



The State of Birds in Switzerland Report 2024



VOGELWARTE.CH

Headlines



Many woodland species have continued to fare well in 2023. But Yellowhammer and European Greenfinch find themselves in an increasingly precarious position. ➡ page 6

Biodiversity promotion areas help to increase species diversity in farmland. Low-intensity farming also enhances biodiversity. ➡ page 8



Ornithologist Walter Christen has been watching birds in the Aare Plain near Solothurn for 43 years. He has now dedicated a comprehensive publication to this area. ➡ page 10

Urbanisation and intensive farming have led to declines in bird populations across Europe. In Switzerland, many species have been able to sustain their numbers at higher elevation or even show positive trends. ➡ page 12



Wetlands have become rare in agricultural landscapes in Switzerland. One project proposes artificially flooding fields to provide stopover sites for migrating waders – with huge success! ➡ page 18



Dabbling ducks are overwintering on Swiss lakes in increasing numbers, attracted by ice-free shallow water zones. For species-rich assemblies of ducks to thrive, they need undisturbed, natural stretches of shore. ➡ page 24

Contrary to expectations, the breeding ranges of European species have shown no significant shift to the north. New areas were occupied mainly near existing populations, while isolated occurrences tended to disappear. ➡ page 28



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Further information

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www.vogelwarte.ch/state

Keeping a finger on the pulse of birdlife

How many birds are there in Switzerland? Which species do they represent? Where can they be found? And how have their numbers changed? No one can answer these questions as well as the Swiss Ornithological Institute. Recording bird observations was one of the Institute's main tasks from very early on. Today, our countrywide monitoring programme is among the best in the world. We can provide information on population size, trends and distribution maps for all wild bird species in Switzerland. We are able to do so mainly thanks to the counts provided by volunteer birdwatchers and the standardised methods of data recording and analysis at our headquarters in Sempach.

This information is crucial when it comes to assessing the state of birds and the level of threat they face, and prioritising and planning measures for conservation. But birds are also valuable indicators of the health of habitats and landscapes. Bird populations reflect how we humans impact the environment and can serve as a measure of sustainability. Data on birds are also representative of many other animal and plant species groups for which we have less information because these groups are less well studied and less well monitored, if at all, not least due to a lack of experts and volunteers. This

makes the comprehensive data we now have on birds all the more valuable. They enable us, for example, to make quick assessments of the consequences of human interventions in nature.

Documenting population trends is indispensable if we want to keep the public and policy makers informed about the state of nature, measure the success and the effectiveness of bird conservation action, and show what needs to be done for the protection of biodiversity as a whole. The robust data also help to assess the state of biodiversity in different habitats. For example, our bird data provide clear evidence for the urgent need for action in farmland, such as the need for more biodiversity promotion areas in arable land and a reduction in fertiliser and pesticide use. This is where the data we have collected on birds achieve their greatest impact. They give birds a voice. Thanks to the enduring efforts of the Swiss Ornithological Institute's volunteer ornithologists, we can provide sound scientific evidence to show that more support for biodiversity is needed!

Matthias Kestenholz
Chairman of the Board of Directors
Swiss Ornithological Institute





Birds are excellent indicators of biodiversity: nature-friendly farming practices characterise the areas where the Red-backed Shrike can still be found.



A study from France found that Rock Partridges benefit from mild winters with little snow and dry, warm summers. The winters of 2021/22 and 2022/23 were both very mild. The rise in Rock Partridge numbers in the past ten years could therefore be a result of mild winters combined with warm summers.

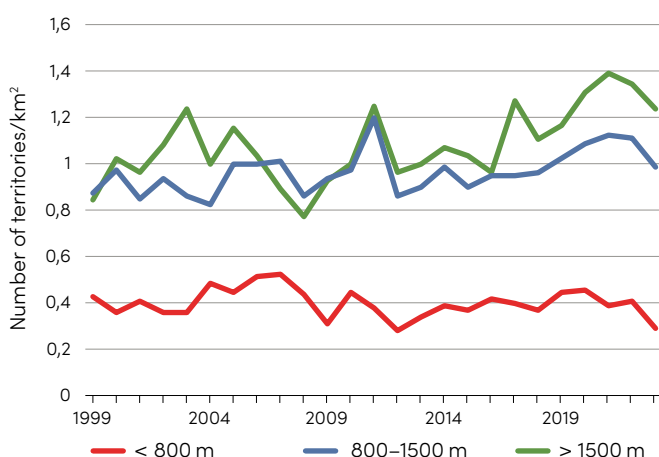
The state of breeding birds

Marked changes in two species were immediately apparent when the spring 2023 survey results arrived. While some fieldworkers were concerned about the decline in Yellowhammer numbers, others were pleased to see an increased presence of Rock Partridge.

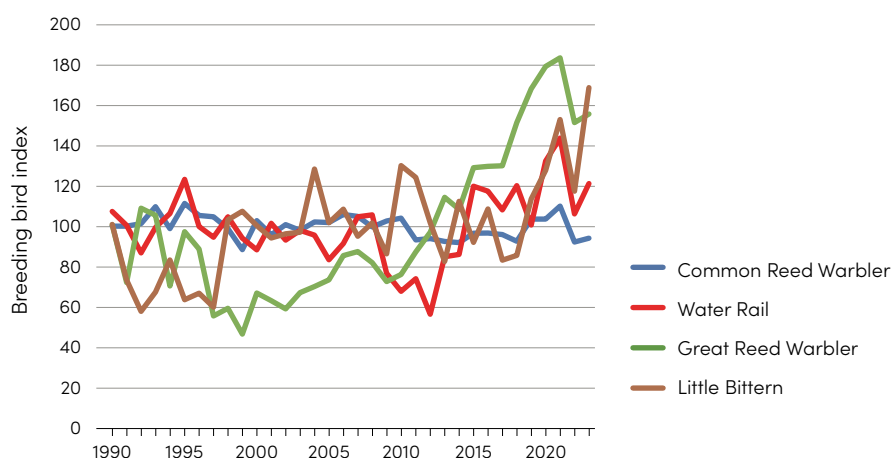
Greenfinch and Yellowhammer declines persist

While the populations of most finches and buntings showed marginal increases or remained stable compared to last year, numbers of both Yellowhammer and European Greenfinch continued to dwindle.

In the past ten years, the Greenfinch population has suffered a decline of about 40 %, while Yellowhammer numbers have gone down by about 35 % in the past seven years. Yellowhammer decline was particularly severe, with numbers dropping by 20 % in the last two years alone.



The Common Cuckoo can be found in a variety of habitats. Despite this flexibility, the species has become rare on the Swiss Central Plateau and in other European countries. So far, the Cuckoo has managed to persist in the higher reaches of its Swiss range. 2023 saw a decline compared to the previous year in all altitude zones. The graph shows the population trend by altitude zone in sites sampled in the «Monitoring of common breeding birds» scheme.



Following a marked drop in numbers in 2022, species associated with reedbeds are showing signs of recovery. The Little Bittern is currently on the rise and has more than made up the losses of the previous year.

The reasons for these losses are not clear. It is striking, however, that the population trend of Red-backed Shrike, another specialist of feature-rich farmland, has been positive in recent years. The species has presumably benefited from habitat improvements on agricultural land. Unlike Red-backed Shrikes, which overwinter in sub-Saharan Africa, Yellowhammers stay in the breeding area or migrate short distances. The results of a British study indicate that birds spending the winter in farmland often face food scarcity due to intensified farming practices. Yellowhammers may be affected in the same way.

Thanks to the existing survey grids and recording tools we are able to obtain detailed information on bird population trends. But the example of the Yellowhammer shows that finding biological explanations for an observed trend can be difficult. So while the monitoring results show the symptoms, research is needed in order to identify the underlying causes.

Trends or fluctuations?

While some species are in decline, other species with positive long-term trends are showing signs of stagnation. The population trend of Black Kite, for example, has now plateaued for almost ten years, which suggests that the population has reached carrying capacity or that a change in interspecific competition has taken place. Similarly, following a multi-year rising trend, there has been no further increase in Red Kite numbers in the last three years. In this case, however, it is too early to speak of a «plateau». Mouse abundance has been very low in some regions in the last two to three years, resulting in below average reproductive success, and the same factor could also be responsible for the reduced number of colonisations.

Downturn followed by recovery

Compared with last year, the populations of certain wetland species appear to be recovering. Some species associated with reedbeds showed a sharp decline in 2022, possibly due

to the fierce hailstorms and thunderstorms in summer 2021. Populations of Great Reed Warbler, Common Reed Warbler, Water Rail and Little Bittern appear to be recovering from this downturn. This indicates that a species can recover from an abrupt collapse in numbers if conditions are more favourable the following year. Such a recovery is more likely to occur in larger or interconnected populations. Small, isolated populations may be more severely affected by extreme events.

Further information

www.vogelwarte.ch/state/breeding



A high proportion of biodiversity promotion areas results in a wider variety of birds, butterflies and plants.

Direct and indirect effects on biodiversity in agricultural landscapes

Which factors influence the diversity of species and habitats in Swiss farmland? To find answers to this question, the research institute Agroscope linked data on the diversity and frequency of plants, butterflies and breeding birds with various land-use and climate indicators. The data came from more than 120 1-km squares representative of Switzerland's biogeographic regions and altitude zones.

Direct and indirect effects

The results showed that some factors affect biodiversity at a landscape scale both directly and indirectly. This is true of temperature, for instance. Warmer areas are used as breeding habitat by a larger number of bird species (direct effect). At the same time, temperature is related to the intensity of land use. In landscapes

where the environmental conditions are favourable, more surface area is used for agriculture, and used more intensively, which goes hand in hand with greater fertiliser and pesticide use. The results confirmed that fewer species of plants, butterflies and birds occur in areas of high-intensity land use. Climate therefore also has an indirect effect on biodiversity via land use and intensive farming practices.

Agri-environment measures prove effective

Agri-environment measures such as organic farming and biodiversity promotion areas (BPA) aim to raise species diversity in farmland. This effect was confirmed by the study. In particular, the proportion of meadows managed at low intensity and the number of different

types of BPA in a 1-km square were positively correlated with biodiversity in that square. A positive correlation was also found for all three species groups between biodiversity and the proportion of BPA-area. Previous studies have demonstrated that BPAs provide valuable foraging, sheltering, nesting and wintering opportunities that are otherwise not sufficiently available in intensively managed landscapes. The Agroscope study was also able to demonstrate a direct positive relationship between organic farming and biodiversity at the landscape scale.

To effectively promote and maintain biodiversity in agricultural land, measures need to be adapted to local conditions. Particularly in intensively managed landscapes like in arable land, BPAs can significantly improve species diversity.



The number of plant and bird species (depicted a Eurasian Tree Sparrow) in farmland increases along with the number of different types of land use.



In intensively managed farmland in particular, biodiversity promotion areas benefit species diversity.

References

Meier, E. S., G. Lüscher & E. Knop (2022): Disentangling direct and indirect drivers of farmland biodiversity at landscape scale. *Ecol. Letters* 25: 2422–2434. [www.doi.org/10.1111/ele.14104](https://doi.org/10.1111/ele.14104)

Herzog, C., E. S. Meier, J. Schneuwly, S. Birrer, T. Roth & E. Knop (in Review): Effekte ausgewählter Faktoren auf die Biodiversität in Schweizer Agrarlandschaften. *Agrarforschung Schweiz*.

Data sources

The plant and habitat data used in the study were drawn from the ALL-EMA monitoring scheme, the butterfly data from Biodiversity Monitoring Switzerland. Breeding bird data came from the «Monitoring of common breeding birds» scheme.

ALL-EMA



Biodiversity Monitoring
Switzerland



Monitoring of common
breeding birds





After heavy rain, patches of water form in the Aare Plain, serving as stopover sites for migrating waders.

In-depth overview of birdlife in the Aare Plain

43 years, 9043 days of birdwatching, 280 species on 32 square kilometres: these impressive figures were racked up by a single observer between 1980 and 2022 in the Aare Plain west of Solothurn. Underlying the numbers is a foundation of discipline, perseverance, extensive knowledge and most of all: a passionate interest in birds and a commitment to their conservation.

Walter Christen’s name is inextricably linked to bird recording and habitat protection in the river landscape between Büren an der Aare (BE) and Solothurn, an expanse so wide and open that it is called «Witi» («vastness») in the local dialect. Several publications in field ornithology have helped to build his reputation. Most recently, Walter

Christen has published a new, updated overview of birdlife in «his» Aare Plain.

Regional avifauna across 120 years

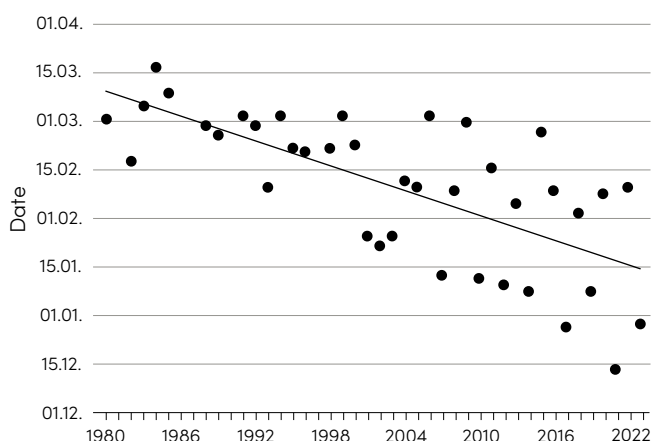
In this in-depth publication, Walter Christen analyses his own observations as well as those of other field ornithologists. All in all, observers

Disappeared	Period	New breeders
1981 Little Owl	from 1980	1982 European Stonechat
1986 Grey Partridge	from 1985	1987 Rook
1994 Whinchat and Icterine Warbler	from 1990	1990 Common Merganser 1994 Savi’s Warbler
1998 Common Pheasant	from 1995	
	from 2000	2000 Eurasian Crag Martin
2007 Common Redstart	from 2005	
2012 Willow Warbler	from 2010	2011 Red-crested Pochard, 2013 Egyptian Goose and Tufted Duck, 2014 Western Yellow Wagtail
	from 2015	2015 European Bee-eater, 2017 Yellow-legged Gull and Melodious Warbler
	from 2020	

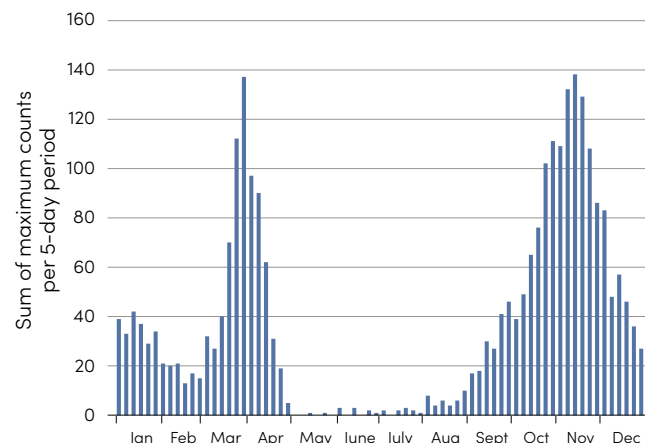
Since 1980, seven breeding bird species have disappeared from the Aare Plain and twelve new breeding species have been recorded.



As a forest ranger, Walter Christen pioneered the enhancement of forest biodiversity by means of forest reserves and old-growth stands. For decades, the ornithologist made regular early-morning birdwatching trips to «his» survey area west of Solothurn before starting work



Start of Common Wood Pigeon calls in the Solothurn region: the species' mating activity, which used to begin in early March in the early 1980s, had advanced to mid-January (or even mid-December in extreme cases!) by 2020.



European Robin migration diagram using regular counts from the oxbow lake near Grenchen (total of 2769 individuals). A total of 2438 counts were conducted between 1983 and 2022.

recorded a total of 299 bird species between 1980 and 2022. Walter Christen himself recorded the 300th species, Blyth's Reed Warbler, in June 2023. He also performed a meticulous review of historical publications and taxidermy specimens in museums, tracing the changes in birdlife in the Aare Plain back as far as 1900. At least 12 species stopped breeding in the area between 1900 and 1980, including Eurasian Curlew, Crested Lark and Lesser Grey Shrike, and a further seven species have disappeared since then (see table on page 10).

The publication offers a wealth of unusual ornithological data series that give fascinating insights into changes in birdlife thanks to the high level of methodological consistency maintained over 43 years. For example, a host of migration diagrams provide information on spring and autumn passage, including common species such as European Robin.

Since 1980, breeding has been confirmed in at least one year for 98 species, 54 of which are regular breeders. Given the ecological potential of this river landscape, these figures are quite low, a circumstance that can be at least partially explained by intensive farming and pressure from recreational activities on land and water. Among the birds breeding in farmland are

Northern Lapwing (regular breeder until 1999), Common Quail, Common Kestrel, Stock Dove, Eurasian Skylark, Red-backed Shrike, Yellowhammer and Corn Bunting. But the trend for species of open landscapes continues to decline despite ecological restoration measures.

Wader stopover site of national importance

Besides information on birds, the publication also looks back on landscape changes since 1850, including two Jura river regulation projects. The sparsely wooded and largely undeveloped Aare Plain with its meandering river is an exquisite landscape to this day, despite these interventions. The former floodplain is now intensively farmed arable land, but built-up areas fortunately are few. After heavy rain, expanses of water still form that can be used by flocks of migrating waders. Since 1980, more than 111 500 individuals from 38 species have been recorded, including rare species such as Sociable Lapwing, Buff-breasted Sandpiper and Terek Sandpiper.

Saved from fragmentation

Because of its pre-eminent importance, the «Witi» was declared a waterbird and migratory bird reserve of national importance by the

Federal Council in 1992. For this reason, and thanks to the painstakingly documented, nationally significant populations of Northern Lapwing and European hare, the negative impacts of the impending A5 motorway construction from Solothurn to Biel had to be mitigated. To avoid slicing through the landscape, the A5 was rerouted through a 1760-m-long tunnel. In addition, alternative habitats were created as a compensation measure. Without Walter Christen's detailed records, the effort would most likely not have been made. The achievement is an example of how detailed observation and documentation and persistent argumentation can benefit nature conservation.

Literature

Christen, W. (2023): Die Vogelwelt der Aareebene westlich von Solothurn, 1980–2022. Solothurn. 388 pages.

Switzerland – the place to be?

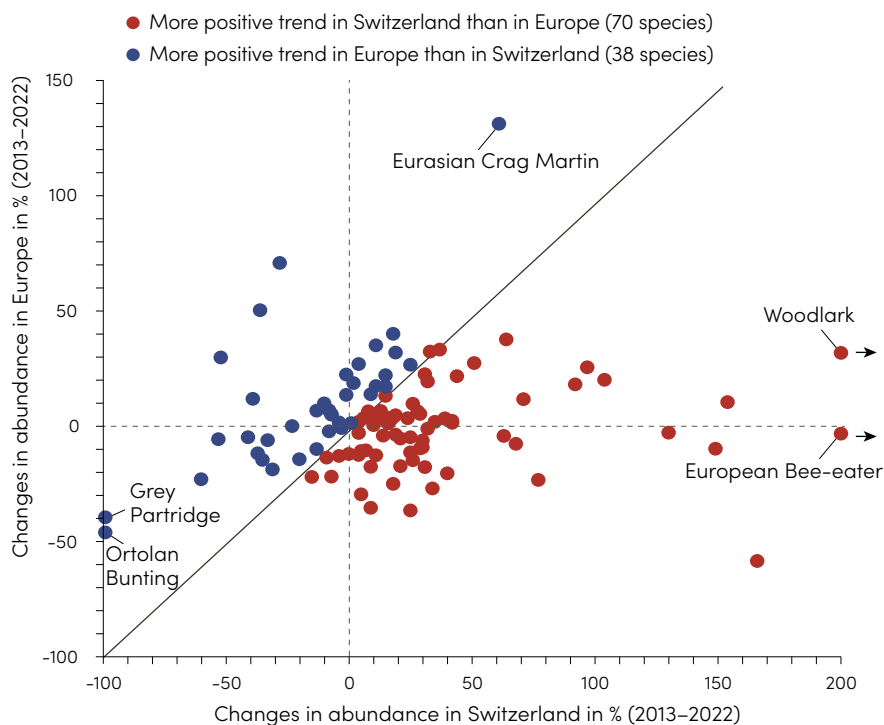


Agricultural intensification and increasing urbanisation are the main reasons for dwindling breeding populations in Europe. In Switzerland, this trend is countered by increasing populations in woodland and mountain areas, among other factors.

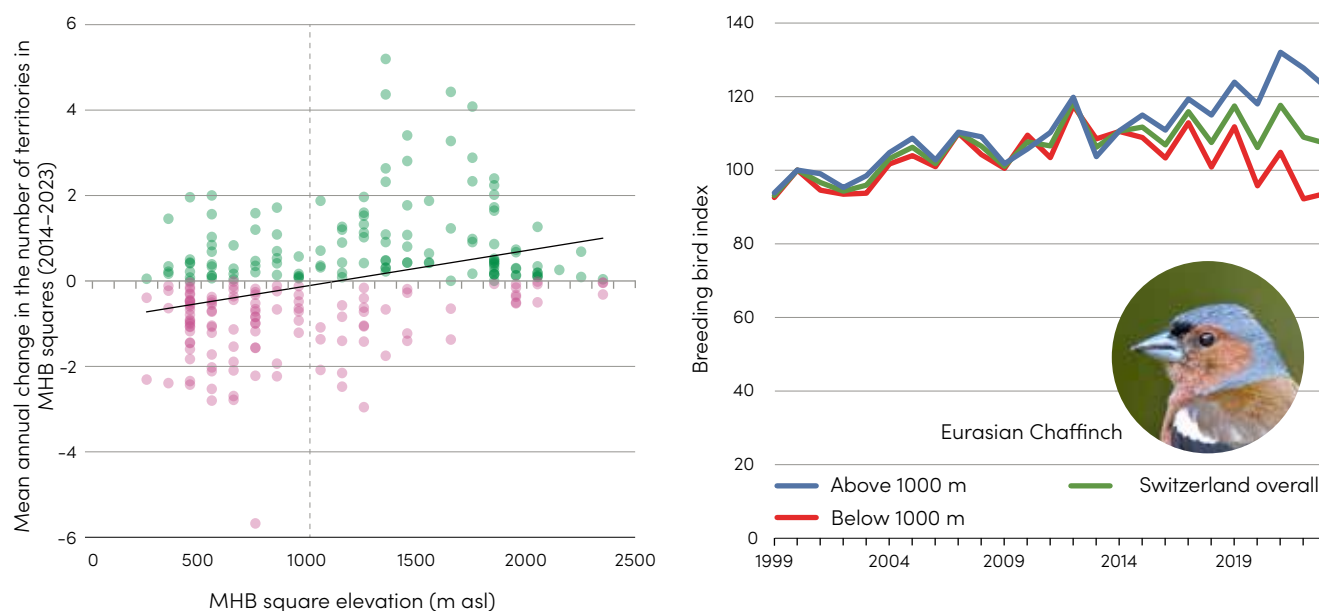
Europe's breeding birds are under pressure. Estimates suggest that there are over half a billion fewer birds on the continent than in 1980, which corresponds to a decline in the breeding bird population of 18 %. The decline is even more marked in populations of typical farmland birds. In contrast, Switzerland's breeding bird populations have shown a mildly positive trend over the past 30 years. Some farmland species are showing signs of recovery as well. But the fact remains that at lower elevation especially, species once common in farmland have disappeared from large parts of the country.

Agriculture and urbanisation are the main drivers

A recently published study by the Swiss Ornithological Institute was involved in pinpointing the causes of this Europe-wide loss of biodiversity. Population trends in 28 countries paint a clear picture: agricultural



A comparison of population trends for 108 species over the last ten years: 65 % of species have a more positive trend in Switzerland (red, below the solid line) than in Europe as a whole. Source: European Environment Agency/Pan-European Common Bird Monitoring Scheme.



Many species' population trends are becoming elevation-dependent in response to intensive land use in the lowlands and rising temperatures. Left: Chaffinch territory numbers in «Monitoring of common breeding birds» (MHB) survey plots below approx. 1000 m asl (dotted line) have mostly declined in the past ten years (red). Above that elevation, positive trends (green) are prevailing. Right: Losses in the lowlands (red) are offset by rising trends higher up (blue), leading to a stable overall trend (green) for Switzerland's most abundant breeding bird.

intensification was identified as the strongest driver of decline, followed by increasing urbanisation. The effects of farming practices and urbanisation are not limited to the species typically associated with these habitats, but also affect long-distance migrants, in particular, and species dependent on insects to feed their chicks, in general. It is reasonable to suppose that besides the direct effects of habitat loss, indirect factors such as a reduced food supply and the impact of pesticides are harming the continent's birds.

Trends in Switzerland

If you compare population trends within Europe, Switzerland looks like a positive outlier at first glance. The various indicators that make up the Swiss Bird Index all show more positive trends than their European counterparts. The «SBI® Regular breeding birds», for instance, declined along with the European «Common

Breeding Bird» index until the early 2000s, but has since increased, while the European index continues its downward trajectory. For 65 % of the 108 species represented in both indices, short-term trends (2013–2022) are more positive in Switzerland than in Europe as a whole. Of the 50 species whose populations declined during this period in Europe, as many as 32 have a rising trend in Switzerland. They include farmland birds like Red-backed Shrike and Eurasian Wryneck. How is it possible that many species seem to be defying the large-scale declines in a country as densely populated and intensively farmed as ours?

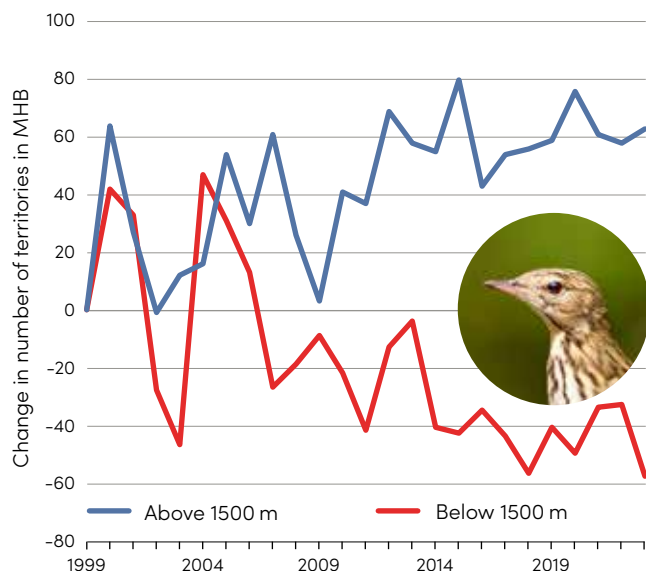
Conservation action and new arrivals offset the downward trend

The reasons for the difference between the European and Swiss trends are complex. Many species suffered dramatic population declines in the 20th century or have already

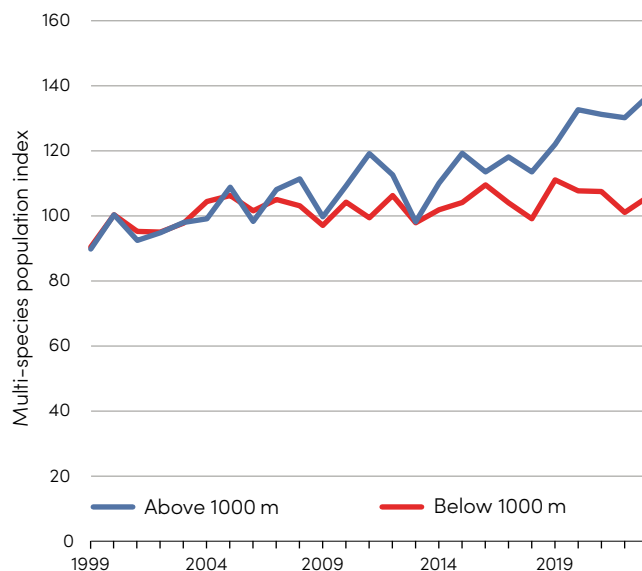
disappeared completely, among them Woodchat Shrike, Grey Partridge and Ortolan Bunting. While after their disappearance, these species no longer contribute with further negative trends in Switzerland, their overall European populations continue to dwindle. At the same time, some species are recovering in our country thanks to conservation action (e.g. White Stork, Common Whitethroat) or are only now colonising Switzerland in significant numbers due to warmer temperatures (e.g. European Bee-eater). What looks like a favourable overall trend is therefore partly the result of many populations declining to a low level while others have shown strong growth (e.g. Rook, Red Kite).

Positive trend at higher elevation

In Alpine areas, climate warming is happening at an above-average pace. Rising temperatures allow many lowland species to move higher up and colonise areas where they



Change in number of Tree Pipit territories in survey plots of the «Monitoring of common breeding birds» (MHB) scheme, below (red line) and above (blue line) 1500 m asl.



The change in mean abundance of 62 common breeding birds above and below 1000 m asl shows that gains are currently seen mainly at higher elevation. Includes all species that were recorded both above and below 1000 m asl in the «Monitoring of common breeding birds» scheme throughout the survey period.

were not present in the past, or only at a low density. An added advantage for farmland birds is that higher-elevation sites are often not managed as intensively as lowland areas. We see evidence of this in the «Monitoring of common breeding birds» data: 60 % of the 97 species that were recorded over an altitudinal gradient of at least 1000 meters show more positive trends at higher elevation than lower down. The set includes 19 farmland species, of which 13 have more positive trends higher up, such as White Wagtail and Whinchat. Gains at higher elevation can compensate the negative trends, some of them marked, on the Central Plateau, thus stabilising the overall trend.

Finding refuge in the Alps

At the end of the last ice age some 12 000 years ago, the lowlands of Europe were mainly tundra. When the landscape changed and became uninhabitable for species like Rock Ptarmigan, they took refuge in the

high mountains, where they have sustained their populations to this day. Today, Europe's breeding birds face a similar outlook. For many species, human activities have resulted in large-scale losses of breeding habitat, and continue to do so. Climate change has allowed some bird species to colonise higher altitudes, where more natural habitats can still be found, or to colonise them in greater density than before. Such movements to higher ground are not possible in large parts of Europe due to a lack of high mountains. Mountain regions therefore have a special responsibility to preserve biodiversity, not only with regard to alpine species, but increasingly for lowland species as well. Whether or not the Alps will once more serve as a refuge in the Anthropocene depends also on how we exercise our responsibility. Should climate change and agricultural intensification continue to progress in mountain areas, further losses in the future seem likely.

References

Rigal, S. et al. (2023): Farmland practices are driving bird population decline across Europe. *Proceedings of the National Academy of Sciences*, 120(21), e2216573120.

Common Linnet numbers have declined by more than half in Europe since 1980. The species has also suffered large-scale losses on the Swiss Central Plateau. Numbers have recently been rising again, especially at higher elevation.

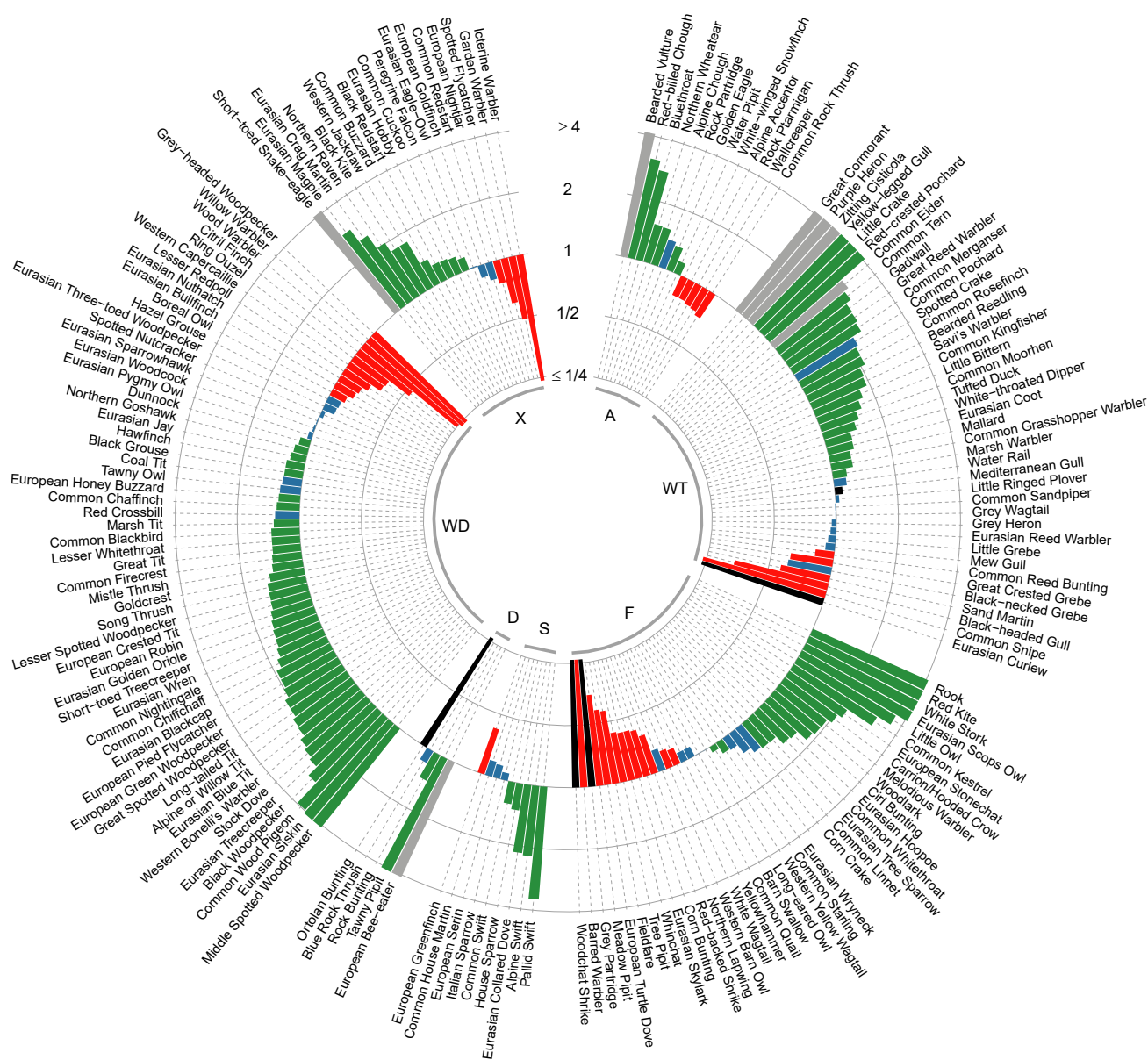


Regular breeders in Switzerland

Population trends for 180 regular native breeding birds¹ in Switzerland from 1990 to 2023. The species are sorted by primary habitat² and trend intensity. The length of the bars corresponds to the factor of change in breeding population size since the start of the survey period: a factor of 1 means no change, a factor of 2 corresponds to a doubling, a factor of ½ to a halving of the population size, etc. Green bars represent species with significant gains, red bars stand for species with significant losses. Blue bars mean that no statistically significant change was detected. This is the case for populations that are fluctuating or stable, or for which we have insufficient data. Grey indicates species newly recorded as breeding birds during the survey period, black those that no longer breed in Switzerland.

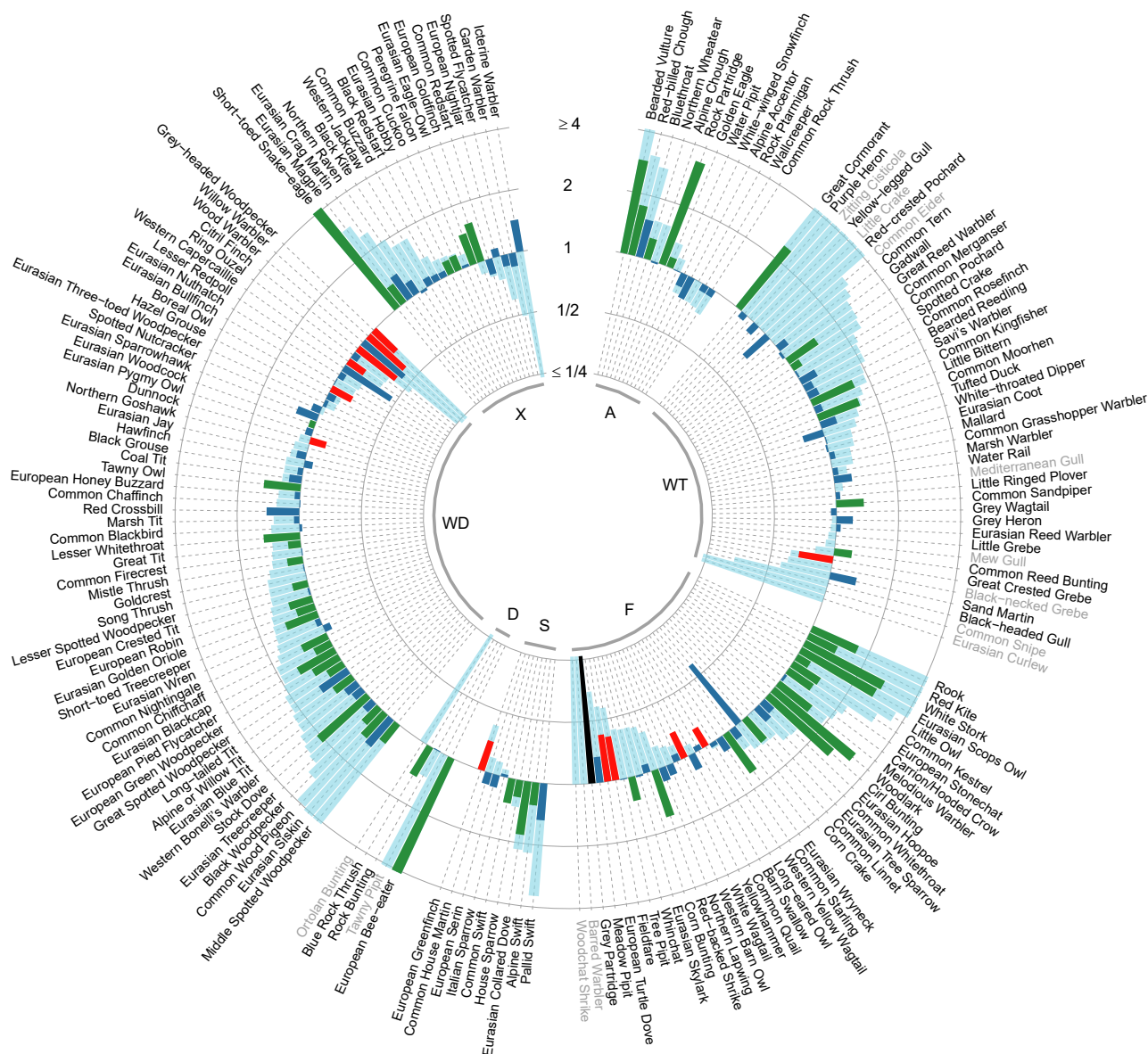
¹ Not including Collared Flycatcher and White-backed Woodpecker. No trend is shown for these species due to insufficient data.

² A = Alpine habitats, WT = Wetlands, F = Farmland, S = Settlements, D = Dry habitats, WD = Woodland, X = not assigned to any primary habitat



Population trends for 168 regular native breeding birds in Switzerland in the last ten years (2014–2023). The axes and colours are explained on p. 16. For a further 12 species, the breeding population never exceeded ten pairs between 2014 and 2023. No trend is presented for these species. Their names are shown in grey. The blue shaded areas indicate the change over the entire survey period. Like in the chart on p. 16, species are sorted by primary habitat² and trend intensity over the entire period (1990–2023).

Example: The breeding population of Eurasian Magpie (at about 11 o'clock, next to Short-toed Snake Eagle) has almost tripled since 1990 (see left-hand chart). The increase in the past ten years amounts to a factor of 1.3, or 30 % (see right-hand chart).



Irregular and exceptional breeders

We also document breeding populations of irregular and exceptional breeders in Switzerland as consistently as possible. You will find a table with this information at www.vogelwarte.ch/state/breeding → Further analyses.

Reference

Müller, C. (2024): Seltene und bemerkenswerte Brutvögel 2023 in der Schweiz. In preparation.

Further information

www.vogelwarte.ch/state/breeding



The wader stopover site «les Quatre-Vingts» in Yverdon-Les-Bains on 18 August 2021.

Fields are flooded to create stopover sites for waders

Wetlands in Switzerland have been heavily impacted by human interventions in the past two centuries. Many floodplains were drained and converted into agricultural land, and the natural dynamics of lakes and rivers were regulated. These measures have drastically reduced the availability of habitats

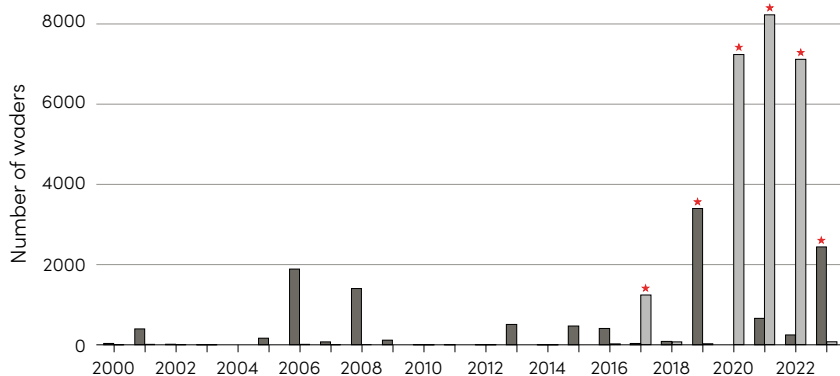
for species that rely on transition zones between water and land. The same is true for most waders that use these areas as stopover sites.

Creating alternative stopover sites

The availability of diverse stopover sites is crucial for migratory birds.

To ensure such sites are available, artificial islands have been created in Swiss lakes (e.g. Île aux Oiseaux near Préverenges) and river deltas have been revitalised. Such measures are often very effective, but maintaining them so as to prevent shrub encroachment takes a huge amount of time and effort.

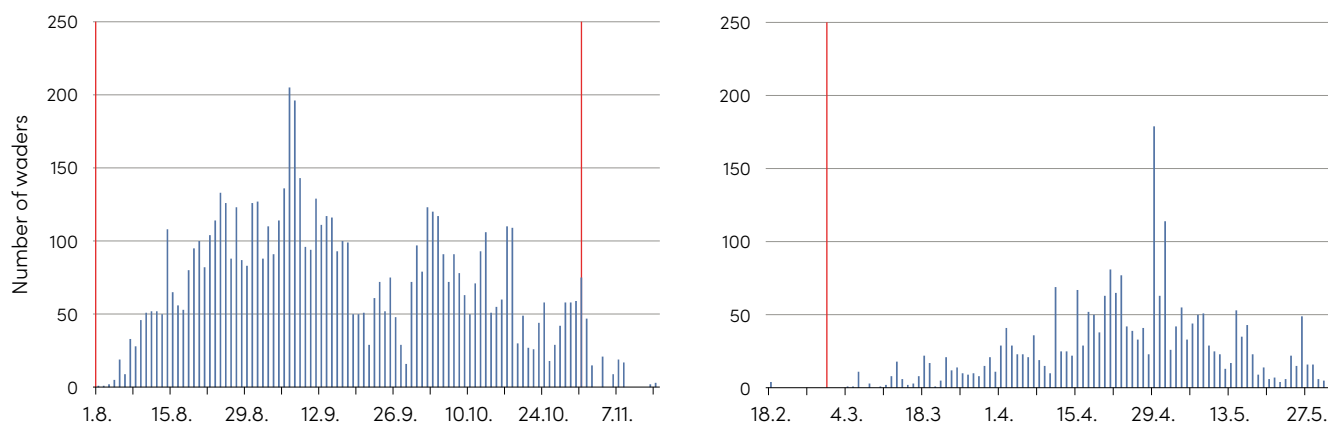
Flooded farmland provides attractive stopover sites for waders, as we see every time there is prolonged rainfall during the migration season. This inspired the idea to flood fields intentionally as a targeted measure. One area in particular known as «les Quatre-Vingts» in the Orbe Plain near Yverdon-les-Bains has drawn the attention of ornithologists. The site has regularly been flooded naturally in the past, attracting a large number of birds.



Number of waders recorded at «les Quatre-Vingts» per day, in totals per half year (dark grey: spring, light grey: autumn). Periods with artificial flooding are marked with a red star. Several instances of natural flooding, especially in spring 2006 and 2008, highlighted the site's attractiveness for waders. In autumn 2017, the site was flooded when passage was already underway (on 19 September).

The pilot project near Yverdon-les-Bains

Christian Roulier, who initiated the project in 2012, founded the «Escale limicoles-agriculture» association



Phenology of the 2022 autumn passage (left) and the 2023 spring passage (right) at the «les Quatre-Vingts» site. The number of individual waders counted per day is shown. The red lines indicate the beginning and end of the artificial water supply.

together with Pierre Iseli in 2016. Their goal was to enable controlled flooding at the «les Quatre-Vingts» site. Thanks to the excellent collaboration with the city of Yverdon-les-Bains, which owns the land, and Stoll Production SA, the group that cultivates the land, the first controlled flooding was able to take place in autumn 2017 on a five-hectare parcel of land. Five further floodings followed, generally for a period of three months (March to May in 2019 and 2023; August to October in 2020, 2021 and 2022).

The success of the flooding far exceeded expectations. In autumn especially, the site attracted waders in impressive numbers by Swiss standards, like on 16 September 2021, when 238 waders were counted. Since 2017, a total of 29 wader species have been observed. During the flooding, the stopover site near Yverdon-les-Bains is among those with the highest numbers of migrating waders in Switzerland.

Wanted: more temporarily flooded stopover sites

To keep yield loss at a minimum and ensure that the «les Quatre-Vingts» site remains classified as farmland, the land needs to be cultivated every year. It is therefore not possible to flood the site in both spring and autumn. A search for other sites in the same area is underway, so that stopover sites can be made available in spring and in autumn. It is a challenging task, mainly because no financial incentives for this type of measure are currently provided.

It would already be a major success if high-quality stopover sites were available in the Orbe Plain every migration season. Several locations across the country are currently being assessed with the aim of creating a network of stopover sites, thus improving Switzerland's ecological infrastructure. The Swiss Ornithological Institute's programme for habitat improvement («Aufschwung für die Vogelwelt»)

offers the necessary expertise and financial support.



The Wood Sandpiper is among the species that benefited most from the measure. The number of observations in the area has risen massively since 2017.

Further information can be found on the website <https://www.escales-limicoles-agriculture.ch/>, where you will also find the date of the next planned flooding.

Migration in 2023

Among the ornithological highlights of winter 2022/23 were the Cetti's Warblers, ten all in all, that were seen in Ticino, on Lake Geneva and in the «Drei-Seen-Land» (the area around Lakes Biel, Neuchâtel and Murten). Apart from a few overwintering birds in the late 1970s and early 1980, the species had only rarely been recorded in winter up until December 2016. Since then, Cetti's Warbler has regularly occurred in Les Granges VD.

In March and April 2023, large numbers of Alpine Swifts appeared in Switzerland, about ten days earlier than usual. The influx did not extend beyond spring passage – during the breeding period in May, the species'

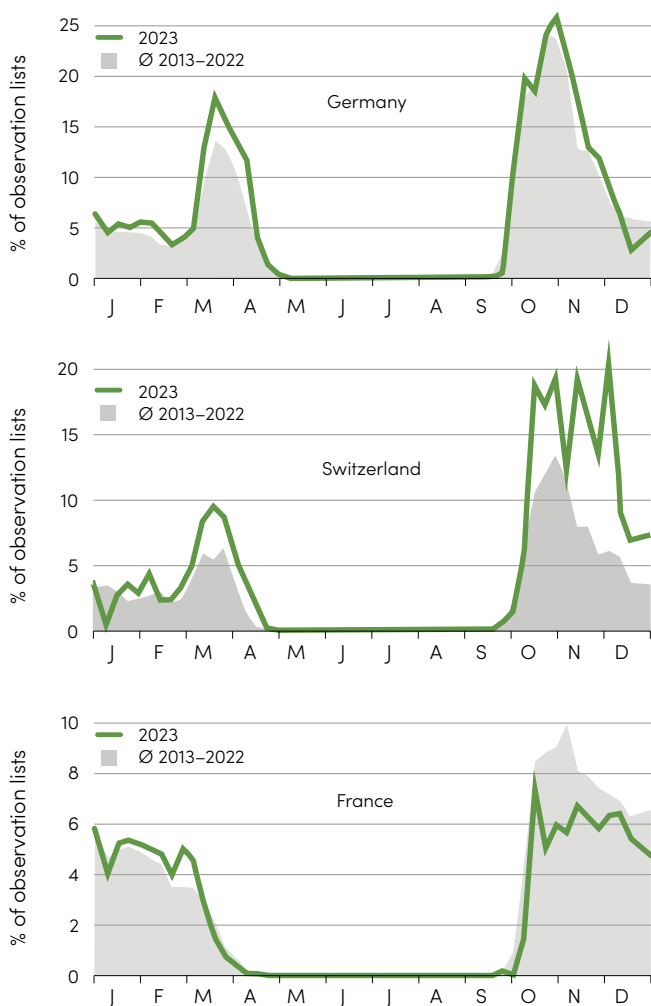
presence was similar to previous years. The striking migration movements were detected as far as the British Isles, which are way beyond the northern fringes of Alpine Swift's European breeding range. The spring passage of Redwing was also unusually intense and ended late; one individual was recorded as late as June.

In August, Switzerland and its neighbours witnessed an unprecedented influx of Pygmy Cormorants. The birds were observed for lengthy periods of time in three locations in western Switzerland, in Chavornay VD, Verbois GE and Les Granges VD, where they overwintered in groups of up to 15 individuals.

Year-round, this small cormorant species' European stronghold lies in southeastern Europe.

In October 2023, ringing stations recorded Eurasian Siskins, Hawfinches and Red Crossbills in above-average numbers. A new record of captured Red Crossbills was set on Col de Bretolet VS at 2595 individuals.

Starting in late October, there was an influx of Long-tailed Tits showing characteristics of the northern and eastern «caudatus» subspecies. This white-headed subspecies was last seen in Switzerland in significant numbers in winter 2010/11. Normally, only a few individuals are observed each winter.



Share of observation lists with reports of Redwing in Germany, Switzerland and France. In all three countries, spring passage in March and April 2023 was above average (green lines), with the earliest records coming from France, where passage is normally (grey areas) hardly noticeable. Autumn passage, by contrast, was different in each country.

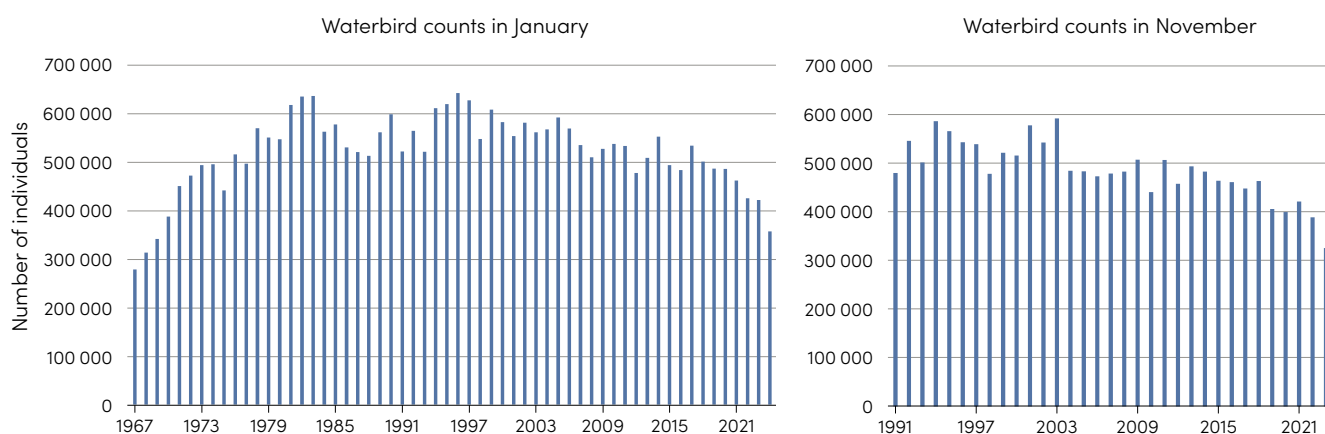


More white-headed Long-tailed Tits than usual were observed in winter 2023/24. The distribution range of the «caudatus» subspecies stretches from Scandinavia to Japan.



Once a rare sighting, Great Egrets have become common winter visitors.

Lots of water, not so many birds



Total number of individuals recorded in the January and November counts in Switzerland, including cross-border areas. In January 2024, numbers were at a similar level as in the 1960s. November counts only began in 1991; a new all-time low was recorded in 2023.

Following the trend of recent years, wintering waterbird counts were very low this year. In January 2024, only around 360 000 individuals were counted in Switzerland (including cross-border areas); November 2023 counts totalled 330 000 individuals. This means that January counts were at their fourth lowest since the census began in 1967, and numbers in November fell below the previous year's record low yet again.

Warm, wet November and high water levels in January

November 2023, indeed the whole of autumn, was unusually warm across Europe, with some regional differences. It was also one of the rainiest months of November since records began in central Europe. The weather was wet on the census weekend in mid-November as well. Lakes and rivers overflowed in many places, and fields were flooded. Water levels remained

high throughout the winter in many areas, with new monthly highs recorded in December and January on Lake Constance. January 2024 was milder than in previous years.

Unsurprisingly, the mild winter meant that fewer waterbirds made their way to Switzerland. In November, several species reached new record lows, including Common Pochard, Common Goldeneye and Black-headed Gull. The Tufted Duck count was the second lowest since



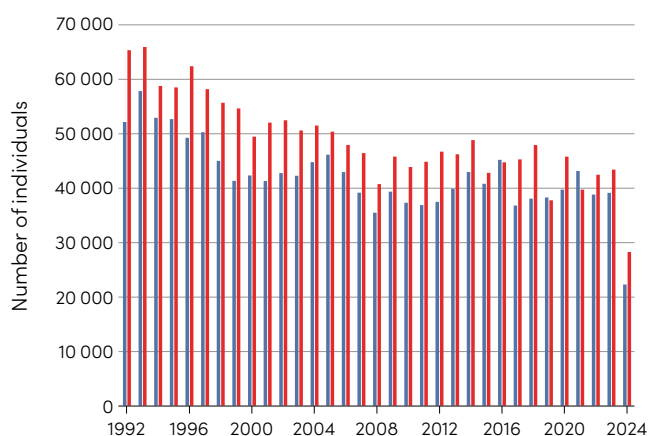
An unusually large number of Little Gulls drifted into Switzerland in autumn 2023 as a result of autumn storms. Many of them were observed during the waterbird census in November.



Wintering Common Loons were particularly numerous in Switzerland and were often easy to observe.



Numbers of Black-headed Gulls recorded in the waterbird census in Switzerland (incl. cross-border areas). November (blue) and January (red) counts show a similar pattern of change, with numbers generally being higher in January than in November. The recent marked decline was probably caused by increased mortality due to bird flu.



the census began in 1991; only a few more individuals than last year were recorded. Although the colder January weather brought more birds to Switzerland, Common Goldeneye and Black-headed Gull counts were still at an all-time January low.

Several reasons for declining numbers

While high temperatures in most parts of Europe are certainly one of the main reasons for the low numbers, other species-specific factors will have contributed to the observed trends. Very low numbers were recorded for both Mute Swan and Mallard. A larger proportion of

these two species may have been missed than in previous years, due to some individuals moving to wet or flooded fields. The unusually low numbers of Black-headed Gulls were presumably a result of high mortality in the northern and eastern breeding ranges due to bird flu.

Not only lows

But like every year, there were also new record highs and noteworthy events. Many Little Gulls could still be seen on our waterbodies in November: 157 individuals were counted, more than three times the current record. Common Sandpipers were also present in large numbers.

Three Common Loons equalled the maximum recorded so far; in January as many as eight individuals were present. Grey Heron and Great Egret also achieved January highs. At 758 individuals, last year's Great Egret count was surpassed by more than 200. Eurasian Wigeon numbers also reached a new record high. The species is mainly found on Lake Constance, where the Vorarlberg Rhine Delta has become an important wintering site in the past ten years.

Habitat niches in shallow-water zones

The first thing that comes to mind for many when hearing the term «waterbird census» is «counting ducks». It is true that, on average, ducks make up a little more than half of all waterbirds overwintering in Switzerland; in peak years in the mid-1990s as many as two thirds of all waterbirds were ducks. What's more, they are present in large variety, form eye-catching groups and display their striking breeding plumage when they overwinter in Switzerland. Their ecological diversity is also the reason why their population trends, those of diving ducks and dabbling ducks in particular, are currently diverging.

More than just a duck

Because of their different foraging strategies, different types of ducks

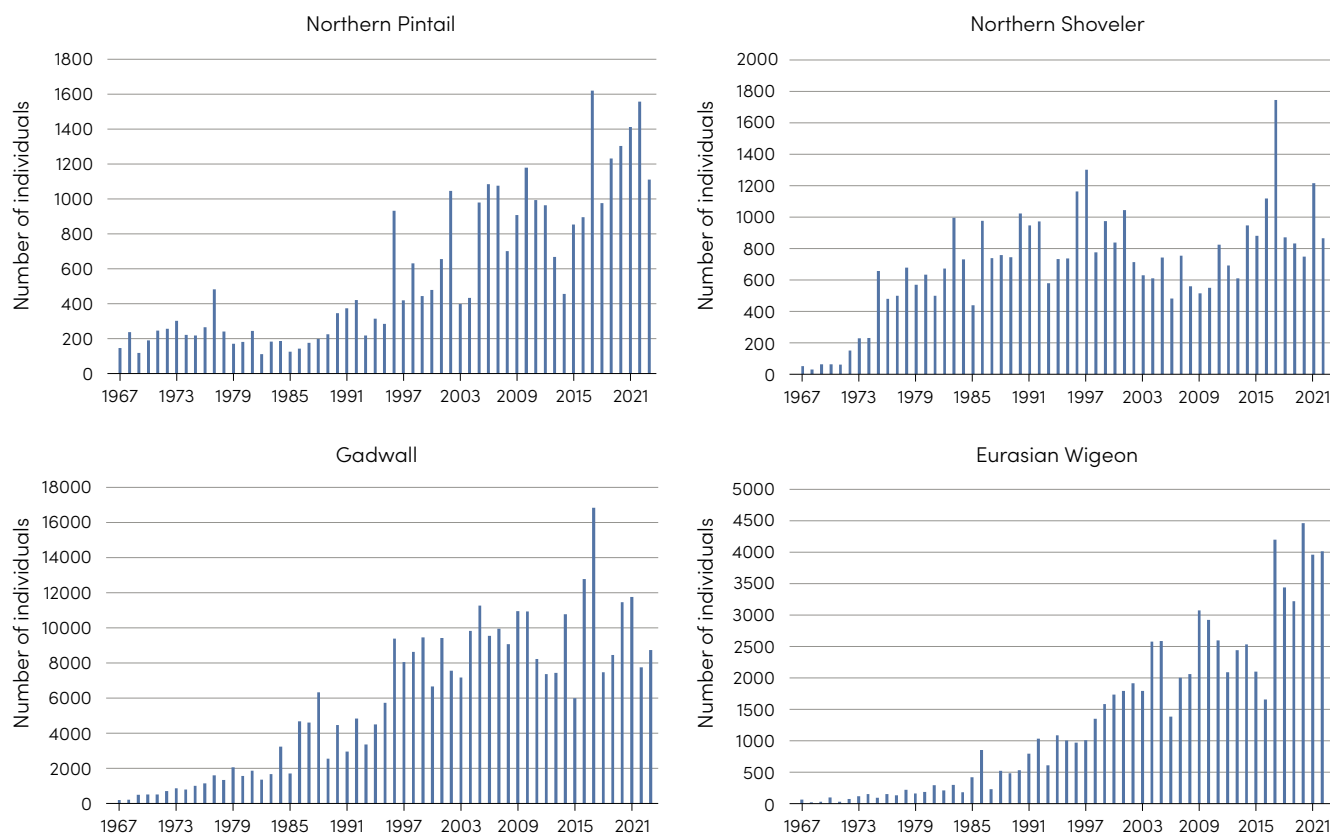
occupy different areas of a water-body. Diving ducks, for example, mostly use zones of deeper water, while dabbling ducks mainly forage in shallow-water zones and close to the shore. Dabbling ducks favour plant food or a mixed diet, while diving ducks feed mostly on animal food. An exception among the latter is the Red-crested Pochard, which feeds on stoneworts.

There are also important differences within the group of dabbling ducks regarding habitat use. These differences reduce competition for food resources and make it possible for mixed groups of ducks to overwinter in the limited space available. Eurasian Wigeon primarily forage on land, often in neighbouring grassy areas. Eurasian Teal favour shallow water and mud banks. They

are subject to large fluctuations, being strongly affected by ice cover and high water levels. Gadwall are also often found near the shore, where they favour deeper water zones than Eurasian Teal. Northern Shovelers prefer shallow, nutrient-rich waters, where they feed on plankton. Wetlands created through the silting up of dammed rivers led to a substantial increase in Northern Shovelers from the 1970s. Finally, the long-necked Northern Pintail is adapted to deeper water zones, where it feeds on aquatic plants.

Climate change is altering the composition of wintering ducks

Diving and dabbling ducks are strongly affected by climate change and the warmer temperatures in their stopover and wintering sites. As



Four dabbling duck species with strongly increasing January numbers since the start of the census in 1967.

long as waterbodies do not completely freeze over, diving ducks will find the food they need, while dabbling ducks rely on ice-free stretches of shore. These differences help us to understand the current trends: the number of diving ducks recorded in Switzerland has been declining significantly for years, because they increasingly find areas of open water further north, which allows them to shorten the migration distance and save energy. At the same time, dabbling duck numbers are rising, as even the shores of our lakes now frequently stay ice-free and remain accessible to various species.

Changes in food supply

What happens underwater is reflected in the spatial distribution of ducks as well. They can only overwinter

successfully where there is a suitable food supply. In the eutrophication phase during the second half of the 20th century, over-fertilisation and wastewater led to a massive nutrient overload in many waterbodies; it was this nutrient overload that provided ample food for the introduced Zebra Mussel, leading to a strong increase, which in turn boosted the food supply for diving ducks. Restoring waterbodies to their natural low-nutrient state (re-oligotrophication) results in the return of pondweed and other aquatic plants, improving the food supply for herbivores.

Valuable natural shallow-water zones

Because many shorelines in Switzerland are heavily built up and

ecologically impoverished, protecting existing shallow-water zones is extremely important. Ducks need sheltered coves where they are protected from the wind and from disturbance through humans and dogs. Reserves for wintering and migratory birds are hotspots for many species' wintering populations; 85 % of the Swiss population of Northern Pintail, for example, spent the winter of 2022/23 in these reserves.



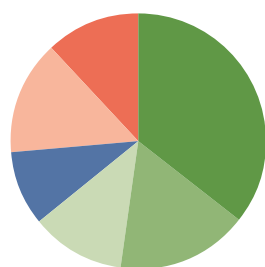
Eurasian Wigeon, Gadwall, Northern Shoveler and Northern Pintail all have different water-depth requirements; their order from left to right reflects a preference from shallow water to deeper water.

Wintering waterbirds in Switzerland

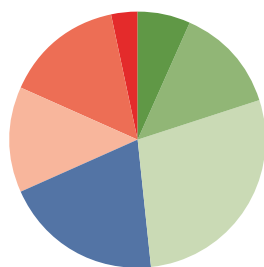
Current population size and population trend for waterbirds wintering in Switzerland (including the German and French parts of Lake Constance and Lake Geneva) for the entire survey period (1967–2024) and for the last 20 years (2005–2024). Trends are based on January counts. Trends shown as +++ or --- signify a change by more than a factor of 5, while ++ or -- marks a change between a factor of 2 and 5 and + or - a change by less than a factor of 2. The symbol • means that no statistically significant change was detected. This is the case for populations that are actually stable but also for those that fluctuate heavily. For species with very small populations (never exceeding 50 individuals) the trends are given in brackets.

Species	November Count 2023	January Count 2024	Trend 1967–2024	Trend 2005–2024
Canada Goose	4	4		(--)
Barnacle Goose	3	2		(-)
Greylag Goose	1 901	1 964	+++	++
Tundra Bean Goose	0	0		---
Gr. White-fronted Goose	1	8	+++	--
Mute Swan	7 209	5 121	+	+
Bewick's Swan	2	2		(++)
Whooper Swan	20	646	+++	+
Egyptian Goose	114	140		+++
Common Shelduck	28	61	+++	+
Ruddy Shelduck	354	674		+++
Mandarin Duck	61	58		-
Garganey	0	4	(•)	(•)
Northern Shoveler	965	1 431	+++	+
Gadwall	5 057	7 998	+++	+
Eurasian Wigeon	1 984	4 597	+++	++
Mallard	27 913	30 733	-	-
Northern Pintail	627	909	+++	++
Eurasian Teal	3 156	4 565	+	+
Red-crested Pochard	30 684	21 102	+++	+
Common Pochard	47 411	44 783	++	-
Ferruginous Duck	88	84	+++	++
Tufted Duck	42 483	66 278	+	-
Greater Scaup	4	42	--	---
Common Eider	14	26	-	--
Velvet Scoter	3	31	+	•
Common Scoter	0	0	(--)	(•)
Long-tailed Duck	0	0	(•)	(--)
Common Goldeneye	266	2 657	--	--
Smew	0	11	--	--
Common Merganser	3 872	6 647	++	+

Species	November Count 2023	January Count 2024	Trend 1967–2024	Trend 2005–2024
Red-breasted Merganser	22	59	++	•
Common Moorhen	1 058	1 186		+
Eurasian Coot	76 012	74 580	-	-
Little Grebe	2 454	2 480	--	•
Red-necked Grebe	2	3	-	--
Great Crested Grebe	23 188	27 406	+	•
Horned Grebe	1	9	(++)	(++)
Black-necked Grebe	1 880	4 338	++	++
Eurasian Curlew	1 140	877		+
Common Snipe	249	271		++
Common Sandpiper	88	46		+
Black-headed Gull	22 215	28 199	-	-
Little Gull	157	3	+++	•
Mediterranean Gull	11	3	(+++)	(+++)
unident. large gull	1 218	661		
Common Gull	32	1 261	-	--
Great Black-backed Gull	0	2	(++)	(•)
European Herring Gull	0	9		(--)
Caspian Gull	37	78		
Yellow-legged Gull	4 703	3 952		+
Lesser Black-backed Gull	20	6	(•)	(-)
Red-throated Loon	2	1	(+++)	(•)
Arctic Loon	81	59	+++	+
Common Loon	3	8	(•)	(•)
Great Cormorant	11 922	5 735	+++	•
Eurasian Bittern	6	11		(•)
Grey Heron	1 557	2 104	++	+
Great Egret	385	758		+++
Common Kingfisher	663	293		+
White-throated Dipper	738	796		+
Grey Wagtail	834	795		+



Trend 1967–2024
(42 species)



Trend 2005–2024
(60 species)

- +++ increase > factor of 5
- ++ increase between factor of 2 and factor of 5
- + increase < factor of 2
- not significant or fluctuating
- decline < factor of 2
- decline between factor of 2 and factor of 5
- decline > factor of 5

Further information

www.vogelwarte.ch/state/winter

The wintering numbers of many species are increasing. However, the proportion of species with increasing trends is greater over the entire period (since 1967) than over the past 20 years.



Wintering numbers of Common Merganser in Switzerland (including cross-border areas) have levelled off in recent years at around 5000 to 6000 individuals. In 2024, counts considerably exceeded 6000 individuals for the first time. In winter, birds that breed in the Alpine region are joined by birds from the northwestern/central European population.

Colonisations occur more often near occupied sites

Climate is a major factor in the global distribution of plants and animals. A research team involving the Swiss Ornithological Institute investigated how climate change along with other factors has influenced the distribution of 378 European breeding bird species. The study used the distribution maps from the 1985–1988 and 2013–2017 European breeding bird atlases. The results may seem surprising: while a territory's climatic suitability was indeed identified as an important factor in local colonisations and extinctions, climate change during the study period only had a minor effect.

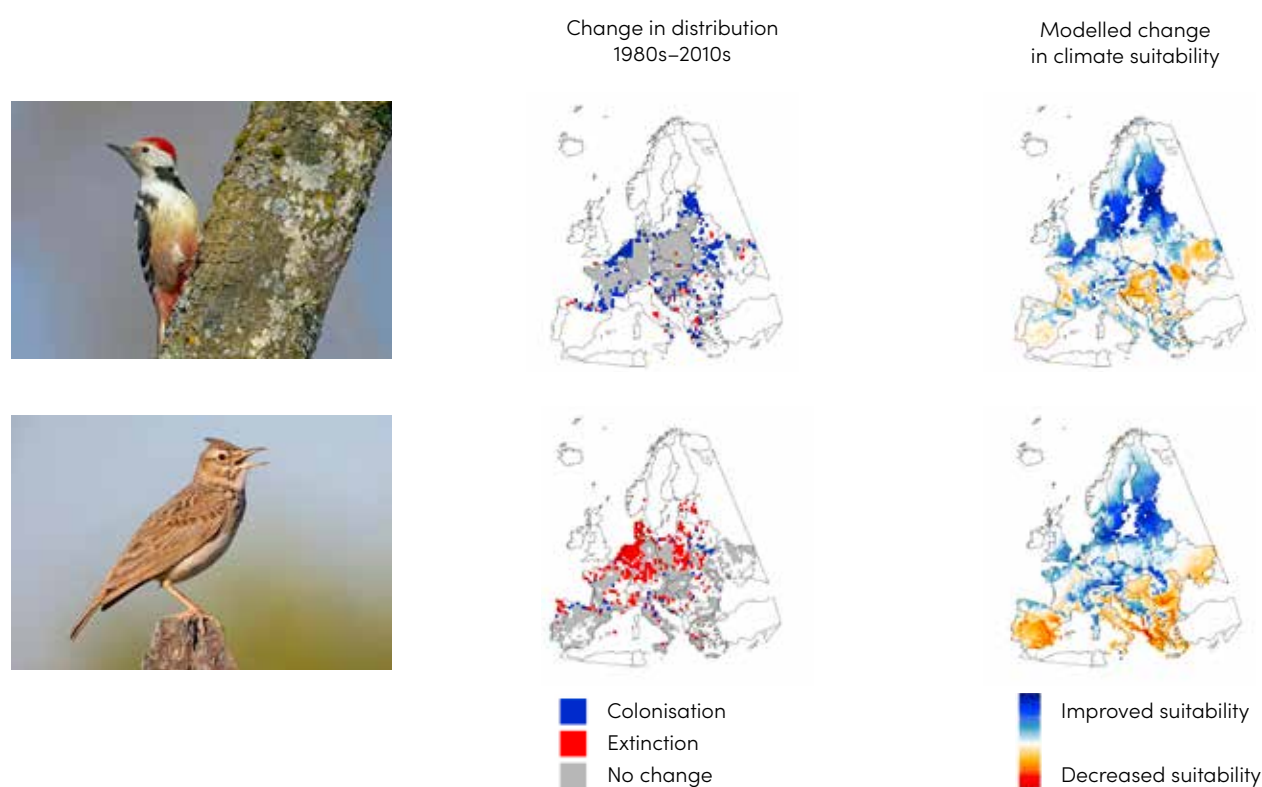
Climatic suitability is a major factor

The study concentrated on the atlas squares (50 × 50 km) that had either been colonised or abandoned between the two atlas periods. Squares that had been unoccupied in the 1980s were more likely to be colonised if they suited the species' climatic niche. A species was more likely to disappear from climatically unsuitable squares than from squares that fit the species' climatic requirements. However, the effect of climatic changes over the 30-year period on species' colonisation or

extinction was small. When the habitat no longer met species' requirements, they were likely to disappear, even if the climate was changing in a way that corresponded to their climatic niche. This is true for several farmland species suffering at a European scale from intensification on the one hand and abandonment of agricultural land on the other.

Range shifts show no clear trajectory

In the period between the two atlases, distribution ranges expanded by more than 5 % in 140 out of



The Middle Spotted Woodpecker (top images) was able to colonise new areas where climate suitability had improved, especially at the northern and eastern range margins. Conversely, the changes in distribution of Crested Lark (bottom images) do not match the changes in the squares' climate suitability, but were probably driven primarily by changes in land management. Source: Howard et al. (2023).

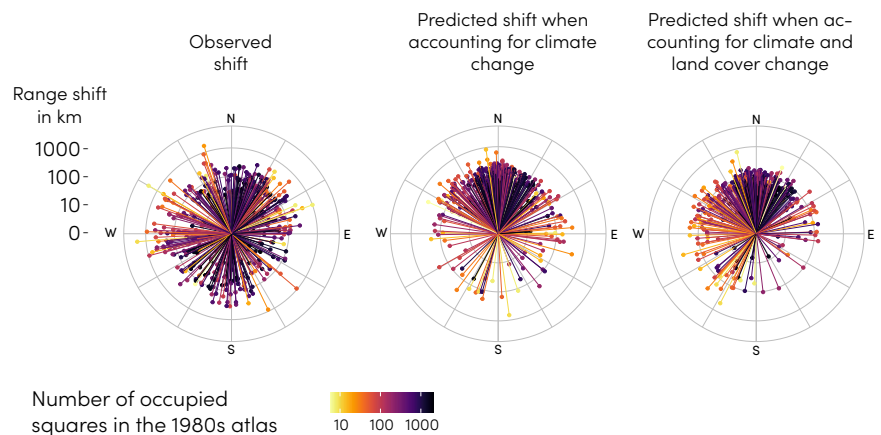
378 species, and contracted by more than 5 % in 110 species. The range changes observed in Europe did not match the shifts expected due to climate change. The median shift in the centre of gravity of the species included in the study was 71 km between the 1980s and the 2010s. Based on climate change, or on climate and land cover change, the majority of species were expected to shift north. This was not the case. In fact, no clear direction could be observed in range shifts across all species.

Time lag?

While birds are a highly mobile species group, this does not necessarily apply to the same extent to vegetation and the birds' prey animals. This can delay the colonisation of an area by birds despite improved climatic suitability. For the same reasons, populations can persist in areas where climate conditions are no longer suitable, at least for some time. This delayed response means that future shifts in distribution could be expected to occur, even without further climate change.

Proximity to occupied sites

The most important factor underlying colonisations and extinctions of species in an atlas square was the distance to other squares occupied in both atlas periods. Colonisations were more likely to occur closer to already occupied squares than in more distant areas. Isolated populations were more likely to disappear. In addition, larger areas of suitable habitat were more frequently colonised and more rarely abandoned. Woodland species appear to have benefited from the expansion, maturation and conservation of forests across much of Europe.



In contrast to the predictions based on climate change (middle) and climate and land cover change (right), the species' distribution ranges did not shift predominantly northwards between the 1980s and 2010s; instead, the shifts were more random (left). Each line represents a species. The length of the line corresponds to the distance of the observed or predicted range shift. Lines extending upwards or downwards show shifts to the north or south, respectively. Lines extending left/right show shifts to the west/east. Source: Howard et al. (2023).



The study also showed that formerly persecuted species such as White-tailed Eagle have been able to expand their ranges again in Europe. The expansion is in response to improved protection from persecution introduced by conservation legislation and highlights the positive impact of such legislation on nature.

Making reliable predictions is challenging

Climate change influences changes in species' distributions along with a variety of other factors. For example, climatic changes can make an area more attractive for a certain species, but they may also bring in their wake changes in the intensity or type of land use. These factors can heavily affect bird populations, irrespective of an area's climatic suitability. Predictions based solely

on climate models are not sufficient to assess species' range shifts and extinction risk.

References

Howard, C. et al. (2023): Local colonisations and extinctions of European birds are poorly explained by changes in climate suitability. *Nature Communications* 14: 4304. <https://doi.org/10.1038/s41467-023-39093-1>

Thank you for working with us for 100 years!

The Swiss Ornithological Institute celebrates its 100th anniversary in 2024. From the very beginning, the observations, ringing recoveries and local know-how provided by volunteers have been pillars of our bird monitoring schemes. The close collaboration between the Swiss Ornithological Institute and passionate, highly knowledgeable volunteers continues to this day, as evidenced by this report. Over 2000 people contributed to the data underpinning this report through opportunistic observations, territory

mapping, waterbird counts, complex species-specific surveys, and their commitment to nature and species monitoring.

No less important than the number of records are the high quality and continuity with which many surveys are conducted. We are honoured and proud to have achieved such an excellent body of knowledge on our country's avifauna thanks to these data and to be able to present it in this State of Birds report. We would like to thank all volunteers for their time and their trust

in the Swiss Ornithological Institute. We also wish to thank the photographers for their brilliant photos that allowed us to create a visually appealing report.

We would like to thank all local, regional, national and international partner organisations for many years of collaboration, especially in breeding bird monitoring and waterbird surveys. We thank the team of Biolovision Sàrl for their enduring commitment to ornitho.ch.



Group photos taken at the conferences for volunteers of the Swiss Ornithological Institute in Sursee (top) and Yverdon-les-Bains (below).



After breeding in Switzerland in nine out of ten consecutive years, the Short-toed Snake Eagle is now considered a regular breeding bird. Thanks to the team led by Lionel Maumary, Jacques Cloutier and Raphaël Arlettaz, we know the species' population trend in Valais. In Ticino, the species is monitored by a team headed up by Luca Pagano.

Authors and copyright

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Front cover: Common Whitethroat: Beat Rüegger; p. 2: Yellowhammer: D. Occhiato, European Stonechat, Northern Lapwing, Eurasian Chaffinch: M. Schäfer, p. 3: Sanderling: M. Burkhardt, Eurasian Teal: D. Occhiato, White-tailed Eagle: M. Varesvuo; p. 5: Red-backed Shrike: M. Burkhardt; p. 6: Rock Partridge: O. Born, Common Cuckoo: M. Varesvuo; p. 7: Little Bittern: R. Aeschlimann; p. 8: flower meadow: S. Hohl; p. 9: Eurasian Tree Sparrow: M. Varesvuo, fallow land: S. Hohl; p. 10: Aare Plain: W. Christen, p. 12: landscape: Samuel Trümpy Photography CC BY-NC-ND; p. 13: Eurasian Chaffinch: M. Burkhardt; p. 14: Tree Pipit: M. Burkhardt; p. 15: Common Linnet: M. Varesvuo; p. 18: Les Quatre-Vingts: C. Roulier; p. 19: Wood Sandpiper: R. Martin; p. 20: Redwing: M. Varesvuo; p. 21: Long-tailed Tit: R. Martin; p. 22: Great Egret: J.-L. Zimmermann; p. 23: Little Gull: P. Donini, Common Loon: R. Martin, Black-headed Gull: M. Burkhardt; p. 25: riparian landscape: Pascal Vosicki/shutterstock.com, Eurasian Wigeon: D. Occhiato, Gadwall: M. Burkhardt; Northern Shoveler: S. Gatto, Northern Pintail: R. Aeschlimann, p. 27: Common Merganser: M. Varesvuo; p. 28: Middle Woodpecker: M. Varesvuo, Crested Lark: M. Schäfer; p. 29: White-tailed Eagle: M. Burkhardt; p. 30: meeting of the volunteers 2024; M. Burkhardt, C. Sahli; p. 31: Short-toed Snake Eagle: M. Varesvuo. Remaining images: archive of the Swiss Ornithological Institute.

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