

# The second Latvian Breeding Bird Atlas 2000–2004: preliminary results

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Data for the second Latvian Breeding Bird Atlas were collected during years 2000–2004. The aim of this project was to update distribution maps for all Latvian breeding bird species and where possible detect changes since the first Breeding Bird Atlas (1980–1984). Unlike the 10x10 km UTM squares in the latter, grid units for the current study were 5x5 km squares in an LKS-92 (rectangular) coordinate system. In all there are 2785 squares, 14.3% (398) of them are incomplete because they overlap with the country border. As in the EBCC Atlas of European Breeding Birds, 16 codes in three categories of breeding probability (possible, probable and confirmed breeding) were used to record species' presence in each square. Observations of non-breeding birds were recorded only in exceptional cases. Systematic surveys to obtain data on abundance were not performed. Preliminary results are presented here. To this date (September 2004) 2672 squares (95.9%) have been at least partially covered. A minimum of 50 breeding species per square was arbitrarily considered a level of satisfactory coverage. In total, there were 1394 (50.1 %) such squares. 219 breeding bird species have been recorded so far, with breeding of 194 species confirmed, 13 species probable, and 12 species possible. In comparison with the first Breeding Bird Atlas, there is a net increase of 11 species. The most recent new breeders are Whiskered Tern *Chlidonias hybridus*, European Bee-eater *Merops apiaster* and Collared Flycatcher *Ficedula albicollis*. Although hindered by difference in grids, comparison of both atlases reveals some obvious distribution changes over the last 20 years. A dramatic decline is recorded for Roller *Coracias garrulus*, now only found in a few scattered places. On the contrary, Middle Spotted Woodpecker *Dendrocopos medius* has spread northwards across most of the country. Whooper Swan *Cygnus cygnus*, Citrine Wagtail *Motacilla citreola* and Black Redstart *Phoenicurus ochruros* also show range expansion.

Key words: breeding bird atlas, distribution, Roller, Middle Spotted Woodpecker, Latvia.

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Breeding bird atlases were established during 1970s and 1980s as a very successful method of mapping actual breeding bird distributions on a national scale (e.g. Sharrock 1976, Rheinwald 1982, Gjershaug *et al.* 1994). The first breeding bird atlas for Latvia was compiled during years 1980–1984 (Priednieks *et al.* 1989). Compilation of this atlas was instrumental in organising professional and amateur ornithologists alike and establishing Latvian Ornithological Society in 1985. It also formed a basis for collection of data for the European Breeding Bird Atlas (Hagemeijer & Blair 1997).

With the collapse of the Soviet Union, Latvia restored its independence in 1991. Wide-

spread changes in land-use and habitats inevitably followed, most notably a significant decrease in agricultural production associated with large areas of abandoned farmland and increased forest harvesting (Anonymous 2000). As a result, populations of species associated with low intensity farming and fallow land could have been expected to increase, while abandonment and overgrowing of meadows with bushes might have lead some grassland bird species to decline. By the end of the decade, it was recognized that Latvia could soon become a member state of the European Union, leading to new changes in land-use planning and practices. In order to document the status of Latvia's birds before join-

ing the EU and to record changes in their distribution during the last 20 years since the first Latvian breeding bird atlas (Priednieks *et al.* 1989), the second Latvian breeding bird atlas was compiled during years 2000–2004.

The aim of the study was to map the distribution of all breeding bird species in Latvia.

The recent increase interest in ornithology and birdwatching in Latvia allowed the involvement of considerably more people in this survey than in the first atlas, and it was therefore decided to reduce the grid resolution for mapping to 5x5 km squares. Apart from recording additional data on the precise location, numbers and habitat of selected species, no attempt was made to obtain quantitative population measures. Only preliminary results are presented here, as the data are still being received and processed at the time of writing.

## Materials and Methods

The study covered all the territory of Latvia (64.6 thousand km<sup>2</sup>). It is dominated by forests that cover 45% of the territory, agricultural lands (39%) and wetlands (9%; Anonymous 2000). Grid units for the current study are 5x5 km squares in the Baltic Coordinate System (LKS-92; Fig. 1). This system is used for most maps and GIS applications in Latvia, therefore it was chosen as the most appropriate for the atlas work, despite being different from the UTM system used in the first Latvian Breeding Bird Atlas (Priednieks *et al.* 1989) and in Atlas of European Breeding Birds (Hagemeyer & Blair 1997). In all there are 2785 squares, 14.3%

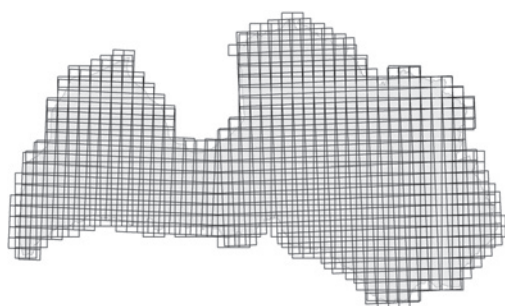
(398) of them are incomplete because they overlap with the country border.

Three categories of breeding probability (possible, probable and confirmed breeding) including 16 observation codes were used to record species' presence in each square, following the EBCC Atlas of European Breeding Birds (Hagemeyer & Blair 1997). For a number of rare and poorly studied species additional data, such as number of birds, habitat and precise coordinates were gathered. Observations were recorded in specially designed forms, one for every square and date (or a longer continuous period of observations). In addition, occasional records were also accepted. These comprise about 14% of all observations. No surveys were made to obtain quantitative population measures other than the extended additional data for the list of selected species. Nevertheless, these data can be used for revising population size estimates and supporting ecological studies, including modeling species distributions.

The fieldwork was carried out mostly by voluntary amateur ornithologists. Coverage of the country was partly co-ordinated by regional coordinators from several districts, but mostly by the project officer in the capital. To ensure reliability of the data gathered by non-professionals, training lectures and excursions were organized before the start and during the atlas survey period. Bird voice recordings were also provided to participants either for learning or playback in the field. A minimum of 50 recorded species was arbitrarily chosen as the level of satisfactory coverage of a square during the data gathering period. This helped to spread the observer effort over the country more effectively.



**Figure 1.** 5x5 km square grid in LKS-92 coordinate system.  
*Quadrícules del sistema de coordenades LKS-92.*



**Figure 2.** Comparison of UTM grid and 10x10 km square grid after merging the 5x5 km squares.  
*Comparació del reticle UTM i els quadrats 10x10 km després de fusionar les unitats de 5x5 km.*



**Figure 3.** Survey coverage of Latvia. Four sizes of dots represent the number of species per square: 1-25, 26-50, 51-75 and >75 species. *Cobertura de l'estudi a Letònia. Les quatre grandàries dels punts representen el nombre d'espècies per quadrícula: 1-25, 26-50, 51-75 i >75 espècies.*

Eventually however, the survey coverage of squares would be judged by the number of the most common species recorded.

All survey coverage and species distribution maps were produced digitally by GIS using ArcView 3.2a program. In order to compare the results of the current study with the first atlas (Priednieks *et al.* 1989; 10 km grid), the 5 km grid was transformed by systematically merging groups of squares into a new 10x10 km grid layer in GIS (Fig. 2). Although both grids were still different due to projection discrepancy, the total number of squares is almost identical – 739 vs. 740 squares in the first atlas and the second atlas respectively. Thus, the 10 km grid distribution maps were produced and compared between both national atlases in a non-overlapping manner.

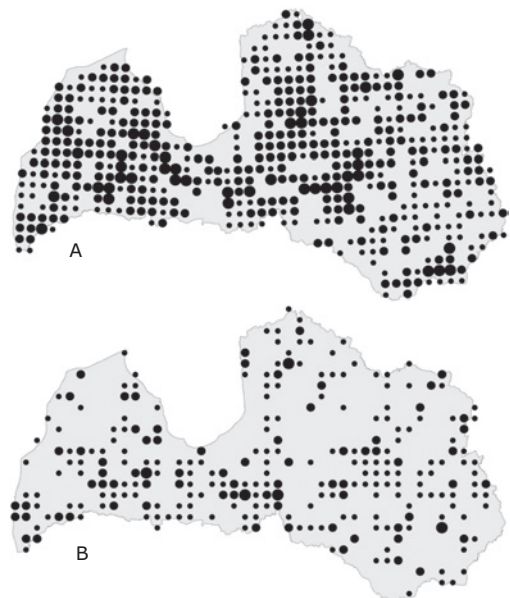
## Results and Discussion

Observations from 789 people have been received and used for the atlas so far. Most observers submitted only occasional data or took part in the project indirectly – by submitting data to other field projects. 285 observers submitted at least one atlas form. Data submission and processing are still in progress at the time of writing.

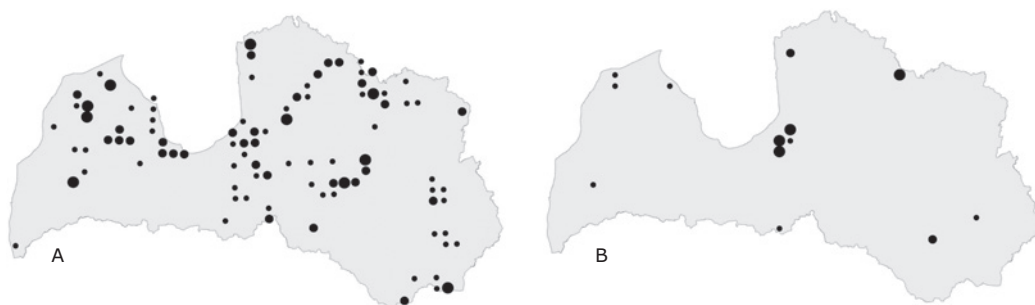
As of September 2004, 2672 squares (95.9%) have been at least partially covered. At least 50 breeding species were recorded in 1394 (50.1%) of the squares. If the coverage is assessed by the number of common species re-

corded (Priednieks *et al.* 1989), then 1785 (64.1%) of all squares have been covered satisfactorily.

A total of 219 breeding bird species have been recorded, with breeding of 194 species confirmed, 13 species probable, and 12 species possible. These numbers may still change after data analysis and interpretation. In comparison with the first national breeding bird atlas (Priednieks *et al.* 1989), there is an increase of 11 breeding species. The most recent new breeders are Whiskered Tern *Chlidonias hybridus*, European Bee-eater *Merops apiaster* and Collared Flycatcher *Ficedula albicollis*. A number of other species show obvious changes in their distribution, and in a few cases, there are changes in knowledge rather than status, over the last 20 years. To illustrate the findings, we present two examples for each of the following groups: 1) decreasing distribution, 2) increasing distribution and 3) significantly improved coverage. In addition, two examples of breeding bird species that have large and widespread populations at the moment but may suffer declines in the near future due to potential land-use changes are presented.



**Figure 4.** Distribution of Turtle Dove *Streptopelia turtur*. A – 1980-1984 (501 squares), B – 2000-2004 (264 squares). *Distribució de la Tórtora Streptopelia turtur. A – 1980-1984 (501 quadrats), B – 2000-2004 (264 quadrats).*



**Figure 5.** Distribution of Roller *Coracias garrulus*. A – 1980-1984 (94 squares), B – 2000-2004 (13 squares).  
*Distribució del Gaig Blau Coracias garrulus. A – 1980-1984 (94 quadrats), B – 2000-2004 (13 quadrats).*

Turtle Dove *Streptopelia turtur* is one of the breeding bird species for which a declining population trend has been revealed by the new atlas (Fig. 4), and there is no other survey or census scheme covering its population. Roller *Coracias garrulus* is one of the most rapidly disappearing species in Latvia, with a few scattered breeding locations known (Fig. 5), despite special attention to survey the species since 1998 (Račinskis 2000, 2001, 2002). In contrast, Whooper Swan, *Cygnus Cygnus*, and Middle Spotted Woodpecker, *Dendrocopos medius*, (Fig. 6) both appear to have had strong expansion of their ranges. Whooper Swans have spread widely around their former stronghold in the Western part of Latvia, and started reaching eastwards over the rest of the country (Fig. 7). The Middle Spotted Woodpecker appears to have expanded its range and population considerably over the last two decades in Latvia. The differences between the atlases may be partly exaggerated by improved area and species coverage, but this does not seem to be the only reason (M. Bergmanis, pers. comm.).

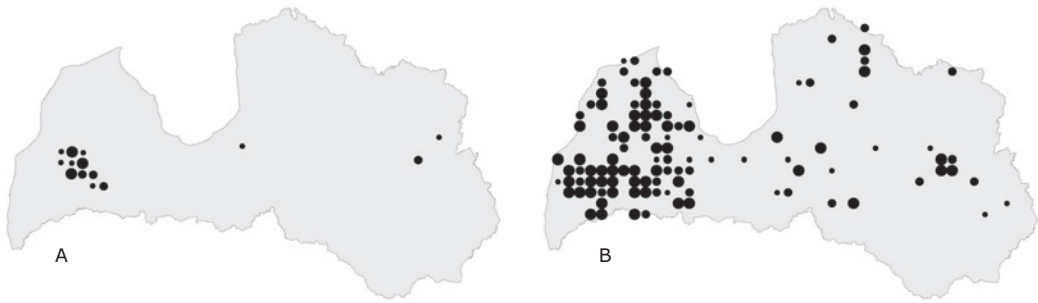
The range expansion of this species in Latvia was recorded for the first time in early 1980s (Celmiņš 1985). It was subsequently recorded in the early 1990s at several sites where it had been absent during earlier studies of woodpecker fauna (Bergmanis & Strazds 1993).

There are two prominent cases of a large difference in the breeding distribution maps caused by both improved methods and increased effort in recording bird species with relatively secretive behaviour or level of habitat specialisation and little, if any, actual population change. Both were previously recorded very rarely. The frequency and distribution of Pygmy Owl, *Glaucidium passerinum*, records grew significantly (Fig. 8) after applying playback or imitating its calls during daylight hours, but especially at dawn and dusk (V. Liepa, pers. comm.). Observer interest and effort in recording this species also increased enormously. Special surveys of Great Snipe, *Gallinago media*, started in 1999 and revealed occurrence of many previously unknown regular lekking sites (Fig. 9), actually re-discovering a significant breeding



**Figure 6.** Distribution of Middle Spotted Woodpecker *Dendrocopos medius*. A – 1980-1984 (4 squares), B – 2000-2004 (187 squares).  
*Distribució del Picot Garser Mitjā Dendrocopos medius. A – 1980-1984 (4 quadrats), B – 2000-2004 (187 quadrats).*





**Figure 7.** Distribution of Whooper Swan *Cygnus cygnus*. A – 1980-1984 (14 squares), B – 2000-2004 (110 squares).

*Distribució del Cigne Cantaire* *Cygnus cygnus*. A – 1980-1984 (14 quadrats), B – 2000-2004 (107 quadrats).

population of about 200-300 pairs (Aunins 2001). During the period of the first atlas (1980–1984) no breeding Great Snipes were recorded.

A number of species – some of them listed in the EC Birds Directive Annex I e.g. White Stork, *Ciconia ciconia*, (Fig. 10) and Red-backed Shrike, *Lanius collurio*, (Fig. 11) are still very numerous and widespread common breeding birds in Latvia. Being highly dependent on the land-use and farming practices, they may, however, potentially suffer future declines if the EU Common Agriculture Policy comes into full force without considerable improvements in conserving wildlife biodiversity in farmlands.

## Conclusions

The second Latvian Breeding Bird Atlas documents breeding distributions, and in several cases significant changes, in breeding ranges of about 219 species. Despite the differences in the

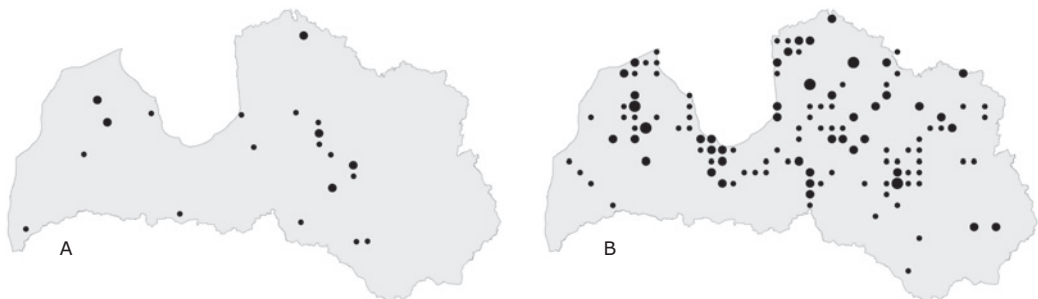
grid resolution and projections, results of both national breeding bird atlases are comparable. In the absence of a country wide breeding bird monitoring scheme, the Breeding Bird Atlas remains an indispensable source of information on birds of Latvia, with some population changes revealed and documented only by the atlas.

The population ecology of most species in Latvia, including their population sizes and trends are poorly studied, and the results from the breeding bird atlas need to be analysed and interpreted with great caution.

It is recommended that, given the increased interest in fieldwork and the momentum gained during the five years of the atlas, participants should be encouraged to take part in a new Common Bird Census in Latvia.

## Acknowledgements

We thank all the voluntary observers who took part in the fieldwork of the atlas and the regional coordi-



**Figure 8.** Distribution of Pygmy Owl *Glaucidium passerinum*. A – 1980-1984 (20 squares), B – 2000-2004 (120 squares).

*Distribució del Mussol Menut* *Glaucidium passerinum*. A – 1980-1984 (20 quadrats), B – 2000-2004 (120 quadrats).



**Figure 9.** Distribution of Great Snipe *Gallinago media* in 2000-2004.  
*Distribució del Becadell Gros Gallinago media en 2000-2004.*



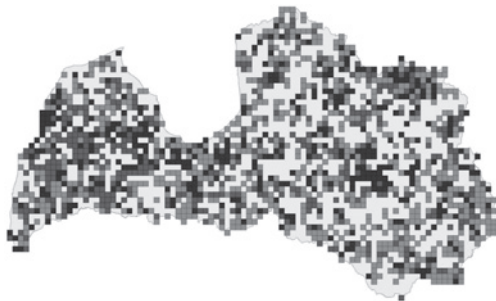
**Figure 10.** Distribution of White Stork *Ciconia ciconia* in 2000-2004.  
*Distribució de la Cigonya Ciconia ciconia en 2000-2004.*

nators, who helped manage the work. We would also like to thank former coordinators of the atlas – Māris Strazds and Ieva Mārdega. Madars Bergmanis helped with valuable information in writing the article. Our participation in the 16th International Conference of the EBCC: Bird Numbers 2004 was sponsored by The Ministry of Environment of the Republic of Latvia.

## Resum

### Segon Atlas d'Ocells Nidificants de Letònia 2000-2004: resultats preliminars

Les dades corresponents al segon atlas d'ocells nidificants de Letònia es van recollir durant els anys 2000-2004. L'objectiu d'aquest projecte era actualitzar els mapes de distribució per a totes les espècies nidificants de Letònia i, sempre que fos possible, detectar canvis a partir del primer Atlas d'Ocells Nidificants (1980-1984). A diferència del



**Figure 11.** Distribution of Red-backed Shrike *Lanius collurio* in 2000-2004.  
*Distribució de l'Escorxadador Lanius collurio en 2000-2004.*

quadrat UTM emprat al primer atlas (10x10 km<sup>2</sup>), les unitats de mostreig d'aquest estudi van ser 5x5 km<sup>2</sup> en el sistema de coordenades LKS-92 (rectangular). En total hi va haver 2.785 unitats, el 14,3% (398) d'aquestes incompletes a causa de la superposició amb el país fronterer. Igual que a l'Atlas Europeu d'Ocells Nidificants EBCC, es van usar 16 codis en tres categories de probabilitat de cria (possible, probable i segur) per registrar la presència de les espècies en cada quadrat. Es van registrar observacions d'ocells no nidificants només en casos excepcionals. No es van realitzar estudis sistemàtics per obtenir dades sobre l'abundància. Els resultats que es presenten aquí són preliminars. Fins a la data (setembre de 2004) han estat cobertes, almenys parcialment, 2.672 quadrícules (95,9%). Es va considerar que el nivell de cobertura era satisfactori quan es podia comptabilitzar un mínim de 50 espècies reproductores per quadrícula. En total, hi va haver 1.394 (50,1%) quadrats on es van registrar 219 espècies d'ocells nidificants, 194 espècies amb cria confirmada, 13 espècies amb cria probable i 12 espècies amb cria possible. En comparació amb el primer atlas d'ocells nidificants, hi ha un augment net d'11 espècies. Les més recents són els nous reproductors, el Fumarell carablanc *Chlidonias hybridus*, l'Abellerol *Merops apiaster* i el Papamosques de Collar *Ficedula albicollis*. Encara que limitada per diferències en el reticle de quadrats, la comparació d'ambdós atlas revela alguns canvis evidents en la distribució d'algunes espècies en els últims 20 anys. Es va registrar un dramàtic descens del Gaig Blau *Coracias garrulus*; ara només es troba en uns pocs llocs dispersos. Per contra, el Picot Garser Mitjà *Dendrocopos medius* s'ha estès cap al nord a través de la major part del país. El Cigne Cantaire *Cygnus cygnus*, la Cuereta Citrina *Motacilla citreola* i la Cotxa Fumada *Phoenicurus ochruros* també mostren una àmplia expansió.

## Resumen

### Segundo Atlas de aves reproductoras de Letonia 2000-2004: resultados preliminares

Los datos correspondientes al segundo atlas de aves reproductoras de Letonia se recogieron durante los años 2000-2004. El objetivo de este proyecto era actualizar los mapas de distribución para todas las especies reproductoras de Letonia y, siempre que fuera posible, detectar cambios a partir del primer Atlas de Aves reproductoras (1980-1984). A diferencia de la cuadrícula UTM usada en el primer atlas (10x10 km<sup>2</sup>), las unidades de muestreo para el presente estudio fueron 5x5 km<sup>2</sup> en el sistema de coordenadas LKS-92 (rectangular). En total hubo 2.785 unidades, el 14,3% (398) de ellas incompletas debido a la superposición con el país fronterizo. Al igual que en el Atlas Europeo de Aves Reproductoras EBCC, se usaron 16 códigos en tres categorías de probabilidad de cría (posible, probable y segura) para registrar la presencia de las especies en cada cuadrícula. Se registraron observaciones de aves no reproductoras sólo en casos excepcionales. No se realizaron estudios sistemáticos para obtener datos sobre la abundancia. Los resultados que se presentan aquí son preliminares. Hasta la fecha (septiembre de 2004) han sido cubiertas, al menos parcialmente, 2.672 cuadrículas (95,9%). Se consideró que el nivel de cobertura era satisfactorio cuando se podía contabilizar un mínimo de 50 especies reproductoras por cuadrícula. En total, hubo 1.394 (50,1%) cuadrículas donde se registraron 219 especies de aves reproductoras, 194 especies con cría confirmada, 13 especies con cría probable y 12 especies con cría posible. En comparación con el primer atlas de aves nidificantes, hay un aumento neto de 11 especies. Las más recientes son los nuevos reproductores como el Fumarel Cariblanco *Chlidonias hybridus*, el Abejaruco *Merops apiaster* y el Papamoscas Collarino *Ficedula albicollis*. La comparación de ambos atlas revela algunos cambios claros en la distribución en los últimos 20 años de algunas especies, aunque este

resultado está limitado por diferencias en el tamaño de las cuadrículas. Se registró un dramático descenso de la Carraca Europea *Coracias garrulus*; ahora sólo se encuentra en unos pocos lugares dispersos. Por el contrario, el Pico Mediano *Dendrocopos medius* se ha extendido hacia el norte a través de la mayor parte del país. El Cisne Cantor *Cygnus cygnus*, la Lavandera Cetrina *Motacilla citreola* y el Colirrojo Tizón *Phoenicurus ochruros* también muestran una amplia expansión.

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