



The State of Birds in Switzerland Report 2021



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Headlines



In 2020, many breeding birds benefited from a mild winter and ideal breeding conditions. But increased outdoor activity during the corona pandemic also led to more disturbance, which may have had a negative effect on breeding success. ➡ page 6

Many mountain birds have lost ground since the 1980s, especially in mountains lower than the Alps. That means Switzerland, situated in the heart of the Alpine range, has a growing responsibility for conservation. ➡ page 8

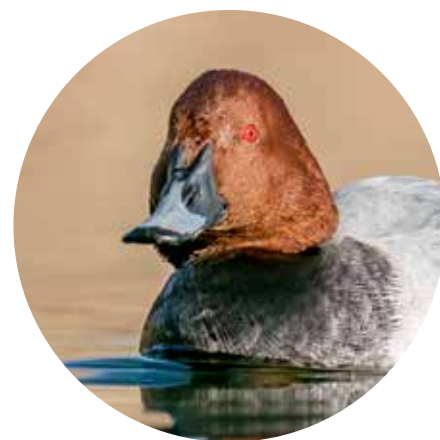


In Switzerland, the Western Yellow Wagtail breeds in vast plains with arable farmland. A nationwide survey counted around 500 pairs. But this trans-Saharan migrant, insectivore and ground breeder faces multiple risk factors. ➡ page 10

The Glossy Ibis represents a group of wetland birds that have expanded their distribution in Europe since the 1980s. It is occurring more frequently and in greater numbers in Switzerland as well. ➡ page 22



In January 2021, 460 000 waterbirds were recorded in Switzerland, the lowest count since the 1970s. Wintering numbers of Common Pochard, Tufted Duck, Mallard, Common Coot and Black-headed Gull are going down due to climate change. ➡ page 24



Northward range shifts are happening at a large scale in Europe. Several passerines have considerably expanded their breeding range to the north since the 1980s. Meanwhile, losses are occurring in the south. ➡ page 30

The second European Breeding Bird Atlas (EBBA2) illustrates that improved protection through nature reserves and hunting bans is effective. The White-tailed Sea-eagle is one of the species with the largest range gains. ➡ page 32



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You can find further information online, including population trends for breeding birds and additional analyses:
www.vogelwarte.ch/state

A European milestone

2020 was undoubtedly a difficult year across most of the world, and a year when the connection and collaboration between people and between nations was made harder by the restrictions imposed in response to Covid-19. In a year of such hardness and sorrow, we should celebrate a ray of light, an outstanding achievement in international collaboration across the entirety of the European continent: the publication, by the European Bird Census Council (EBCC), of the European Breeding Bird Atlas 2.

This was, of course, not something that just emerged in 2020, but the result of a full ten years of work, much of it led by scientists from the Swiss Ornithological Institute, most notably Verena Keller who drove the project forward from the very beginning, along with colleagues at the Catalan Ornithological Institute and Czech Society for Ornithology. The numbers behind the book are truly amazing; approximately 120 000 people contributed data. Data was collected from 5110 50-km squares, mapping

the breeding distributions of 596 bird species. Rather than a top-down approach, this was made possible by 48 national partner organisations, each responsible for delivering data collection to a common design and standards. In countries such as Switzerland, and my own (UK), this was enabled by a lengthy heritage of ornithological studies and thus an existing community of volunteer ornithologists, whilst in many countries in the east of Europe this was not the case. Guidance, training and vital funding – much of it from the generosity of the MAVA Foundation – supported communities of enthusiastic bird-watchers in eastern European nations to achieve remarkable coverage, surpassing expectations.

Of course, EBBA2 leaves not just a legacy of ornithological development, but the results, summarised in a magnificent book, will serve as a vital information source for conservation and research for decades to come. The maps provide better-than-ever-before knowledge of the distribution of European

birds, particularly in the east of the continent where coverage was much improved on that achieved by the first atlas in the 1980s. This – and the changes in distribution seen since the first atlas – give us an improved understanding of the state of birds in Europe and will be used to direct the conservation efforts to help them. Future research with the EBBA2 dataset will help us to understand the role of different drivers of change, such as land-use and climate change, in influencing the distribution of birds. Finally, knowing the wider distribution of species across Europe gives us valuable insight into populations at a national scale, such as this report explores for Switzerland.

Delivered by a remarkable network across Europe with Switzerland at its core, EBBA2 is an inspiring example of international cooperation, and, I hope, a stepping stone to even greater achievements in the future.

Dr Mark A. Eaton
Chair, European Bird
Census Council (EBCC)





Ninety-one bird species are endemic or near-endemic to Europe. The Short-toed Treecreeper is a near-endemic species. It has slightly expanded its breeding range since the 1980s, especially at the northern and eastern range margins, as shown by the second European Breeding Bird Atlas (EBBA2).



From a point on Lake Sempach, 109 stand-up paddle boards, rubber boats and similar watercrafts were counted on 9 August 2020. Increased disturbance in the pandemic year probably had a negative impact on breeding success.

Coronavirus influences human behaviour and bird data

Looking back, the corona pandemic leaves its mark on 2020 from an ornithological perspective as well. During the lockdown in spring, the public was asked to stay at home as much as possible. The #stayhomeandwatchout campaign was launched on 19 March,

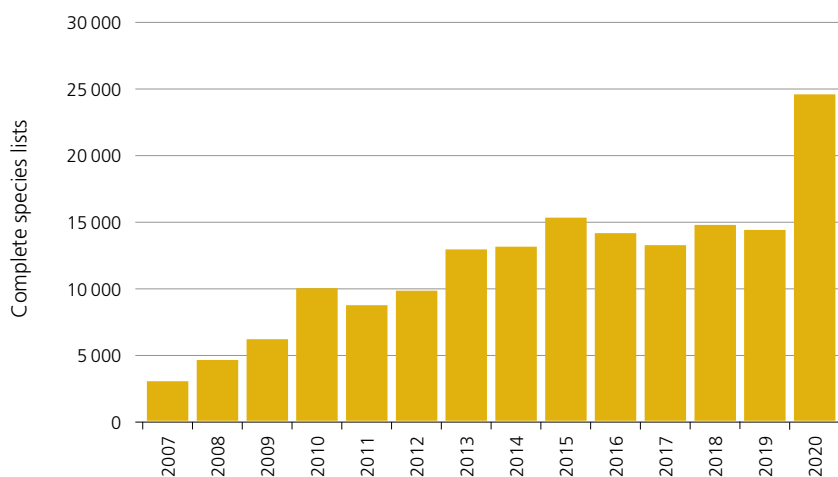
encouraging people to birdwatch in their own gardens or from the balcony. More than 300 participants recorded almost 31 000 observations. While the three most frequently reported species came as no surprise (Eurasian Blackbird, Great Tit, House Sparrow), a few

of these garden lists boasted species like Black-crowned Night-heron, Little Owl, Eurasian Pygmy-owl, Griffon Vulture and Blue Rock-thrush. Some birdwatchers obviously live in enviable locations and/or had tremendous birding luck!

Record number of ornitho entries

Due to the general travel restrictions many observers visited places closer to home, the Alps in particular. The warm summer enhanced this trend. As a result, the records submitted on ornitho.ch from elevations above 1500m rose by almost a third compared to the year before. The total number of records climbed to 2,5 million, surpassing the peak reached in the previous year by 13 %.

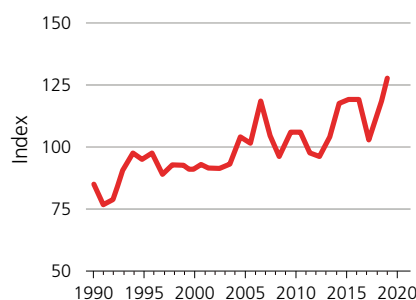
2020 will be remembered as a truly exceptional year. From the point of view of birds, two aspects stand out: (1) an extremely mild winter and (2) (due to the pandemic) people flocking out of doors even more than usual, especially to the lakes and rivers of the Central Plateau.



In early 2020, the Swiss Ornithological Institute revised the recording instructions for the information service. Recorders did a good job implementing the new instructions. The number of complete species lists increased substantially in 2020. This type of data enables more comprehensive analyses, as it also contains information about species that were not recorded.



As a short-distance migrant, the European Robin benefited from the mild winter in 2019/20. The common breeding bird monitoring scheme (Monitoring Häufige Brutvögel, MHB) registered a hike of 15% for the Robin compared to the year before.



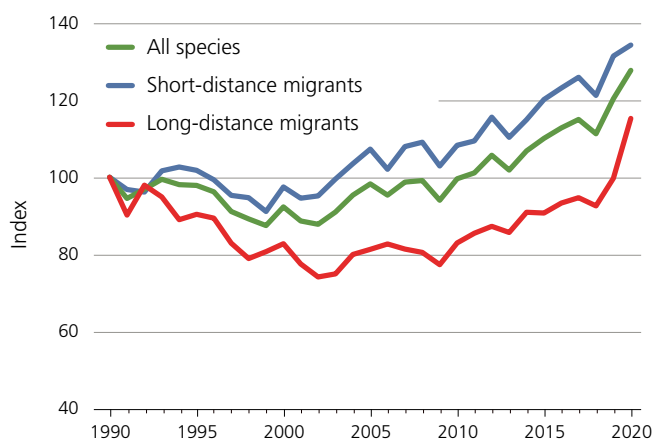
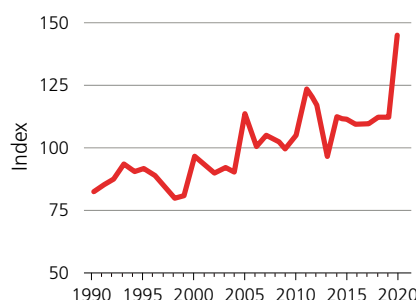
Mild winter and ideal breeding conditions

Winter was the mildest in Switzerland since records began in 1864. Winter temperatures in 2019/20 were 3°C above the 1981–2010 average. This presumably explains the very large breeding populations of residents and short-distance migrants in 2020.

An exceptionally warm winter was followed by the third warmest spring with a lengthy dry period. Summer was very warm, but there were no marked heat-waves like in the years before. Many species did well under these conditions. At +15%, the average increase in the breeding bird indices for long-distance migrants was higher than ever, leading to a new peak in the overall Swiss Bird Index SBI® as well.



The Northern Wheatear, a long-distance migrant, also reached a peak in 2020. The reasons for the steep increase are unclear.



Weather conditions were excellent for both short- and long-distance migrants, so that the Swiss Bird Index SBI® for all species reached a new high in 2020. The calculation method for the SBI received a slight adjustment (read more on pages 12–13).

Effects of the corona pandemic on wetlands

With the pandemic preventing many alternative leisure activities, the Swiss public flocked out of doors during the fine spring and summer months. While the Swiss lakes and rivers have always been popular destinations, they saw a flood of visitors during the 2020 lockdown, even in nature reserves. The rangers on St. Petersinsel at Lake Biel registered about 55 visitors per hour during spring and summer, or about 150% of the previous year's visitor volume. Unfortunately, the influx led to more violations of reserve rules. On the southern shore of Lake Neuchâtel, the number of violations was at least twice that of the year before. Three Purple Heron pairs presumably abandoned their nests due to disturbance.

Further information

www.vogelwarte.ch/state/breeding



The Alpine Accentor has disappeared from many low-lying regions in Europe. Thus the importance of high-alpine areas such as the Swiss Alps for the species' survival increases.

Switzerland has a special responsibility

The second European Breeding Bird Atlas (EBBA2) was possible only thanks to the enormous effort of about 120 000 people who counted birds in 48 countries, often far from the beaten path. The wealth of data and results offers conclusions for Switzerland as well. In our country and across Europe, farmland birds

are under pressure. Agricultural intensification continues to drive many bird species out of their habitats. Woodland birds, on the other hand, are faring comparatively well. Their population trends in Switzerland are mostly positive.

A country of mountains

Compared to other European countries, Switzerland is small but mountainous. The Alps cover about two thirds of its territory. The Jura, too, is higher than many of the highest peaks in other countries. That is why Switzerland is home to a proportionally large number of mountain birds, with 10 % of the European population of Ring Ouzel, White-winged Snowfinch, Yellow-billed Chough and Water Pipit, and more than 30 % in the case of the Alpine Accentor. Overall there are almost 40 species for which

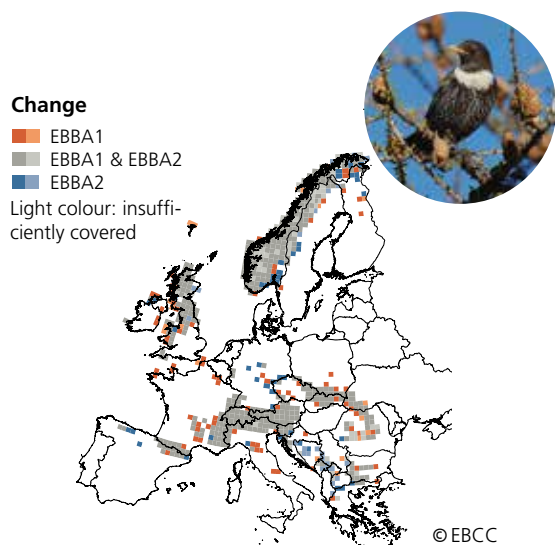
Switzerland holds an especially large share of the European population.

Mountain birds under pressure

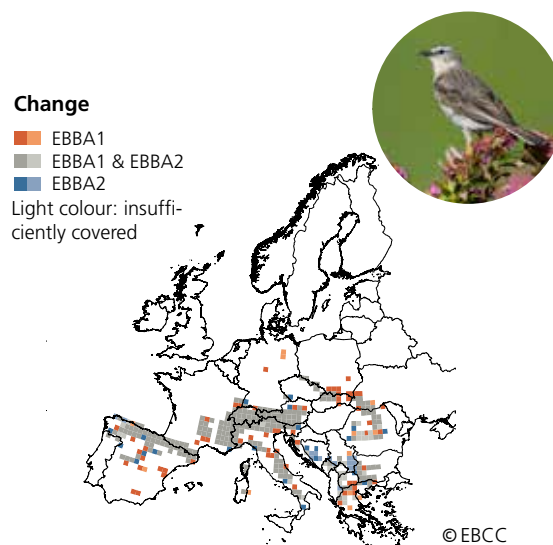
For EBBA2, breeding bird species were assigned to a main habitat. Fourteen species were categorised as mountain dwellers. The largest diversity of species in this group is found in the Caucasus, home to special birds such as Caspian Snowcock, Caucasian Grouse, White-winged Redstart and Great Rosefinch. Species richness is high in the Alps and the Pyrenees as well. Considering all 14 species, declines since EBBA1 were most severe in the Carpathians, Apennines and Pyrenees, but also at lower elevations of the Alps. Of the species in this group that breed in Switzerland, all except one have suffered range losses in Europe: to a greater or lesser extent, this is the case for Yellow-billed Chough, Wallcreeper, Alpine Accentor,

European Breeding Bird Atlas 2: distribution, abundance and change

For the first time, the new European Breeding Bird Atlas presents distribution maps for all of Europe. In addition, it shows the changes that have occurred over a period of 30 years. The 967-page atlas is available for 90 euros: www.lynxeds.com/product/european-breedingbird-atlas-2-distribution-abundance-and-change.



The Ring Ouzel still occurs in Europe at low altitudes, but it is in these environments in particular that the species has lost ground since the 1980s. In Switzerland, the Ring Ouzel shows marked losses below and slight gains above 2000 m asl.



In Europe, the Water Pipit shows losses mainly at mid-elevation and at the range margins. In Switzerland, the average altitudinal distribution rose by about 40 metres between 1993–1996 and 2013–2016.

White-winged Snowfinch and Water Pipit. These losses are related to climate change, among other factors, as they mainly affect mountains lower than the Alps.

Climate change and Switzerland's role

Climate change is having an impact in Switzerland, where – together with changes in land use – it is forcing many breeding birds to higher elevations, as shown by the Swiss Breeding Bird Atlas 2013–2016: the altitudinal distribution of 71 common breeding birds shifted upwards by 24 metres on average between 1993–1996 and 2013–2016, i.e. by about one metre per year.

The fact that many mountain bird species that have disappeared from parts of their European breeding range also show altitudinal range shifts in Switzerland is especially alarming: the declines at lower elevations are generally more marked than the increases higher up, resulting in an overall decline.

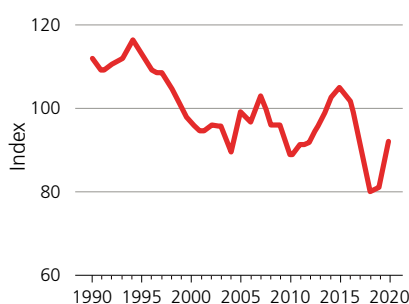
The shift in elevation is especially problematic for species that breed above the tree line, as their habitat gets smaller and smaller towards

the top of the mountain. As mountain birds disappear from many other mountain ranges, the importance of the Alps for the conservation of this specialised avifauna grows. Data from Europe show: Switzerland as a central Alpine country must assume its international responsibility and improve the protection of Alpine biodiversity.

Ensuring better protection

One possibility would be to improve the protection in the federal no-hunting zones, which lie mainly in the Alps. Their purpose is to serve as refuges for rare and threatened species, keeping

them safe from disturbance. If we succeed, on top of that, in establishing adapted, non-intensive forms of agricultural land use, the no-hunting zones could play a significant role in protecting mountain birds and biodiversity. In other areas, the main task is to keep a close and critical eye on the development of tourism infrastructure. Preserving the remaining healthy ecological infrastructure in the mountains is vital.



The population index of the White-winged Snowfinch is negative despite fluctuations. On top of that, its distribution area is small and fragmented, and the decline is expected to accelerate due to climate change. For these reasons, the species is now classified as Near Threatened (NT) as on the new Red List, to be published this year.

Counting Western Yellow Wagtails

The Western Yellow Wagtail is a breeding bird that threatens to slip through the net of our monitoring schemes. It breeds in just a few areas, in farmland not frequently visited by ornithologists. To make sure we will have reliable data in the future to calculate this species' breeding bird index, we launched a nationwide population survey in spring 2020. The purpose of the survey was to identify where current populations are located and how they can be efficiently and reliably monitored.

Population surveys are a challenge

Territory mapping for Western Yellow Wagtails is not easy. Their habitats are open but vast, and as soon as the vegetation grows dense, the birds are difficult to detect. Their breeding season is short, and the many passage migrants resting in these areas well into May add to the complexity of the task. Fast-growing crops and harvest activity hamper monitoring efforts as early as the beginning of June. In addition, the birds often occur



The distribution of the Western Yellow Wagtail in Switzerland is limited to a few farmland areas.

in troops and roam widely in search for food, making it difficult to distinguish territories. In the method finally chosen, potential habitats are systematically searched on three visits between early May and mid-June, with

a five-minute stop at the field edge every 150–200 metres.

There are only few farmland areas in Switzerland that traditionally support breeding Western Yellow Wagtails: the Chablais region VD/VS, the Orbe Plain VD, Grosses Moos BE/FR, the Magadino Plain TI and a site near Agno TI. Finally, there is the area bordering the cantons of Schaffhausen, Thurgau and Zurich in northeastern Switzerland. Most of these sites used to be extensive wetlands or alluvial plains. Western Yellow Wagtails nest in different crops depending on the region.



Western Yellow Wagtails struggle with adverse conditions, such as large fields of crops covered with protective fleece. This image from the Magadino Plain shows a male of the subspecies M. f. feldegg. This subspecies is at home in southeastern Europe and only exceptionally breeds in Switzerland.



Western Yellow Wagtails breed where our lettuce grows, like here in the Orbe Plain. Successfully raising young in fast-growing crops is a race against time.

Pilot year yields surprising results

The counts were very successful but required a lot of effort. In north-eastern Switzerland, 74 territories were detected, 17 in Ticino and 99 in Grosses Moos. The Orbe Plain was comprehensively mapped for the very first time and 240 territories were found, exceeding all expectations. In Chablais the results of the previous year were used, when 42 territories had been counted. Overall, around 470 territories were found – one third more than reported in the Swiss Breeding Bird Atlas 2013–2016. The population in the Orbe Plain was underestimated during the atlas period. Together with a handful of very small populations in other areas, the population size in Switzerland is currently estimated at around 500 pairs.

Species faces difficult conditions

The Western Yellow Wagtail is a rare breeding bird in Switzerland and one that combines several risk factors: it is a trans-Saharan migrant, insectivore, ground breeder and occupant of intensively farmed land, where

a changing food supply, seasonally fast-growing vegetation, frequent mechanised tillage and frequent pesticide use are all obstacles to successful breeding. Large fluctuations and a marked decline in numbers in the Magadino Plain indicate that

the populations are fragile. In addition, the Western Yellow Wagtail has seen range losses in our neighbouring countries since the 1980s, especially in northern Italy. There is definitely good reason to keep an eye on this bird in the future.



The birds occupy vast plains where potatoes and other vegetables, sugar beet, cereals or rapeseed are cultivated.

Adjustments to breeding bird indices and SBI®



Since 1990, several species have become regular breeders in wetlands. Among them is the Little Crane, whose population trend is now included in the SBI® Wetlands.

Breeding bird indices and the Swiss Bird Index SBI® are important indicators when it comes to assessing trends in bird communities and the environment in Switzerland. As a general rule, changes to the calculation method of an indicator should be minimal. However, the datasets used for certain species can evolve. Also, every now and again, there are relevant methodological and statistical developments in the calculation method. Both lead to periodical adjustments, as in the current case.

Adjusting the breeding bird indices

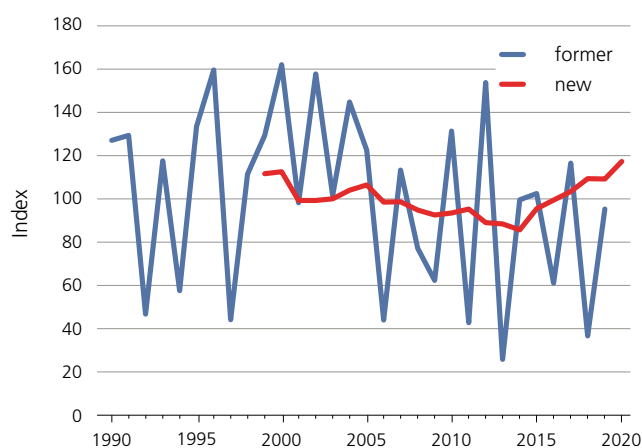
Population trends for widespread species are relatively easy to determine thanks to the common breeding bird monitoring scheme (MHB). It is a lot more complicated for rare species, as these calculations are based on opportunistic observations (i.e. data collected on ornitho.ch). We regularly check whether the MHB data for species in decline are still sufficient or whether the breeding bird index needs to be

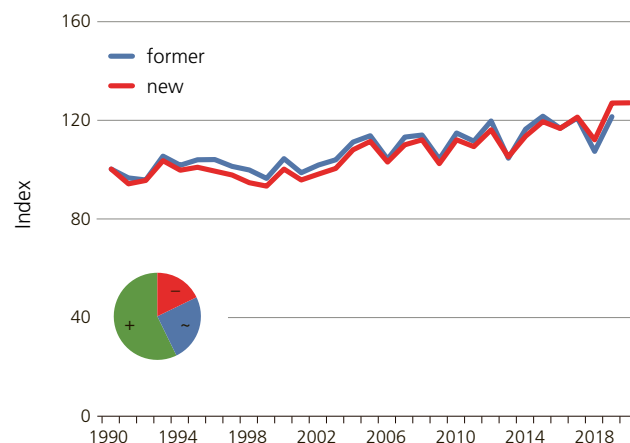
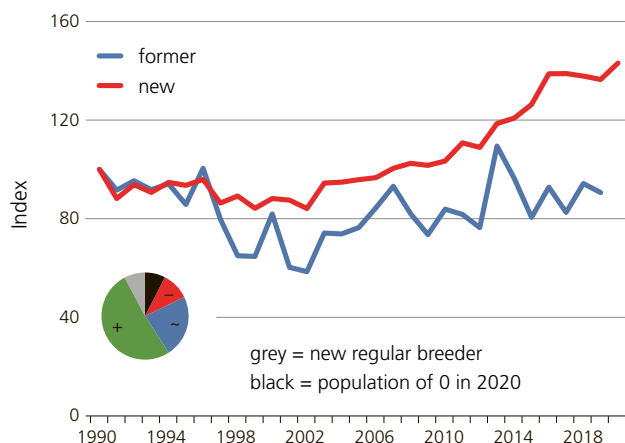
recalculated using ornitho data. In the case of rare species whose populations are growing, we need to determine whether the index can be calculated based on MHB data in the future. The Whinchat is an example of the former case, while Eurasian Sparrowhawk, Stock Dove and Eurasian Crag Martin are examples of the latter.

Ornitho data are mainly collected during the daytime, so population monitoring of nocturnal species is particularly challenging. The population trend of the Tawny Owl, for instance, has so far been based on the occupancy rate of nest boxes. In years when mice and other small mammals are scarce, many pairs do not breed. The resulting fluctuations in the occupancy rate of nest boxes are, however, not representative of the population trend, because the pairs are often present anyway. As the Tawny Owl regularly calls at dawn, the index is now calculated based on MHB data. Displaying Eurasian Woodcock have been monitored since 2017 via a nationwide network of survey sites. From 1989 to 2007, a similar monitoring programme was conducted in the Canton of Vaud, coordinated by François Estoppey. New methods of analysis now allow us to use both datasets when calculating the index. In the case of Eurasian



The Tawny Owl is nocturnal. Still, the common breeding bird scheme (MHB), started in 1999, collects enough records at dawn to estimate the population trend. Interestingly, the new trend fluctuates much less. The former trend showed the occupancy rate of nest boxes, which is subject to much greater variation than the actual population size.





The adjustments made to the calculation method are particularly apparent in the SBI® Wetlands. This index includes three species with a breeding population of 0 in 2020 (Black-necked Grebe, Eurasian Curlew, Common Snipe) and three new regular breeders (Common Eider, Purple Heron, Great Cormorant). Using the former calculation method, such species had a distinct but arbitrary influence on the index. The new method (red) therefore produces a different trend than the former (blue). By contrast, the SBI® Woodland (right), which has no new regular breeders or species with a population of 0 in 2020, remains practically the same.

Eagle-owl and Peregrine Falcon, which nest in cliffs, we have mapped territories (also retroactively) based on all reported observations. These have replaced the number of occupied kilometre squares as spatial units, an adjustment that results in more realistic trend estimates.

Methodological milestone for the SBI

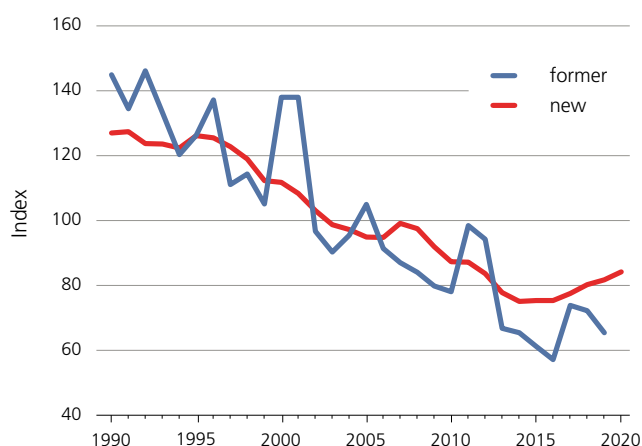
When calculating the SBI, we include almost all species that have bred

regularly in Switzerland, at least for a certain period, since 1990. Until now, we calculated the SBI as the geometric mean of the breeding bird indices for all individual species, which is the standard for calculating combined indices. If the species set contains species that have disappeared or newly occurred, this calculation method becomes practically impossible. A new method developed at the Swiss Ornithological Institute now allows us to make a coherent calculation, so that the SBI will remain

comparable in the long term, even in the case of disappearances or new regular breeders. From now on, the number of species with a population of 0 and the number of new regular breeders will be provided with the index as additional information.

Further information

www.vogelwarte.ch/state/breeding



Due to its steady decline, the Whinchat now only occurs in few areas covered by MHB. To calculate a trend, MHB data need to be combined with breeding-season observations from ornitho.ch. The new breeding bird index is practically identical to the former MHB trend.

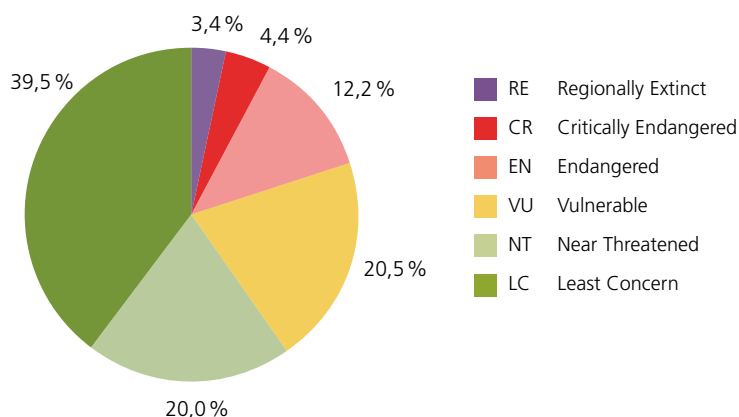
Red List: in the gloom, glimmers of hope

The Red List assesses the risk of a breeding species disappearing from Switzerland. It is updated every 10 years. The new version is scheduled to be published in autumn by the Federal Office for the Environment FOEN.

Of 205 species breeding in Switzerland (not counting exceptional breeders and introduced species), 83 (40 %) had to be put on the Red List. The proportion of threatened species in farmland and wetlands is considerably higher than in woodland or in Alpine habitats. This is a clear sign that problems are still particularly severe for farmland and wetland birds.

Several prominent losers

The percentage of species on the Red List has remained the same (40 %) from 2001 through 2010 to 2021. Of 205 bird species included in the assessment, 42, i.e. more than one fifth, were assigned to a different category in 2021 than in 2010. Of these, 25 were moved to a higher category of threat, 17 to a lower. The overall level of threat to breeding birds has, therefore, continued to rise. The situation has worsened for Rock Partridge, European Turtle-dove, Grey-faced Woodpecker, Peregrine Falcon, Eurasian Skylark and Garden Warbler, among others. Among the species whose situation has improved since 2010 are Goosander, Northern Long-eared Owl, Eurasian Eagle-owl, Golden Eagle and Fieldfare.



Percentage of breeding bird species per Red List category. The Red List (categories RE – Regionally Extinct, i.e. extinct in Switzerland, CR – Critically Endangered, EN – Endangered and VU – Vulnerable) contains 83 species (40 % of all assessed species).

Marked increase in near-threatened species

The percentage of near-threatened species has grown considerably between 2001 and 2021, from 12 to 20 %. Among the species on this «early warning» list, which is not part of the actual Red List, are widespread birds such as Great Crested Grebe, Boreal Owl, Red-backed Shrike, Barn Swallow and White-winged Snowfinch, all of which have seen declines in past years.

Species conservation works

But there are nevertheless some glimmers of hope: White Stork, Northern Lapwing

and Eurasian Jackdaw, which benefit from conservation projects, have recovered somewhat and have been moved to a lower category of threat. These cases highlight the importance of conservation efforts.

Still, stronger measures for species conservation and habitat enhancement are of the essence. Agricultural policy makers in particular are called on to reduce the intensity of cultivation, optimise biodiversity promotion areas, and promote near-natural structures. The need for action is great in wetlands as well, in order to create and maintain a network of sufficiently large and wet biotopes with little disturbance.

Following the revision of the Red List, the list of species of national conservation concern will be reviewed taking additional factors into account, such as the international importance of Swiss bird populations. This, in turn, will provide the basis for the list of priority species for recovery programmes along with specific action steps.

Reference

Knaus, P., S. Antoniazza, V. Keller, T. Sattler, H. Schmid & N. Strebel (in press): Rote Liste Brutvögel. Gefährdete Arten der Schweiz, Stand 2020. Bundesamt für Umwelt, Bern, und Schweizerische Vogelwarte, Sempach.



The Corn Bunting, despite being a species with relatively few requirements, is in dramatic decline. It has disappeared from several areas since the mid-1990s and is therefore now classified as Critically Endangered (CR), two categories higher than in 2010.



The population of Little Grebes is small and shows a long-term decline with fluctuations, though it has recently been increasing again. The species benefits from newly created small bodies of water (e.g. on golf courses) and revitalised wetlands. In the case of small waterbodies, however, numbers depend heavily on maintenance measures. The Little Grebe is now considered Near Threatened (NT) instead of Vulnerable (VU).

Regular breeders in Switzerland

Population trends for 176 regular breeding birds¹ analysed in Switzerland for the entire survey period (generally 1990–2020) and for the last 10 years (2011–2020). Trends shown as +++ or --- signify a change by more than a factor of five, while ++ or -- marks a change between a factor of two and five and + or – a change by less than a factor of two. 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. The colours in the last two columns show the status on the Red List (RL) for Switzerland: red = CR – Critically Endangered, light red = EN – Endangered, yellow = VU – Vulnerable, light green = NT – Near Threatened, green = LC – Least Concern; the new «Red List of Breeding Birds» will be published this year by the Federal Office for the Environment FOEN.

Species	Trend 1990–2020	Trend 2011–2020	RL 2010	RL 2021
Common Quail	•	•	LC	VU
Rock Partridge	•	++	NT	VU
Grey Partridge	---	---	CR	CR
Hazel Grouse	•	•	NT	NT
Rock Ptarmigan ⁴	–	•	NT	NT
Western Capercaillie	–	•	EN	EN
Black Grouse	•	•	NT	NT
Common Eider	•	•	VU	EN
Goosander	++	+	VU	NT
Red-crested Pochard	+++	•	NT	NT
Common Pochard	•	•	EN	EN
Tufted Duck	+	•	VU	VU
Gadwall	++	•	EN	VU
Mallard	+	•	LC	LC
Little Grebe	•	+	VU	NT
Great Crested Grebe	–	•	LC	NT
Black-necked Grebe	•	•	VU	VU
Stock Dove	++	++	LC	LC
Common Woodpigeon	++	+	LC	LC
European Turtle-dove	--	–	NT	EN
Eurasian Collared-dove	+	+	LC	LC
European Nightjar	–	–	EN	EN
Alpine Swift	++	+	NT	NT
Pallid Swift	++	•	VU	VU
Common Swift ²		•	NT	NT
Common Cuckoo	+	•	NT	NT
Western Water Rail	•	+	LC	LC
Corncrake	++	•	CR	CR
Spotted Crake	+	•	VU	VU
Little Crake	+++	•	VU	VU
Common Moorhen	+	+	LC	LC
Common Coot	+	+	LC	LC
White Stork	++	++	VU	NT
Common Little Bittern	+	•	EN	EN
Grey Heron	+	+	LC	LC
Purple Heron	+++	•	CR	CR
Great Cormorant	+++	++	LC	LC
Little Ringed Plover	•	•	EN	EN
Northern Lapwing	–	+	CR	EN
Eurasian Curlew	---	•	CR	CR
Eurasian Woodcock	–	–	VU	VU
Common Snipe	---	•	CR	CR
Common Sandpiper	•	•	EN	EN
Black-headed Gull	--	–	EN	EN
Mediterranean Gull	•	•	VU	VU
Mew Gull	•	•	EN	VU

Species	Trend 1990–2020	Trend 2011–2020	RL 2010	RL 2021
Yellow-legged Gull	+++	•	LC	LC
Common Tern	++	•	NT	NT
Common Barn-owl	–	+	NT	NT
Eurasian Pygmy-owl	•	•	LC	LC
Little Owl	++	+	EN	EN
Boreal Owl	–	–	LC	NT
Eurasian Scops-owl	++	++	EN	EN
Northern Long-eared Owl ³	+	•	NT	LC
Tawny Owl ²		+	LC	LC
Eurasian Eagle-owl	•	•	EN	VU
European Honey-buzzard	+	•	NT	NT
Bearded Vulture	+++	++	CR	CR
Golden Eagle	+	+	VU	NT
Eurasian Sparrowhawk	•	•	LC	LC
Northern Goshawk	+	•	LC	NT
Red Kite	+++	+	LC	LC
Black Kite ²		•	LC	LC
Eurasian Buzzard	+	•	LC	LC
Common Hoopoe	+	•	VU	VU
European Bee-eater	+++	+++	EN	VU
Common Kingfisher	+	•	VU	VU
Eurasian Wryneck	•	+	NT	NT
Grey-faced Woodpecker	--	–	VU	EN
Eurasian Green Woodpecker ³	+	•	LC	LC
Black Woodpecker	++	+	LC	LC
Three-toed Woodpecker	•	+	LC	LC
Middle Spotted Woodpecker	++	+	NT	NT
Lesser Spotted Woodpecker	+	+	LC	LC
Great Spotted Woodpecker	++	•	LC	LC
Common Kestrel	++	+	NT	NT
Eurasian Hobby	+	+	NT	NT
Peregrine Falcon	+	–	NT	VU
Eurasian Golden Oriole	+	•	LC	LC
Red-backed Shrike	–	•	LC	NT
Woodchat Shrike	---	•	CR	CR
Red-billed Chough	++	+	EN	EN
Yellow-billed Chough ²		•	LC	LC
Eurasian Jay	+	•	LC	LC
Eurasian Magpie	++	+	LC	LC
Northern Nutcracker	•	•	LC	LC
Eurasian Jackdaw	+	+	VU	NT
Rook	+++	++	LC	LC
Common Raven	+	•	LC	LC
Carion Crow	++	•	LC	LC
Coal Tit ²		•	LC	LC
Crested Tit	+	•	LC	LC

Species	Trend 1990–2020	Trend 2011–2020	RL 2010	RL 2021
Marsh Tit	+	•	LC	LC
Alpine or Willow Tit ²		•	LC	LC
Eurasian Blue Tit	++	•	LC	LC
Great Tit	+	•	LC	LC
Woodlark	•	+	VU	VU
Eurasian Skylark	–	•	NT	VU
Bearded Reedling	+	+	VU	VU
Melodious Warbler	+	+	NT	NT
Icterine Warbler	---	•	VU	EN
Marsh Warbler	•	•	LC	LC
Common Reed-warbler	•	+	LC	LC
Great Reed-warbler	++	+	NT	NT
Savi's Warbler	+	+	NT	NT
Com. Grasshopper-warbler	+	•	NT	NT
Northern House Martin	–	•	NT	NT
Barn Swallow	•	+	LC	NT
Eurasian Crag Martin	++	++	LC	LC
Collared Sand Martin	–	+	VU	EN
Western Bonelli's Warbler	++	+	LC	LC
Wood Warbler	--	--	VU	VU
Willow Warbler	--	–	VU	VU
Common Chiffchaff	+	+	LC	LC
Long-tailed Tit	+	•	LC	LC
Eurasian Blackcap	+	+	LC	LC
Garden Warbler	–	–	NT	VU
Barred Warbler	---	•	VU	VU
Lesser Whitethroat	+	+	LC	LC
Common Whitethroat	+	+	NT	NT
Short-toed Treecreeper	+	+	LC	LC
Eurasian Treecreeper	++	•	LC	LC
Eurasian Nuthatch	–	–	LC	LC
Wallcreeper	•	•	LC	LC
Northern Wren	+	•	LC	LC
White-throated Dipper	+	•	LC	LC
Common Starling	•	+	LC	LC
Mistle Thrush	+	•	LC	LC
Song Thrush	+	•	LC	LC
Eurasian Blackbird	+	•	LC	LC
Fieldfare	--	–	VU	LC
Ring Ouzel	–	•	VU	NT
Spotted Flycatcher	–	•	LC	NT
European Robin	+	+	LC	LC

Species	Trend 1990–2020	Trend 2011–2020	RL 2010	RL 2021
Bluethroat	++	•	VU	VU
Common Nightingale	+	+	NT	LC
European Pied Flycatcher ²		•	LC	LC
Black Redstart	+	•	LC	LC
Common Redstart	•	•	NT	NT
Rufous-tailed Rock-thrush	–	•	LC	LC
Blue Rock-thrush	•	•	EN	EN
Whinchat	–	•	VU	VU
Common Stonechat	++	+	NT	NT
Northern Wheatear	+	•	LC	LC
Goldcrest	+	•	LC	LC
Common Firecrest	•	+	LC	LC
Alpine Accentor	–	•	LC	LC
Dunnock	+	•	LC	LC
House Sparrow	+	+	LC	LC
Eurasian Tree Sparrow	+	•	LC	LC
White-winged Snowfinch	–	•	LC	NT
Tree Pipit	–	•	LC	NT
Meadow Pipit	--	•	VU	VU
Water Pipit	•	+	LC	LC
Tawny Pipit	•	+++	EN	EN
Western Yellow Wagtail	+	•	NT	VU
Grey Wagtail	•	•	LC	LC
White Wagtail	–	•	LC	LC
Common Chaffinch	+	•	LC	LC
Hawfinch	+	•	LC	LC
Common Rosefinch	+	•	VU	EN
Eurasian Bullfinch	–	•	LC	LC
European Greenfinch	–	–	LC	NT
Common Linnet	+	+	NT	LC
Redpoll	•	--	LC	LC
Red Crossbill ²		•	LC	LC
European Goldfinch	–	+	LC	LC
Citril Finch	–	•	LC	NT
European Serin	•	•	LC	LC
Eurasian Siskin ²		•	LC	LC
Corn Bunting	--	--	VU	CR
Rock Bunting	+	+	LC	LC
Ortolan Bunting	---	---	CR	CR
Cirl Bunting	+	+	NT	NT
Yellowhammer	•	–	LC	LC
Reed Bunting	–	+	VU	NT

¹ This includes species categorised as regular breeders at least once since 1990 (i.e. the species has bred in Switzerland in at least nine of ten consecutive years) for which we have the necessary data. Not counting introduced species (i.e. Mute Swan, Ruddy Shelduck, Common Pheasant). No assessment is possible for White-backed Woodpecker, Collared Flycatcher and Italian Sparrow due to lack of data.

² Survey period 1999–2020

³ Survey period 1996–2020

⁴ Survey period 1995–2020

Further information

www.vogelwarte.ch/state/breeding

Irregular and exceptional breeders

Since 2000, a further 26 species have bred in Switzerland irregularly or exceptionally. Their breeding occurrences are documented as consistently as possible (table available online in the section «Further analyses»).

Reference

Müller, C. (2021): Seltene und bemerkenswerte Brutvögel 2020 in der Schweiz. Ornithol. Beob. 118 (in press).

The statistics of birdwatching

In October 2020 the second volume of the English-language textbook on ecological statistics was published, a work that represents the culmination of years of collaboration between the population ecologist Marc Kéry (Swiss Ornithological Institute) and the American statistician J. Andy Royle. The textbook is of course highly technical. But a closer look affords the fascinating insight that most of the fundamental concepts underlying these methods will actually make intuitive sense to birdwatchers. For in a way, this textbook describes how the basics of probability theory apply to birdwatching.

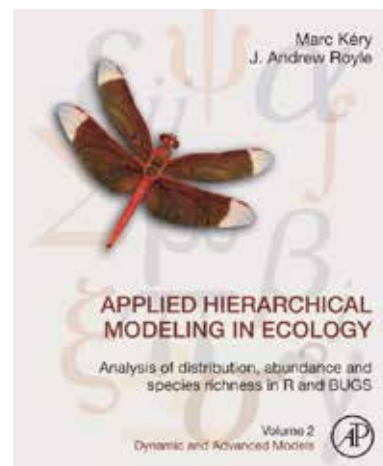
For instance, detection probability is a key parameter that indicates what the chances are of actually observing a species that is present. Most of the methods in the new textbook describe models that allow us to correct for detection probability when analysing distribution and population size.

Habitat requirements are another important topic in the book where scientific analysis and ornithological experience converge. Distribution

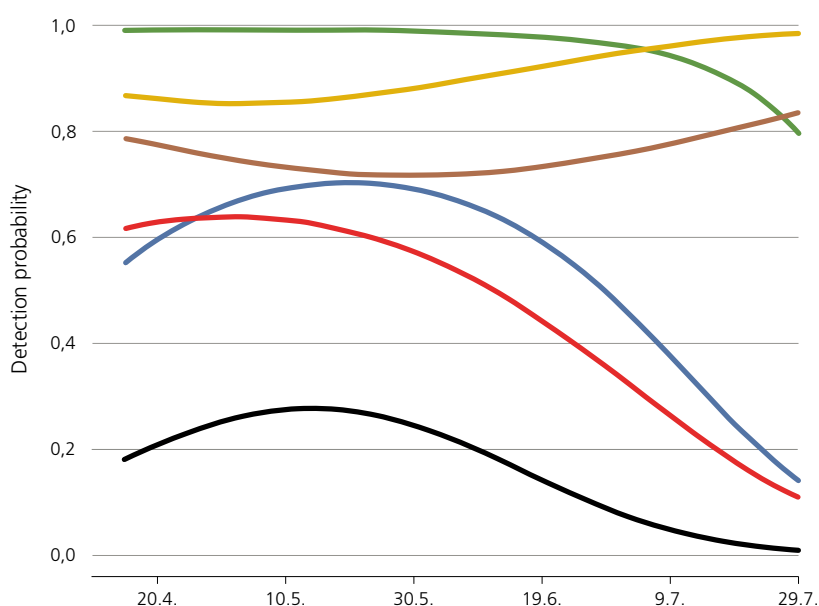
models are often used for modelling species distribution and predicting the influence of environmental changes, for example in the Swiss Breeding Bird Atlas 2013–2016. But knowledge of habitat requirements is crucial for us ornithologists as well, because it allows us to find a species we are looking for more easily: in a way, one could say that we develop our own species distribution models intuitively through years of experience. Such intuitive distribution models even help us to identify birds, because we know that many species rarely occur in certain habitats.

The topic of spatial autocorrelation, also described in the book, refers to the almost universal pattern in nature that locations close to each other are more similar than those further apart. This concept is often used in species distribution models to improve predictions. As nature watchers, we know intuitively that we are often much more likely to encounter a species if we are close to a site where it is known to occur.

Hopefully, these examples will serve to reconcile birdwatchers with



The cover of the new textbook on ecological statistics, authored by Marc Kéry and a colleague from the United States.



Detection probability means the probability of actually observing a species that is present. Most species see marked seasonal fluctuations, as these examples show: black = Hazel Grouse, blue = Common Redstart, red = Mallard, brown = Marsh Tit, yellow = Northern Wheatear, green = Common Chaffinch.

statistical models. While they can appear very mathematical and abstract, it is impossible to imagine current data analysis in science, nature conservation and biodiversity monitoring without them. And if you take a closer look, many of these models intuitively make a lot of sense.



Detection probability varies from species to species. All birdwatchers know this, and few would expect to find a Hazel Grouse on the first outing. On the other hand, you would be very surprised not to see a Common Chaffinch on your first survey visit.



Due to the decline in population size, the Red-footed Falcon is classified as Near Threatened (NT) on the European Red List.

Variable spring migration

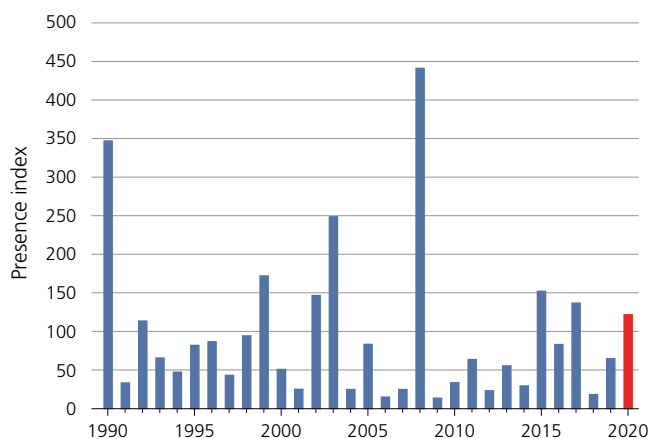
Spring 2020 saw the strongest passage of Whiskered Terns in 20 years. The elegant birds are a rare but regular sight over Swiss lakes and wetlands on their homeward migration, in numbers fluctuating from year to year. In 2020, passage peaked in the second half of May. However, at 29 individuals, the maximum flock size fell short of the record values in 1999. The closest breeding sites are in the Dombes F,

but the core breeding grounds lie in eastern Europe, where the populations of Whiskered Terns are increasing and spreading to the north.

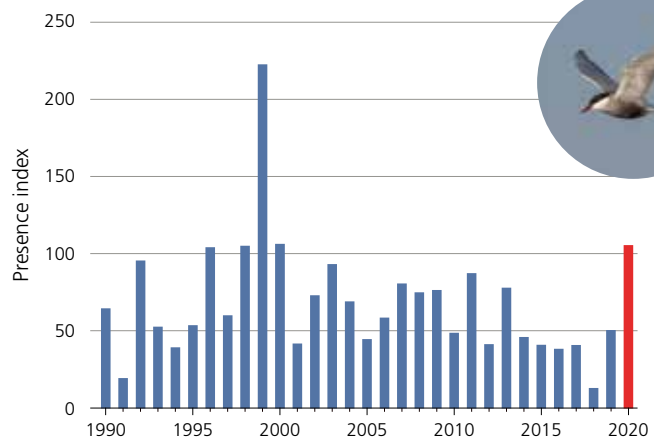
The falcon from the east

The Red-footed Falcon is also known for marked fluctuations in its spring passage. In 2020, the number of observation sites reached a new high. Between 2015 and 2019, the average

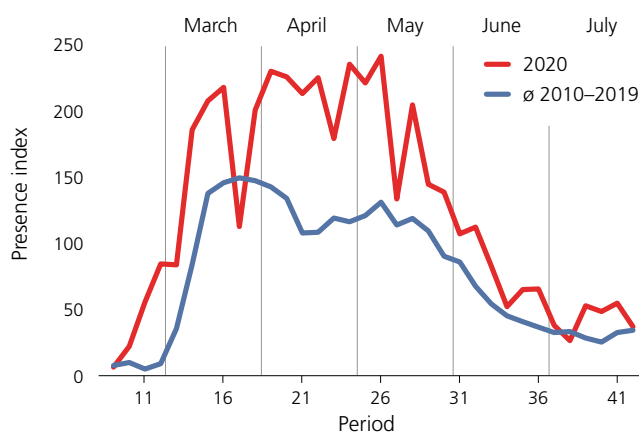
was 157, compared to 261 in 2020. The number of observed birds was modest, however, the largest group counting only 12 individuals. That is a far cry from the groups of 60 birds recorded in 2008 or the approximately 100 individuals seen together in 1990. The average group size seen in Switzerland has sunk from 3,5 in the 1990s to 1,9 in the 2010s. Although a small breeding population



The intensity of the Red-footed Falcon's spring passage fluctuates massively from one year to the next. The heaviest influxes of the past 30 years occurred in 1990 and 2008.



Spring passage of Whiskered Terns in Switzerland varies greatly from year to year; in 2020, passage was the strongest since 2000.



In 2020, the spring passage of Common Stonechats was a bit earlier and considerably heavier than average.



The recent range gains of the Common Stonechat in northern Europe are probably related to milder winters. By contrast, populations in the south are shrinking, presumably as a consequence of intensified agriculture.

of 50–70 pairs has recently formed in Italy, numbers are dwindling in eastern Europe, where intensified agriculture is destroying habitat and causing a sharp decline in large insects, an important food source.

Short-toed Snake-eagle out for conquest

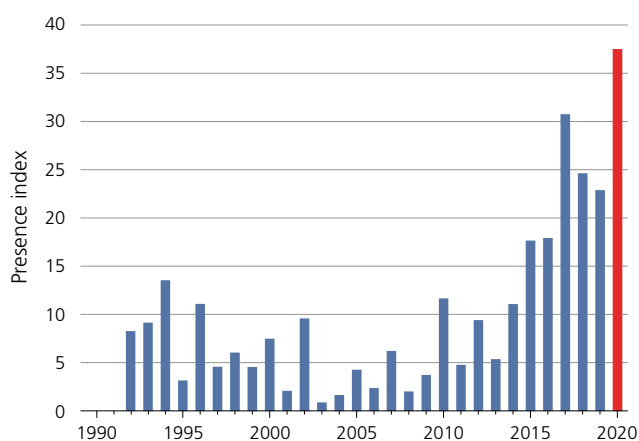
While the Short-toed Snake-eagle was a rare visitor to our country in the 20th century, it has become a scarce but regular passage migrant since 2005. The first broods were discovered in Valais in 2012 and Ticino in 2016; both areas have become core sites for

the species in Switzerland. Since 2005, the number of observations has multiplied. The elegant snake hunter was recorded in 9–11 cantons every year between 2010 and 2019, and in as many as 16 cantons in 2020. Furthermore, observations are starting earlier in the year: while the first sightings were recorded around 14 April in the 2000s, they occurred around 27 March in the 2010s. In fact, the first sighting in 2020, on 13 March near Satigny GE, is currently the earliest sighting in Switzerland. The breeding population in western Europe is stable or slightly increasing. At the northern range

border in France and Portugal, there are even signs of a small expansion.

Common Stonechat on a high

Following the record winter of 2019/20, when the presence index rose to three-and-a-half times the average of the past 10 winters, the Common Stonechat continued to appear frequently throughout 2020. While winter visitors were limited to the cantons of Ticino, Valais, Vaud, Geneva and the Rhine Valley in St. Gallen in the 1990s, they have now expanded to cantons north of the Alps like Solothurn, Lucerne or Aargau. The 2020 spring passage broke all records, with a rather early peak in the beginning of March. Autumn migration, peaking in mid-October, was also strong: large groups of 17 and 21 birds were seen on 14 October in Gwatt BE and Alpnach OW, respectively, and 22 individuals were reported on 18 October from Wauwilermoos LU.



Following a strong increase since 2015, the presence of the Short-toed Snake-eagle reached a new high in 2020.



Further information

www.vogelwarte.ch/state/migration

Glossy Ibis on the up

Towards the end of the 20th century, the Glossy Ibis was considered an irregular visitor to Switzerland; between 1980 and 2010, there were never more than four annual observations. Since 2010, however, the Glossy Ibis has been observed every year. The first large influx numbering 44 birds occurred in 2013. In 2018, 15 birds were sighted, followed by 38 in 2019 and 37 in 2020. Records are spread out across all months of the year, although the first winter records occurred only in 2013, not counting the Glossy Ibis that stayed in Les Grangettes VD for more than a year in 1960/61. More recently, prolonged winter visits have been recorded from 7–24 December 2018 in Yverdon VD as well as during the winter of 2020/21.

Extensive range gains

The increase in observations in Switzerland is related to a large-scale range expansion to the west and north. After a massive decline during the 20th century in the most important breeding areas in southeastern Europe, recovery did not set in until the 1990s. The first breeding pairs reoccupied Spain from 1993 onwards, their numbers quickly multiplying. In

2017, more than 10 000 pairs bred in the Doñana region alone! The expansion of rice crops presumably played a central role in this population explosion. The first breeding record from Portugal came in 2005 and from the Camargue F in 2006 (14 pairs). By 2017, numbers had already grown to over 2000 pairs in several places in southern France. A few pairs of Glossy Ibis have bred on the French Atlantic coast since 2011, and breeding attempts have occurred even further north, especially in the UK. The Glossy Ibis has expanded its breeding range in Italy and in eastern Europe as well. Most birds continue to winter in tropical Africa, but there are some residents in southwestern Europe. Around 6600 birds stayed in the Ebro Delta E between 2014 and 2018, and about 20 000 individuals remained in the Doñana E in 2016.

Birds from the southwest

Two birds ringed as nestlings in the Camargue have been sighted in Switzerland, one in 2012 and one in 2014. Some of the Glossy Ibis we see here could come from Spain, as birds marked in Spain have later been recorded in northern and eastern Europe, North Africa and even the Caribbean.

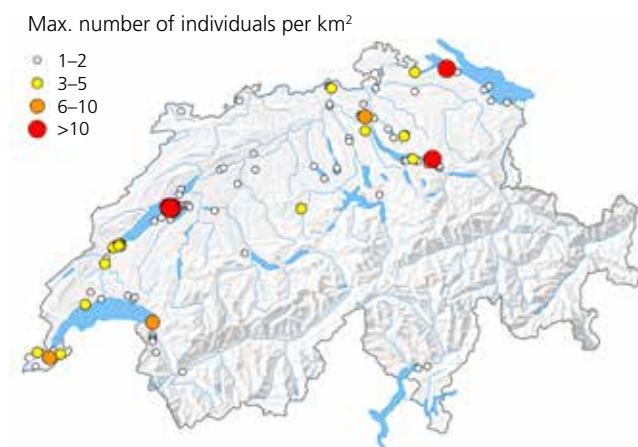
Swiss Rarities Committee

The Swiss Rarities Committee (Swiss RC) is an independent group of experts whose main task is to verify whether reports of unusual bird observations are sufficiently documented to be cited in scientific literature. This concerns species that are rarely seen in Switzerland, like the Glossy Ibis up until 2019, but also species that are more common but rarely seen at a specific time of year or in a particular part of the country, as well as species that breed here for the first time.

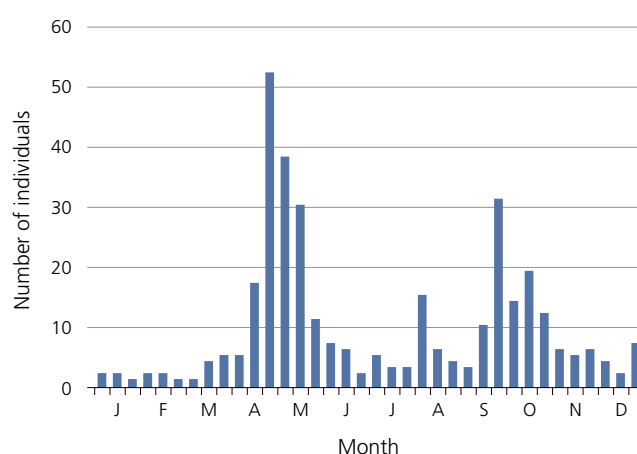
The SRC publishes an annual report in German («Ornithologischer Beobachter») and French («Nos Oiseaux»).

Further information

www.vogelwarte.ch/src



Practically all records of Glossy Ibis in Switzerland from 1900 to 2020 come from lowland areas north of the Alps. The only exceptions are an old record from Col de Bretolet VS and two newer records from Ticino.



Seasonal distribution of Glossy Ibis records in Switzerland between 1900 and 2020 per decade. The records are concentrated in the migration periods between mid-April and mid-May, and between mid-September and late October.



For a long time, the Glossy Ibis was an irregular visitor to Switzerland. Because records have greatly increased and the species is easy to identify, observers no longer need to submit a rarity form as of 2020.



A bout of winter weather before the January census was felt bitterly by birds and ornithologists alike.

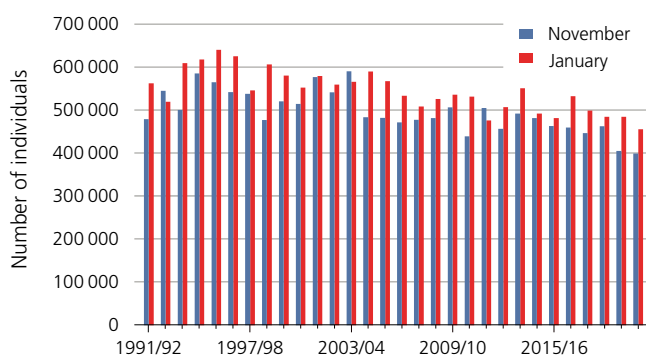
Record highs of waterbirds on Lake Neuchâtel

The weeks before the November 2020 waterbird census were dominated by high pressure and therefore mild with little precipitation. On the day of the census, however, persistent fog hampered progress in some places. A cold spell just before the 2021 January count led to widespread snowfall. In the northern

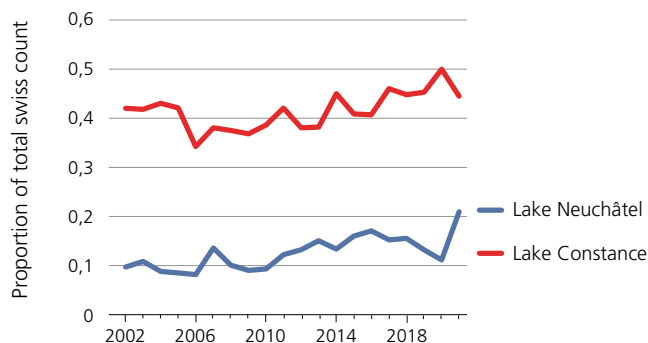
and eastern parts of the country in particular, there was so much fresh snow that counts had to be delayed on some stretches. Small bodies of water and some bays on larger lakes froze over. This winter spell caused noticeable shifts in the numbers of wintering birds.

Declines continue in most common winter visitors

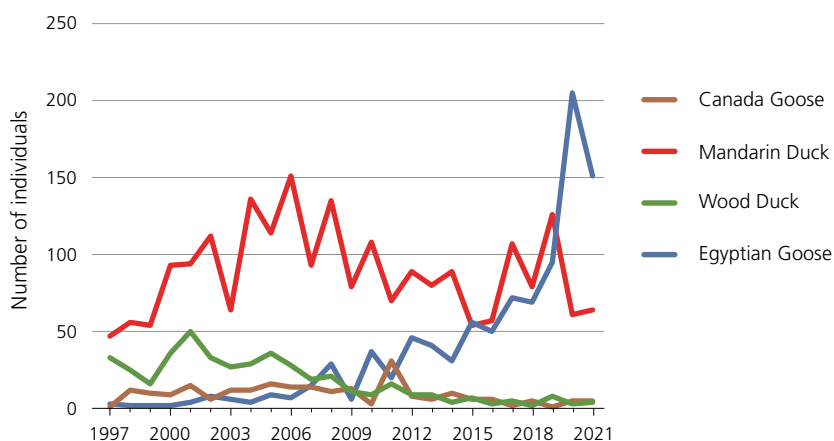
The overall number of wintering waterbirds in Switzerland is declining. The count of 400 000 individuals in November 2020 is the lowest since the start of the November census in 1991. The figure of just under 460 000 individuals counted in



The downward trend in the overall number of wintering waterbirds (including foreign parts of Lake Constance and Lake Geneva) has become more marked in the past years.



The proportion of birds wintering on lakes Neuchâtel and Constance has increased over the last 20 years. In January 2021 Lake Neuchâtel received a particularly high share, probably due to the harsh weather conditions in the eastern and northern parts of the country.



Not all non-native species breeding in Switzerland have become invasive. While the wintering population of Egyptian Geese is growing rapidly, that of Mandarin Ducks has stayed fairly stable so far, despite the fact that the latter also breed in Switzerland successfully. The populations of Wood Duck and Canada Goose are actually decreasing. Given the trends in other countries, however, it is likely that Canada Geese will become more common here in the future as well.



The Mandarin Duck is still quite rare in Switzerland. During the winter waterbird census, between 50 and 150 individuals are counted every year, with no clear trend.

January 2021 corresponds approximately to the counts in the early 1970s. The most common wintering waterbird species – Tufted Duck, Common Pochard, Common Coot, Black-headed Gull and Mallard – all show declining numbers. Mallard and Tufted Duck had extremely low counts this winter in both November and January: Mallard 30 000 individuals in November ($\bar{X}_{2001-2020} = 44\,000$), 39 000 in January ($\bar{X}_{2002-2021} = 50\,000$); Tufted Duck 56 000 individuals in November ($\bar{X} = 96\,000$), 84 000 in January ($\bar{X} = 120\,000$). Common Coot numbers were especially low in November (77 000, $\bar{X} = 94\,000$), those of the Black-headed Gull in January (39 000, $\bar{X} = 46\,000$). The search

for northern visitors such as Greater Scaup, Common Scoter, Velvet Scoter or Long-tailed Duck was all but futile this winter.

Wintry conditions lead to new highs

By contrast, several species reached new records: an all-time high was recorded for the Common Kingfisher, included in the waterbird census since winter 1996/97, both in November (721 individuals, $\bar{X}_{2001-2020} = 403$ individuals) and January (393, $\bar{X}_{2002-2021} = 226$). New November highs were reached by Greylag Goose (2000, $\bar{X} = 1130$) and Egyptian Goose (177, $\bar{X} = 45$), although higher counts for both species have been recorded in previous years in

January. Both Ruddy Shelduck (1400, $\bar{X} = 645$) and Great White Egret (543, $\bar{X} = 268$) were recorded in greater numbers in January 2021 than ever during the waterbird census. January highs were also achieved by Common Snipe (278, $\bar{X} = 143$) and Grey Heron (2000, $\bar{X} = 1600$).

Snow and ice may have contributed to the comparatively high numbers of some species in January. Some small bodies of water were frozen, and the snow cover prevented Grey Heron and Great White Egret from foraging in fields. The cold spell in January appears to have influenced the distribution of waterbirds not just locally but regionally. Thus, the total January count of 88 000 birds on Lake Neuchâtel was higher by around 24 000 individuals than the average of the last 20 years, while 190 000 individuals were counted on Lake Constance, which means around 28 000 fewer than average. Furthermore, around 30 000 individuals were «missing» from Lake Constance compared to December (mainly Tufted Duck and Common Pochard), whereas the Common Pochard reached a new January record on Lake Neuchâtel.



At over 31 600 individuals, Common Pochards (the image shows a mixed group with Tufted Ducks and some Red-crested Pochards) reached a new January record on Lake Neuchâtel in 2021.

Further information

www.vogelwarte.ch/state/winter



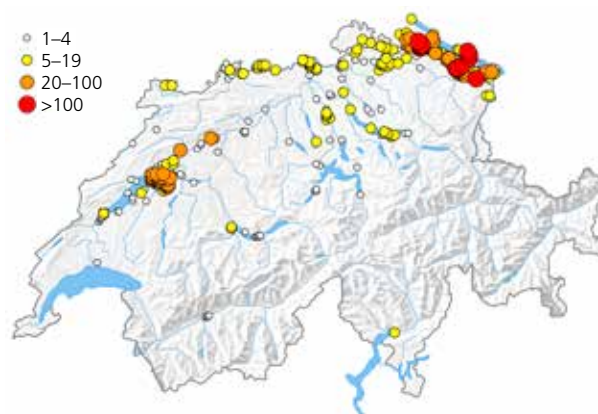
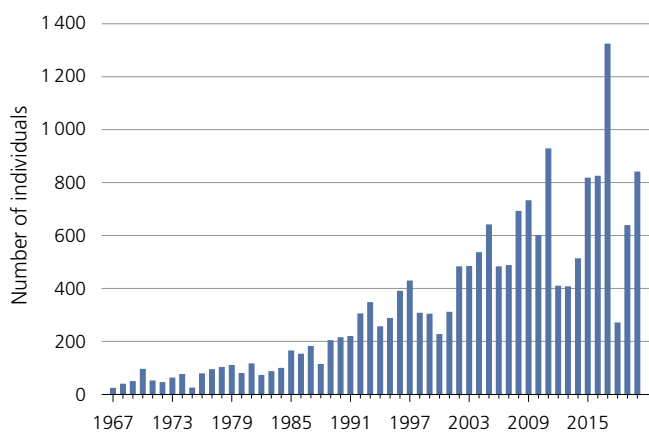
Juvenile Whooper Swans, easy to recognise by their brown neck feathers, migrate to the winter quarters with their parents.

Northern swans on the rise

Whooper Swans were rare visitors to inland areas of Europe up until the 1970s. Since about 1990, wintering numbers on Swiss waterbodies have been increasing rapidly. In the winter of 2017/18, the

current maximum of 1318 Whooper Swans was recorded (including foreign parts of Lake Constance and Lake Geneva), more than 10 times the number counted in the 1980s.

From the start, Lake Constance has hosted more than 90 % of wintering Whooper Swans. The most significant wintering areas on Lake Constance are Ermatinger Becken, Eriskircher Ried



The number of wintering Whooper Swans on Swiss lakes and rivers (including foreign parts of Lake Constance and Lake Geneva) is increasing (left). Wintering numbers are higher in harsh winters than in mild winters. Records collected between 2010 and 2020 (right) strikingly illustrate the concentration of Whooper Swans on lakes Constance and Neuchâtel (Fanel and surroundings).

and the Rhine Delta. In addition, some Whooper Swans regularly overwinter in the Fanel reserve on Lake Neuchâtel. From here, they sometimes move to the northern shore of Lake Murten. At other sites, Whooper Swans are only seen irregularly passing through (e.g. on the Rhine, at Klingnau Reservoir and on Lake Zurich). Despite the strong increase in northern Switzerland, records in the south of the country are surprisingly scarce. From Lake Geneva, for instance, there have been just two records since 2000.

Growing breeding and wintering populations

The rising number of wintering birds is a result of the positive trend in the northwestern European population, which more than doubled from 1995 (59 000 individuals) to 2015 (137 000). The breeding population in Sweden has doubled since 2000, that in Finland has seen a stunning tenfold increase since 1986. Given these positive population trends, it is not surprising that the Whooper Swan, which has quite a long lifespan, has been able to occupy new breeding areas. Range gains are most evident in the Baltic States and Scandinavia. Today, there are also a few breeding pairs in France (Dombes region near Lyon), Germany (e.g. confirmed breeding in Bavaria in 2019), the Czech Republic and Hungary. It is quite possible that the expansion in central Europe will continue.



Along with the wintering Whooper Swans, the much rarer Tundra Swans (far right) are also increasing, though numbers remain low.

The growing breeding and wintering numbers are a result of improvements in the protection of wetlands across Europe. On Lake Constance, observations of Whooper Swans and other waterbirds in Ermatinger Becken have increased considerably since 1985 thanks to the ban on both hunting and water sports. While the hunting of Whooper Swans is prohibited in Switzerland and most other European countries, they are indirectly affected by disturbance due to hunting of other duck species as well as leisure activities (e.g. boats). Whooper Swans rely on undisturbed, shallow stretches of water and shore. They mainly feed on plant food in the water, sometimes on land as well.

Whooper Swans often return to the same wintering sites, frequently migrating in family groups. The percentage of juveniles on Lake Constance is around 12 % but can reach 30 % in years with high breeding success. A high proportion of juveniles ensures that overwintering traditions are passed on to future generations.

More Tundra Swans as well

Among the Whooper Swans a much smaller number of Tundra Swans can sometimes be observed. Since 2003, up to 30 Tundra Swans can be seen populating the traditional wintering site in Ermatinger Becken, and numbers are on the rise. This is a remarkable trend, as the breeding population in the Russian Tundra appears to be decreasing slightly. The growing wintering numbers in our country must therefore be related to the improved protection of our lakes and rivers or to changes in migration and overwintering strategies.

Swiss lakes and rivers are significant wintering sites for waterbirds that breed in northern Europe. International protection measures in the breeding and wintering areas are hugely important for many species. Whooper Swan and Tundra Swan are impressive examples of the success of such measures.



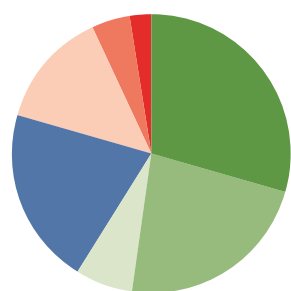
Whooper Swans feed not only in the water but also in fields. Birds wintering in Switzerland come mostly from Latvia and Germany; this information is gained from the neck rings of marked birds (fourth bird from the left).

Wintering waterbirds in Switzerland

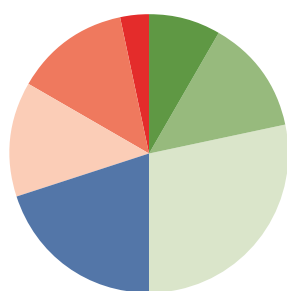
Current population size and population trend for waterbirds wintering in Switzerland (including foreign parts of Lake Constance and Lake Geneva) for the entire survey period (1967–2021) and for the last 20 years (2002–2021). Trends are based on January counts. Trends shown as +++ or --- signify a change by more than a factor of five, while ++ or -- marks a change between a factor of two and five and + or – a change by less than a factor of two. 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.

Species	Ind. November 2020	Ind. January 2021	Trend 1967– 2021	Trend 2002– 2021
Mute Swan	7 366	7 297	+	+
Whooper Swan	66	843	+++	++
Tundra Swan	3	25		+++
Barnacle Goose	4	5		–
Canada Goose	5	5		--
Greylag Goose	2 042	1 396	+++	++
Bean Goose	9	0	---	---
Gr. White-fronted Goose	3	12	+++	•
Long-tailed Duck	0	2	++	•
Common Eider	32	35	–	--
Velvet Scoter	0	37	++	+
Common Scoter	0	3	•	•
Common Goldeneye	737	2 850	--	--
Smew	0	9	--	--
Goosander	3 839	5 463	++	+
Red-breasted Merganser	15	56	++	•
Egyptian Goose	177	151		+++
Common Shelduck	13	28	+++	+
Ruddy Shelduck	329	1 369		+++
Mandarin Duck	89	64		+
Red-crested Pochard	31 020	29 330	+++	+
Common Pochard	76 217	80 437	++	–
Ferruginous Duck	46	70	+++	++
Tufted Duck	56 397	83 741	++	–
Greater Scaup	7	14	•	--
Garganey	3	0	•	•
Northern Shoveler	1 926	1 125	+++	•
Gadwall	10 554	11 907	+++	+
Eurasian Wigeon	2 714	3 670	+++	++
Mallard	29 938	38 589	–	–
Northern Pintail	1 465	1 402	+++	++

Species	Ind. November 2020	Ind. January 2021	Trend 1967– 2021	Trend 2002– 2021
Common Teal	2 921	8 787	+	+
Little Grebe	2 961	3 314	–	•
Red-necked Grebe	3	6	•	---
Great Crested Grebe	26 360	22 689	+	•
Horned Grebe	0	19	++	++
Black-necked Grebe	4 004	6 128	++	++
Common Moorhen	1 037	921		+
Common Coot	77 071	88 342	–	–
Red-throated Loon	3	8	+++	•
Arctic Loon	63	63	+++	+
Common Loon	1	0	•	•
Eurasian Bittern	5	13		–
Grey Heron	1 618	1 971	++	+
Great White Egret	330	543		+++
Great Cormorant	6 227	5 126	+++	•
Eurasian Curlew	1 488	1 129		+
Common Snipe	238	278		++
Common Sandpiper	84	64		+
Little Gull	3	0	•	--
Black-headed Gull	42 777	39 374	–	–
Mediterranean Gull	2	3	•	+++
Mew Gull	98	1 205	–	--
Lesser Black-backed Gull	7	14	•	–
European Herring Gull	6	5		--
Yellow-legged Gull	4 604	3 579	++	+
Caspian Gull	77	109		
Great Black-backed Gull	1	1	•	•
Yellow-l./Herring/Casp. G.	781	1 027		
Common Kingfisher	721	393		+
White-throated Dipper	797	907		+
Grey Wagtail	777	762		+



Trend 1967–2021
(44 species)



Trend 2002–2021
(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

In the long term, most species have increased in number. Tundra Swan, Egyptian Goose, Ruddy Shelduck and Great White Egret have seen the strongest relative increase in the last 20 years.



Both the wintering and the breeding population of the Common Kingfisher show a positive trend. In January 2021, 393 individuals were counted nationwide, almost exactly as many as the previous maximum from January 2020 (392).



Around 95% of the worldwide distribution of the Common Firecrest lies in Europe. It is one of several passerines that have spread to the north between EBBA1 and EBBA2.

Expansion to the north, losses in the south of Europe

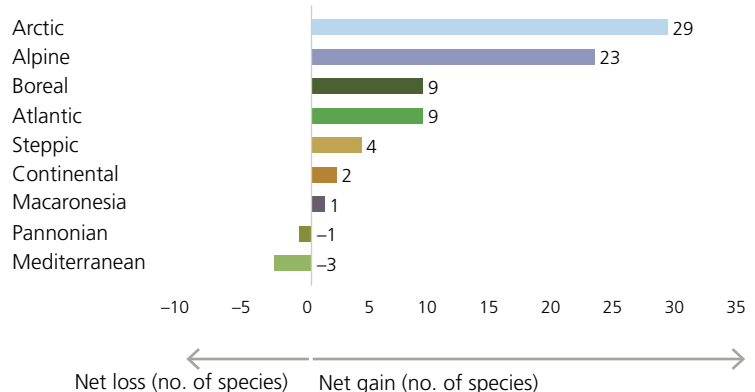
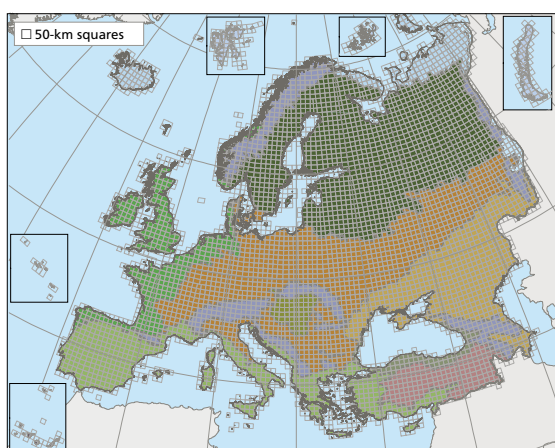
For the first time on a European scale, the second European Breeding Bird Atlas (EBBA2) shows how the distribution of breeding birds has changed in the last 30 years. The resolution of 50×50 km is fairly low, however, so small-scale range changes cannot be rendered. Even when declines are massive, it can take a long time before a species completely disappears

from an atlas square; by contrast, a square is considered newly occupied if just a single breeding pair was detected. Thus, signs of expansion emerge more quickly than evidence of range contraction.

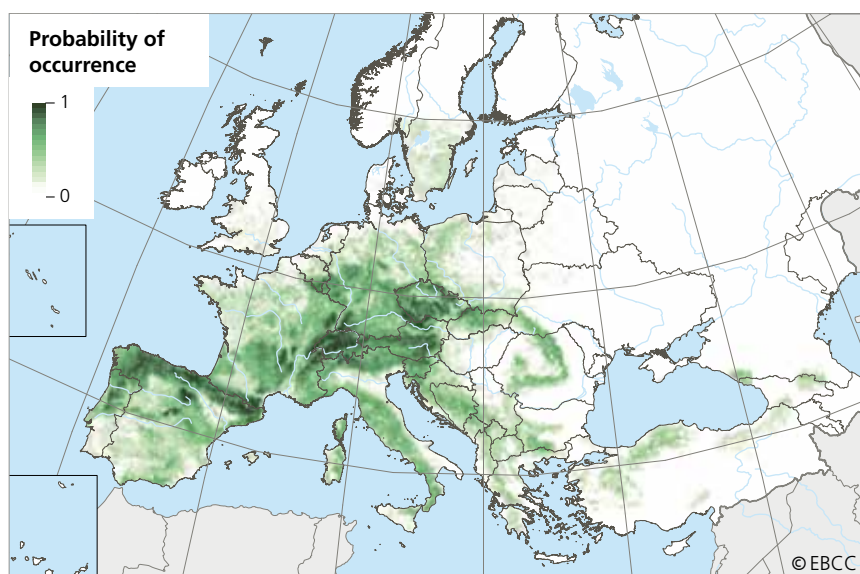
Large-scale shifts to the north

The two coldest biogeographical regions of Europe, the Arctic and the

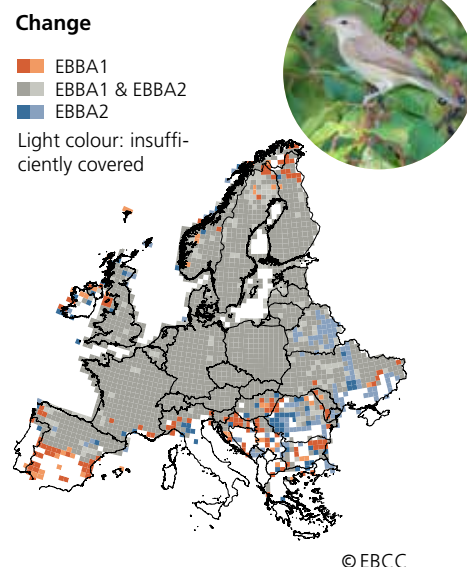
Alpine region, hold the greatest number of newly detected species since the 1980s, namely 29 and 23 species, respectively. In contrast, the warmest region (the Mediterranean) shows a net loss of three species. The increase in the number of species per 50 km-square was most evident in the Boreal region. Taking all species together, a mean northward shift in distribution



The change in the number of species in the biogeographical regions of Europe (left) between the 1980s and 2013–2017 shows gains in the Arctic and Alpine regions and losses in the Mediterranean region (right).



According to the modelled map of occurrence probability, Switzerland lies at the centre of the Common Firecrest's distribution range. Since EBBA1, the Firecrest has extended its range at the northern edges in particular, mainly in the UK, Denmark and Poland. It has colonised southern Sweden, Lithuania and Latvia.



The breeding range of the Garden Warbler has contracted since the 1980s, especially in southern Europe.

of 28km was found, i.e. about 1 km per year. Arctic birds in particular could face an existential problem in the long term, as it is impossible for them to move even further north.

These are clear signs of climate change. The warming climate has allowed many species to spread to the north. Expansion tendencies can be seen, for example, in Eurasian Jackdaw, Cetti's Warbler, Eurasian Nuthatch, Common Firecrest and European Goldfinch. At the same time, species whose distribution is concentrated in the north show losses at the southern range margins, e.g. Garden Warbler and Reed Bunting. There are exceptions, however: the Crested Lark has lost ground in the northern part of its breeding range, the Ortolan Bunting almost everywhere. Both species are affected by excessive intensification in agriculture. Bohemian Waxwing and Whooper Swan have expanded in the north of Europe and penetrated further south. Climate change, therefore, is not the only driver behind such trends, though it is among the most important. In the Mediterranean region, increasing aridity may be a problem for many species.

The large-scale range shifts are in line with numerous predictions based on climate-change scenarios. These

scenarios suggest a rapid increase in the number of species in northern Europe as distribution limits shift northwards.

Switzerland in the European context

The Swiss Breeding Bird Atlas 2013–2016 reveals similar patterns: bird species with a Mediterranean distribution which reach their northern range limit in this country have expanded their breeding areas to the north since 1993–1996. Presumably, the warming climate is an important driver behind these trends as well. By contrast, the distribution of central and northern European species whose southern range limits run through Switzerland shows signs of shrinking. Examples include Grey-faced Woodpecker, Boreal Owl and Barred Warbler, all of which have expanded their breeding range in Europe but not in Switzerland. Species that are seeing a positive population trend in Switzerland but declining in Europe include the Little Owl, a bird that has benefited from recovery measures in our country but whose population remains small, and the Northern Wheatear, which continues to find suitable conditions in the mountainous regions of Switzerland, unlike in the lowlands of northern central Europe.

Combating the causes of climate change

Along with habitat changes and human activities, climate change is having a growing impact on bird communities in Europe. We need to do everything we can to combat the causes of climate change and mitigate its effects – Rough-legged Buzzard, Snowy Owl, Snow Bunting and others have little space left to move even further north.



The Snowy Owl has seen massive losses of territory in Fennoscandia. Climate change is a probable cause, as it has an adverse effect on lemmings, the Snowy Owl's main food source.

Further information

www.ebba2.info



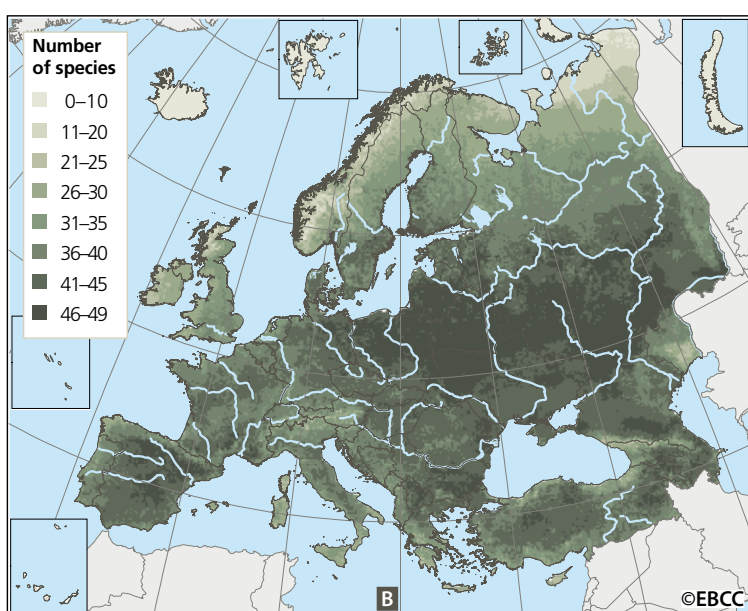
Thanks to improved protection measures, numbers of White-tailed Sea-eagles are rising in northern Europe. This could lead to more frequent sightings of this impressive bird of prey in Switzerland.

Better protection proves effective

Many species in Europe are threatened, and some of them are afforded special legal protection. Where are their distribution hotspots? How has their distribution changed?

Like the species of national conservation concern in Switzerland, European species have been classified based on their level of threat and Europe's conservation responsibility. The list of species of particular significance for nature conservation in Europe, the so-called «Species of European Conservation Concern» (SPEC), was first established in 1994 by BirdLife International, from sources including EBBA1 data. It has since been updated twice, most recently in 2017. A total of 218 species with unfavourable conservation status were classified as SPEC.

The SPEC species are an important foundation for nature conservation.



Combining the modelled maps of all SPEC species of particular significance for nature conservation (number of species per 10 × 10 km square) highlights the distribution hotspots. SPEC species are concentrated mainly in eastern and partly in southern Europe. The pattern resembles the map of overall species richness.

They are, however, not under any direct protection. Legally binding in Europe are the lists of bird species featured in international agreements such as the Bern Convention (206 species), signed by Switzerland and many other countries, and featured in the European Union's Birds Directive (193 species). For instance, under the Birds Directive, EU member states are obliged to protect the areas most suitable for the conservation of these species, to restore destroyed habitats and to prohibit the killing and trapping of birds by national law.

Most species-rich regions in eastern Europe

According to EBBA2 data the regions with the greatest number of SPEC species per 50×50 km square lie in Europe's north- and southeast. The central part of European Russia and the Caucasus region also have high values, although the survey effort in these areas was lower. Here, vast forests and wetlands still exist, but so does farmland where cultivation is much less intensive than in the west. SPEC species such as Eurasian Bittern, Corncrake, Whinchat, and Great and Lesser Grey Shrike are much more widespread and common than in the west.

The map of species richness for the species listed in the Bern Convention and the EU Birds Directive has some similarities with the SPEC map but shows lower values especially in western Europe.

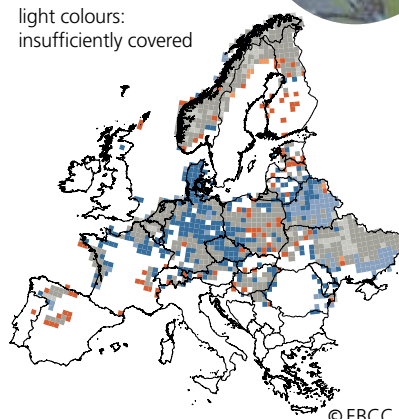
Lists show different trends

The two groups – the SPEC species of special significance for nature conservation, and the legally binding list of the Bern Convention and the EU Birds Directive – show different trends. Comparing species richness per atlas square between EBBA1 and EBBA2 reveals a general decrease in the case of SPEC species, but an increase in many parts of Europe for the species in the Bern Convention and EU Birds

Change

- EBBA1
- EBBA1 & EBBA2
- EBBA2

light colours:
insufficiently covered



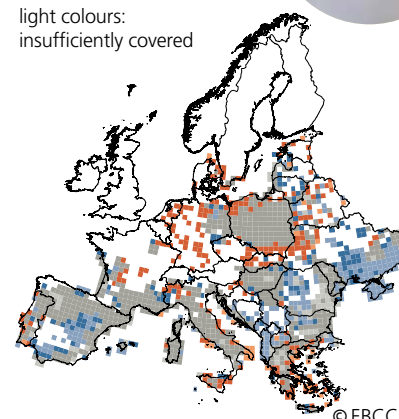
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The Bluethroat is among those species in the Bern Convention and EU Birds Directive which were able to significantly extend their breeding ranges. Numerous other wetland birds such as waterfowl, herons, gulls and terns have similar trends.

Change

- EBBA1
- EBBA1 & EBBA2
- EBBA2

light colours:
insufficiently covered



© EBCC

There are also exceptions in the species listed in the Bern Convention and EU Birds Directive such as the Tawny Pipit, which suffered marked range losses. Losses were especially severe for farmland birds, despite the legal protection.

Directive. This indicates that the legal efforts implemented in favour of the species of the Bern Convention and the EU Birds Directive have been successful, or at least have enabled an overall expansion in the distribution of these birds over 30 years.

The positive effects of the EU Birds Directive on bird population trends in Europe have been demonstrated before. The EBBA2 data support the conclusion that the Directive has contributed to conserving the species on its list. The species were able to benefit from improved protection. Therefore, the implementation of these policies in eastern and southern European countries, most of which are members of the Council of Europe or have recently joined the European Union, is an important step towards conservation in these areas.

On the other hand, the decrease in the number of SPEC species signals that the protection efforts were not successful on a broad scale for all species. Comparing the trends in species

richness for different habitats shows that farmland species, many of which are classified as SPEC, have suffered losses. By contrast, the species of the Bern Convention and EU Birds Directive include many waterbirds, which often benefit from direct protection.

Reference

Keller, V., S. Herrando, P. Voříšek, M. Franch, M. Kipson, P. Milanesi, D. Martí, M. Anton, A. Klvaňová, M. V. Kalyakin, H.-G. Bauer & R. P. B. Foppen (2020): European Breeding Bird Atlas 2: Distribution, Abundance and Change. European Bird Census Council & Lynx Edicions, Barcelona.

Thank you for several decades of dedicated work!

Keep an eye on the details without losing sight of the big picture. That could be the motto Verena Keller was committed to during her wide-ranging 30-year career at the Swiss Ornithological Institute. She joined us in 1990 after writing a doctoral thesis on the Great Crested Grebe and conducting studies on Eider ducks and geese in Scotland. In the beginning she headed projects on wildlife crossings and wrote countless appraisals. She soon became increasingly involved in Department 1 (Monitoring) and was subsequently appointed head of the section «Status assessments». In this function, she devoted many years to the waterbird census, the waterbird and migratory bird reserves and the Ramsar areas, and participated in international committees. She developed the new concept for the Red List and the priority species, published prolifically and provided constant, invaluable support and advice on monitoring projects.

As a member of the EBCC board she eventually took the lead in EBBA2, the second European Breeding Bird Atlas. Those who remember how arduous the work on the first atlas was, which finally appeared after a long delay, are humbled by the feat Verena Keller and her team pulled off, publishing right on target. This tour de force is owed above all else to her prudence, perseverance, meticulousness and self-discipline, but also her unfailing commitment. Never putting herself in the limelight, Verena Keller has given a tremendous boost to the Swiss Ornithological Institute's international reputation. She never hesitated to roll up her sleeves and take



Verena Keller devoted the last 10 years of her career to the European Breeding Bird Atlas. Besides the overall coordination of the project, she also supported the field surveys, here on the Kola Peninsula in northwestern Russia.

on the more gruelling tasks, either, be it surveying for signs, hare counts, a diverse range of mapping activities, waterbird counts or any number of special surveys. She was also an enthusiastic participant in the fieldwork for the European Breeding Bird Atlas, helping to fill in the gaps in remote regions of Europe.

Verena Keller retired at the start of 2021. We extend our best wishes and sincere gratitude to her as she enters this new phase of her life. Knowing that she can look back on a rich and successful professional career makes saying goodbye just a little bit easier. As does knowing, of course, that she is still full of ideas and unlikely to find retirement boring.

We also express our thanks to the myriad fieldworkers (counters, mappers, observers) who supported Verena Keller in her projects. Their tireless ornithological work in the field built the foundation for the countless publications, book chapters, brochures as well as appraisals and assessments Verena Keller has to her name. This unique synergy between the untiring activity of our volunteer fieldworkers and the dedicated scientists in Sempach is one of the Swiss Ornithological Institute's major success factors. We look forward to continuing this fruitful collaboration with our volunteers!



Population size and breeding success of Great Crested Grebes depend largely on the degree of eutrophication, as the analyses of counts on Lake Sempach over the course of 25 years by Verena Keller show. The slight decline and fairly small population size have caused the species to be classified as Near Threatened (NT) on the new «Red List of Breeding Birds», to be published this year by the Federal Office for the Environment FOEN.

Impressum

Authors

Peter Knaus, Thomas Sattler, Hans Schmid, Nicolas Strebel, Bernard Volet

With the collaboration of

Sylvain Antoniazza, Marcel Burkhardt, Simon Hohl, Claudia Müller, Isabelle Kaiser, Verena Keller, Marc Kéry, Matthias Kestenholz, Fränzi Korner, Pietro Milanese, Christian Rogenmoser, Gilberto Pasinelli, Michael Schaad, Arno Schneider, Martin Spiess, Katarina Varga, Samuel Wechsler

Translation

Stephanie Morris

Images

Front cover: Alpine Accentor: M. Burkhardt; p. 2: Purple Heron: M. Varesvuo, Yellow-billed Cough, Western Yellow Wagtail, Glossy Ibis: M. Burkhardt; p. 3: Common Pochard, Common Firecrest, White-tailed Sea-eagle: M. Burkhardt; p. 4: M. A. Eaton; p. 5: Short-toed Treecreeper: M. Burkhardt; p. 6: Water sports: T. Sattler; p. 7: European Robin: M. Burkhardt, Northern Wheatear: D. Occhiato; p. 8: Alpine Accentor: M. Burkhardt; p. 9: Ring Ouzel: P. Keusch, Water Pipit: R. Martin, White-winged Snowfinch: M. Burkhardt; p. 10: Western Yellow Wagtail: A. Schneider; p. 11: Orbe Plain: C. Guggenbühl, Western Yellow Wagtail: M. Spiess; p. 12: Little Crake: M. Burkhardt, Tawny Owl: A. Wulschleger; p. 13: Whinchat: M. Schäf; p. 14: Corn Bunting: M. Schäf; p. 15: Little Grebe: R. Martin; p. 19: Hazel Grouse: R. Martin; p. 20: Red-footed Falcon: B. Rüegger, Whiskered Tern: M. Burkhardt; p. 21: Common Stonechat, Short-toed Snake-eagle: R. Martin; p. 23: Glossy Ibis: P. Corday; p. 24: Waterbirds: S. Werner; p. 25: Mandarin Duck: B. Rüegger, Waterbirds: A. Pfänder, Association de la Grande Cariçaie; p. 26: Whooper Swan: S. Trösch; p. 27: Whooper Swan: U. Rettenmund, Tundra Swan: H. Zumbühl; p. 29: Common Kingfisher: B. Rüegger; p. 30: Common Firecrest: M. Burkhardt; p. 31: Garden Warbler: A. Wulschleger, Snowy Owl: M. Burkhardt; p. 32: White-tailed Sea-eagle: M. Burkhardt; p. 33: Bluethroat: M. Burkhardt, Tawny Pipit: D. Occhiato; p. 34: Verena Keller: N. Zbinden; p. 35: Great Crested Grebe: M. Burkhardt. Maps on pp. 8–9 and 30–33: European Breeding Bird Atlas 2 © European Bird Census Council (EBCC). The copyright for the map background (relief maps) is held by the ETH Zurich Institute of Cartography and Geoinformation. Other images: archive of the Swiss Ornithological Institute.

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CH-6204 Sempach