which an important part of the population has been

observed in farmland and open landscape. The index shows a moderate decrease over the last 25 years.

The value of three annual counts will be discussed in context of estimating winter survival of small passerines and using the third count (in the second half of February) as an indicator of early breeding species as an alternative to the common bird monitoring programme. Unfortunately, because of species-specific differences in detectability, this method does not reveal the absolute abundance of species.

## A new significant population nucleus of Egyptian Vultures found in Çorum, Turkey

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The Egyptian Vulture (*Neophron percnopterus*) is one of the most threatened vulture species in the world, with continuing fast declines across all of its range in Europe, Asia and Africa, apparently for a number of reasons. European populations have declined by > 50 % over the last three generations. The Turkish breeding population is estimated as 1000-2000 breeding pairs, which is equal to 38 % of the European population, but this figure is not underpinned by any solid survey and very little is known about the species in the country.

The current study has been performed during the 2014 and 2015 breeding seasons in Çorum, Central Anatolia, following the occasional observation of high numbers of Egyptian Vultures feeding at the rubbish dump there, but where no significant breeding populations were known. Surveys focused to an area of

1100 km<sup>2</sup>. So far, 26 occupied nests with successful breeding and 9 possible nests have been found in the area. There were another 16 unoccupied nests that could have belonged to Egyptian Vultures. The nests were mainly built on cliffs, or to rocky ledges hidden by plants. A maximum of 190 Egyptian Vultures have been counted in one day. The Egyptian Vultures have been seen feeding on carcasses of chickens left by chicken farms in the area.

This is one of the densest breeding areas of the species in Turkey. The study area includes many potential areas that still need to be visited, and a large number of the empty nests need more observation to understand their situation. Long lasting and more detailed studies are needed in the area to gather valuable data for the species conservation in Turkey.

## Revision of common birds list indexed by the MITO2000 programme in Italy

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The Italian common breeding bird monitoring scheme (MITO2000) started in 2000 with the main aim to estimate inter-annual population changes. After the second year, data of 5,000 (10 min) point counts, regularly scattered over the country, were used to set up an initial list of species selected for being indexed every year. We identified 103 target species by setting a threshold abundance value of 0.1 breeding pairs/10 point counts over the whole country or within at least one among six CORINE biogeographical regions. After the 15<sup>th</sup> year of the program we performed a health check of the species list, involving the MITO2000 board, the technical team and the regional coordinators into the evaluation process. Possible faults could arise due to relevant changes in species abundance, inadequacy of habitat/range coverage, new taxa identification (i.e. *Serinus corsicanus* from *S.citrinella* and *Sylvia subalpina* from *S.cantillans*). Objectives were: a) to verify the

reliability of the trend calculated for the original target species, and b) to assess the availability of reliable estimates for other species originally not selected. Over a set of 90,500 point counts performed between 2000 and 2014, we applied the following criteria: 1) frequency higher than 1 % of the point counts and/or abundance higher than 0.1 birds/10 pc (in the whole country or in at least one among six newly defined ornithological regions); 2) defined trends in the last five years of the program; 3) consistency between inferred trends and data from external sources; 4) adequacy of the sampling procedure to the species ecology. We confirmed 97 species of the initial set (94 %) and decided to suspend the publication of trends for seven passerine species, due to low frequency/abundance and/or ongoing trend uncertainty. Moreover, we added six non-passerine and one passerine species. The fully updated list is available at <http://mito2000.it/2015/02/10/new-specie-target/>.

## Are christmas tree plantations a suitable habitat for farmland birds?

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Over the last decade, nonfood perennial crops have been increasingly prevalent in European farming systems. Here, vegetation structure and crop management greatly differ from conventional crops and may likely impact farmland birds. Impacts on birds have been examined for bioenergy agricultural systems, such as miscanthus plantations and short rotation willow coppice. In Europe, the extend of Christmas tree plantations (CTP) has recently increased dramatically in farmland but their impacts on farmland birds remains largely unknown. We examined the extent to which CTP in southern Belgium alter bird species assemblages compared to traditional farmland. The presence and abundance of birds were recorded twice during a breeding season in randomly selected sites located in farmland areas with and without CTP. Results show that the conversion of traditional farmland into CTP modifies bird species assemblages and locally incre-

ases bird diversity and density without inducing biotic homogenization. This observed pattern indicates that CTP might constitute an interesting alternative habitat for farmland birds. However bird presence or abundance may be confounding indicator of habitat quality because individuals may be attracted to low-quality habitats in human modified landscapes. The European Stonechat (*Saxicola rubicola*) was chosen as a model species to investigate the quality of CTP as a breeding habitat in more details. Habitat quality in CTP was assessed with measures of reproductive success and survival. These measures were compared with those collected in traditional farmland. Although vegetation structure, field management and nest placement are highly different between habitat types, our first results suggest that CTP are not of lesser quality than traditional farmland for the European Stonechat.

## Impacts of policy induced land-use changes on farmland birds in Lower Saxony, Germany

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Farmland birds continue to decline across Europe. This decline has been linked to the rapid intensification of agricultural practices and land use. Agri-environment policy is an important driver of these changes. Recently, changes in agricultural land use in Germany were mainly caused by the abolishment of the set-aside obligation introduced under the Common Agricultural Policy and the amendment to the Renewable Energy Sources Act in 2004.

To analyze the potential impacts of policy induced land-use changes on population trends of farmland birds, we used data of the Common Breeding Bird Survey in Lower Saxony, Germany (covering 97 monitoring plots, 1 km<sup>2</sup> size) and high-resolution data on agricultural land use originating from IACS (Integrated Administration and Control System) between 2005 and 2012. Analyses were conducted for 19 species listed in the European Farmland Bird Indicator (“farmland birds”) and a subset of eight species depending on agricultural fields as breeding habitat

(“field-nesters”). Population trends of farmland birds were analyzed using generalized linear mixed models. Agricultural land-use change variables were calculated as temporal changes in maize, permanent grassland, set-aside land and crop diversity. Moreover, static variables were included reflecting landscape elements and the occurrence of Natura 2000 areas. Furthermore, we divided Lower Saxony into regions of land-use change to include this grouping as explanatory variable for farmland bird dynamics. To correlate trends over time, slope estimates for each monitoring plot were extracted from the models and used as input variables in the final analysis.

Using an information criterion approach we will analyse the drivers responsible for spatial variations in population trends. First results indicate adverse effects of maize on farmland birds. Our study will contribute to tailor effective conservation actions to regions characterised by agricultural land-use change.

## Breeding phenological response to weather conditions in common Finnish birds

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National bird-nest record schemes provide a valuable data source to study large-scale changes in basic breeding biology and effects of climate change on birds. Using nest-card scheme data from 26 common Finnish breeding bird species, we investigated the relationship of mean spring temperature and spring precipitation sum to changes in the onset of laying over the period 1961–2012. In addition, we examine differences in response to climatic variables in three migratory strategy groups (residents, short- and long distance migrants). Finally, we test whether body size (weight) is related to the strength of phenological response. We show that 26 common Finnish breeding bird species have advanced their laying dates due to an increase in the mean spring temperature over the period 1961–2012. Breeding phenological change is strongly negatively associated with

changes in the mean spring temperature and positively associated with an increase in spring precipitation. When species are grouped according to their migration strategy, we found that residents respond strongest to changes in mean spring temperature, but also short- and long-distance migrants advance their laying dates with increasing temperatures. In contrast to results from an earlier study, we did not find any evidence that small-sized species would have responded faster to temperature than large-sized species. As climate change has been predicted to continue in the future, long-term citizen science schemes, such as the Finnish nest-card scheme, are a cost-effective way to monitor the environment and allow investigation into how species are responding to changes in their environment.

## The impact of grazing and forest succession on bird communities in the submediterranean landscape of SW Slovenia

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The open karstic landscape in SW Slovenia has been rapidly disappearing in the last decades due to forest succession. On the other hand, grazing pressure intensified in the same period because of agricultural policy. We investigated the impact of these contradicting processes on bird communities. We made two transect counts of birds, in 2007 and 2012, and analysed the habitat in 230 transect segments. We subsequently performed canonical correspondence analysis (cca) to reveal the habitat optima of the bird species and compared their indices between the two counts (2007 and 2012). The cca triplot showed several typical groups of species. Unexpectedly, four species were strongly positively linked to grazing pressure, namely Red-backed Shrike (*Lanius collurio*), Corn Bunting (*Emberiza calandra*), Woodlark (*Lullula arborea*) and Greenfinch (*Chloris chloris*). Hoopoe (*Upupa epops*) was strongly linked to bushes and meadows with trees. All of the species with a preference for grazed habitats showed a strong positive development of the count indices (2007-2012). On the other hand, two ground nesting

meadow species, Skylark (*Alauda arvensis*) and Ortolan Bunting (*Emberiza hortulana*), showed strongly negative indices. We also investigated the predictors which influence bird diversity and conservation value in the landscape. We expected heterogeneous responses and therefore used multivariate adaptive regression splines (MARS). We found that important predictors for landscape conservation value were forest succession and grazing pressure. The highest conservation value can be expected at the lowest stages of forest succession. Grazing pressure has a positive influence on the conservation value but it becomes negative when the pressure is intense. Bird diversity is mostly influenced by patch diversity and areas with meadows with trees. Very low patch diversity causes very low bird diversity but then quickly rises to a constant value. On the other hand, meadows with trees have constant positive influence on bird diversity. However, these findings are valid only for the scarce remaining patches of open landscapes. Forest management policy should enable the existence of larger open landscapes in the area.

## 60 years of 'atlassing' in Switzerland: Illustrating broad-scale changes and the need for monitoring of density

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Long-time changes in the composition of avifauna have been documented locally or regionally but seldom on national scales for more than 30 years. Thereby changes partially caused by the agricultural intensification after World War II are missed. The distribution of Swiss breeding birds has been documented with a historic atlas from 1950–1959 and in three atlas projects in 1972–1976, 1993–1996, 2013–2016 in squares of 10 x 10 km. This baseline information allows an unprecedented evaluation of avifaunal changes in Switzerland for more than 60 years. Most dramatic losses are apparent especially for farmland species. Grey Partridge (*Perdix perdix*) is almost extinct. Some species like the Whinchat (*Saxicola rubetra*) have almost entirely lost their former breeding range in Swiss lowlands and are nowadays

restricted to altitudes above 1000 m. However, also the fall and the rise of raptor species such as Red Kite (*Milvus milvus*) or Peregrine Falcon (*Falco peregrinus*) are illustrated. Broad-scale distribution maps allow to describe broad changes in distribution, however they usually detect population decline only in a very late state of the process, as single pairs often persist despite a massive general decline. The Eurasian Skylark (*Alauda arvensis*) has declined by about 40% since 1990 but classical distribution maps based on occurrences miss to detect this dramatic change. In order to detect species decline in time to allow for conservation measures, monitoring of density instead of distribution is of great importance.

## The West African Bird Database

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The West African Bird Data Base at [www.wabdab.org](http://www.wabdab.org) is an open-access, not-for-profit, bi-lingual (French and English) database that aims to further the knowledge of birds and their conservation in West Africa. At present the WABDaB includes Niger, Chad and Burkina Faso. Registered contributors can upload bird records and any associated images to the database. Any one interested can call up half degree block maps of individual species based on the records in the database, either for a particular country or for all countries combined. If desired the data can be filtered by period (from year A to year B) and/or by season (months C to D). The database administrators can also plot maps with precise locations of all observations of a particular species. In addition, information can be accessed by location (all

users) or an entire area such as a national park (administrators only). To help preserve ethno-ornithological knowledge and to encourage contact with people with no primary interest in birds, information is collected on bird names in local languages and bird stories in local cultures. As of 25<sup>th</sup> March 2016 the WABDaB held 65,891 observations of 540 species in 374 half-degree blocks, 2,825 photos of 383 species, and breeding evidence for 216 species. Information from the WABDaB has already been used in a number of projects and publications. In addition to many documented national first records, the database also includes details and images of two species new for West Africa, Greater Kestrel and Chestnut Sparrow.

## Seasonal differences in raptor migration over the Strait of Messina

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The Strait of Messina is the most important migratory bottle-neck along the Central Mediterranean flyway. During spring and autumn 2014 and 2015 we counted migrating raptors at one station located on the continental side of the Strait (the Ornithological Station of the Strait) and at a watch point in north-east Sicily. Visual observations were integrated with optical range finder and radar tracking to characterize speed, direction, and altitude of the birds in flight. We counted a mean of 15,925 and 13,998 migrating raptors respectively in spring and autumn. The commonest diurnal migrant during both seasons was the Western Honey Buzzard (*Pernis apivorus*) with a mean of 14,939 and 8,443 individuals observed from the continental watch point, respectively in spring and autumn. Other common species were: Western Marsh Harrier (*Circus aeruginosus*), Black Kite (*Milvus migrans*), Montagu’s

Harrier (*Circus pygargus*), Pallid Harrier (*Circus macrourus*) and Kestrel/Lesser Kestrel (*Falco tinnunculus/naumanni*). For each species there were differences in the number of individual counted in each seasons. For instance, Black Kites and Kestrels/Lesser Kestrels were more abundant during the autumn migration (mean of 2,298 and 779, respectively for the two species) than in spring (mean of 200 and 35, respectively). Few raptors were observed over the Sicilian watch point during autumn (max. 816 in 2015) indicating that most of the raptors reached Sicily south of the Strait of Messina. Also, radar tracking revealed seasonal differences in the migratory behaviour of raptors. For instance, Western Honey Buzzards were flying at lower altitude with increasing wind speed in autumn while showed the opposite behaviour in spring.

## Raptor monitoring in Estonia: Linking breeding and wintering numbers

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There are 28 breeding and 20 wintering raptors (incl. owls) in Estonia. The national monitoring programme for breeding raptors started in 1994. Since then 8–17 study plots, totalling 900–1650 km<sup>2</sup> (2.0–3.6% of the country), have annually been censused. This has resulted in accurate trends for 15 breeding species. Monitoring of wintering farmland raptors was introduced in 2014. 16–23 study plots have provided first quantitative

data on 4 species of wintering farmland raptors, additionally rough estimates of 3 forest-dwelling or water-related raptors have been obtained. Both monitoring programmes are conducted mostly in the same study plots, which enables to search for common environmental factors, or eases distinguishing between effects of various factors, which influence raptors in different seasons.

## Red list of migratory non-breeding bird populations in the Netherlands

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Regional Red Lists have an important function for nature policy and conservation and often are the first step to take conservation action. Many countries conduct Red List reviews for birds, but in many cases only for their breeding populations. As the Netherlands also harbours important numbers of migratory bird populations from breeding grounds elsewhere, either wintering or on passage, it was decided to undertake a Red List assessment of these populations.

As a first step we categorized all bird taxa regularly occurring in the Netherlands in so-called functional populations. We made an overview of their breeding, passage and wintering range. For most waterbirds we used the existing Flyway boundaries as functional units. For all other species it was necessary to define these using ringing recoveries. Furthermore we assessed the function of the Netherlands for these populations: breeding / passage / wintering.

For the Red List assessment we selected the non-breeding populations with significant numbers of breeding birds from other countries.

Then we set up criteria for the Red List assessment, partly as is done for breeding birds: population size, trend in numbers and distribution. In addition we included a criterion for international importance of the Netherlands. This proved important for instance to exclude scarce occasional visitors from the Red List.

We evaluated 263 bird populations and 39 qualify for the Red List. In addition we identified an early warning signal for 9 populations: the so-called Amber List.

This assessment revealed that the knowledge of the status of non waterbird passage and wintering populations is rather poor. We plea for a better monitoring of this group, also on an international basis.

## Poster Presentations

### The migration of Western Marsh Harriers to the African wintering quarters along the Central Mediterranean flyway

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The Western Marsh Harrier (*Circus aeruginosus*) shows a leap-frog migration with populations from Eastern and Northern Europe migrating up to South-Saharan Africa. During migration harriers move on a broad front heading SW and undertake long sea-crossings. Many move through Italy where substantial concentrations have been reported at several watch sites, the highest concentration occurring at the Strait of Messina. Most of the individuals migrating across the Strait reach the wintering quarters in Africa, while only few winter in Sicily. In this study we determined age and sex of the Western Marsh Harriers migrating through the Strait of Messina. Observations were carried out over five seasons (2011-2015) from August 26 to September 30. In addition, in 2014 we measured the flight altitudes of the harriers using a surveillance radar and an optical range finder. Overall, a total of 10,261 Western Marsh

Harriers was counted, on average  $2,052 \pm 271$  (SE) per season. The migratory flow showed two peaks, from the 6<sup>th</sup> to the 10<sup>th</sup> and from the 21<sup>st</sup> to the 25<sup>th</sup> of September. Age could be determined on 5,599 birds (54.6% of the birds counted) and adults were observed more frequently than juveniles (63.4% vs. 36.6%). Among adults, males outnumbered females. Juveniles peaked later in the season, between 21<sup>st</sup> and 25<sup>th</sup> September. Our observations are consistent with previous surveys and confirm that adult males have a tendency to migrate over a long distance, while substantial numbers of adult females and juveniles do not reach Africa. The mean flight altitude measured (N = 214) was  $321,7 \pm 14$  meters above ground (minimum: 3 m; maximum 835 m) and was not homogeneously distributed during the day, with the highest altitudes reached during the afternoon.

### The first waterbird winter census in the Republic of Moldova

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The International Waterbird Census in the Republic of Moldova started in 2013 under coordination of Wetlands International. During this monitoring programme (2013-2016) we conducted observations at 6 wetlands in the Republic of Moldova covering 40.24% of the total lake surfaces (Beleu-Manta Lakes and Costești – Stâncă Lake on Prut River, Congaz – Taraclia Lakes on Ialpuș River, Ghidighici Lake and Sălaș Lake on Bâc River, Dubăsari Lake on Nistru River) and one large river sector (Nistru River between Naslavcea and Soroca). Further lakes, which were not covered during this monitoring programme are small and completely

freeze over during the winter season. Since 2013 we recorded 23 wintering waterbird species with a total of almost 120,000 individuals. The monitored wintering seasons differed significantly. Warm winters in 2014 and 2016 ensured high numbers of species and large numbers of waterbirds. But during the harsh winter of 2015 most of the water bodies were frozen. The most important wintering area for waterbirds is the Upper Dniester River which ensures suitable conditions for more than 20,000 birds during this harsh season. This is the first country-wide monitoring programme for wintering waterbirds in the Republic of Moldova.

## February precipitation in Africa: Is it a cue for the onset of spring migration of the Lesser Whitethroat?

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Numerous studies in recent years have examined the effect of climate change on timing of spring arrival of migratory birds to European breeding grounds. However, most studies of Palearctic species were conducted in Europe and only a few examined the effect of climate conditions in their African wintering grounds. In this study, we examined the effect of weather conditions at the wintering grounds of the Lesser Whitethroat (*Sylvia curruca*) on spring arrival time in Eilat, Israel, a major stopover site after crossing the Sahara desert. We used a 30-year dataset, provided by the International Birding & Research Centre in Eilat, which included records of 27,000 individual birds. Principal component analysis and multivariate regression models were applied in order to examine correlations of median arrival time with 50 climate variables derived from the wintering quarters. In spite of the high variation due to the large size of the wintering grounds and the rather long mig-

ration season, we were able to construct a model with a very high statistical fit. The major climate explanatory components included mean precipitation in February and March, and the number of wet days during November-February. Negative coefficient estimates of the first two factors suggest that February and March precipitation accelerate departure. Interestingly and contrary to previous published results, annual or seasonal precipitation showed no correlation with spring arrival time, nor did temperature. Moreover, winter, in the Lesser Whitethroat's wintering grounds, falls into the dry season characterized by negligible rainfall quantities (February means ranged between 1.2 and 12.4 mm). Hence, it is unlikely that the effect of precipitation on habitat productivity is a driving force of migration, as suggested by other studies. Instead, we propose that precipitation in February acts as a cue for the birds, indicating the approach of spring and migration time.

## Bird species of European importance in Flanders (B): Do we reach the 2020 goals?

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In Flanders, population targets for a favourable conservation status (as required by Article 2 of the EU Habitats Directive) have been formulated for 28 breeding bird species, 27 of the Annex I of the Birds Directive and one internationally important species, Lesser Black-backed Gull (*Larus fuscus*), and for 19 wintering waterbird species that occur in internationally important numbers. Population numbers of these species are obtained from the long term monitoring programmes "Special Breeding Birds" and "Wintering Waterbirds", both coordinated by the INBO.

When we compare the numbers of breeding pairs during the period 2007-2012 for 20 yearly monitored species with the target numbers, we see that population goals are met for three species. For another three the

goals were met in one or two years during the six year period. For 14 species however, there is still a large gap between actual numbers and the goals and their populations are still depleted.

When we compare average waterbird numbers during the last five winters with their target values, we see that they are met for seven species. Four species are just below the targets and for eight species there is a rather large gap between actual numbers and goals. Most of them showed a clear negative trend during the last ten years.

We present the deviation from target values for all species, illustrate some cases in more detail and discuss the causes, problems and possible solutions.

## How to count a vagabond?

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The Corncrake (*Crex crex*) is known to be highly mobile within the breeding season, making it difficult to determine actual breeding population sizes. Males may move long distances to new breeding sites especially after their original home ranges are mown, but also in the absence of mowing.

We counted calling male Corncrakes at intervals of approx. 10 days during the breeding season over multiple years. A multi-state occupancy model for open populations was used to estimate numbers of occupied calling sites alongside with immigration and departure probabilities for each interval, while accounting for imperfect detection. A hierarchical formulation of the model enabled us to also estimate the number

of occupied calling sites in sub-areas, where only two surveys per season took place.

Occupancy in the study area peaked in late May, when also most females started egg-laying. Males arrived and departed continuously during the breeding season. Departure probabilities were higher than arrival from the end of May. They decreased when more effective conservation measures were established during the second part of the study period.

Open population occupancy models applied to repeated counts are a powerful tool for inference on population size as well as effectiveness of conservation measures when dealing with mobile species.

## Long-term woodpecker winter population dynamics in Tatarstan Republic

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During the last 30 years, climate change had a serious impact on the ecosystems. A significant increase of the mean annual temperature and dry periods on the territory of Tatarstan had a negative impact on the conditions of forests in this region. The number of withering and dying trees in forest stands sharply increased and as a result also the number of xylophages sharply increased. In this context the question came up whether these changes affect bird populations. The aim of our research was to analyze data on the winter density of woodpeckers. Data were collected during the period from 1991 to 2015. Bird censuses were carried out following transects methods. During surveys also weather conditions, abundance of seeds and the proportion of dying or withering trees were recorded. Great Spotted (*Dendrocopos major*), Grey-headed (*Picus canus*) and Black Woodpecker (*Dryocopus martius*) showed

a significant increase in abundance. The main factors that influenced population growth were seed yield of conifers for Great Spotted Woodpecker and increase in food availability for Black Woodpecker and the Grey-headed Woodpecker as a result of the withering of trees. Similar abundance dynamics in these species can be observed in other parts of Europe, such as Finland. Population density of White-backed (*Dendrocopos leucotos*) and Three-Toed Woodpecker (*Picoides tridactylus*) also show a pronounced upward trend, but the trend accuracy is masked by strong annual population fluctuations in these species. Abundance reduction was only found for Green Woodpecker (*Picus viridis*). Thus, climate changes cause rapid responses of forest ecosystems as a whole and its individual components. Our data on changes in woodpecker abundance can serve as an indicator of forest health.

## Romanian Breeding Bird Atlas 2006-2016: Present progress and aims for the future

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The “Milvus Group” Association and the Romanian Ornithological Society/BirdLife Romania plan to publish a new breeding bird atlas of Romania. Covering a period of 10 years – between 2006-2016 – and over 250 species, the aim of the present atlas is to provide information on the distribution of all breeding birds in Romania on the 10x10 ETRS grid, population sizes, and in case of available data, trends, computed from the existing information on the highest precision possible. During the last decade the two organizations have gathered a significant amount of standardized data through several censuses, survey and monitoring schemes. These data, supplemented by the casual observations of Romanian birdwatchers, will represent the foundation for this project. In order to enhance the

national coverage, the two organizations have launched a dedicated method for the atlas in 2016 similar to the method used for the EBBA2, ensuring data compatibility on a larger scale. Data management is realized through online databases facilitating efficient data input both manually and via several external data formats. Species distribution in data deficient areas will be estimated by habitat suitability modelling techniques, using the R package TRIMmaps. This publication is aiming to fulfil all expectations of a modern breeding bird atlas and should become a useful tool for both decision makers and further scientific purposes. Furthermore, we are confident that the new breeding bird atlas will be a proper contribution to the second edition of the European Breeding Bird Atlas.

## Breeding waterbird survey in Northern France: A pilot protocol for valuable questions

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Monitoring breeding chronology and reproductive success is an important issue in the context of determining the effects of environmental factors on waterbird conservation status and management.

Since 2013, a survey of breeding waterbirds has been initiated in 10 departments located in Northern France. Twenty-six sites are surveyed each year during 3 days within one week during the first and the second half of each month between April and August. All individuals, pairs and broods - with brood size - are exhaustively counted. Each year, between 730 and 1000 different broods have been identified among Mallard, Tufted Duck, Pochard, Great-crested Grebe, Coot, Mute Swan, Moorhen and the Shelduck. The length of the hatching period was shortest in Tufted Ducks (2 months) and longest in Mallards and Coots (4 months). Although the chronology of hatching events did not change by departments in most species ( $p > 0.12$ , LogRank test) it

differed among the Pochard ( $p < 0.05$ ), which is highly sensitive to habitat changes. Our results demonstrate that this protocol is very efficient for improving detection probability and properly estimating hatching dates and brood survival, especially among species that have short growing periods. Indeed, when offspring reaches 2 weeks it becomes more difficult to assess hatching date at a 2-3 days margin. It also helps to better estimate nest and offspring survival. This survey seems time consuming, but reducing the prospect effort for example by skipping the 3 visits of the second half of the month, or by prospecting the site only once every week, weakens the results especially among species that are less abundant, very mobile or tend to hide (diving ducks or grebes). Such type of survey is a powerful tool to improve the knowledge on the conservation status and the habitat management of breeding waterbird species.

## Barn Swallow phenological changes in South Africa over three decades

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Increasing temperatures and particularly warmer springs in the Northern Hemisphere, from the mid-20<sup>th</sup> century onwards, have been associated with advances in the spring phenological phases of many plants and animals, including long-distance migrant birds. Barn Swallows (*Hirundo rustica*) showed geographically variable changes at their Palearctic breeding grounds, with their arrival shifting earlier in parts of western and central Europe and later farther east. In South Africa, over three decades, there were geographically variable changes in the timing of both migration and flight feather (primary) moult. To improve our understanding of these changes, we examined migratory connectivity of Barn Swallows in relation to the timing of flight feather moult and patterns of body weight change. Our migratory connectivity analysis was based on Barn Swallows ringed in South Africa from 1952–2012, using data curated by the South African Bird Ringing Unit. Using totals of ringed birds and Palearctic recoveries,

we estimated spatially variable ratios of migratory connectivity, accounting for differences in ring re-encounter probability in the Palearctic. Primary moult phenology from 1990–2012, estimated using the Underhill & Zucchini moult model, varied geographically within zones of South Africa. Further, between the early 1990s and late 2000s, the mean start date of moult shifted earlier by six days in Gauteng, and later by seven days in the Free State. Body weight patterns over that period revealed pre-migratory weight gain for Barn Swallows in South Africa. The mean start date of pre-migratory weight gain was estimated using break-point analysis. The patterns of change in weight gain were partially consistent with changes in the timing of moult and migration within each zone. Climate changes in the Palearctic could be associated with the observed shifts in non-breeding activities in South Africa. Citizen science was pivotal for this analysis, and is crucial for ongoing monitoring of the effect of climate change on migratory birds.

## Overlap between breeding distribution and windfarm risks: A spatial approach

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In 2015 gross wind energy production accounted for about 13% of the energy production in Germany and while there is a recent strong increase in wind energy generated offshore, the majority of wind energy is produced by more than 25,000 onshore wind turbines. The effects onshore wind turbines impose on various bird species have been studied comprehensively in recent years and collision risk, habitat loss due to displacement and barrier effects have been identified as key impacts. To mitigate wind turbines related risks for birds, German statutory bird conservation bodies defined species-specific core activity zones that should be kept free from wind turbines based on knowledge on species-specific sensitivity and home range size during the breeding season. Moreover, density hotspots of sensitive species should receive increased attention during the planning and approval process for wind turbines to secure source populations.

Based on these species-specific distance recommendations the overlap between the breeding distribution of

sensitive species and areas of increased conflict potential/threats due to wind energy production was estimated. Species-specific breeding distribution was defined based on data of the recent Atlas of German Breeding Birds and CORINE land use classes. Wind turbine locations were buffered by species-specific distance recommendations and overlaid to estimate the percentage spatial overlap between habitat and wind farm risks. This allows a cumulative assessment of the habitat devaluation/disturbance associated with wind energy production across the entire German breeding range of sensitive species. Moreover, a combination of bird abundance data with relative concentration of wind turbines allowed ranking the influence of wind energy on a number of sensitive species.

The work presented is supported by the Federal Agency for Nature Conservation (BfN) with funds provided by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

## Breeding bird atlas data reveal missing information on forest specialist bird population trends in Latvia

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Our aim is to determine the changes in those forest bird population trends, which have uncertain data according to the Common Bird Monitoring Scheme (CBMS) alone. Although the data collection for EBBA2 in Latvia continues and survey coverage is incomplete, this study compares data collected so far with the Second Atlas of Latvian Breeding Birds 2000-2004 (LBBA2) which also had incomplete survey coverage.

Because of survey incompleteness in both atlases it is not appropriate to compare rough distribution maps. We used the  $\chi^2$  test instead to determine distribution changes and their significance. We compared well-surveyed squares where species were or were not observed from both atlases.

In this study thirty forest specialist species were used and compared between both atlases. We used the same 5x5 km squares in the LKS-92 grid, forming a total of 2787 squares, in order to gather data for both the LBBA2 and EBBA2. We exclusively used well-surveyed squares (squares where 69 or more species were

found). LBBA2 had 782 well surveyed squares, while EBBA2 currently has 280.

We found that eight species show a significant increase in distribution and six species show a significant decrease, while sixteen species showed no significant changes in distribution.

As expected, data comparison with CBMS indicated that twenty-six species show the same population trend direction, whereas four species showed an opposite direction of the trend. For four other species we do not have enough CBMS data for trend analysis. We found a significant positive correlation between the recorded change in distribution and the mean annual change in population size.

This allows us to better understand population changes of those forest specialist species which the CBMS does not provide usable abundance data for such as Black Stork, Western Capercaillie, Ural Owl and Boreal Owl.

## Long-term trend of changes of migration distance of passerine migrants at Pape, Latvia, 1966 – 2015

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If the climate change is causing warmer winters, facultative migrant birds do not need to move as far, as they would be forced to move in cold winters. We analyzed Latvian ringing recoveries (primarily birds ringed at Pape Ornithological station) at their wintering grounds (recoveries in December, January and February). We analyzed these species of facultative migrants – Great

Tit (*Parus major*), number of recoveries 1840; Blue Tit (*Parus caeruleus*), n=676; European Robin (*Erithacus rubecula*), n=142; Songthrush (*Turdus philomelos*), n=162; Blackbird (*Turdus merula*), n=79. The trend for Great Tit shows a decrease of the migration distance to wintering grounds (as defined by recoveries in December, January and February) over time.

## The diversity of aquatic birds and breeding of some species in Mallaha, Tripoli

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The presented study started to monitor the breeding and populations dynamics of waterbirds at Al-Mallaha wetland in March 2014. The area is classified as a site of national importance for Black-winged Stilt (*Himantopus himantopus*), Cormorant (*Phalacrocorax carbo*), Dunlin (*Calidris alpina*), Flamingo (*Phoenicopterus roseus*), Shoveler (*Anas clypeata*) and Teal (*Anas crecca*). Mallaha is a salt marsh, fed by a canal from the sea all year-round and by rainfall during winter. A total of

1631 individuals belonging to 47 species were observed with a peak during the last week of April 2014. The study also reported nine important waterbirds species that are mentioned in the Annex II, RAC/SPA. Moreover, this study observed a total of 41 and 32 nests with different clutch sizes for Black-winged Stilt and Little Tern (*Sterna albifrons*) respectively. Breeding success of both species was significantly affected by predation.

## Invasive alien birds in Denmark

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Avian Introduced Alien Species (IAS) constitute a threat to the integrity of native biodiversity, the economy and human health, so here we briefly review some of the problems posed by such species around the world in relation to bird species in Denmark. A new European Union Regulation on Invasive Alien Species implemented in January 2015 requires a framework for actions to combat alien species, which requires Member States to prevent the spread of alien species, provide early warning and rapid responses to their presence and management of established alien species where they occur. We show the importance of mechanisms such as DOFs (Danish Ornithological Society, BirdLife Denmark) Atlas project, Common Bird Monitoring (breeding and wintering species) and DOFbasen to contribute data on the current geographical and numerical dis-

tribution of the few serious alien avian species already present in Denmark. We review the status, abundance and distribution of seven critical IAS that do, or have, occurred in Denmark in the last 10 years and conclude that none of these pose a major threat as things stand at the present, although breeding Egyptian Geese (*Alopochen aegyptiaca*) and Canada Geese (*Branta canadensis*) potentially give cause for future concern. We underline the need for continued surveillance of all avian IAS through data collection via DOFs monitoring programmes and Aarhus University's mid-winter, hunting bag and wing surveys. These programmes are essential if we are to continue to effectively monitor the extent and nature of the problems constituted by IAS in support of the Danish Nature Agency in their direct management of alien species problems in this country.

## Building the third Catalan Breeding Bird Atlas in a context of multiple interactions with other atlases, platforms and monitoring projects

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Catalonia is one of the Mediterranean regions for which two breeding bird atlases have already been made, one for the period 1975-1983 and a second for 1999-2002. 15 years after the latter, a third atlas has recently been started in a very different context. The birding activity has greatly changed since the launch of the on-line platform Ornitho.cat, the number of members of the Catalan Ornithological Institute has greatly increased but funding has been drastically reduced. In addition, this new atlas had to be implemented considering the different interactions arisen with the common bird monitoring scheme (started just after the second atlas), the comparability with previous atlases in Catalonia, and complementarities with atlases at other scales. Ornitho.cat has been incorporated as a major source of information for the new atlas, especially thanks to the availability of atlas codes. However, geographical and taxonomical preferences

in spontaneous birdwatching activity are biased when trying to achieve a robust picture of bird species distribution across the whole region and hence a strategy for minimum fieldwork effort per 10 x 10 km square has been implemented. On the other hand, the monitoring scheme has to be integrated into the standardised part of the atlas fieldwork since the recruitment of new members is good but does not ensure to cover both projects by different people. As well as monitoring surveys, 50 % of the 2 1-hour surveys conducted in 1 x 1 km squares in the second atlas have been kept to allow robust comparisons with the previous atlas. And last but not least, EBBA2 represents a new motivation for local ornithologists; on the one hand data shown in the first European atlas for Catalonia can be greatly improved in this framework, and on the other hand local ornithologists have the opportunity to contribute to atlas work abroad.

## The role of foreign birdwatchers and on-line portals in collecting data for the second European Breeding Bird Atlas (EBBA2)

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The second European Breeding Bird Atlas (EBBA2) presents one of the most comprehensive mapping efforts so far that requires simultaneous and joint actions over more than fifty countries. However, large discrepancies in experience, financial support and human capacity between Western and Eastern/South-eastern European countries make it more challenging to ensure a proper coverage in all parts of Europe. In order to achieve our goal, we rely not only on national capacities within each country, but also on contributions from foreign ornithologists that collect data from less covered regions of Europe. Here we show examples how foreign birdwatchers have already contributed to the overall EBBA2 goal. Moreover, we want to provide suggestions to orientate further surveys in the final breeding season in 2017. Despite every country has its own fieldwork particularities, some general guidelines can be useful both at national

and European levels, such as appropriate recording of the location of observation and of atlas codes. Gap areas where most of the effort should be carried out are shown. Besides this, we present different possibilities on how foreign observers can provide the data, with special focus on available on-line tools. Map-based geolocation and ease of data transmission make on-line portals an attractive tool for foreign observers, while standardization in format and use of species base-lists and breeding codes are useful for management of big amounts of data for EBBA2 coordination. Four portals can be used in all European countries: Observation.org, BirdTrack, eBird and NaturaList. Data collection through these four portals is compatible with EBBA2 standards. To help observers choose one of these portals for their expeditions, we will compare the functionalities of these four global on-line portals.

## The 2015-16 UK non-estuarine waterbird survey

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The United Kingdom's Wetland Bird Survey monitors non-breeding waterbirds on wetlands; most estuaries are counted annually but open coastal habitats are not so well covered. Important African-Eurasian Flyway populations of shorebird species such as Purple Sandpiper, Ringed Plover and Turnstone occur widely outside of estuaries, and seaducks, divers and grebes make extensive use of UK inshore waters in winter. Such species consequently are not completely monitored within the Wetland Bird Survey.

The first large-scale survey of waterbirds on the non-estuarine coasts of the United Kingdom, the Winter Shorebird Count (WSC) was undertaken in 1984/85, and was repeated by the Non-Estuarine Waterbird Survey (NEWS) in 2006/07 and 1997/98. NEWS-3 was carried out between December 2015 and February 2016 and covered the UK, Channel Islands, Isle of Man and Republic of Ireland (in partnership with the Irish Wetland Bird Survey). The non-estuarine coast of the United Kingdom was divided into count

sectors: 247 in Northern Ireland, 535 in Wales, 1,164 in England and 5,559 in Scotland. Priority sectors were selected randomly from each region, and volunteers were requested to cover these before selecting other stretches of coast for survey. Over 75 % of these priority sectors were surveyed by almost 900 counters. In total, counts were made of coastal birds using around half of the non-estuarine UK coast, both in terms of the number of sectors and length, with completed surveys covering over 8,300 km of coast (mapped at a scale of 1:50,000).

Most counters were volunteers, with a small number of professional fieldworkers increasing coverage in remote areas. A newly developed online submission system allowed rapid collection and analysis of coverage and counts.

The preliminary results of the survey will be shown, including coverage and changes in species population distributions compared with previous UK non-estuarine waterbird surveys.

## Long-term monitoring of a Stone Curlew population breeding in intensive farmland landscape

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Over the past fifty years, the agricultural intensification in Europe has been identified to cause a major farmland biodiversity loss. The precise causal relationships between farming practices and bird population declines are still to be elucidated in most cases, and even the breeding ecology of several farmland birds, including threatened species, is still poorly known or established for very few breeding sites. The Stone Curlew (*Burhinus oedichenus*) is a cryptic species poorly monitored outside England, even in France where 21 % of the European population is present. Our study is based on a 17 years monitoring (1998-2015) of a Stone Curlew population breeding in intensively farmed land-

scape, in the main French breeding region (Center-West). Through the monitored period, we highlight the decrease of several key biological parameters such as population trend, adult survival rate, body condition, reproduction investment and hatching rate. We also provide a population viability analysis which indicates an unsustainable population development for the next decades. Our results were obtained just after the downgrading of the protection status of Stone Curlew from "vulnerable" to "least concern" in Europe. Obviously, there is a lack of knowledge on the Stone Curlew, which can be unfavorable to the preservation of this species in highly perturbed habitat.

## A new survey program for breeding coastal birds in Sweden

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Until recently Sweden had no program specifically aiming at monitoring its large marine bird populations at a national scale. In 2015 Lund University in collaboration with the Swedish Environmental Protection Agency and Regional County Boards established such a program that will run annually.

In total 200 2 x 2 km fixed squares (Sampling Areas, SAs) were semi-randomly placed in archipelagoes along the Swedish coast. The number of SAs assigned within a given geographical area is proportional to the local number of islands. Each of the SAs should be visited once during the breeding season. The field methods are simple and mainly carried out from a boat. The field observers are instructed to visit all islands within a SA and to circle them at a distance of up to 50 m. To go ashore is voluntarily. The counting unit is individuals; no attempts are being made to find nests or to investigate the breeding status of the birds. All waterbirds are

targeted, as well as Rock Pipit (*Anthus petrosus*) and a few species of potential predators.

We find the results from the pilot year very promising. Altogether 92400 birds were recorded; the most abundant species being Common Eider (*Somateria mollissima*) (10447 individuals). Common Gull (*Larus canus*) was the most widespread species, observed in 94% of the SAs. Considerable numbers of individuals were counted for species currently not well covered by existing monitoring schemes in Sweden. The new program should make a monitoring of such species possible. Some examples are Red-breasted Merganser (*Mergus serrator*) (1857), Velvet Scooter (*Melanitta fusca*) (1467), Common Shelduck (*Tadorna tadorna*) (333) Turnstone (*Arenaria interpres*) (200), Arctic Skua (*Stercorarius parasiticus*) (102), Sandwich Tern (*Stercorarius parasiticus*) (52) and Rock Pipit (280).

## Collared Pratincole breeding colonies discovered at Port Said, Mediterranean coast of Egypt, May 2016

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Collared Pratincoles (*Glareola pratincola*) have a large and fragmented breeding distribution in the Palearctic (Cramp & Simmons, 1983; Del Hoyo *et al.*, 1996). It is a migratory species that breeds in different countries around the Mediterranean Sea, southern Europe and countries of the former Soviet Union and spends the winter mainly in Africa. In European breeding areas most populations are declining (Cramp & Simmons, 1983; Dolz, 1994), particularly because of human-

induced habitat changes (Walmsley, 1978; Cramp & Simmons, 1983; Calvo *et al.*, 1993; Dolz, 1994; and Del Hoyo *et al.*, 1996). In Egypt the Collared Pratincole is a fairly common migrant breeder in the Nile Delta, the Faiyum, and possibly in Wadiel-Natrun and near El-Alamain. All Egyptian material examined refers to *Glareola pratincola* (S.M. Goodman & P. L. Meininger, 1989). In this study I record the first breeding of the species in Port Said Governorate in two colonies.

## Common Tern breeding colony discovered at Port Fouad, Port Said, Mediterranean coast of Egypt, May 2016

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The Common Tern (*Sterna hirundo*) is a migratory species with a circumpolar distribution, breeding in most of Europe, Asia, and North America, except for the extreme north and south of these regions (del Hoyo *et al*, 1996; BirdLife International, 2013). In Egypt, it is a fairly common migratory visitor along the Mediterranean Coast, Red Sea Coast, and the Nile in spring from mid-March to mid-June and in autumn from early August to mid-October. However, it is a scarce, non-breeding summer visitor to the Mediterranean Coast, the Gulf of Suez, and the northern Red Sea (Goodman

& Meininger, 1989). In May 1990, a nest with two eggs was photographed on the periphery of a Slender-billed Gull (*Chroicocephalus genei*) colony. Eleven alarming adults were observed at El Malaha, just east of Port Said (Meininger *et al*, 1993). This represented the first known Common Tern colony in Egypt, with at least five breeding pairs. In 2013 a maximum of 273 Common Terns were counted, with an estimated 270 nests in a colony west of Port Said. (Mohamed Habib, 2014). For this study I surveyed an area east of Port Fouad in the El Malah district.

## Mammal recording during the breeding bird survey

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Over 2,600 volunteers survey 3,600 1-km squares annually for the United Kingdom's BTO/JNCC/RSPB Breeding Bird Survey. Monitoring data on this scale does not exist for most non-bird taxa in the UK, so from 1995 the extensive network of volunteer birdwatchers were invited to also record mammals during their surveys.

The participation in mammal recording on Breeding Bird Survey squares is growing. It is an optional part of the survey, yet in 2015 89% of all BBS squares contributed information on mammals. This includes counts of live mammals observed during transects, evidence of presence from tracks and signs or reports from outside transect surveys (e.g. from landowners), or confirming the square was surveyed for mammals, but none were detected (a null return).

Now, annual UK population trends for nine of the larger, easily-detectable terrestrial species can be calculated and trends for these species span back to 1995. Since then, Rabbit (*Oryctolagus cuniculus*) and Red Fox (*Vulpes vulpes*) have decreased by 57% and 29% respectively, and the non-native deer Reeves's Muntjac (*Muntiacus reevesi*) has increased by 95%.

This poster will show population trends for the UK as a whole, and also population changes at a more local scale, showing regional variation in species such as Brown Hare (*Lepus europaeus*). It will also illustrate a study whereby bird and mammal data from squares was used to study the relationships between deer and bird species in woodlands in lowland England.

## Status of UK's upland birds

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Some of the UK's scarcest bird species occupy the upland areas of our islands. These are perceived as some of our wildest landscapes, encompassing a wild sweep of habitats, many of which actually receive quite intensive management. Monitoring the iconic species in these areas is an essential tool in assessing the health of these remote ecosystems.

National surveys are carried out periodically for this suite of species; here we summarise results from the last 5 years for Dotterel, Snow Bunting, Twite, Ring Ouzel and Golden Eagle. By taking a broad look across

this diverse group of species we will be able to give a deeper insight into the status of the UK's upland birds than if each species were considered individually. To add further context we will use additional sources on the status of birds, biodiversity and the wider environment in the uplands.

Threats to the upland habitats in the UK are largely driven by human impacts, through intensive management for food production, climate change, expansion of inappropriate forest cover and impacts of air pollution.

## Population estimates, favourable reference values and conservation measures for Cyprus Wheatear, Cyprus Warbler, European Roller, Cretzschmar's Bunting and Masked Shrike in Cyprus

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Cyprus birdlife includes endemics such as the Cyprus Wheatear (*Oenanthe cyprica*), Cyprus Warbler (*Sylvia melanothorax*) and 4 endemic subspecies. Also, migrant breeders such as the European Roller (*Coracias garullus*), Cretzschmar's Bunting (*Emberiza caesia*) and Masked Shrike (*Lanius nubicus*) breed in numbers important at European level. For all the above and other SPA qualifying species current population figures have been estimated and Favourable Reference Values have been set. FRVs have been set at both the all-Cyprus level and at the level of key SPAs for the species. The methodology followed for determining FRVs involved MAXENT modelling for estimation of suitable habitat extents, Distance analysis for estimation of current breeding densities and use of Minimum Viable Population (MVP) analysis. Expert opinion played an important part in setting realistic FRV targets.

The Cyprus Wheatear is a migrant breeder; it breeds in a variety of habitats, from lowland open areas to the highest forested mountains. Population estimates for 2015 range between 20,000-40,000 pairs whereas the FRV is set at 50,000 pairs. The Cyprus warbler exists both as a resident and partially migratory species, since individuals have been found to overwinter in

the Middle East. It is found predominantly in thorny maquis. Population estimates for 2015 range between 60,000-75,000 pairs whereas FRV is set at 75,000 pairs. The Masked Shrike is the smallest shrike species to visit Cyprus. It prefers woodland areas, upland orchards and vineyards and open forest. Population estimates for 2015 range between 4,000-7,000 pairs whereas FRV is set at 7,000 pairs. The Cretzschmar's Bunting breeds mainly in open, mountain sides with phryganic vegetation, dispersed with grasses. Population estimates for 2015 range between 5,000-15,000 pairs whereas FRV is set at 10,000 pairs. The European Roller prefers open habitats such as dry cultivations with scattered trees such as carob and olive. It is a cavity nester, nesting in large trees, cliffs and earth banks. Population estimates for 2015 range between 1,000-3,000 pairs whereas FRV is set at 3,500 pairs.

An on-going Life+ project (LIFE FOR BIRDS) targets, through specific conservation actions (improving habitat and nesting conditions, combating illegal bird trapping) to improve the status of the above species in 3 specific SPAs in the eastern part of Cyprus. Management plans are also being drawn up for all 30 SPAs in Cyprus.

# Is there any relation between observers' preference to visit a given site and its conservation value? An analysis with casual data from Ornitho.cat for birds

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Understanding how biodiversity conservation may generate benefits to humans is one of the most challenging goals within the framework of ecosystem services. A cultural service is currently provided by wildlife and here mainly by birds. An increasing number of people are interested in birdwatching as a recreation activity. These observers decide where to go to watch birds taking into account a series of trade-off factors such as targeted species search and travel costs. To date, however, there is a lack of empirical studies to provide explicit support for the hypothesis that observers select areas with high values for biodiversity conservation for their recreational activities. To test if this relation exists we conducted spatially explicit analyses for birds in the Barcelona province (Catalonia, Spain). Using data from bird species distribution and conservation assessments, an index of conservation interest based on IUCN status at different spatial scales and interna-

tional importance of the species' population occurring in the study region was calculated at 1 x 1 km resolution. Birdwatchers' occurrence in each square was obtained from Ornitho.cat, an on-line portal used in Catalonia for casual wildlife observations. Visits were classified into three categories depending on observers' residence: local, sub-regional and regional. Such classification was performed to test if each group had a different behavior of square selection. We found that sub-regional and regional observers selected areas with high conservation interest to watch species even though they may have to cover considerable distances. This assessment may thus assist both conservationists and managers in decision making. In addition, this type of explorations may also provide a new view on the role of on-line portals as sources of information on cultural ecosystem services.

## Improving data quality and recruiting new volunteers with bird identification training

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Citizen science activities for ornithological data collection are building momentum all around the globe. However, skillful volunteers are lacking and building their capacity is crucial to guarantee relevant data quality suitable for analyses. In the last 4 years Nord University from Norway has initiated training for bird identification in Bulgaria, Latvia, Lithuania and Serbia aiming to increase the number of skillful volunteers and find new observers. The methods of the bird ID training include 15-25 days of field training with skillful teachers and self-preparation using the online tool [www.birdid](http://www.birdid.no).

**no.** Results suggest that volunteers significantly improve their skills as a result of the training and the online tool corresponds to the field skills of the participants. As a result of the bird ID training, participating countries have increased their number of volunteers in the common bird monitoring scheme that have passed the online test suggesting increasing credibility of the data. Thus the bird ID training can be considered as a useful tool for any European country willing to increase the number of skillful volunteers needed for large scale monitoring schemes.

## Nigeria Bird Atlas Project (NiBAP): Mapping Nigeria's birds

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The Nigerian Bird Atlas Project (NiBAP) is an initiative of A.P. Leventis Ornithological Research Institute (APLORI), Jos, Nigeria with technical support from Animal Demography Unit, University of Cape Town, South Africa. NiBAP aims to update information on distribution of birds to be published in a bird atlas for Nigeria. The project hopes to achieve this with help and valuable input from volunteer members of the public keen to contribute to bird conservation (citizen scientists) in Nigeria. By encouraging participation of citizen scientists, NiBAP hopes to improve local capacity and increase conservation/environmental awareness. Methodology for NiBAP is adapted from the Southern Africa Bird Atlas Project (SABAP2). Nigeria has been gridded along lines of latitude and longitude and the smallest grid square is a pentad - the unit of data collection measuring 5' x 5' (c. 9 km x 9 km). There are about 11,600 pentads across Nigeria and atlas protocol invol-

ves spending a minimum two hours in a pentad and visiting as many habitats as possible to record every bird species in the order of encounter on a list. A protocol once started can be completed within five days. Data is submitted through the homepage ([www.nigeriabirdatlas.adu.org.za](http://www.nigeriabirdatlas.adu.org.za)). Start-up funding was provided by SkandinavKonsult, Sweden to support preliminary fieldwork for data collection which started since January 2016 by a small team of 3 individuals including the project coordinator, manager and assistant. Six volunteers have also been recruited and regularly contribute to the database. Additional funding is being sought to support continuous data collection by the core team and to embark on massive wide ranging workshops/awareness campaigns to introduce this methodology and promote volunteering culture for citizen science in Nigeria.

## Changes in distribution and abundance of Kentish Plover in European Russia

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We have created a database for observations of Kentish Plover (*Charadrius alexandrinus*) in European Russia. We used published and own data, the ornithological collections of the Zoological Institute of the RAS and the Zoological Museum of MSU. At present the database includes about 400 observations. We combined data before and after 2000 and used the 50-km squares of the UTM WGS84 grid across Europe to visualize the available information on a map.

In European Russia Kentish Plover breed on open mudflats and sandbanks along the shores of the Black, Azov and Caspian seas and salt lakes, Ciscaucasia and Lower Volga. Kentish plover breed in Rostov, Krasnodar, Stavropol, Volgograd, Astrakhan regions, Republic of Kalmykia and Dagestan. Looking at the entire period for which data were available Kentish Plover bred in 44 squares, in 17 squares the species was always present, in 13 squares it disappeared and in 14 squares it appeared for first time.

The number of individuals in the North Caucasus is low and the species is included in most regional Red Lists. 100-150 pairs breed in Rostov region, Krasnodar - 300, Stavropol - 230, Volgograd - 100-120, Kalmykia - 500, Astrakhan - several pairs, Dagestan - 30-40. Before 2000 the population of Kentish Plover in European Russia was estimated to comprise 1000-10 000 breeding pairs (Hagemeijer, Blair, 1997; Heath et al., 2000), just after 2000 at 150-1300 breeding pairs (Mishchenko, 2004). Based on the available data, the current population of Kentish Plover in European Russia is estimated to comprise 900-1100 breeding pairs. The numbers in 4 squares did not change, decreases occurred in 16 squares and increases in 24 squares.

We must refer critically to the obtained data due to the unevenness of observations in different periods and more detailed investigations in recent years. In general we can assume that distribution and population of the species in European Russia fluctuates or slightly declines.

## Status report on selected breeding raptors on Cyprus

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Cyprus presents a diversified avifauna, including endemics. Important breeding raptors include Bonelli's eagle (*Aquila fasciata*), Long-legged buzzard (*Buteo rufinus*), Goshawk (*Accipiter gentilis*), Peregrine falcon (*Falco peregrinus brookeii*) and Eleonora's falcon (*Falco eleonora*). Annual breeding surveys for the above species are carried out by the Game and Fauna Service and BirdLife Cyprus as well as the Sovereign Base Areas (SBA) Environment Department for the Eleonora's falcon breeding population. The Bonelli's eagle population is estimated at 40 breeding pairs, with its stronghold being the Pafos Forest, the largest SPA on the island, shared also by the Goshawk whose population is estimated at 70-120 breeding pairs (half of which breeds at Pafos forest). Long-legged Buzzard, an expanding raptor over the last 2 decades, shows an increasing trend and its current population is estimated at 70 breeding pairs, having doubled in size since 2005.

Peregrine falcon, breeding both on inland and coastal cliffs, shows a relatively stable population, estimated at 60 breeding pairs. The summer visitor, Eleonora's falcon, breeds on coastal cliffs in the southern, rugged coastline of the island, with a population of about 130 breeding pairs. All population figures are for areas under the effective control of the Cyprus Government, with the exception of Eleonora's falcon, where a large part of its population is within SBA boundaries. The spatial distribution of nesting territories of all breeding species is presented and discussed, along with nest site coverage by the Natura 2000 network. Threats and conservation concerns include direct human persecution (poisoning, shooting and trapping as "by-catch"), expanding road networks that fragment habitat and increase human encroachment, development of wind farms in environmentally sensitive areas and other developments incompatible with conservation.

## Results of the mid winter waterbird counts on the warmed waters of Bortnychi sewage treatment plant

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A regular and later mass wintering community of waterbirds formed during the early 1970s of the 20<sup>th</sup> century on the territory of Kiev agglomeration area. The largest winter accumulation within the town agglomeration exists on the discharge canal of Bortnychi sewerage aeration station (BSAS). Over 30 years the wintering waterbirds at this site have been monitored (Melnichuk, 1989; Davydenko, Sypko, 2002; Pshenychnyi, 2007) and this paper represents a continuation of these studies. The results of observations in January 2016 are presented. The data are collected by means of route counts and point observations using optical equipment and a digital photo camera.

4469 birds of 20 species of 7 orders were recorded. The most numerous species was Mallard (*Anas platyrhynchos*) - 4088 birds (91,5%) represent the largest number recorded during the last few years (Pshenychnyi et al., 2009; Kazannyk et al., 2013). Other common wintering waterfowls occurred in considerably lower numbers: Mute Swan (*Cygnus olor*) - 17 birds, Pochard (*Aythya ferina*) - 1, Tufted Duck (*Aythya fuligula*) - 54, Goldeneye (*Bucephala clangula*) - 75,

Goosander (*Mergus merganser*) - 35, Coot (*Fulica atra*) - 7. Compared with recent years a record quantity of observations of Great White Egret (*Egretta alba*) were recorded - 63 birds. Grey Heron (*Ardea cinerea*) - 19 birds were observed as well.

Among 81 gulls Caspian Gull (*Larus cachinnans*) (65 birds) was most numerous. Rare species and not numerous wintering species were: Great Crested Grebe (*Podiceps cristatus*) - 1 bird, Whooper Swan (*Cygnus cygnus*) - 8, Smew (*Mergellus albellus*) - 2, Moorhen (*Gallinula chloropus*) - 2, Green Sandpiper (*Tringa ochropus*) - 1, Kingfisher (*Alcedo atthis*) - 2 and Reed Bunting (*Emberiza schoeniclus*) - 3. As an accidental visitor a number of 10 Wood Ducks (*Aix sponsa*) was recorded (4 ♂, 6 ♀).

In summary it can be stated that the number of waterbirds recorded this year was the largest during the last decades of observations. This can be explained by frosty weather conditions which started in early January. Due to considerable frost the Dnieper River in Kiev was covered with ice and all wintering waterbirds assembled on BSAS ice-free canal.

## A new scheme for roost counts in the Netherlands

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A new scheme for monitoring roosts was started in the Netherlands in 2010. Information on numbers of birds on roost sites is primarily needed to periodically report on the Bird's Directive. For 19 water birds species in total 53 Natura 2000-sites are appointed as a result of their important roost function. In this contribution we will present the scope, set-up and applications of the roost site monitoring. We will discuss the species selection, the frequency and timing of the counts, and our approach for organizing the field work in large areas covering a large number of interacting roosts. We will also present some first results, both in terms of participation by volunteers and numbers and trends assessed for some example species. For a species such

as Great Egret, the roost counts provide already better estimates of wintering numbers at the national level than the water bird counts, because of the large national coverage of roosts we are able to achieve. Also for Ruff, Common Crane, Caspian Tern and Black Tern the roost counts provide the best method for assessing national numbers and trends. Roost counts also give information on (changes in) distribution of species at the local scale. Together with information about movements of bird concentrations between foraging and roosting sites, this is used in risk assessments of large infrastructural projects, such as the location of new wind farms.

## Monitoring nocturnal birds in open and semi-open habitats in Romania – first results of a new monitoring scheme

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The distribution, abundance and population changes of nocturnal bird species in Romania are under-researched and poorly documented. This knowledge gap includes species of high conservation concern such as the Corncrake (*Crex crex*). In this study we present the findings of the “Monitoring nocturnal birds in open and semi-open habitats” scheme, which specifically targeted this regional deficiency. The species aimed by the scheme are Corncrake, Scops Owl (*Otus scops*) and Nightjar (*Caprimulgus europaeus*). The survey consists of 5-minute point counts, without the vocal stimulation of individuals, within randomly selected 10 x 10 km squares, with 10-16 observation points per square. A part of the squares are repeated annually to permit trend analysis. The first survey completed in 2014-2015 covered most of Romania, except the Southern Plains. Distribution and abundance models were produced using the Random Forest package within a suite of R-scripts called TRIMmaps. As co-variables we used

land use, climatic, geomorphological and demographic data. The Corncrake is widely distributed in the hilly and low mountain areas of the Romanian Carpathian region and Moldova, with the highest densities breeding in Eastern Transylvania and Western Moldova. The species is missing, or breeds only exceptionally, in most of the Southern and Western Plains and in Dobrogea. The Scops Owl is evenly distributed from the plains to the low mountains of the country, but densities vary considerably, being most abundant in Central Transylvania and in parts of Oltenia. The Nightjar has a patchy distribution, with the bulk of the population breeding in Dobrogea and in the Subcarpații Curburii region. The findings of this project will, on the one hand, contribute to the new Romanian and European Breeding Bird Atlas projects, and on the other hand, provide the scientific basis for the correct designation of target areas of agri environmental measures aiming at supporting the Corncrake in Romania.

## **Feld & Vogel - development of an interactive application: Satellite-based habitat analysis for indicator bird species in the agricultural landscape – a tool to meet the EU biodiversity targets in 2020**

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Covering 210 million hectares of arable and pasture land, almost half of Europe's land is used for agriculture. The intensification and industrialization of agriculture practice has led to a dramatic species and biodiversity loss. The Farmland Bird Index (EBCC 2012) shows a decrease in agricultural bird numbers by 52 % since 1980.

The goal of the project is to create an interactive platform for biodiversity to provide everyone involved in the implementation of the new reform with information and assistance for an ecologically worthwhile implementation.

The aim of the project is to develop a standardized automated process that enables an extensive and inexpensive analysis of the status of favorable/unfavorable habitat structure in agricultural areas using remote sensing data. This app also provides support for conservation measures and improvement of habitat structure. The creation of a geoportal with interactive maps will foster the communication between different users and

stakeholders, such as government agencies, farmers, and NGOs.

In detail, habitat requirements of selected bird species such as Corn Bunting (*Emberiza calandra*) will be extracted from satellite remote sensing data. Remote sensing is a promising approach for the development of high quality, but cost-effective and comprehensive methods for landscape information. Multi-temporal satellite data will be applied for the analysis of the habitat requirements, such as the size and nature of crop fields and semi-natural habitats as well as the general land use. With species distribution data from field observation these landscape indicators will be implemented in the species distribution model (MaxEnt). The model predicts the occurrence probability of the species and thus the habitat suitability of the landscape.

These habitat suitability maps will be presented to the user via a browser-based geoportal. The geoportal allows the user to search, query and filter information temporally, spatially, and content based.

## Using density surface modelling for estimating abundance of breeding birds in heterogeneous mire habitats: A case study in Estonia

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Mire habitats are important for the regional survival of several endangered species - more than 20 species breeding in Estonian mires are EU Bird's Directive Annex I species. Large mires represent very diverse habitats, where variations in wetness and openness in combination with nutrient availability and acidity are forming different microhabitats for species. Effective conservation planning and evaluation of effectiveness of conservation measures requires an understanding of how and by what factors local populations are limited. Our understanding of bird populations can be greatly enhanced by modelling their distribution in space and as a function of environmental covariates.

Density surface models consist of a spatial model of the abundance of a population which has been corrected for uncertain detection via distance sampling methods (Miller, 2013). Large mire complexes (total census area ca 20 000 ha) are surveyed using single-visit mapping censuses with regularly spaced counting

transects. The distances between transects varied between 200-500 m depending on the habitat, accessibility and available resources. Interpretation of the collected data with the aim to estimate the total abundance of a species on a mire patch has been limited. However, the varying intervals of transects, spatial heterogeneity of the habitat and detection probability of different species are not considered in this case. In this paper we compare several methods that aim to consider the mentioned factors and help to statistically improve the abundance estimates derived from such type of survey data. Using GIS and remotely sensed data (soil map, LANDSAT, LiDAR) we were able to describe the heterogeneity of a mire habitat. Using environmental covariates and density surface modelling we were able to arrive at more accurate abundance estimates than obtained when merely interpreting field census maps or applying distance sampling to field data.

## Changes in bird distribution and phenology between the first and second Birds Atlas Projects in Southern Africa (SABAP1 & 2)

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This presentation is based on 16 million records of bird distribution from SABAP1 (mainly 1987–91) and SABAP2 (2007–). Records were collected throughout the year using similar (but not identical protocols) for both projects.

More species show decreases in range than increases. The most parsimonious explanation for the majority of range changes in both directions is bush encroachment, which has occurred for a variety of reasons, across much of the northern half of South Africa. Bird species that have benefitted from bush encroachment are mainly small insectivores and frugivores, and include most of the Palearctic passerine migrants which spend the southern summer in the study area. Species which have decreased in range as a result of bush encroachment are mainly large species which utilized the patches of grassland interspersed through the savanna biome. Many of these species are in IUCN threat categories.

Climate change is implicated in the change of distribution of a small number of species. Leading species here is the Cape Rockjumper (*Chaetops frenatus*), a species confined largely to the fold mountains of the Western Cape, a habitat which has remained intact between the two projects. The Rockjumper has shrunk substantially in range over the two decades between the atlas projects.

Analyses of the timing of arrival and departure of Palearctic migrants show that there have been changes for many species between the two projects. The leading species here is the Barn Swallow (*Hirundo rustica*); this species shows results which are inconsistent geographically. The confusing pattern is explained by the fact that the Barn Swallows spending the southern summer in South Africa are not a complete admixture of swallows from the entire breeding range; each region is dominated by swallows from different parts of the breeding range. It is clear that change in the timing of the start of spring shows complex variation across Eurasia.

## The breeding bird monitoring of the Republic of San Marino

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The Republic of San Marino is a small (about 61 km<sup>2</sup>) independent country included in the Italian Peninsula. The country has a rugged hilly terrain, up to 750 m above sea level; the land use is a mosaic of urban areas, farmland, scrubland and small woods; there are many cliffs and some small streams. In the breeding season 2015, the Republic of San Marino started a Breeding Bird Monitoring Program, with the aim to calculate population trends of the commonest species. A 10' point counts method was chosen. Firstly, we collected data from previous projects (Breeding Bird Atlas of Republic of San Marino, 228 10' point counts, surveyed at least in one year between 2008-2010; 80 of which were also surveyed in 2015) and we tried to calculate trends for the period 2008-2015 using the software TRIM. Starting from a database of 145 points (each surveyed for 2 to 4 years), we were able to calculate trends for 47 species (out of the 72 species detected).

Despite having data from only four years, we obtained defined trends for 12 species: Goldfinch (*Carduelis carduelis*) (strong decline), Collared Dove (*Streptopelia decaocto*), Turtle Dove (*Streptopelia turtur*), Wren (*Troglodytes troglodytes*), Fan-tailed Warbler (*Cisticola juncidis*) and Greenfinch (*Carduelis chloris*) (moderate decline), Swift (*Apus apus*), Redstart (*Phoenicurus phoenicurus*), Blackcap (*Sylvia atricapilla*) and Short-toed Treecreeper (*Certhia brachydactyla*) (moderate increase), Woodpigeon (*Columba palumbus*) and Jay (*Garrulus glandarius*) (strong increase). We also calculated community indices: the FBI (Farmland Bird Index) resulted in a slight decline, the WBI (Woodland Bird Index) resulted in slight increase. These results roughly match those found in Italy, except for Collared Dove, and seem to be promising, representing a good basis to continue bird monitoring in this small country, in order to join and contribute to the EBCC projects.

## Using high resolution process-based models to determine bird conservation areas in Flanders (North Belgium)

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Species distribution modelling is increasingly used as a decision support tool in biodiversity conservation policy. Many of the species of conservation concern, however, are (very) rare and correlative modelling is usually not possible due to insufficient data. An alternative is to apply process-based models using quantitative ecological species profiles. These are translated into a GeoDynamix script that renders high resolution maps (20 x 20 m<sup>2</sup>) with potentially suitable areas for the given species. We tested this for 28 breeding birds of the European Birds Directive that are present in Flanders (north Belgium) and used it to determine regional priority bird conservation areas. We overlaid all individual species maps and considered grid cells that are suitable for at least five bird species as priority bird conservation areas. Finally, we clustered these grid cells into areas of >50ha resulting in 148 priority bird

conservation areas. We compared the locations of these areas with the actual Natura 2000 areas in Flanders. In total, 90 (61%) of the priority bird conservation areas were covered by at least 50% Natura 2000 area, but 43 (29%) were not covered by any actual Natura 2000 area. We also calculated the amount of priority bird conservation area in each of the actually delineated Natura 2000 areas in Flanders. Of all 47 Natura 2000 areas in Flanders, only 7 (15%) had >30% high potential bird conservation areas and 24 (50%) had less than 10%. Given the fact that some of the actually high potential bird conservation areas are not covered by Natura 2000 areas and that some of the actually delineated Natura 2000 areas only have low predicted potential for bird conservation, we propose to regularly update the Natura 2000 areas to coincide with potential priority sites for bird conservation.

## Insectivorous and open-cup nester bird species suffer the most from urbanization

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Urbanization effects in an Eastern European city (Cluj-Romania) depend on feeding and breeding traits of bird communities with stronger negative effects on more specialized traits. Based on a stratified random sampling we selected 61 study squares of 200 x 200 m for bird surveys representing the following habitats: suburban, residential and apartment complex (representing an increasing urbanization gradient). We carried out bird censuses in both breeding and wintering seasons. The observed bird species were classified according to their feeding guilds and nesting sites. Insectivorous and open-cup nesting species were most abundant in subur-

ban areas. Omnivorous species richness was not related to urbanization gradient. Species showed similar patterns of distribution during breeding and winter with respect to feeding habits. However, in case of nesting preferences, species richness of cavity nesters increased with urbanization gradient in winter, but decreased in the breeding season. Food and nesting site availability are key drivers in limiting more specialist species in utilizing city centres. Future studies should assess the effect of how green areas can counteract such negative effects of increasing urbanization in the context of such specialist trait limitations.

## Common bird census in Portugal: 2004 to 2015

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The Common Bird Census (CAC) started in 2004 by SPEA with the main goal of calculating trends of breeding bird species and to use them as an indicator of the general state of the environment. Volunteer fieldworkers are responsible for the data collection that takes place on the Portuguese mainland and Madeira and Azores archipelagos. The sample unit represents a square of 10x10km in which 20 point counts are carried out twice every spring. After the first years of the project, the statistical procedure to calculate species trends was determined as well as the way to combine

trends into composite indices (only for the mainland). Hence, the general Portuguese Common Bird Index, the Farmland Bird Index and Forest Bird Index were created. The data analyses showed stable trends in these indicators, respectively with variations of +10%, -3% and +9% between 2004 and 2014. The Portuguese government has included the Common Bird Index in the National Strategy for Sustainable Development 2005-2015 and the Ministry of Agriculture accepted the Farmland Bird Index as an indicator of the National Rural Development Program 2007-2013.

## Towards continental bird distribution models: Environmental variables for the second European Breeding Bird Atlas and identification of priorities for further surveys

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The first EBCC atlas of European Breeding Birds was a milestone in European ornithology and after 30 years, fieldwork for the second European Breeding Birds Atlas (EBBA2) is underway. It not only aims at providing up-to-date distribution maps at a broad scale but also modelled maps showing relative abundance at a finer resolution.

Bird data collected across Europe from 2013 to 2015 have been compiled by the national atlas coordinators and provided to EBBA2 as part of a pilot data provision in 2015. These data serve as a basis for first analyses by the EBCC Spatial Modelling Group (SMOG).

Some preliminary steps are necessary to develop robust species distribution models (SDMs). Moreover, these steps could also provide information about areas and environmental variable combinations under-represented in the squares sampled so far.

First, we collected a set of predictor variables potentially relevant for bird distribution. Second, we

identified the squares surveyed with timed visits and complete species lists in the pilot data provision. Third, we combined predictor variables and information on sampled cells to identify poorly sampled areas in Europe (using a modified version of the Multivariate Environmental Similarity Surfaces, mMESS).

A total of 39 predictor variables (geographic, climatic, topographic, land-cover, habitat structure, anthropogenic, and soil variables) were collected and 7,658 cells were surveyed across Europe. Considering mMESS map, we also identified parts of our study area where extrapolations based on SDMs have to be considered carefully. In the same way, we also point at environmental variable combinations for which more sampling effort is required. Possibly, additional efforts regarding data collection for EBBA2 could focus on these areas/ environmental space in order to minimize the space for which no information will be available for final SDMs.

## First steps of a common birds monitoring scheme in the Moscow region, Russia

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The Moscow region is the most populated area in the Russian Federation and well-studied by ornithologists. In 1999 one of the first national birdwatching programs, called «Birds of Moscow and the Moscow Region», was founded. Now the organization unites hundreds of members, submitting their observations to a common database. However, our knowledge about species abundance and multiyear dynamics is still scarce. In 2010, M.V. Kalyakin and O.V. Voltzit started a monitoring program which meets the requirements of European scheme (PECBMS). Its participants annually conduct line-transect censuses on free-chosen plots. For six years the censuses were made on 30 plots, and the total number of volunteers exceeded 23. We are aware that this numbers are not sufficient for an area of 44,379 km<sup>2</sup> and the monitoring period is short, but we have already obtained pilot populations trends for the common birds and also multispecies trends for two ecological groups (woodland species, open-landscape species). In total,

141 species were registered, and 16 of the common ones showed significant population trends. For 11 species positive trends were obtained: most of them are woodland birds, accordingly the group indicator exhibited an increase of 38 %. The other 5 species, all associated with open habitats, showed negative trends, so the open-landscape group decreased by 13 %. For 11 of 16 species trend signs are consistent with tendencies in the EU: it may indicate the influence of some continental-scale factors, but also local factors can play a role. The increase of forest birds probably reflects population restoration after several harsh weather events in 2009-2011. Some of this species could also benefit from the subsequent outbreak of bark beetles, which provided affluent food resources and increased the proportion of early-succession shrub habitats. The reasons causing the dynamics of open-landscape species are unclear. Further investigations are needed to reach any firm conclusions.

## Distribution and trends of gulls and terns in Switzerland

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As habitat specialists and colonial breeders, gulls breed on shore habitats which can be spatially very limited. This is especially true for Switzerland where most river beds were corrected and lakes regulated during the 19<sup>th</sup> and 20<sup>th</sup> century. After the loss of natural breeding sites on rivers and lakes, artificial breeding installations promoted the recovery of some of the breeding populations since the 1960s. Thus, some species showed an intensive dynamic in distribution and population size within the last decades. Breeding pairs are counted each year by volunteers and compiled centrally since the 1970s. Thus the population of the Common Tern (*Sterna hirundo*) almost disappeared and subsequently recovered to approx. 600 pairs today. The population of Common Black-headed Gull (*Larus ridibundus*) showed an increase and then declined in the 1980s and 1990s (today

900 pairs). Yellow-legged Gull (*Larus michahellis*) colonise Switzerland since 1968, caused by an expansion of the growing population in the Mediterranean area. This species breeds on small islands (partially in co-concurrence with the two smaller species) and on flat roofs. The population showed exponential growth in the 1990s and 2000s (today 1200 pairs) and nowadays represents the most abundant breeding gull. In addition, Mediterranean Gull (*Larus melanocephalus*), Mew Gull (*Larus canus*) and Arctic Tern (*Sterna parasidaea*) breed in small numbers and irregularly. With the exception of Yellow-legged Gull the populations of all species today depend on a sufficient supply of artificial breeding sites. This species group is an illustrative example of how human activities can affect the size of natural populations.

## The long-term changes in numbers and reproductive success of waterbirds as the response to eutrophication of fishpond habitats

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Recently, fishponds and fishpond systems represent the most common wetland type in the Czech Republic, with about 20 000 fishponds covering 50 000 ha. Fish production (mostly Carp (*Cyprinus carpio*)) was about 50 kg/ha until the end of the 19th century, increasing to more than 1000 kg/ha from 1950 to 1980. More recently, the important grazing effect of fish (especially Carp) has been recognised as a factor affecting benthic and plankton communities, the extent of littoral vegetation, and consequently water transparency and chemistry. The monitoring of waterbird breeding populations based on annual May and June censuses started in the early 1980s. Moreover, detailed brood surveys were carried out annually since 2004.

Decreasing species were frequently represented among the 23 most investigated waterbird species recorded at 273 fishponds between 1981 and 2015. During this period 11 decreasing species were found during May and 7 during June surveys. On the other

hand, only 3 increasing species were found during May and 4 were found during June surveys. Highly significant differences were found among different foraging groups of waterbirds in May as well as in June. Increasing trends were recorded in herbivorous species (Mute Swan, Greylag Goose, Red-crested Pochard). On the other hand, decreasing trends prevailed among species foraging on aquatic invertebrates (benthophagous species).

Moreover, less intensive management of fish stocks allowed the establishment of moulting concentrations of males of particular duck species such as Common Pochard, esp. in late June and July. More recent analysis of Common Pochard population dynamics documents that increases in the number of adult birds (mostly moulting birds) is not correlated with bird presence at the beginning of the breeding season. The breeding population size is affected by low productivity (i. e. number of reared broods) in recent years.

## Brood census efficiency: Comparison of long-term data based on brood counts and monitoring individually marked brood of diving ducks

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Annual waterbird monitoring was carried out at 180 fishponds in South Bohemia, Czech Republic between 2004 and 2015. The studied area was located in fishpond systems of South Bohemian in the region of Třeboň, Soběslav, Jindřichův Hradec and České Budějovice (48° 57' 18" - 49° 15' 53" N, 14° 40' 7" - 14° 54' 19" E).

We analysed brood census efficiency using data from brood counts as well as data from the monitoring of individually marked females of diving ducks rearing broods. Between the years 2004 and 2015, 35 individually marked females of Red-crested Pochard (*Netta rufina*), 287 females of Common Pochard (*Aythya ferina*) and 38 females of Tufted Duck (*Aythya fuligula*) were recorded.

The aim of poster is to analyse the probability of resighting records of individually marked ducks in relation to independent variables such as stage of breeding season (pre-breeding, incubation, brood rearing), hatching success and local annual population size. The preliminary results show the highest probability of records of individually marked ducks during the stage of brood rearing and in females which successfully hatched ducklings. Moreover, duck census at the beginning of the incubation season (i. e. in May) can provide reasonable data for estimating the annual population size of the investigated diving duck species.

## Long-term changes in population and habitat selection of Red Kite in the region with the highest population density of the areal

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The Red Kite (*Milvus milvus*) is the most remarkable of all bird species breeding in the Federal Republic of Germany. Uniquely among about 260 native species of breeding birds, half of the global Red Kite population occurs in Germany. The area with the highest population density reported is located in the federal state of Saxony-Anhalt, currently supporting about 2,000 breeding pairs (8% of the global population). Especially the region north of the low mountain range Harz is known for its high population density.

Red Kite population changes have been well studied in this region for more than 50 years. In the past the majority of breeding pairs nested in isolated forests (Hakel, Huy, Hohes Holz) and nearly none in the surrounding open landscape with high productive soils used for intensive farming. Agriculture provided a good food-supply for the Red Kite. In 1990/91 the highest

population density of more than 40 bp/100 km<sup>2</sup> was reported. Afterwards the population declined by nearly 50% within only 5 years due to pronounced changes in agricultural practice. Moreover, Red Kite habitat selection changed considerably. Today the majority of Red Kites nest in poplar (*Populus spec.*) tree rows in the open landscape. Currently nearly 80% of Red Kites use such trees as nesting sites, while only few pairs continue to breed in forested areas. Due to the short lifespan of poplar (max. 100 years) and a lack of young trees most of the tree rows will disappear within the next 20 years. Potentially the Red Kite population will then make stronger use of the historic nesting sites in the forests again, but the consequences for the population remain unclear. In the worst case the population of this threatened species will decline further.

## Numbers of Black Storks in Ukraine in 2008-2015

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The Black Stork (*Ciconia nigra*) is a rare bird species in Ukraine which is listed in the Red Data Book. In 1990-1991 the Black Stork census in Ukraine was conducted for the last time. The population was estimated at 300-350 breeding pairs. In order to assess the current status of the species on the territory of Ukraine, a new census was organized and conducted by the author of this abstract, together with the Department of Zoology of Shevchenko National University in Kyiv, Bird Conservation and Study Society of Ukraine, [State Museum of Natural History \(Lviv\)](#) and Kyiv Zoo in 2008-2015. The information presented was collected during own field research. During our field studies we marked nests and possible nesting places indicated by forestry workers and local people. Moreover, data were collected with a questionnaire distributed among state forestry

managers and biologists. As a result of the census work between 2008 and 2015 230 nests and 156-165 probable breeding locations were recorded. So, not less than 386-395 pairs of Black Stork breed in Ukraine. Nevertheless, a large part of potential Black Stork habitat on the territory of Ukraine could not be investigated. Based on the available information we assume that the total breeding population of Black Storks in Ukraine is not less than 800 pairs. In comparison with the previous census (1990-91) the results of the last census show that the population increased in Ukraine. To enable a further increase of the Black Stork population in Ukraine it is necessary to establish local protected areas round the known inhabited nests, to generally increase the size of protected areas covering old forests and to install nesting platforms in suitable habitats.

## Distribution, behavior and interaction with humans of the Rose-ringed Parakeet in Turkey

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Two parakeet species, the Rose-ringed parakeet (*Psittacula krameri*) and the Alexandrine parakeet (*P. eupatoria*), are found in Turkey. They have been intentionally or accidentally introduced in a number of different locations. These alien species are now considered to be resident as they have a healthy breeding population in Turkey.

We studied the distribution, behavior and interaction with humans of the Rose-ringed Parakeet in Turkey, as they have potential impacts on other species and can disturb people by being noisy. In order to track the expansion of the population and to evaluate the factors affecting it we used historical data gathered from articles, bird reports and observation data bases, for example KuşBank and Trakuş, from the years 1975-2015.

All parakeet sightings were recorded in and around urban areas, and the size of the population has increased dramatically. Their population is increasing yearly, in relation to the density of human population at different cities. The correlation between parakeets and human populations were measured through Pearson's correlation coefficients. Of the 24 cities in which the Rose-ringed Parakeet has been recorded it is most abundant in Istanbul. The Ring-necked Parakeet is recorded bet-

ween 0 – 1200 m altitudes. The important altitude levels are changing between 5 – 120 m and preferred habitats are wooded urban areas and coastal towns. Parakeets are alien species in Turkey which compete for food and nesting sites with resident species. They can influence the distribution and the population numbers of the resident species. Therefore, we need to understand the level of the interaction with other species. The Rose-ringed Parakeet has showed interactions with hooded crow, Caucasian Squirrel, Yellow-legged Gull and Jackdaw while attacking them.

Whilst our analysis of the historical data had given us an indication of the expansion of impacts of this population, to fully understand its current status we instigated a study to examine the distribution, population, behaviour, habitat preferences, intra- and inter-specific competition, social and economic impacts. To assess these impacts there is an urgent need on reliable detailed data. Therefore, “The Parakeet Census of Turkey 2016” has been organized. As a result of the parakeet census in 2016, there will be detailed data available next year to present their status and environmental impacts in Turkey.

## The first national Atlas of Breeding Birds in Greece

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Since 2014, the Hellenic Ornithological Society (HOS) has been participating in the EBBA2 project through the Greek Breeding Bird Atlas (GBBA1) project. The project comprises the first national attempt to accurately map the distribution of breeding bird species and is being supported with grants from the MAVA Foundation and the A.G. Leventis Foundation.

The project follows the main guidelines and methods set out by the EBBA2 Steering Committee, and will incorporate field data from 2010-2017. The sampling period covers April until June each year using 10x10km square units of the National Greek Grid (EGSA87). Data will then be transferred to the corresponding 50 x 50 km squares in UTM used in EBBA2 (overall 155 terrestrial squares). The project will col-

late data both from standardized methods (e.g. HOS monitoring projects and timed-effort visits) as well as non-standardized casual records submitted through online platforms.

Currently, although coverage of the 50x50km squares is moderate for the mainland, island square coverage is still low. The contribution of Greek and foreign volunteer observers will be crucial during the breeding seasons of 2016-17 in order to attain acceptable coverage at the national level. Atlas camps organized in collaboration with the Catalan Ornithological Institute (ICO) and regional groups located in remote mountainous sites of Kastoria-Grammos and the Peloponnese are expected to increase local involvement and enhance training efforts.

## Long-term changes in timing of autumn migration through Southern Baltic in first-year Song Thrush related to temperatures at breeding grounds

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We aimed to determine any long-term changes in the timing of autumn migration by first-year Song Thrushes (*Turdus philomelos*) along the southern Baltic coast in relation to climate warming at their breeding areas. We compared the dates when 5%, 50% and 95% of Song Thrushes were ringed each year during autumn migration (5 September – 31 October) in 1975–2014 at the Polish coastal ringing station Mierzeja Wiślana (54°21'N, 19°17'–19°23'E). We correlated these dates (using Kendall's tau) with the mean minimum monthly temperatures of May–August at four weather stations (ECA&D: <http://www.ecad.eu>). These stations are in Finland, Sweden and NW Russia, representing the breeding areas of Song Thrushes that migrate through the southern Baltic region. We estimated the trends in migration dates of the 5%, 50% and 95% cohorts and in temperatures using locally weighted linear regression. We verified the differences between the mean dates of

the first and of the last decade of the period we analysed using the permutation test. From 1975–2014 the beginning (date for 5%) of autumn migration advanced by five days, from 19 to 14 September ( $p=0.009$ ). These dates of 5% migration were correlated with mean minimum July temperatures at all four weather stations (tau from -0.27 to -0.22;  $p<0.05$ ). Over that period the mean minimum July temperatures increased between 1° and 2.5°C at each of the four weather stations. We suggest two explanations for these results: 1. A warmer summer probably advances the development of the young, which then leave the breeding grounds earlier than compatriots 40 years ago; 2. A warmer July increases productivity on the breeding grounds leading to a high density of young Song Thrushes. Late-hatched young will compete with those from earlier broods, encouraging the immatures to leave the breeding grounds earlier than 40 years ago, despite the warmer summer.

## Long-term ringing shows fluctuating populations of forest passerines migrating through the Polish Baltic coast

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We used data collected in standardised ringing of migrant passerines at “Operation Baltic” ringing stations on the Polish coast during autumn migration (15 Aug–30 Oct) in 1965–2012 at Mierzeja Wiślana (54°21'N, 19°18E–54°21'N, 19°23'E) and Bukowo (54°21'N, 16°17E–54°27'N, 16°24E), and during spring migration (26 March–15 May) in 1982–2012 at Bukowo, and in 1968–1971, 1978–2012 at Hel (54°45'N, 18°30E). Migrants were trapped daily from dawn to dusk. Totals of each species caught at a station in a season were recalculated per 50 mistnets and used to derive multi-year smoothed trends with the Dynamic Linear Models for structural time series (dlm package in R). For each species we used Kendall's tau to correlate the totals between ringing stations in the same season, and between spring and autumn at Bukowo. A large decrease in Pied Flycatcher (*Ficedula hypoleuca*), Chiffchaff (*Phylloscopus collybita*), Lesser Whitethroat (*Sylvia curruca*) and Blackcap (*Sylvia atricapilla*) occurred from the 1960s

to the early 1990s, correlated between stations and between autumn and spring migrations. These migrants ringed at the Polish coast breed in Sweden, Finland, NW Russia, the Baltic countries and locally. We suggest this large decline was caused by agricultural practices at the breeding grounds, especially in the use of pesticides and more intensive farming. In Pied Flycatcher and Chiffchaff numbers increased in 1990s–2000, and decreased in 2001–2012. We suggest the trends since 2000 show cyclic fluctuations in numbers, and the increase might reflect improved agricultural practice (e.g. DDT abandoned in 1987 in Finland and the early 1990s in Russia). Chiffchaff and Blackcap numbers greatly increased during 1990s–2012. In Blackcaps, the increase is consistent with the Polish Breeding Bird Census (MPPL). This is correlated with the increase of mean temperatures in April and July–September at the Polish coast, which suggests that climate warming benefits population recovery in some passerines.

## Filling the gap: The first Breeding Bird Atlas of Turkey

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Turkey is located in between the continents and holds a wide variety of habitats. These factors led to rich bird diversity in Turkey. Despite this species richness, country wide systematic bird studies only started very recently. A small team of ornithologists took the opportunity of the second European Breeding Bird Atlas and scheduled the first Turkish Breeding Bird Atlas for 2014-2018.

The first Turkish breeding bird atlas aims at mapping the distribution and abundance of breeding bird species in the country and producing comparable data for the second European Breeding Bird Atlas.

The surveys are done at 50 x 50 km resolution by local and foreign birdwatchers between mid-March and early July. For each square volunteers are conducting standardized timed surveys and collect casual records to build the species list of the respective square. For each species breeding evidence and the abundance are recorded.

We surveyed a total of 76 50 x 50 km squares out of 166 during two fieldwork seasons. Over 100 volunteers

were involved in the surveys. Breeding evidence was documented for 259 different species including Red-footed Falcon (*Falco vespertinus*), possibly new species for Turkey, and new breeding grounds were found for Corncrake (*Crex crex*), Green Warbler (*Phylloscopus nitidus*), Red-breasted Flycatcher (*Ficedula parva*) and Red-necked Grebe (*Podiceps grisegena*). Management measures were taken to better engage with volunteers and to generate enthusiasm for the atlas work. Several capacity building activities, required to successfully implement the atlas work in Turkey, are planned for the remainder of the project.

The first breeding bird atlas of Turkey will provide a basis for both, regional and national scale conservation of bird species. For the first time it will enable us to determine national scale trends of breeding birds when further surveys are carried out in future. This study will also contribute to capacity building for ornithological research in Turkey.

## Global changes and bird spring arrival

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Observations on bird spring arrival in the suburbs of Kiev are conducted since the 50s of the 19<sup>th</sup> century. Having the phenological dates of spring arrival of 100 species in the 20<sup>th</sup> century we have a good data base to study trends in spring arrival. We found different trends for various species. Some species, on average, started to arrive earlier (e. g. Starling (*Sturnus vulgaris*))

), others later (e. g. House Martin (*Delichon urbica*)). A separate group of species did not change the timing of their spring arrival (e. g. White Stork (*Ciconia ciconia*)). Accordingly, global climate changes trigger different impacts on different migratory species in the Kiev region.

## Monitoring of geese spring migration stopovers and forecasting of the bird numbers

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The farmland in the outskirts of Olonets city (Karelia, 60°58'N, 32°58'E) represents one of the largest stopover sites for geese during spring migration in Russia. The three main factors relevant to guarantee the stability and quality of this migration stopover are 1) a hunting ban at the protected area of 5 000 ha, 2) good foraging conditions and 3) safe night rest sites in the surrounding swamps and Lake Ladoga. The total annual number of geese using the territory varies from 100 000 to 150 000 birds. During the period 1997-2014 and on average for about 3 weeks daily numbers of more than 10 000 geese were registered in the field. On some days up to 20 - 33 000 individuals were counted. The White-fronted Goose (*Anser albifrons*) is the most numerous species (about 75% of birds), approximately 15% of geese are Bean Geese (*A. fabalis*) and 10% represent Barnacle Geese (*Branta leucopsis*). Trends in bird num-

bers depend on the spring weather, grass quality and human disturbance. The relations between geese numbers and the registered parameters can be described using simple functions, for instance linear regression models. Besides the geese migration follows the 'green wave', the appearance of the first shoots of grass with high nutritional value (Drent et al. 1978; Graaf et al. 2006). Therefore, indicators describing the local weather and phenology can be the basis for predicting the dynamics of bird numbers at each stopover. It should be noted that the human disturbance factor, e. g. poaching and spring burning of last year's grass by farmers, have a negative influence on the accuracy of predicted geese numbers. However, such activities represent violations of law and we try our best to keep the Olonets spring stopover site undisturbed.

## Numbers and distribution of wintering waterbirds in Krasnodar province, Southwestern Russia

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With extensive Sea of Azov and Black Sea coasts and inland waterbodies, the Krasnodar Province provides important winter quarters for waterbirds, especially in mild winters. The International Waterbird Census (IWC) was established in the region in 2003 and has been annually conducted since then except for 2007-2009. The coverage varied, depending mostly on the respective wetlands conditions (frozen or not). Altogether, 37 sites were counted at least once between 2003-2016, with high coverage (27 sites) in 2004. The total numbers of waterbirds varied from 145,614 in 2003 to 1,112,213 in 2013. Among individual sites, the highest number of waterbirds (353,982) was recorded in Taman Bay in 2013. Altogether, 74 species of waterbirds, 8 species of wetland-dependent raptors and one marine bird species were identified. Most numerous species were Mallard (highest total was 396,920 in

2013), Common Black-headed Gull (243,615 in 2013), Coot (147,390 in 2011), Tufted Duck (137,839 in 2014) and Common Pochard (106,069 in 2013). Mallard, Common Black-headed Gull, Tufted Duck and Common Pochard demonstrated strong or moderate increase over the period 2013-2016, while Coot showed a moderate decrease. The White-tailed Eagle (highest total was 252 in 2006) was the most abundant species among birds of prey. Four globally threatened waterbird species were found: Dalmatian Pelican (2003-2016), Lesser White-fronted Goose (in 2013), Red-breasted Goose (in 2006 and 2016) and White-headed Duck (in 2011, 2013 and 2014). Along with mild weather, low disturbance in January is a critical factor for waterbirds to stay in Krasnodar Province. However, infrastructure development and housing at the sea shores causes a degradation of some important wetland habitats.

## Bird migration over Calais, Northern France, during autumn 2014: A new approach in analysing radar data

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For environmental impact assessments, investigations on bird migration with remote sensing technologies as radar are meanwhile widespread. Most systems do only poorly allow assigning radar echoes as birds or other flying animals. Trajectories of moving items especially during the night are often registered without any classification of these echoes. This is due to missing details of bird specific parameters such as wingbeat frequency.

With a new developed software tool we first analysed a high proportion of the recorded echoes by its fluctuations in echo strength. The output of the analysed data concludes the wingbeat frequency, the length of the beating phase and pause, which is typical for most passerines. In the case of waterbirds/waders no

data for beating and pausing phases is recorded during migratory flight (Bruderer et.al. 2010). With this wingbeat frequency we get a hint on the size of the birds. Passerines can be separated into several groups e.g. large thrushes with a lower frequency of 9-11Hz and the smallest passerines (e.g. Goldcrest) with higher frequencies of more than 22 Hz.

Based on the ability to differentiated several bird groups we present the general temporal and spatial distribution of migrating birds over Calais in Northern France (Tardinghen 50,87°N/1.62°E; 0 m asl) in autumn 2014 (30.09.2014 to 25.11.2014) in relation to weather conditions.

## Wintering waterfowl in Latvia 1991–2016

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Wetlands International mid-winter waterfowl counts have been performed at various coastal sites striving for 100 % coverage of the 500km Latvian coastline as well as at about 100 inland sites.

About 40 waterfowl species have been registered during these counts, 12 being regular and abundant enough to calculate indices. Indices were calculated, using BirdSTATs (<http://www.ebcc.info/trim.html>). For the time period 1991-2016 Cormorant (*Phalacrocorax*

*carbo*), Goldeneye (*Bucephala clangula*), Goosander (*Mergus merganser*) and Smew (*Mergellus albellus*) show a moderate increase, Mallard (*Anas platyrhynchos*), Mute Swan (*Cygnus olor*) and Whooper Swan (*Cygnus cygnus*) have been stable and changes in Great Crested Grebe (*Podiceps cristatus*), Red-breasted Merganser (*Mergus serrator*), scoters (*Melanitta spp.*) and divers (*Gavia spp.*) remain unclear. No wintering species shows a statistically significant decrease.

## Training of young White Storks

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Using GPS position and velocity data from a group of 31 young white storks, we studied the behavior of these birds during the post-fledging period to the first days of migration. The birds of our study originate from North-West-Germany, from places close to Loburg (52.12°N 12.07°E). Though all birds performed some kind of training, training patterns were very individual and differed very much in the number and frequency of

training days. We study the effect of the birds' body mass, meteorological conditions and social factors on training behavior and the start of migration. Presenting a number of particular cases, we show that birds use environmental and social cues when necessary. In addition, we study the extent to which juveniles explore their environment prior to migration.

## Standardised breeding bird survey in Bulgaria contributing to the European Breeding Bird Atlas

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The poster presents results from a standardised breeding bird survey carried out in Bulgaria in order to inform the European Breeding Bird Atlas. The objective was to provide species lists collected during fixed time for a sample of 10 x 10 squares in order to ensure data for fine grid modelling of the probability of occurrence of a species in Europe and collect additional information for species distribution in Bulgaria. The methodology includes counting in each of the 50x50 UTM squares within Bulgaria. Their number is 63. Five 10 x 10 km squares were randomly selected in every 50 x 50 UTM

square. Surveys were carried out in at least two of those 10 x 10 km squares. Timed walking routes surveys were carried out for 120 min in every square trying to cover as many habitats as possible within the square. This time does not include the time needed to move between different routes if they were scattered. Field data were collected using the electronic application SmartBirds Pro developed by BSPB/BirdLife. GPS coordinates and probability for breeding was recorded for every single observation.

## Strong decline of the long distance migrant Sand Martin in Hungary, importance of the population recruitments to study the impact of climate change

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The long distance migrant species show large declines in Hungary, 53 % of the 30 common long distance migratory bird species with known population trends significantly declined between 1999 and 2015. Since 1986, our research group has continuously monitored the Sand Martin (*Riparia riparia*) population along the nearly 600 km long Tisza river in eastern Hungary, one of the largest natural breeding populations in Europe. Our long-term studies on this population demonstrate a strong decline over the last 15 years: the population in 2015 was less than 10 % of its surveyed size in 1990, based on annual census (i. e., from ca. 30,000 to ca. 3,000 individuals). The population from the middle and southern part of the river nearly disappeared and the dominant part of the remaining population breed in the upper section of the river in large colonies. Modelling survival of breeding adults based on regular and intense ringing (140 000 individuals) at colonies along the

upper section of the river since 1986, shows that adult survival rates vary among years and drought conditions in the Sahel can cause large annual decreases. However there is no significant declining trend in the survival rate of adults over the last 30 years. The breeding success (measured by the number of fledged nestlings) varies over the years, but there is no significant declining trend over the last 20 years according to weekly endoscope surveys of 26 400 nests since 1995 at 432 randomly selected sections of 175 colonies. Our detailed study of this large population shows, that recruitment, mainly based on conditions and survival of the fledged nestlings, could play a crucial role in explaining the marked decline. The influence of climate and habitat changes in the breeding, migration and wintering areas both act seasonally and trans-seasonally. These aspects need to be considered for the identification of factors behind the observed decline.

## Breeding population fluctuations of Crab Plover on the islands of Dayyer-Nakhilu National Park, Persian Gulf, Iran

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The breeding population fluctuations of Crab Plover (*Dromas ardeola*) on the Omol-Karam and Nakhilu Islands in the Dayyer-Nakhilu National Park were investigated from 2004 to 2015. Active nests were counted during late incubation and before the hatching phase. The results revealed that a mean population of  $2422 \pm 327$  pairs of Crab Plover annually bred on these islands. The biggest number was found in 2007 with 3241 nests, while the smallest number was recorded in 2010 with 1391 nests. This study showed that Nakhilu and Omol-Karam Islands represent important breeding habitats for Crab Plover in the Persian Gulf region as they provide suitable and protected breeding sites for about 8% of the world population of Crab Plover.

Natural events or human activities or both affect the breeding sites. This can cause the breeding population to change the breeding habitat and shift to other islands. For the long term protection, it is necessary to prevent all kinds of disturbance on the nesting islands, particularly egg-collecting and uncontrolled visits by fishermen and eco-tourists. As an urgent measure, it would be necessary and helpful to prepare a series of guidelines to control visits of the islands and keep visitors away from the Crab Plover colonies to avoid the destruction of burrows. The development of awareness programs for visitors, local people and fishermen would certainly benefit the breeding birds on both Islands.

## Chick growth patterns of three sympatric tern species on the Persian Gulf islands

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This study compares the chick growth rates of the Bridled Tern (*Sterna anaethetus*), Lesser Crested Tern (*Sterna bengalensis*) and Greater Crested Tern (*Sterna bergii*) as the three most abundant sympatric seabird species on Nakhilu island, Persian Gulf, Iran, to determine different effects of the prolonged growth period of Bridled Tern (8 weeks) against the rapid growth period of Lesser and Greater Crested Terns (6 weeks). In 2010 and 2011, data collection took place during the chick rearing stage of each species on Nakhilu Island. Chicks and adults were captured, weighed and their wing, tail, tarsus and head to bill length were measured in one-week intervals. The results showed that the body weight of chicks of all three tern species increased from hatching to the 5<sup>th</sup> week ( $p < 0.01$ ). The most rapid period of

weight gain occurred during the first and second week after hatching. The average ratio of the fledging weight to the adult weight was calculated 1.01 for Bridled Tern while it was 0.85 and 0.96 for Lesser Crested Tern and Greater Crested Tern respectively. When fledging, the wing and tail lengths of Bridled Tern chicks was up to 70%, and bill length up to 80%, of the measurements of adult birds. This was not the case for Greater and Lesser Crested Terns. The study result supports the hypothesis that the growth rate represents an optimum balance between the low energy requirements and short development time. This hypothesis would predict that variation in the growth rate between species should be related to the rate of predation and patterns of energy consumption.

## Bird dynamics during the wintering time in two wetlands of the Prut river basin (Romania and Moldova)

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Our study was done during the period 2012 – 2015, using the fixed point census method in two IBAs of the Prut River basin: Jijia and Miletin Ponds (Romania) located in the central river basin and Manta – Belevu Lakes (Moldova) in the lower river basin. We recorded 75 bird species at the Romanian survey site and 83 species at the Moldovan survey site. During the entire wintering period and in both IBAs, we focused our attention on the presence of wintering waterfowls and raptors. We recorded 14 species at the Miletin - Jijia ponds, while 47 were present at the Manta – Belevu Lakes. From these, 13 bird species are regarded as “late” migrants in these areas, being present just from November. Three of the recorded wintering bird species are globally threat-

ened: White-tailed Eagle (*Haliaeetus albicilla*) (resident), while Pygmy Cormorant (*Microcarbo pygmeus*) and Red-breasted Goose (*Branta ruficollis*) appear only on passage, especially until December.

Big differences in bird diversity recorded in the investigated IBAs are a result of their geographic position. The Manta – Belevu Lakes are situated close to the Danube Delta, representing a bottle-neck that concentrates big flocks of waders and waterfowls. The area offers suitable feeding resources and resting habitats for the wintering birds.

24 bird species appear in the Annexe 1 of EU Birds' Directive and 10 of them are included in the Red Books of Romania and Moldova.

## Impact of land use change on farmland bird species in Latvia 1980 – 2015

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Latvia has experienced dramatic land use changes since the 1980s, when it was occupied by the Soviet Union, up to 2015, when the country is member of the European Union. This includes periods of relatively intensive land use during the 1980s and after accession to the EU in 2004, and periods with massive abandonment of agricultural lands during the mid and late 1990s. These changes have had impact on typical farmland bird species as well. We used breeding bird atlas data of three periods – 1980-1984; 1985-1989; 2000-2004 and partly also 2013-2016 to look for changes in distribution of Common Bussard (*Buteo buteo*), Yellow Wagtail

(*Motacilla flava*), Red-backed Shrike (*Lanius collurio*), Marsh Warbler (*Acrocephalus palustris*), Barred Warbler (*Sylvia nisoria*), Common Rosefinch (*Carpodacus erythrinus*) and other species. We also used point count data in 6 sample plots of 40 points in Latvia counted in 1995-2006 and in 2014-2015 to look for abundance changes. For most species we found an increase during the 1990s with small to moderate decrease occurring after 2004. One exception is the Red-backed Shrike being common not only in agricultural lands, but also in forests clear-cuts.

## The IBA Caretaker Project of DOF/BirdLife Denmark 2003-13

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The IBA Caretaker Project was launched in 2003 as an opportunity for BirdLife Denmark to continue and improve its monitoring efforts and communication about the 200 most significant Danish bird sites. These are primarily the IBAs (Important Bird Areas), now 130 in total, but also a number of nationally important bird sites.

IBAs are sites that are regularly used by more than 1 % of the flyway population of a species or are judged by other criteria to be of international importance to one or more species of breeding, staging or migrating birds. The identification of IBAs is based on the presence of a) a bird species threatened with extinction or with a highly limited distribution, b) a bird fauna that is characteristic for a biome, and/or c) an exceptionally high number of congregatory bird species.

The final project report presents an overview of DOF's 2003 -13 IBA Caretaker Project that involved 901 volunteers and 171 bird sites, notably the 130 IBAs. Furthermore, the report reviews several previous studies of the most important bird sites. The analysis of the IBAs is based on bird data from the online DOF database ('DOFbasen') and a variety of other sources, and thus each of the 171 sites has been assigned one of three threat levels (very serious, serious or less serious) and one of four protection levels (good, medium, low or none).

Hence, the main conclusions of the report show half of both staging and breeding bird sites to be in an unsatisfactory condition. Generally, conditions are mainly satisfactory in forests, largely unsatisfactory in open country, especially at the coasts, while numbers of satisfactory and unsatisfactory sites are equal in freshwater areas.

The most serious threat to the majority of the sites is disturbance, as this threat is assessed as (very) serious at 50-60 % of all sites. When the slightly less serious threats are included, vegetation overgrowth joins the list.

The average protection of farmland and marine sites is significantly lower than that of other types of IBAs, which is related to farmland and marine sites in particular not being designated as EU Special Protection Areas (SPAs).

The condition of IBAs for each species group indicates that 55-60 % of staging and breeding birds only are in a satisfactory state on at least half of the sites. Hence, findings suggest an urgent need for improvement of areas in open land and on the coast where the condition of the internationally important bird reserves are mostly unsatisfactory.

## Exotic parakeet population monitoring in Belgium in 2015-2016

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Ring-Necked Parakeet (*Psittacula krameri*) has developed a feral population in Brussels in the 1970s. From the beginning, this population is monitored by coordinated roost counts and, since 1992, the species is included in the Common Bird Monitoring scheme of Brussels Region. With the sharp increase of the population and appearance of new settlements in Belgium, it became necessary to organize a first national count at roost sites in 2015. Together with the Common Bird Monitoring, results indicate a stabilization of the species in Brussels, suggesting a saturation of habitat carrying-capacity in the city. The national population size was assessed but could be underestimated because some roost sites might be overlooked. Moreover, a small population of Alexandrine Parakeet (*Psittacula eupatria*) recently settled. This species breeds in mixed colonies with

Ring-necked Parakeet making it difficult to monitor the species. Accordingly the population estimate for this species represents a rough estimate.

In 2016 a census of Monk Parakeet (*Myiopsitta monachus*), the third feral parakeet species breeding in Belgium, was carried out in Brussels supporting the sole population in Belgium. The species started to breed in Brussels in the 1970s and is characterized by building several nests within communal nest structures (sometimes sized several meters). Several of those massive communal nests form colonies used for breeding and as roosts throughout the year. The methodology is based on counting birds entering the nests at dusk outside the breeding season. Distribution and population estimate were obtained.

## Developing national bird population monitoring schemes to create indicators of environmental change in Africa

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Here we present details of the establishment and ongoing development of Common Bird Monitoring (CBM) schemes in three African countries: Botswana, Kenya and Uganda. Schemes were established in Botswana and Uganda in 2009, and in Kenya in 2011, based on the approaches used to establish new schemes in Europe, with the aim of monitoring the trends in widespread and common birds. There have been a number of challenges, including training and keeping volunteer surveyors and securing funding for long-term monitoring schemes in Africa. Over 350 people have participated in

the scheme in Botswana, with over 450 2 km transects covered at least once. Already over 750 species have been recorded during monitoring in Uganda, from ca. 120 2 km transects. So far, population trends for the most widespread species in Botswana and Uganda have been produced, using TRIM. For Botswana and Uganda, multi-species indicators have been produced by broad scale habitat, to compare trends inside and outside protected areas, and to compare trends between African residents and West Palearctic migrants.

## Seasonal trends of waterbirds at Livadi Marsh, Cephalonia Island, Greece

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The waterbird assemblage of a small shallow coastal wetland, the Livadi marsh, Cephalonia Island, Greece, was studied from June 2014 to May 2015. Monthly counts revealed distinctive seasonal patterns of occurrence and abundance. A total of 16 species of waterbirds were recorded inside the marsh. The highest total numbers of individuals were observed in winter. The monthly number of species varied from 5 in July to 10 in April. The Little Egret (*Egretta garzetta*), Grey Heron (*Ardea cinerea*), Little Grebe (*Tachybaptus ruficollis*), Common Moorhen (*Gallinula chloropus*), Mallard (*Anas platyrhynchos*) and Eurasian Coot (*Fulica atra*) were regularly observed in most of the months, whilst the Great Egret (*Casmerodius albus*), Eurasian Teal (*Anas crecca*), Black-winged Stilt (*Himantopus himantopus*), Purple Heron (*Ardea purpurea*), Squacco Heron (*Ardeola ral-*

*lides*), Northern Shoveler (*Anas clypeata*), Common Kingfisher (*Alcedo atthis*) and Glossy Ibis (*Plegadis falcinellus*) were recorded occasionally. The Squacco Heron, Great Egret, Little Egret, Glossy Ibis, Purple Heron, Common Kingfisher and Black-winged Stilt are included in Annex I of Birds Directive 2009/147/EC. The Livadi marsh hosts a diverse waterbird assemblage and its value lies more in its use as a feeding, roosting and staging site for wintering and migrating waterbirds. The marsh is currently threatened by overexploitation, illegal hunting, grazing and other human activities (quarries) and conservation efforts should focus therefore on its protection and improvement through the designation of the area as wetland protection site with appropriate habitat management interventions.

## Avifauna of the Tver region (Russia): Its past and present

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Aside of scarce reports on birds of the Tver Region in medieval and 18<sup>th</sup> century sources, the real monitoring of the regional fauna has started in the second half of the 19<sup>th</sup> century. Since the first relatively long list of birds, which contained 154 avian species, was published by A. Dyakov in 1878, the number of birds recorded in the Tver Region has increased to 275 species. Although not all of them are nesting or have nested in the region, bird populations and their distribution dynamics show certain trends during the last one and a half centuries. The beginning of 20<sup>th</sup> century in the Tver Region was marked by the presence of a number of avian species typical for the more southern forest-steppe regions. European Roller and Eurasian Scops Owl, as well as European Bee-eater have never been recorded nesting in those numbers again. Also White Stork started to nest in the region in 1930s and since

then has expanded its nesting range over the entire region; today the White Stork breeding population is estimated to comprise 200-230 pairs. Moreover, two dove species demonstrate an interesting case. Eurasian Collared Dove populated the Tver Region in the 1970s and reached a population peak in the 1980s, when the region harbored about 100 nesting pairs. Than the number of doves abruptly declined during the early 1990s and today the species has completely disappeared from the region. European Turtle Dove demonstrates a similar case. Being numerous by the end of the 1980s it has now almost disappeared from the Tver Region. These and other results of the long-term monitoring of birds in the Tver Region show that population and distribution dynamics not only related to climate changes, but also to the type and intensity of human activities.

## Workshops

As indicated in the programme two workshops take place during the conference week. The workshops led by Leo Soldaat (Tuesday evening) and Verena Keller (Wednesday evening) are both open to the entire conference audience. Moreover, interested conference participants are welcome to join the post-conference workshop led by Szabolcs Nagy (Saturday morning).

Tuesday 6<sup>th</sup> September 2016 - 20:00 - lecture hall ground floor

### **Methodology workshop: A practical method to test for trends in multi-species indicators**

Leo Soldaat

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The applicability of biodiversity indicators strongly increases if accompanied by proper measures of uncertainty. Confidence intervals for the trends in an indicator enable trend testing and classification and statistical comparison with other indicators. However, in multi-species indicators like the European Wild Bird Indicators, the inclusion of the sampling error of species indices has shown to be hard to realize. Missing values and time series of different lengths disable the use of analytical approaches, whereas bootstrapping across sites requires the raw abundance data on the site level, which may not always be available. We developed a practical and conceptually elegant method to account

for sampling error in the calculation of multi-species indicators based on Monte Carlo simulation of annual species indices. The construction of confidence intervals is elaborated to allow various trend assessments, like testing for linear or smooth trends, testing for changes between two time points, testing the significance of a supposed change-point and testing for differences between two multi-species indicators. In the workshop the method will be explained and demonstrated. A R-script with the Monte-Carlo method can be obtained during the workshop and participants equipped with a laptop with R installed will be assisted in applying the method on test databases.

Wednesday 7<sup>th</sup> September 2016 - 20:00 - lecture hall ground floor

## EBBA2 workshop: Run-up to the last field season and data provision

Verena Keller<sup>1,2</sup>, Marti Franch<sup>1,3</sup>, Sergi Herrando<sup>1,3</sup>, Marina Kipson<sup>1,4</sup>, Petr Voříšek<sup>1,4</sup>

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<sup>4</sup> Czech Society for Ornithology, Czech Republic

Across Europe, data collection for the European Breeding Bird Atlas EBBA2 is advancing rapidly. There are regions, however, where gaps remain, which should be covered as well as possible in 2017. A big effort by the ornithological community is needed to support national coordinators in several countries. The workshop will present the current situation and discuss the possibilities.

In addition to data collected at the level of the 50x50 km grid, which will allow comparison with the first atlas, “timed visits” provide standardised data that will allow modelling the probability of occurrence at

a smaller resolution. In 2015, a pilot data provision was launched. National coordinators from almost all European countries provided nearly 100 000 species lists from timed surveys carried out during atlas or breeding bird monitoring projects. These data are a basis to explore the modelling possibilities. The pilot data provision also allowed to test data transmission and data quality. After two provisions of preliminary data at the level of 50x50 km grid (the last one ongoing) and one for “timed visits”, the real data provision for EBBA2 is approaching and their characteristics and timings will be discussed at the workshop.

Saturday 10<sup>th</sup> September 2016 - 9:00 - Halle University, Zoology building, Domplatz 4

## Post-conference workshop: Waterbird Monitoring Partnership meeting

Szabolcs Nagy, Tom Langendoen

Wetlands International, [Szabolcs.Nagy@wetlands.org](mailto:Szabolcs.Nagy@wetlands.org)

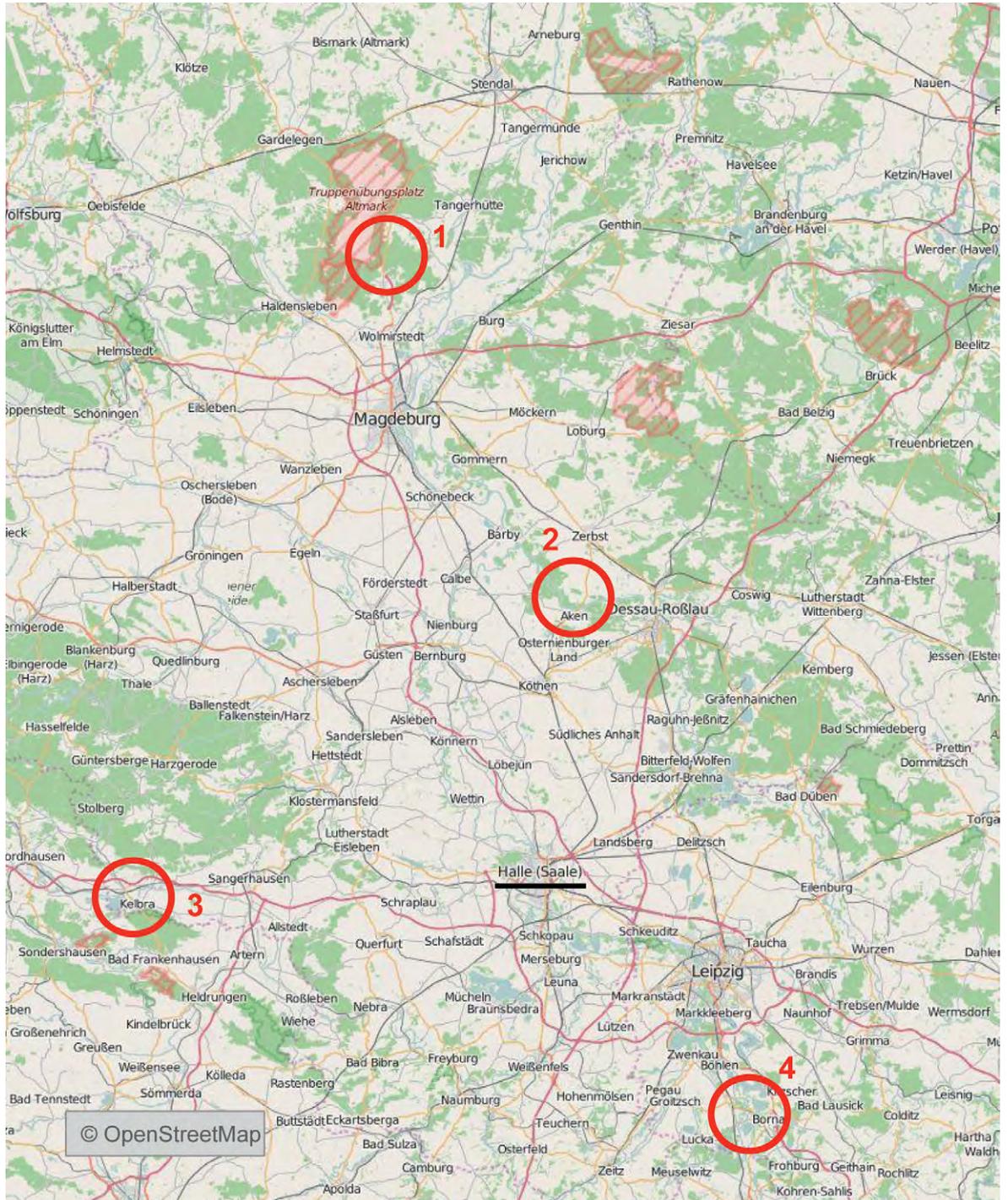
The African-Eurasian Waterbird Monitoring Partnership has evolved from the International Waterbird Census (IWC) and aims to produce reliable and policy-relevant data and analyses to support the management of waterbird populations across the African-Eurasian flyway and especially important for the implementation of the EU Birds Directive, the Ramsar Convention on Wetlands and the Africa-Eurasian Waterbird Agreement. The Partnership includes the national IWC schemes and the relevant Species Specialist Groups of Wetlands International and the IUCN Species Survival Commission. The Partnership Meeting provides a face-to-face opportunity for national IWC coordinators

and others to discuss governance and specific technical issues.

At this meeting, we will deal with the following issues: (1) Waterbird Monitoring in Europe, North Africa and West Asia: achievements and challenges, (2) Capacity development around the Mediterranean: the North African Waterbird Project and the Adriatic Flyway projects, (3) Election of the representative of the national coordinators, (4) Revision of data use agreement and (5) Round-table discussions on (a) Monitoring of large sites consistently, (b) Working with historical data, (c) Network development, (d) Integration of IWC with IBA monitoring.

## Mid-conference Excursions

- 1 Colbitz-Letzlinger Heathland and Treuel
- 2 Mittlere Elbe
- 3 Stausee Kelbra and Bauerngraben
- 4 Neues Leipziger Seenland



## Excursion 1: Colbitz-Letzlinger Heathland and Treuel

The Colbitz-Letzlinger Heathland is the largest contiguous heathland in Saxony-Anhalt. Major parts of the heathland area belong to the military training ground "Altmark".

Since the mid-1930s the central part of the Colbitz-Letzlinger Heathland is used as military training ground leading to the development of an extensive and unfragmented heathland today providing suitable habitat for typical heathland species such as Nightjar, Hoopoe, Great Grey Shrike, Woodlark, Red-backed Shrike, Barred Warbler and Tawny Pipit. The area characterized by open landscape habitats covers between 100 and 120 km<sup>2</sup>. Next to the extensive heathland areas very old deciduous woodland can be found especially in the southern part. Black Woodpecker, Grey-headed Woodpecker and Middle-spotted Woodpecker as well as a tree-breeding population of Swifts characterize these woodlands. In contrast the woodlands in the northern part of the area are characterized by pine and birch. Occasionally the Tengmalm's Owl calls from old pine stands. The forested area of the military training ground comprises about 100 km<sup>2</sup>. As the Colbitz-Letzlinger Heathland supports populations of regional and sometimes national importance for many species listed above, the area has been designated as EU Special Protection Area (SPA) „Colbitz-Letzlinger Heide“.

In addition to species-specific surveys carried out during single years, several monitoring plots contributing to the national monitoring of common breeding birds, coordinated by the Federation of German Avifaunists, are surveyed annually since 2005. Moreover, a

project focusing on the implementation of conservation measures to support the local Hoopoe population is in place since 2007.

Colbitz-Letzlinger Heathland and the adjacent Colbitzer Lindenwald are also designated as Special Area of Conservation (SAC) under the Habitats Directive. Besides various further animal species about 2,000 species of insects have been recorded. For example important populations of xylobiont beetles such as Great Capricorn Beetle, Hermit Beetle and Stag Beetle can be found. Looking at typical open landscape insects the occurrence of the ground beetle species *Calosoma reticulatum* (Genetzter Puppenräuber) and the cricket species *Gampsocleis glabra* (Heideschrecke) have to be emphasized. In Germany both species occur only at two further sites outside Colbitz-Letzlinger Heathland respectively.

The gravel pit at the "Alte Elbe Treuel" is one of the biggest extraction sites along the Elbe river. An oxbow lake cut off from the Elbe river supports Black Tern (on artificial nesting platforms), Bluethroat, Great Reed Warbler and Savi's Warbler as regularly occurring breeding bird species. The gravel pit itself hosts a big Black-headed Gull colony with up to 1,000 breeding pairs and in recent years up to 5 pairs of Mediterranean Gull nested within the colony. Moreover, the gravel pit supports 40 pairs of Common Tern, Shelduck, Oystercatcher and Little Ringed Plover. During migration time various species of ducks and waders regularly frequent the site.

**Organised by Karin Hahn-Becker, Hanspeter Mußler, Björn Schäfer, Joël Schrumpf, Wolfgang Rost, Emanuel Walter & Lothar Schmid**

**Supported by Bundesamt für Infrastruktur, Umweltschutz und Dienstleistungen der Bundeswehr, GS II 4 & Bundesanstalt für Immobilienaufgaben/Bundesforstbetrieb Nördliches Sachsen-Anhalt**

## Excursion 2: Mittlere Elbe

The Elbe river runs through the federal state of Saxony-Anhalt on a length of 302 km. Despite numerous adjustments in the last centuries and decades, the Middle Elbe remains one of the most close-to-nature river sections of the 1,094 km course of the Elbe.

The full length of the river course in Saxony-Anhalt including its neighbouring wetlands is under protection of several European environmental protection legislations (SPA and SAC status). Four SPAs secure ornithological hotspots, which are of tremendous importance for breeding and wintering bird species alike. The Biosphere Reserve Middle Elbe continues in the neighbouring Elbe regions.

Within the Biosphere Reserve Middle Elbe, 310 bird species have been recorded. The excursion will mainly lead into the central region of the reserve, i. e. the SPA "Middle Elbe" including the "Steckby-Lödderitz" forest. This hardwood forest provides protection for high densities of Middle-spotted Woodpecker (500-550 territories) as well as Black and Red Kite. Osprey and White-tailed Eagle are further frequent breeding birds in this area. Other character species are, amongst others, River Warbler, Red-backed Shrike and Barred Warbler. In annually strongly fluctuating numbers, Corncrake and Spotted Crake occur in the meadows.

White Stork is a character species in the Elbe wetlands. With more than 120 pairs, close to 20% of the

state-wide counted storks occur in the Biosphere Reserve.

In the winter half year, large congregations of Whooper Swans (> 1,000 individuals), Tundra Swans (> 200 individuals) and Nordic geese dominate along the river course, oxbow lakes and neighbouring meadows and agricultural areas. Moreover, waders and several species of ducks frequent the area in large numbers when staging during migration.

Centered in the region one finds the statutory bird conservation agency of Saxony-Anhalt. During the excursion participants have the opportunity to learn about the work of the agency, especially their bird monitoring efforts. In the 1970s, the agency started captive breeding and reintroduction of Great Bustards into the wild. The Great Bustard population of the adjacent SPA "Zerbster Land" has vanished during the early 1990s even though the SPA offers suitable habitats. Thus, provided the right methods are taken to lessen intensive land use, a reintroduction of Great Bustards to this area seems possible.

In recent years, several large nature conservation projects were completed in the reserve, mainly focusing on the restoration of a close-to-nature water cycle. During the excursion we will visit a back water reconnected to the river at "Alte Elbe Klieken" as well as the largest dike relocation project in Germany currently implemented close to Lödderitz.

**Organised by Stefan Fischer, Gunthard Dornbusch & Annett Schumacher**

**Supported by Landesamt für Umweltschutz Sachsen-Anhalt/Staatliche Vogelschutzwarte Steckby & Biosphärenreservat Flußlandschaft Elbe**

## Excursion 3: Helmestausee and Bauerngraben

Between Harz Mountains and Kyffhäuser Mountains one finds the Helme lowlands. Due to the run-of from these mountains, the area had always been highly flood-prone. To protect the area, in 1968/69 the water reservoir “Helmestausee” in Kelbra was put into operation. The waterbody together with its surrounding meadows and the southern Karst landscape (xenic and nutrient-poor grasslands) provide important breeding and staging areas for numerous bird species. Significant numbers of Black-necked Grebe, Little Ringed Plover, Snipe, Wheatear, Whinchat, Corncrake and Spotted Crake represent examples of the breeding bird community. The area is also important for migrating birds. Most impressive are up to 40,000 Cranes. Noteworthy staging numbers are also reached by Bean Goose, Great White Egret, Dunlin, Black Tern, Lapwing, Water Pipit and Aquatic Warbler. Besides being important for flood protection and as a recreation area, the catchment lake is listed as SPA in both federal states, Saxony-Anhalt and Thuringia. Right after the first damming, the area developed into an Eldorado for birdwatchers and bird ringers.

Since the early 70s systematic bird ringing is carried out during autumn migration. Bird-catching facilities are built around the nature conservation station “Numburg” and used for ringing and observations. The

excursion offers a tour along the bird-catching facilities, demonstration of characteristic species in hand and explanations concerning the ringing procedures and, of course, offers you opportunities to go birdwatching at the lake yourselves.

The excursion will end with a walk to the “Episodischen See – Bauerngraben”. While there will not be many ornithological highlights you will see karst-like landscapes and subnatural beech-rich Wood Bedstraw/Sessile Oak/Hornbeam forests at a confined space. The feeder river “Glasebach” creates the so-called “Episodische See – Bauerngraben”. While the feeder river is easily seen, the outflow is not visible as it is below the water surface. Due to the steady but slow outflow and the fluctuating inflow of water, the lake has a very unique dynamic that changes its appearance constantly up to complete disappearance. Thus, depending on the water level, the lake provides habitats for species such as Tufted Duck or Little Ringed Plover. The forest dominated environment supports Wildcat, Garden Dormouse, Midwife Toad and numerous bat species. The area is listed as a Nature Reserve, part of the SAC “Buntsandstein- und Gipskarstlandschaft bei Questenberg im Südharz” and also part of the Biosphere Reserve “Karstlandschaft Südharz”. The excursion will be led by a knowledgeable employee of the Biosphere Reserve.

**Organised by Mark Schönbrodt, Patrick Herzog & Armin Hoch**

**Supported by Ornithologen-Gesellschaft Sachsen-Anhalt & Biosphärenreservat Karstlandschaft Südharz**

## Excursion 4: Neues Leipziger Seenland

For decades large open-pit brown coal mining sites shaped the region surrounding the city of Leipzig located in the federal state of Saxony. The relevance of fossil energy constantly decreased in recent years initiating a step-wise closure of huge open-pit mining areas south of Leipzig. In frame of the recultivation and restoration of these former brown coal mining sites numerous new water bodies developed and are still developing today, mainly used for touristic purposes and for flood prevention in the Leipzig region.

Already during operation of the mining sites, as well as during the later recultivation phases, the often inaccessible mining sites were refuges for numerous threatened breeding bird species. Especially open and dry landscape specialists found ideal conditions in the post-mining landscapes. Species such as Whinchat, Stonechat, Corn Bunting and Wheatear that nearly disappeared as breeding birds of the agricultural landscape of Saxony, today have their strongholds in post-mining landscapes. Tawny Pipit even exclusively occurs in these landscapes. Crane, Barred Warbler, Wryneck, Bee-eater and Bluethroat show unusually high densities in post-mining landscapes. Several species not occurring in Saxony for decades or only sporadically nesting with few breeding pairs, such as Red-necked Grebe, Mediterranean Gull, Common Gull and Common Tern, found new habitats in the post-mining landscapes. As new

breeding species Caspian Gull, Yellow-legged Gull, Lesser Black-backed Gull and Great Black-backed Gull as well as Oystercatcher and Shelduck have been recorded.

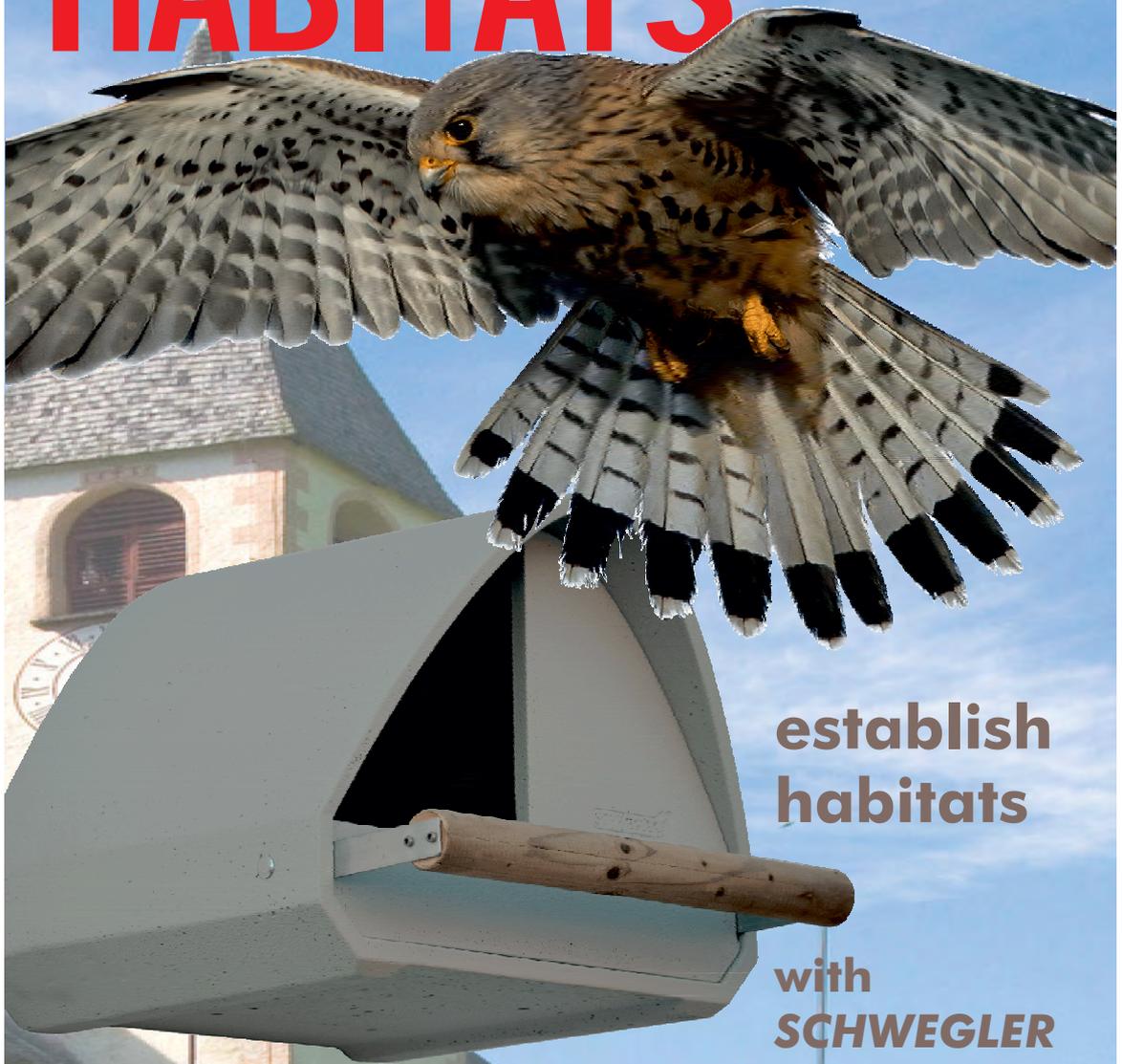
During the migration period sometimes unusually high numbers of divers, Nordic geese and waders use undisturbed areas of these newly formed landscapes as staging sites. Already several times aestivations of Slavonian Grebe, Black-throated Diver and Red-throated Diver have been recorded on the bigger waterbodies which can measure up to nearly 1,000 hectares. Also wintering of Great Northern Diver and White-billed Diver has been recorded.

The first stop of our excursion will be one of the recultivated open-pit mining sites south of Leipzig comprising the huge artificial waterbody "Zwenkauer See" (960 ha). Subsequently we have the opportunity to visit the active open-pit mining site "Schleenhain". The large settling pits of the site which are overgrown with reed and have a semi-natural character represent outstanding breeding and staging habitats. The former mine operator used this semi-natural area for publicity and twice a year allowed interested ornithologists and conservationists to visit this area inside the operational mine. Finally, excursion participants will have the opportunity to witness brown coal mining works using huge mining technology at the brown coal power plant "Lippendorf".

**Organised by Hartmut Meyer, Harald Krug, Andre Müller & David Conlin**

**Supported by Verein Sächsischer Ornithologen & Ökologische Station Borna-Birkenhain**

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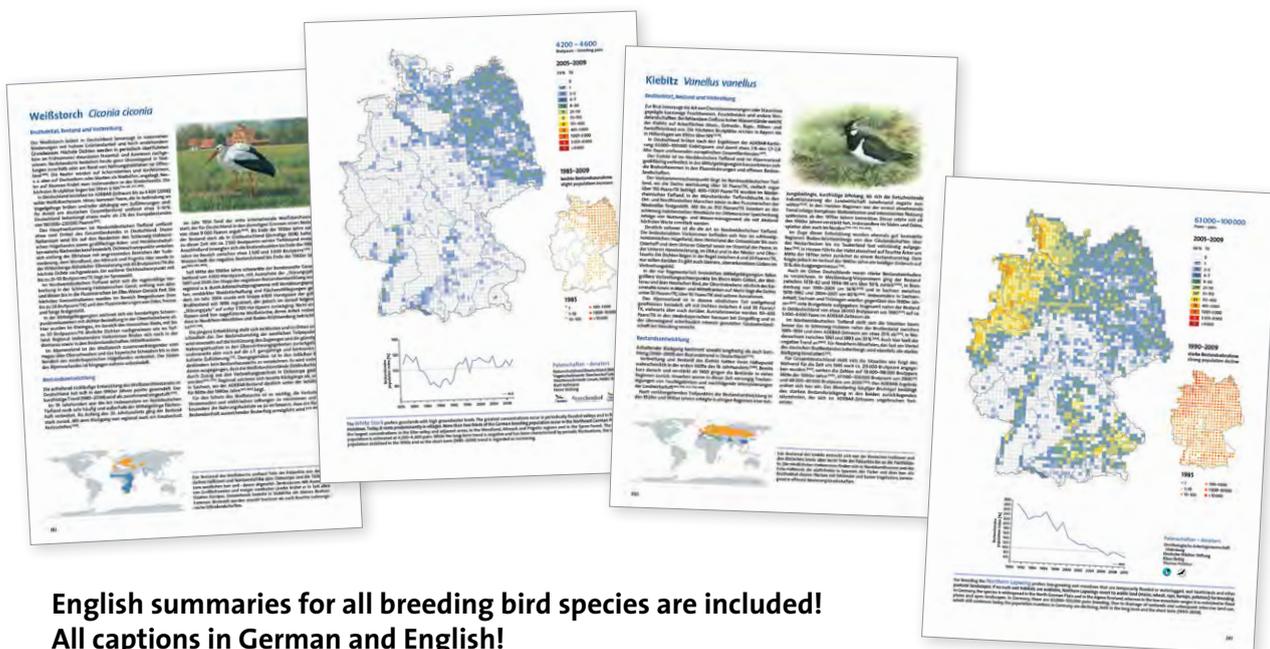
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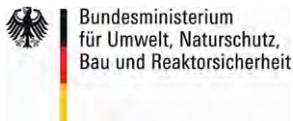
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