Bird Census News 2010, 23/1-2: 41-47

The distribution of breeding birds in Switzerland in the 1950s compared to the present situation

Peter Knaus

Abstract. A project was launched to document the distribution of breeding birds in the 1950s in Switzerland. This historical atlas allows direct comparisons with the two atlases 1972–1976 and 1993–1996. As many original records as possible at a national level were compiled from notebooks and different archives as well as via standardised interviews with 56 field ornithologists of the older generation. The country was divided into 467 atlas squares (10 x 10 km), but convincing comparisons of the distribution in 1950–1959 with the two published atlases are in general restricted to the Swiss Plateau. Our data document that in the 1950s several farmland and wetland species were widespread across the whole Plateau, but since then lost a considerable part of their range or disappeared completely. On the other hand, we also report on range expansions for some species.

Swiss Ornithological Institute, CH–6204 Sempach, Switzerland,
peter.knaus@vogelwarte.ch

Introduction

During the 20th century natural habitats came under increasing pressure from changes in land use, habitat destruction, use of pesticides, pollution and human interference. In Switzerland, over 90 % of the wetlands and moorlands have been drained since 1850 and numerous rivers were regulated and canalised to avoid floods and to gain cultivated land. More than 10 million fruit trees were cut since 1950, and in some regions of the country a third of the hedges were destroyed in the 1970s and 1980s (Maumary *et al*. 2007). This led to drastic changes in the avifauna.

A good knowledge of the historical distribution and abundance is an important basis for assessing the current status of bird communities in a region. In Switzerland, the trends of distribution and numbers are documented only since the 1970s, for many species only since around 1990. For the distribution of breeding birds we use the two breeding bird atlases compiled from 1972 to 1976 and from 1993 to 1996, respectively (Schifferli *et al*. 1980, Schmid *et al*. 1998). Data on population trends are available since the mid 1980s (Schmid *et al*. 2001). However many species had suffered massive declines already in the 1970s and before, as intensification of land use started in the 1950s or even earlier.

The project «Avifauna 1950», launched by the Swiss Ornithological Institute in 2007, aims at documenting the distribution of the breeding birds in the 1950s. There is much, mostly anecdotal evidence of the local distribution of bird species of that time period, but so far no effort has been undertaken to compile these mainly original records at a national level. The only nationwide publication covering this period, the book on the breeding birds of Switzerland published in 1962 (Glutz von Blotzheim 1962), gives relatively detailed information on the distribution of many species around the 1950s, but only a few maps are shown. The aim of the project is a breeding bird atlas for the period 1950–1959, allowing

direct comparisons with the two atlases 1972–1976 and 1993–1996. The project also aims at raising awareness among politicians, government agencies and the public.

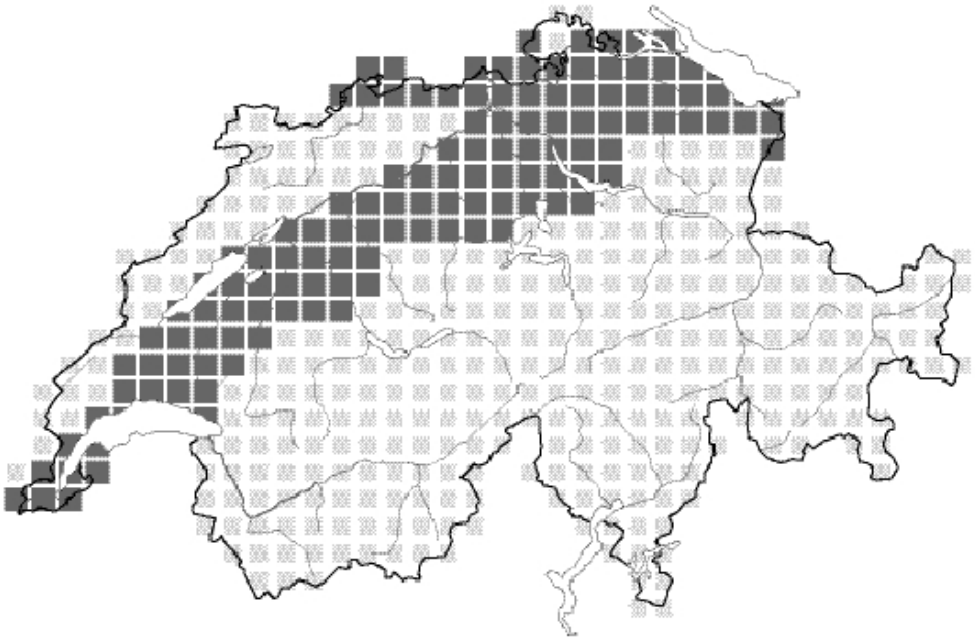

Figure 1. The Plateau is the lowland region between the Jura and the Alps. Atlas squares (10 x 10 km) on the Plateau are dark grey, those outside the Plateau are grey; they are shown with smaller squares on the change maps to reflect less complete coverage.

Methods

Many field ornithologists of the older generation still have a good knowledge of the situation of breeding birds in the 1950s. This knowledge will be lost soon, since most of these observers are aged. Using information in their notebooks and with standardised interviews, this knowledge was used as far as possible. Altogether, 56 interviews were carried out with old-age regional ornithologists by running through a list of the breeding bird species of Switzerland, discussing if the respective species had been present during the breeding season at the time or not. If the species was present, the breeding probability was noted (possible or certain breeding) and, if available, additional information on the abundance, the regularity of breeding and further details. For rarer breeding birds the exact locations were recorded on a large-scale map if possible.

Further sources were the archives of the Swiss Ornithological Institute, such as the archive of the 1962 book, observation data, nest cards and ringing data. Additional information came from regional overviews, publications and private compilations as well as from the specimen lists of the natural history museums of Basle, Berne, Geneva, Fribourg and St. Gallen.

The species were classified as follows:
(1) 45 well documented, very rare or rare breeding birds, for which the data were already completely available;
(2) 104 scarce or formerly widespread species, for which data were collected as completely as possible;
(3) 64 rather common breeding birds with no indications of massive changes in distribution, for which the records were not systematically collected.

To reduce the effort, in general only one observation per atlas square (10 x 10 km) and species was recorded. Similar to the bird atlas 1993–1996 breeding probability (possible, probable and certain breeding) will not be differentiated on the maps. Instead criteria were defined for each species for records to be included on the maps. The criteria list is in general identical to that used for the atlas 1993–1996.

As in the two existing breeding bird atlases, the country was divided in 467 atlas squares (10 x 10 km). Mainly because of the topographic characteristics of Switzerland, the coverage in the 1950s is non-homogeneous. Therefore convincing comparisons of the distribution in 1950–1959 with the two atlases are in general restricted to the Swiss Plateau (in German «Mittelland»), the lowland region between the Jura Mountains and the Swiss Alps, which covers about 30 % of the surface of Switzerland. The biggest changes in land use occurred in the heavily populated Plateau. Atlas squares outside the Plateau are shown by smaller symbols on the change maps, to reflect less complete coverage (Figure 1).

Results

There are enough data for about half of the 213 species to produce representative distribution maps for the 1950s. The data document that in the 1950s several farmland and wetland species were widespread across the whole Plateau: Little Bittern *Ixobrychus minutus*, Common Snipe *Gallinago gallinago*, Eurasian Curlew *Numenius arquata*, Little Owl *Athene noctua*, Eurasian Hoopoe *Upupa epops*, Woodlark *Lullula arborea*, Great Reed Warbler *Acrocephalus arundinaceus*, Icterine Warbler *Hippolais icterina*, Lesser Grey Shrike *Lanius minor*, Great Grey Shrike *L. excubitor*, Woodchat Shrike *L. senator* and Ortolan Bunting *Emberiza hortulana* (Table 1). These species showed marked declines already on the maps 1972–1976 and two of them (Lesser and Great Grey Shrike) had disappeared completely by 1993–1996. For instance, the Eurasian Hoopoe (Figure 2) was still widespread across the whole Plateau in the 1950s. Already until the 1970s, the species disappeared from a part of that region, especially in areas with expanding urban areas. By 1993–1996 the Hoopoe was just an irregular breeder on the Plateau. The reasons for this trend are intensification of land use, agricultural mechanisation, land consolidation and pesticides.

Other breeding birds such as the Grey Partridge *Perdix perdix* and the Corn Crake *Crex crex* were distributed only fragmentarily already in the 1950s (Table 1). Their decline must have started earlier, as at the beginning of the 20th century these species were described as widespread and locally common breeders on the Plateau. In the 1950s, the Corn Crake was found mainly on the Plateau, although with many gaps (Figure 3). However considering the known population fluctuations of this species, the period of 10 years probably gives a rather optimistic image of the distribution. In the 1990s, the distribution was limited even more and breeding attempts occurred almost exclusively in the Jura and the Alps.

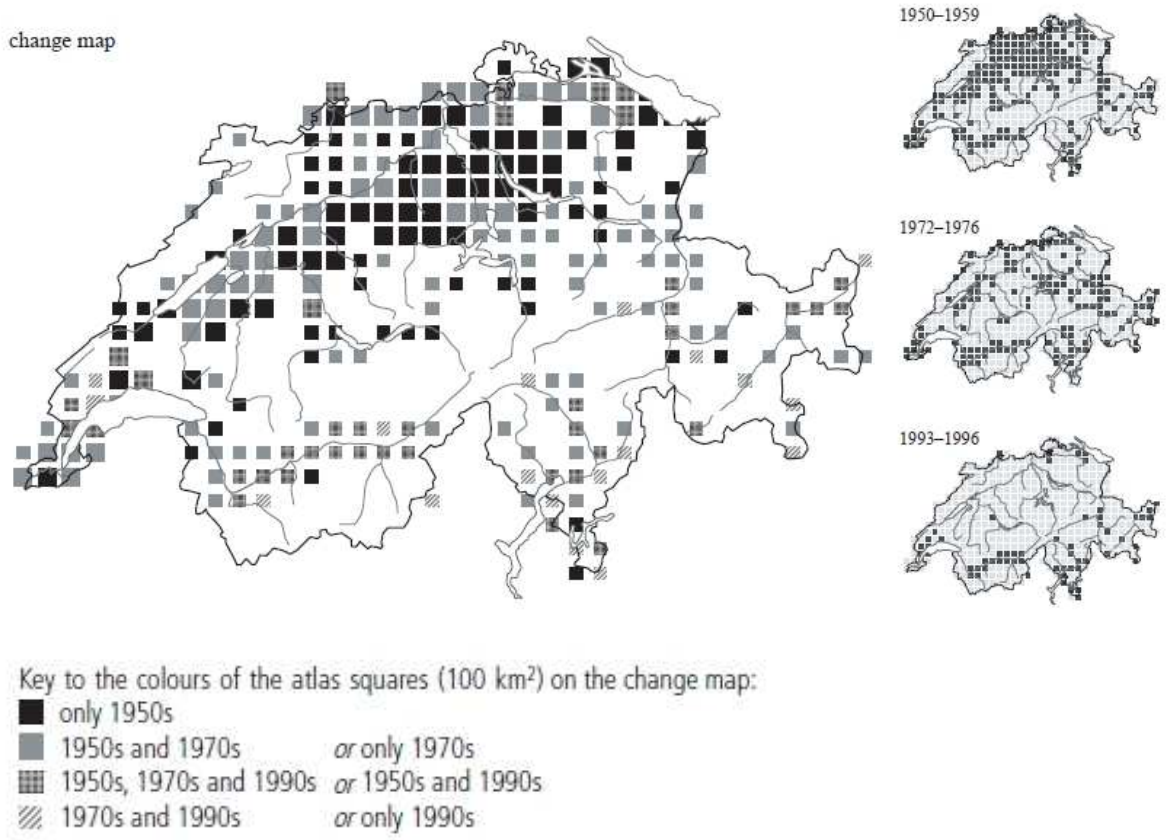

Figure 2. The three distribution maps 1950–1959, 1972–1976 and 1993–1996 (black: at least one record, grey: no record) and the change map of the Eurasian Hoopoe *Upupa epops*

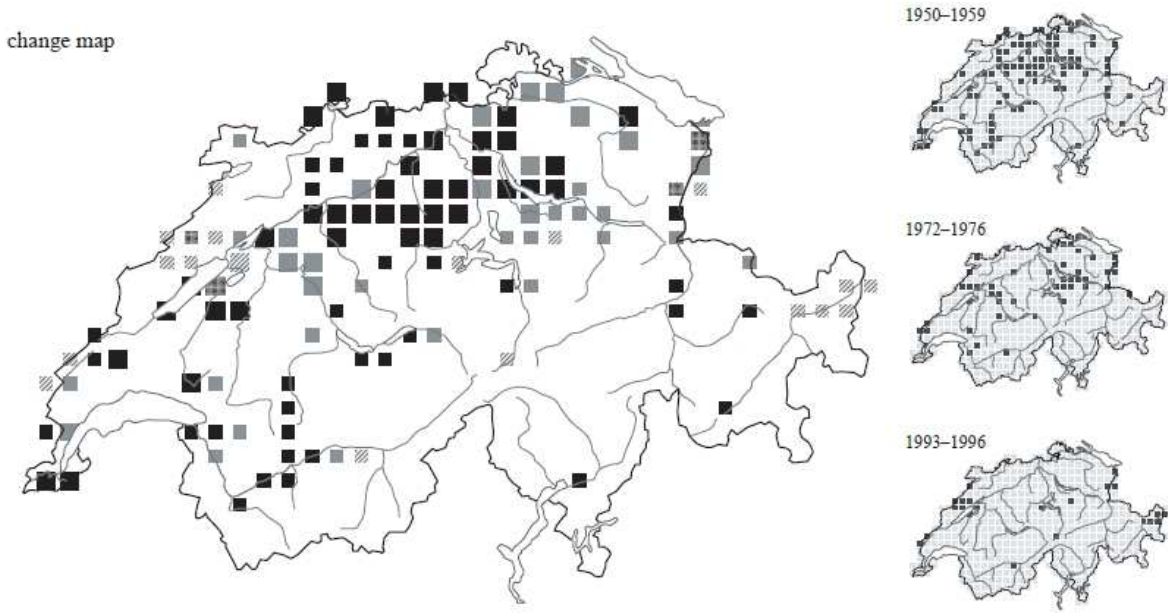

Figure 3. The three distribution maps 1950–1959, 1972–1976 and 1993–1996 and the change map of the Corn Crake *Crex crex* (for square legend see Figure 2).

On the opposite, increases are documented, e.g. for White Stork *Ciconia ciconia*, Black Kite *Milvus migrans*, Red Kite *M. milvus*, Eurasian Collared Dove *Streptopelia decaocto*, Eurasian Stonechat *Saxicola torquatus*, Fieldfare *Turdus pilaris* and Northern Raven *Corvus corax*. For instance, the spread of the Red Kite (Figure 4) can be well shown: In the 1950s, the species was limited mostly to the northern third of Switzerland. By 1993–1996 it had extended the breeding range towards the southwest, south and east and had reached the foothills of the Alps. And this trend still continues today.

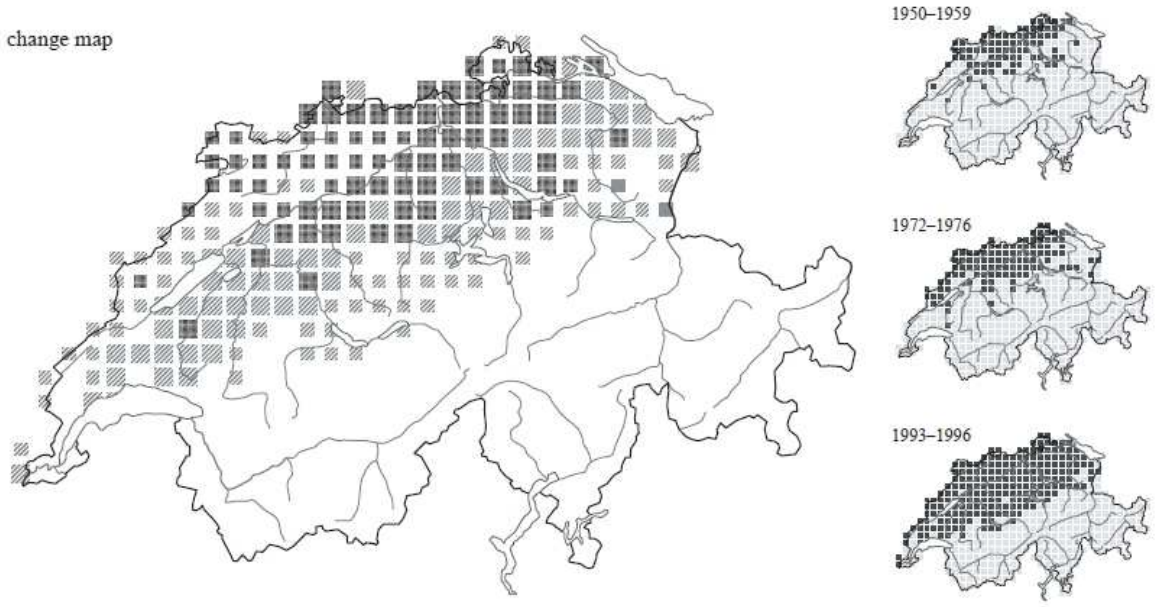

Figure 4. The three distribution maps 1950–1959, 1972–1976 and 1993–1996 and the change map of the Red Kite *Milvus milvus* (for square legend see Figure 2)

Discussion

These results help to better understand today's distribution of the breeding birds of Switzerland. Many species lost a considerable part of their range on the Plateau already between the 1950s and the 1970s. Some wetland species also declined in that period. This indicates that many, mostly smaller wetlands were still being destroyed or at least turned out not to be suitable any more for some species, e.g. by increasing isolation. With the distribution maps of the 1950s the rapid change in the avifauna of Switzerland is obvious. The use of the same grid as in the two existing breeding bird atlases offers the possibility of comparison for each atlas square.

To our knowledge there is only one other attempt to document historical records for the whole species community on a nationwide level. Holloway (1996) compiled the distribution of breeding birds in Britain and Ireland between 1875 and 1900. However this work did not use the grids of the existing atlases, but for practical reasons county borders instead. Contrary to our project, Holloway (1996) also included the relative abundance. But using original records instead of county avifaunas, this task was not possible in this project. The results of the project will be published in a book in 2011. (Knaus *et al*. in press).

Acknowledgements

This work would not have been possible without the help and the records of many observers, some of them making their observations available especially for this project. I wish also to thank Peter Lüps, Claudia Müller, Bertrand Posse and Niklaus Zbinden for their help with the interviews, Jérôme Guélat, Guido Häfliger and Bernard Volet for preparing the maps, Dominik Hagist, Gesa von Hirschheydt, Rosemarie Küchel, Prisca Mattmann, Bruno Meyer, Daniel Muff, Marianne Parmiggiani, Geneviève Räber, Matthias Schweizer, Ursula Spiess and Elisabeth Taylor for data recording and many other persons for indications of unpublished records and private compilations. Verena Keller, Hans Schmid and Niklaus Zbinden gave valuable comments on earlier drafts of the manuscript.

References

GLUTZ VON BLOTZHEIM, U.N. (1962). Die Brutvögel der Schweiz. Verlag Aargauer Tagblatt, Aarau. 648 pp.

HOLLOWAY, S. (1996). The historical atlas of breeding birds in Britain and Ireland: 1875-1900. T. & A. D. Poyser, London. 476 pp.

KNAUS, P., GRAF, R., GUÉLAT, J., KELLER, V., SCHMID, H. & ZBINDEN, N. (in press): Historischer Brutvogelatlas. Die Verbreitung der Schweizer Brutvögel seit 1950. Schweizerische Vogelwarte, Sempach. 336 pp. (German/French, with Englisch and Italian summaries)

MAUMARY, L., VALLOTTON, L. & KNAUS, P. (2007). Les oiseaux de Suisse. Station ornithologique suisse, Sempach, and Nos Oiseaux, Montmollin. 848 pp.

SCHIFFERLI, A., GÉROUDET, P. & WINKLER, R. (1980). Verbreitungsatlas der Brutvögel der Schweiz/Atlas des oiseaux nicheurs de Suisse. Schweizerische Vogelwarte/Station ornithologique suisse, Sempach. 462 pp.

SCHMID, H., BURKHARDT, M., KELLER, V., KNAUS, P., VOLET, B. & ZBINDEN, N. (2001). Die Entwicklung der Vogelwelt in der Schweiz/L'évolution de l'avifaune en Suisse. Avifauna Report Sempach 1, Annex. Schweizerische Vogelwarte/Station ornithologique suisse, Sempach. 444 pp.

SCHMID, H., LUDER, R., NAEF-DAENZER, B., GRAF, R. & ZBINDEN, N. (1998). Schweizer Brutvogelatlas. Verbreitung der Brutvögel in der Schweiz und im Fürstentum Liechtenstein 1993-1996/Atlas des oiseaux nicheurs de Suisse. Distribution des oiseaux nicheurs en Suisse et au Liechtenstein en 1993-1996. Schweizerische Vogelwarte/Station ornithologique suisse, Sempach. 574 pp.

MS received: 17.05.2010
Revised MS accepted: 05.11.2010

English name	Latin name	Occupied atlas squares			Change			
		1950–1959	1972–1976	1993–1996	1950–1959 vs. 1972–1976		1950–1959 vs. 1993–1996	
					n	%	n	%
Declining species								
Little Bittern	*Ixobrychus minutus*	66	41	40	*-25*	*-46.7*	*-26*	*-49.1*
Common Snipe	*Gallinago gallinago*	28	34	7	*+6*	*+19.4*	*-21*	*-120.0*
Eurasian Curlew	*Numenius arquata*	13	7	2	*-6*	*-60.0*	*-11*	*-146.7*
Little Owl	*Athene noctua*	85	66	8	*-19*	*-25.2*	*-77*	*-165.6*
Eurasian Hoopoe	*Upupa epops*	99	45	12	*-54*	*-75.0*	*-87*	*-156.8*
Woodlark	*Lullula arborea*	50	15	4	*-35*	*-107.7*	*-46*	*-170.4*
Great Reed Warbler	*Acrocephalus arundinaceus*	73	56	48	*-17*	*-26.4*	*-25*	*-41.3*
Icterine Warbler	*Hippolais icterina*	74	74	42	*+0*	*+0.0*	*-32*	*-55.2*
Lesser Grey Shrike	*Lanius minor*	16	2	0	*-14*	*-155.6*	*-16*	*-200.0*
Great Grey Shrike	*Lanius excubitor*	83	33	0	*-50*	*-86.2*	*-83*	*-200.0*
Woodchat Shrike	*Lanius senator*	91	59	8	*-32*	*-42.7*	*-83*	*-167.7*
Ortolan Bunting	*Emberiza hortulana*	22	7	2	*-15*	*-103.4*	*-20*	*-166.7*
Species showing a fragmented distribution already in the 1950s								
Grey Partridge	*Perdix perdix*	51	61	10	*+10*	*+17.9*	*-41*	*-134.4*
Corn Crake	*Crex crex*	50	19	3	*-31*	*-89.9*	*-47*	*-177.4*
Increasing species								
White Stork	*Ciconia ciconia*	3	7	*34*	*+4*	*+80.0*	*+31*	*+167.6*
Black Kite	*Milvus migrans*	110	118	127	*+8*	*+7.0*	*+17*	*+14.3*
Red Kite	*Milvus milvus*	53	60	114	*+7*	*+12.4*	*+61*	*+73.1*
Collared Dove	*Streptopelia decaocto*	42	117	*124*	*+75*	*+94.3*	*+82*	*+98.8*
Stonechat	*Saxicola torquatus*	25	31	33	*+6*	*+21.4*	*+8*	*+27.6*
Fieldfare	*Turdus pilaris*	94	125	126	*+31*	*+28.3*	*+32*	*+29.1*
Northern Raven	*Corvus corax*	31	71	94	*'+40*	*+78.4*	*+63*	*+100.8*

Table 1. Occupied atlas squares in the three periods (selected declining species, species showing a fragmented distribution already in the 1950s and increasing species) and change in the number of occupied atlas squares between 1950–1959/1972–1976 and 1950–1959/ 1993–1996 is given. In contrast to the usual calculations of % change, here the mean of the occupied atlas squares in the 1950s and the 1970s and 1990s, respectively, is used as the denominator, not the number of occupied atlas squares in the 1970s or 1990s. The use of the mean makes increases and declines symmetrical. Maximum decline in the case of extinction is −200%, and maximum increase in the case of colonisation is +200%. The table shows preliminary results.