

The Atlas of the Birds of Moscow City Project: history, methods and first results.

Mikhail V. Kalyakin & Olga V. Voltzit

Zoological museum of Moscow Lomonosov State University; Bolshaya Nikitskaya Str., 6, Moscow, 125009, Russia; kalyakin@zmmu.msu.ru; voltzit@zmmu.msu.ru

Introduction

Although the avifauna of the Moscow Region has been studied for already more than 200 years, since the beginning of 19th century, publications on the birds of Moscow City are from a much more recent date (Formozov 1947, Il'ichev *et al.* 1987, Konstantinov & Zakharov 2005). A first *Atlas of the Birds of Moscow City* has been published within the framework of the *Program Birds of Moscow City and the Moscow Region* several years ago (Kalyakin & Voltzit 2006) based on the first six years of fieldwork within this Program. The data were collected by approximately 400 collaborators. However, in this atlas the distribution maps for the city part were not presented using squares, but as the area comprising all observations of a species during the period 1999-2004.

The Project of the *Bird Atlas of the City of Moscow* started in 2006. The fieldwork period is planned to end in 2010 but could continue until 2011. The main aim is to produce a distribution atlas, of breeding, migrant as well as wintering birds in the city of Moscow, based on a 2×2 km square grid. It is one of the first urban distribution atlas projects in Russia of that a kind. A similar atlas of former Leningrad, now St-Petersburg, appeared in 1991 (Khrabry 1991), while a tetrad atlas project in Kaliningrad has been run until 2006 but has not been published yet (Lykov 2007). In this short note we provide some background on the history of the project and the methods used, and present some preliminary results.

The Atlas of the Moscow Region Program

The *Program Birds of Moscow City and Moscow Region* was established in 1999 as a personal initiative of the first author, who proposed to all

ornithologists of the Moscow area, both professional and amateurs, to join forces for a common goal: supply information on bird distribution, abundance, breeding biology etc.. for a new book on the birds of the Moscow Region. This initiative proved successful and this joint activity has not only improved the exchange of information among ornithologists, but also greatly stimulated the observation of birds. In general our *Program* is similar to activities of other Bird societies in Europe, but with the difference that we are not officially registered as a association or club, that we have no member fees and that we are 'just' a group of people who are interested in birds of the Moscow Region. All collaborators agreed to provide their observations to the centralized database at the Zoological museum of Moscow Lomonosov State University where the data are imported, checked and analysed. The results have been published in a series of annual reports from 1999 to 2005. The 2006/2007 report will appear shortly. Financial support during the first stages was provided by the Zoological museum of the Moscow University. However, after 2007 new publications were financed by the income generated from the sale of previous ones. More details about the Program can be found on our web-site <http://www.birdsmoscow.net.ru/>.

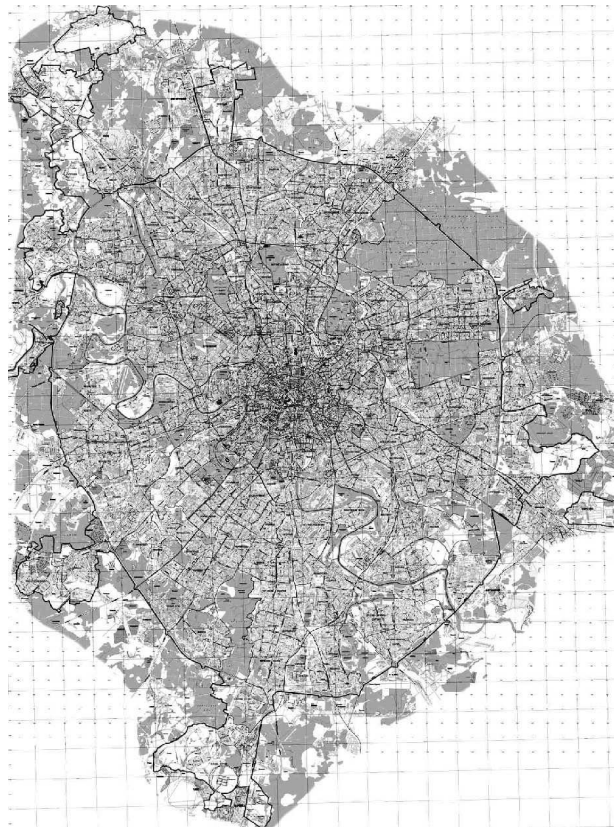


Figure 1: Moscow City with Ring Highway and outside areas which are also officially included within the town border (green areas in light grey).

The Atlas of Moscow City Project

The method

This project is a continuation of the Program's atlas activity. Its main goal is to obtain detailed and complete distribution data of the breeding birds of the City of Moscow. Also information on species presence during migration and winter is collected, although less comprehensive. The main method used for data gathering is a survey of one (or more) 2×2 km squares –based on the Universal Transverse Mercator (UTM) projection- by one (or several) observers during a one-year period. An observer should spend at least 36 hours in a square during the breeding period (April-July). Visits outside this period are less restricted. The total survey time per month is registered as well as the degree of square coverage. In an ideal situation the whole square should be covered in a similar way. However, in some circumstances e.g. in squares with homogeneous residential areas where diversity and numbers of birds are usually very low, one or two short visits will suffice. Before the start of the survey the observer has to visit the whole square to get an idea of the different land-use and habitat types present. In each square a list of all observed bird species has to be compiled, including their breeding status (confirmed, probable and possible breeding following international atlas codes and after Friednieks *et al.* 1989). The non-breeding status of a species has to be documented with data on behaviour (e.g. using the square only as feeding or roosting area). For all species, breeding abundance (as number of pairs) or presence outside the breeding season (as number of individual birds) has to be estimated in every square, using four log scale categories: <10, 10-100, 100-1000 and >1000. Yearly, each observer provides a report with the results of his fieldwork (bird and habitat data) to the co-ordinators of the project for the compilation of the annual report.

The study area

Because the official territory of Moscow City includes several urban satellites located far from the central part of the town, we decided to study only the zone delimited by the Moscow Ring Highway. This is an oval-shaped area of about 40 km from north to south and 30 km from west to east. It includes a total of 240 squares of 2×2 km of which 56 are only partially located within the boundary.

Participation to the project

An important task before starting up this project was to find enough observers eager to work within a frame that requires the use of standardized methods, regular visits and a certain level of species recognizing skills, which was a totally new way of working. During the course of the Program contacts between participants had been rather informal and the only real obligation imposed on the fieldworkers was the use of a standardized observation form in order to facilitate data input in the centralized database.

Moscow City and the Moscow Region are the area with the highest density of ornithologists and birdwatchers in Russia. However, it was not that easy to find many volunteers for this more time-consuming and standardized fieldwork as required by the new atlas project. Therefore, already from the beginning of the Project it was very difficult to predict its duration, and even now, at the the end of a four year fieldwork period, there is no clear idea how long it will take us to finish.

Preparation and evolution of the scheme

The first season was used to assess the method, to prepare the data forms, analyzing the data and writing and distributing a report not only to all participants but also on a wider scale. The first annual report (Kalyakin & Voltzit 2007) included data of 26 squares. The next two volumes (Kalyakin & Voltzit 2008, 2009) were compiled in the same style. Field activity increased in the second and third years: respectively 36 and 57 squares were covered in 2007 and 2008, which means that in three years, 50% of the area of the City had been covered (119 from 240 squares). But unfortunately in 2009 we could not count more than 58 squares, which means that (at least) another year of fieldwork (or even two) will be necessary, in particular to cover the less “attractive” squares or the ones more distant from the fieldworkers homes. Now a decision is necessary as to the continuation of the project: trying to cover all the remaining squares in 2010 (by assigning the distant squares to fieldworkers with cars, counting squares with several people) or continue to 2011. The second option could facilitate additional surveys in hitherto poorly covered squares.

Preliminary results

The detailed counts in about half of the squares of the City area have already improved our knowledge on their distribution. First of all, it is clear that many species formerly categorised as “rare” are not so rare at all (or have become common, in several cases), A good example is the Black Redstart, *Phoenicurus ochruros*, which was not mentioned for Moscow and neighbouring Regions forty years ago (Ptushenko & Inozemtsev 1968), but has now become more common in Central European Russia. The species was observed several times in Moscow City before 2006. The preliminary results of the Atlas Project show breeding evidence in 8 squares and observations in another 8 during the breeding period. Thus, most probably the Black Redstart is at present already breeding in 15-16 squares (c. 13% of the total covered). The species prefers rocky habitats and is mainly present in the former industrial zone of the City. After 1990 many of the factories closed down and the area is now a mosaic of open areas, bushes, groups of trees, new buildings and many ruins, as well as debris and some small ponds. In the past, such non-

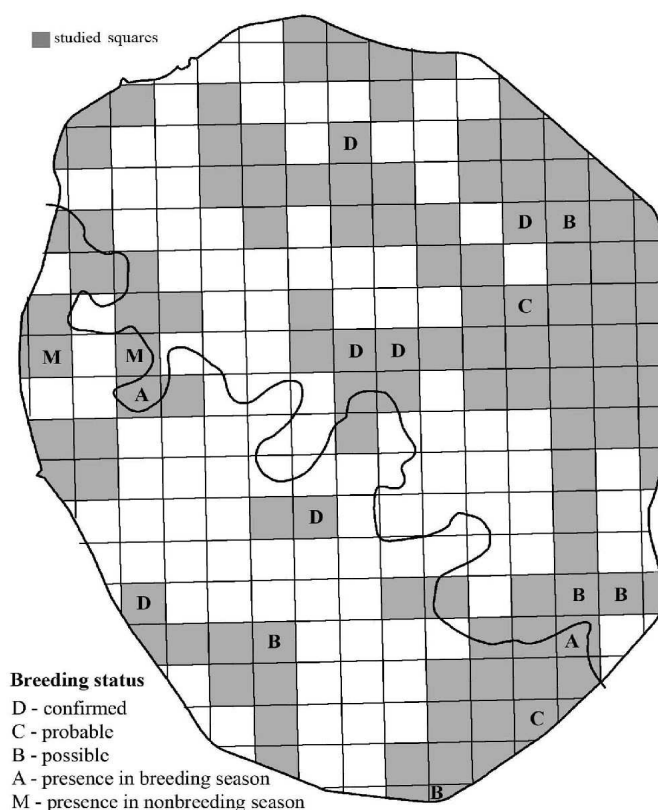


Figure 2: The distribution of the Black Redstart, *Phoenicurus ochrorus* in 119 Moscow squares studied in 2006-2008.

attractive areas (with difficult access and presence of stray and semi-wild dogs) were not popular amongst birdwatchers, but with the new Project, these interesting “town landscapes” are now visited and their avifauna counted.

As a result of the Atlas Project, we could add several new species to the list of the bird fauna of Moscow. Our knowledge of spring and autumn phenology and of wintering species has increased substantially. We also obtained many additional information on birds of protected areas, large parks, and other semi-natural areas. These data have already been included in a new edition of the Red Data Book of Moscow which is in preparation and should be published in 2010. We hope to present all this information in our new Atlas, which will most probably be published by 2012. At present we are still looking for possible sponsors. We are convinced that this Atlas will be a good base for future monitoring of the birds of Moscow City as well as a good tool for their protection.

Acknowledgements

The authors would like to thank all the participants of the Project for the great efforts they put into the detailed fieldwork. We also are very grateful to Sergey Eliseev for his help by providing maps of the squares. Our special thanks to Anny Anselin for her kind invitation to publish this short report in Bird Census News and her patience waiting for the draft of our short note.

References

- KHRABRY V.M. (1991). Birds of St-Petersbourg. Fauna, distribution, protection. Proceedings of Zoological institute of Academy of Science of USSR. Vol. 236: 275 p.
- FORMOZOV A.N. (1947). Fauna. In: Nature of Moscow City and the Moscow Region. Moscow-Leningrad: 287–370.
- IL'ICHEV V.D., BUTIEV V.T. & KONSTANTINOV V.M. (1987). Birds of Moscow and the Moscow Region. Moscow. 272 p.
- KALYAKIN M.V, VOLTZIT O.V. (2006). Atlas. Birds of Moscow City and the Moscow Region. Sofia-Moscow. 372 p.
- KALYAKIN M.V, VOLTZIT O.V. (2007). Birds of Moscow City: 2006, from square to square. Proceedings of the Program “ Birds of Moscow and the Moscow Region”. Vol. 1, 176 p.
- KALYAKIN M.V, VOLTZIT O.V. (2008). Birds of Moscow City: 2007, from square to square. Proceedings of the Program “Birds of Moscow and the Moscow Region”. Vol. 2, 228 p.
- KALYAKIN M.V, VOLTZIT O.V. (2009). Birds of Moscow City: 2008, from square to square. Proceedings of the Program “Birds of Moscow and the Moscow Region”. Vol. 4, 332 p.
- KHRABRY V.M. (1991). Birds of St;-Petersbourg. Fauna, distribution, protection. Proceedings of the Zoological Institute of Academy of Sciences of USSR. Vol. 236, 275 p
- KONSTANTINOV V.M. & ZAKHAROV R. (2005). Moscow. In: Kelcey, J.C. & Rheinwald, G. 2005. Birds in European Cities. St. Katharinen: 197–214.
- LYKOV E.L. (2007). Fauna, numbers and distribution of breeding birds in Kaliningrad, north-western Russia. Ornithologia, 34(1): 83–93.
- PRIEDNIEKS YA., STRASDS M., STRASDS A., PETRINSCH A. (1989). Atlas of breeding birds of Latvia 1980–1984. Riga. 352 p.
- PTUSHENKO E.S. & INOZEMTSEV A.A. (1968). The biology and the economic value of the birds of the Moscow Region and adjacent territories. Moscow. 461 p.