

Raptor and Owl Conservation in Switzerland: Strategic Guidelines and Management Priorities

Annex – Species Account



Red Kite (*Milvus milvus*) © M. Burkhardt

12 September 2019

Report of the Swiss Focal Point of the Raptors MoU

under the Conservation of Migratory Species of Wild Animals (CMS)

Dr Stefan Werner, Johann von Hirschheydt, Hans Schmid, Dr Reto Spaar, Sabine Herzog

based on data published under <https://www.vogelwarte.ch/en/atlas/home-page>

Content

European Honey Buzzard <i>Pernis apivorus</i>	3
Red Kite <i>Milvus milvus</i>	5
Black Kite <i>Milvus migrans</i>	9
Northern Goshawk <i>Accipiter gentilis</i>	11
Eurasian Sparrowhawk <i>Accipiter nisus</i>	13
Common Buzzard <i>Buteo buteo</i>	15
Booted Eagle <i>Aquila pennata</i>	17
Golden Eagle <i>Aquila chrysaetos</i>	19
Griffon Vulture <i>Gyps fulvus</i>	22
Bearded Vulture <i>Gypaetus barbatus</i>	24
Hen Harrier <i>Circus cyaneus</i>	27
Pallid Harrier <i>Circus macrourus</i>	29
Montagu's Harrier <i>Circus pygargus</i>	31
Western Marsh Harrier <i>Circus aeruginosus</i>	33
Short-toed Snake Eagle <i>Circaetus gallicus</i>	35
Osprey <i>Pandion haliaetus</i>	37
Peregrine Falcon <i>Falco peregrinus</i>	39
Eurasian Hobby <i>Falco subbuteo</i>	42
Merlin <i>Falco columbarius</i>	44
Red-footed Falcon <i>Falco vespertinus</i>	46
Common Kestrel <i>Falco tinnunculus</i>	48
Western Barn Owl <i>Tyto alba</i>	50
Eurasian Scops Owl <i>Otus scops</i>	52
Eurasian Eagle-Owl <i>Bubo bubo</i>	54
Eurasian Pygmy Owl <i>Glaucidium passerinum</i>	56
Little Owl <i>Athene noctua</i>	58
Tawny Owl <i>Strix aluco</i>	60
Long-eared Owl <i>Asio otus</i>	62
Short-eared Owl <i>Asio flammeus</i>	64
Boreal Owl <i>Aegolius funereus</i>	66

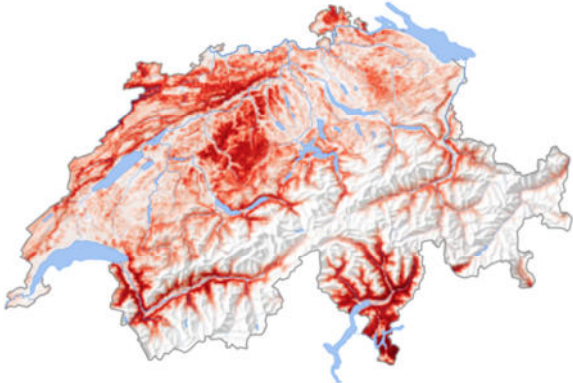
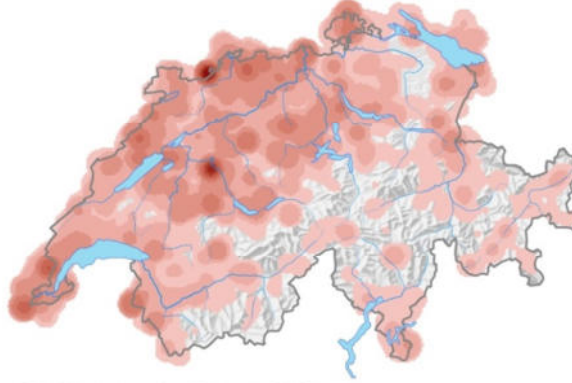
European Honey Buzzard *Pernis apivorus*

Wespenbussard Bondrée apivore Falco pecchiaiolo



Male (© D. Occhiato)

Description	Length	52–60 cm
	Wingspan	125–135 cm
	Weight	600–1100 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	2 = high
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Regular breeder, passage migrant
	Migration strategy	Long-distance migrant, wintering in tropical Africa
	Habitat requirements	Mixed Farmland and forests from the lowlands to 1500 m a.s.l.
	Age of first breeding	Mainly 4 th calendar year. Juveniles stay at least one year in Africa (Mebs & Schmidt 2014)
	Breeding season	May to end of August
	Clutch size	2
	Incubation period	30–35 days
	Fledgling period	40–44 days
	Food	Brood of ground-burrowing, social wasps and bumble-bees, other insects, amphibians

<p>Breeding population size CH</p>	<p>2013–2016: 500–1000 pairs</p> <p>2005–2009: 400–600 pairs</p>	<p>Assessment of breeding population is difficult. Population seems to be more or less stable since the year 2000</p>
<p>Breeding distribution</p> 	<p>Distribution of records during migration (autumn)</p> 	
<p>Migrant numbers</p>		<p>10'000–15'000</p>
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Breeding habitats in the lowlands are mainly threatened by building development, forest modifications and intensified agriculture (Maumary et al. 2007). Human disturbance could also be a threat. • Abandonment of farming in subalpine and montane regions may decrease habitat quality by vegetation succession. • Disturbance of reproduction by timber harvest during the breeding season. • Collision risk at wind turbines and habitat loss due to forthcoming construction of wind farms in forests. <p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Illegal hunting particularly during migration in the Mediterranean area is a serious threat mainly for eastern populations • Deforestation of African rain forests. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Maintain breeding habitats (old stands with low crown density). • Maintain/promote healthy populations of ground burrowing bumble-bees and wasps by creating/maintaining meadows continuously rich in flowers and fallow land areas close to forest edges. • Reduce the use of insecticides in agriculture. • No wood harvest during breeding season. • No wind parks close to important migratory sites. 	

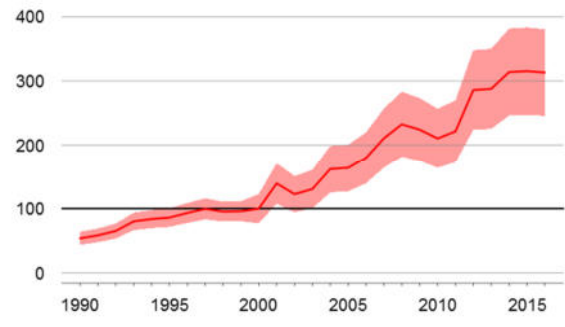

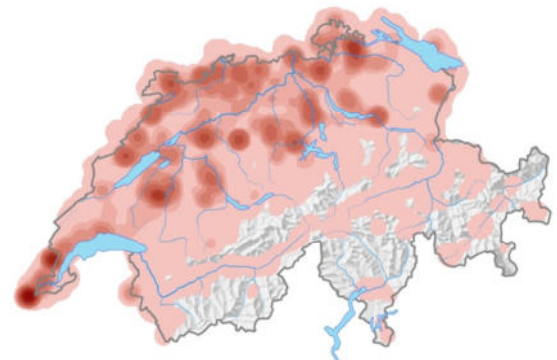
Red Kite *Milvus milvus*

Rotmilan Milan royal Nibbio reale

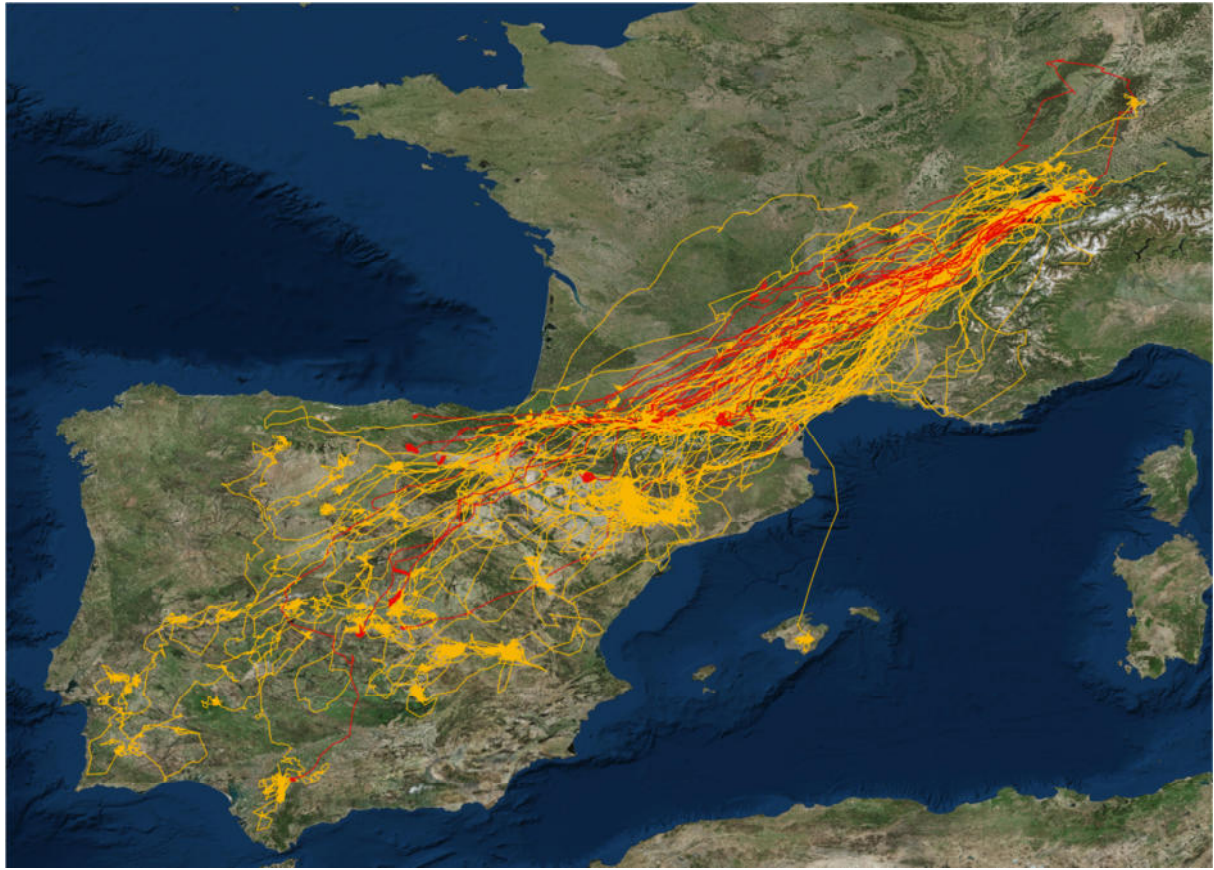


(© M. Burkhardt)

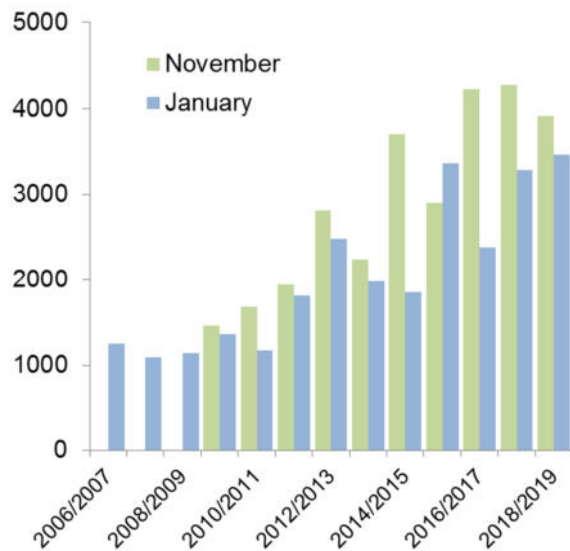
Description	Length	56–73 cm
	Wingspan	140–165 cm
	Weight	750–1300 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Near threatened (NT)
	Raptors MoU	Category 1 species
Biology	National Status	Regular breeder, passage migrant, winter visitor
	Migration strategy	Resident or short-distance migrant; Swiss birds are partly wintering in Switzerland (mainly adults), partly in southern France, Spain or Portugal
	Habitat requirements	Mixed Farmland (particularly meadows) for foraging, trees for nesting
	Age of first breeding	3–4 th calendar year

	Breeding season	March to end of July
	Clutch size	2–3
	Incubation period	30 days
	Fledgling period	50–55 days
	Food	Small mammals, birds, earthworms, carcasses, organic rubbish
Breeding population size CH	2013–2016: 2800–3500 pairs	Trend: Swiss Bird Index SBI 
	2005–2009: 1200–1500 pairs	
Breeding distribution		Distribution of records during migration (Autumn)
		
Migrant numbers		10'000–20'000

Migration map showing telemetry data of 27 adult (red) 73 young (yellow) Swiss birds from 2017 and 2018.

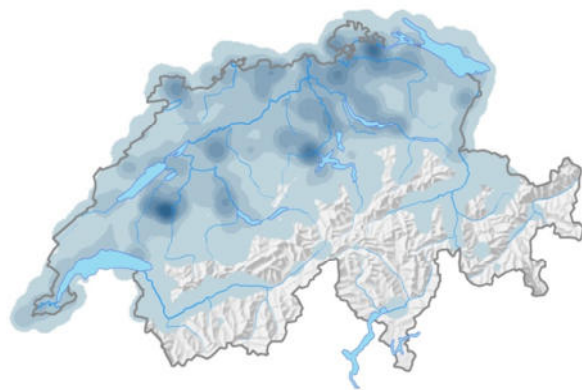


Winter population size



Total of birds at all known roosts since winter 2006/07 (n=69). Green: November counts at all known roosts. Blue: January counts at all known roosts (n=22) (A. Aebischer 2018, 2019).

Winter distribution



<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Locally secondary poisoning from consumption of poisoned rodents by rodenticides (Bromadiolon) spread on farmland to control vole plagues (Maumary et al. 2007). • Wind turbines are a potentially serious future threat (Bellebaum et al. 2013, Grünkorn et al. 2016, Schaub 2012, Korner-Nievergelt et al. 2016). • Other threats within Switzerland include electrocution and collision with power lines, road-kills and potentially also conversion from grassland to arable land like in France, where Red Kite populations disappeared at the same rate as grassland was converted to cereal crops¹. Farming intensification leading to chemical pollution, homogenization of landscapes and ecological depletion also threatens the species (Knott et al. 2009).
	<p>Abroad:</p> <ul style="list-style-type: none"> • In Spain breeding and wintering populations declined considerably due to direct hunting, electrocution/collision with power lines and to the closing of (slaughter) waste deposal sites (Maumary et al. 2007). However, increased recently (Molina 2015). • Wind turbines are a serious threat in Germany (Bellebaum et al. 2013, Grünkorn et al. 2016).
<p>Conservation measures</p>	<ul style="list-style-type: none"> • No wind parks close to wintering sites with large concentrations of birds. • Keep high percentage of grassland. • Monitor effects of pesticides in birds found freshly dead (e.g. road casualties). • Keep permanent ban of carbofurans and allies. • Defuse dangerous power lines to reduce electrocution and collision.

¹ BirdLife International. 2017. *Milvus milvus*. (amended version published in 2016) The IUCN Red List of Threatened Species 2017: e.T22695072A110921280. <http://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T22695072A110921280.en>. Last Download on 11 July 2017

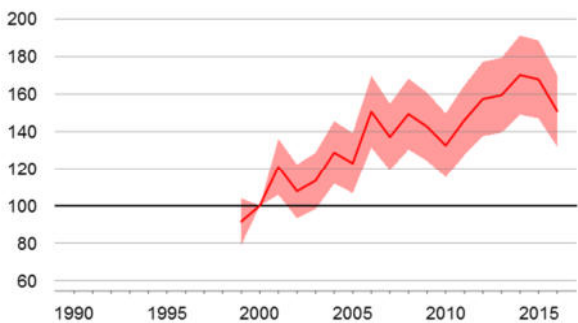

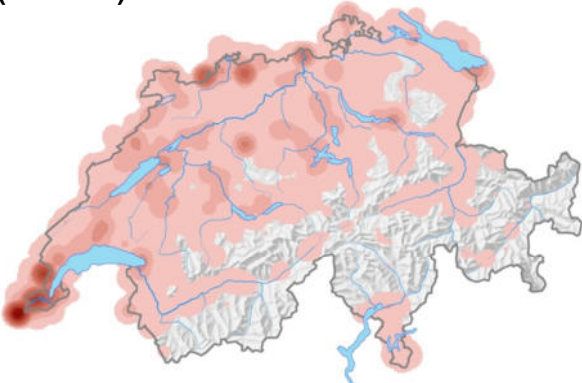
Black Kite *Milvus migrans*



Schwarzmilan Milan noir Nibbio bruno





(© M. Schäf)

Description	Length	55–60 cm
	Wingspan	130–155 cm
	Weight	650–950 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Regular breeder, passage migrant
	Migration strategy	Long-distance migrant, Swiss birds wintering in tropical western Africa
	Habitat requirements	Farmland, lakes, rivers, streams, forest
	Age of first breeding	5–6 th calendar year
	Breeding season	Mid of March to mid of July
	Clutch size	2–3
	Incubation period	30 days
	Fledgling period	42–45 days
Food	Fish, carcasses, organic rubbish	

<p>Breeding population size CH</p>	<p>Atlas 2013–2016: 2000–3000 pairs</p> <p>2005–2009: 1200–1500 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of records during migration (Autumn)</p> 	
<p>Migrant numbers</p>	<p>10'000–17'500</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Threats within Switzerland include electrocution, collision with power lines and road-kills. <p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Pollution of freshwater systems with chemicals, heavy metals and substances influencing hormonal systems. • Wind turbines are a potentially serious future threat. In Spain they are even actually a menace to migrating Black Kites (Langgemach & Dürr 2016) including birds potentially originating from Switzerland. • Shooting of migrating birds around the Mediterranean Sea and farther south kills many birds (>20 % of ring recoveries from birds ringed in CH). • Carcass poisoning and water pollution lead to steady declines in Europe and parts of Asia and potentially also in Africa. • Use of insecticides to reduce locusts in Africa (main food source in winter). 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Monitor effects of pesticides in birds found freshly dead (e.g. road casualties). • Keep permanent ban of carbofurans and allies. • Mitigate dangerous power lines to reduce electrocution and collision. 	

Northern Goshawk <i>Accipiter gentilis</i>		
Habicht Autour des palombes Astore		
		
Adult (© M. Varesvuo)		First year (© M. Varesvuo)
Description	Length	48–62 cm
	Wingspan	93–127 cm
	Weight	500–1350 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Different semi-open landscapes for foraging, forests with aery trees
	Age of first breeding	2–3 rd calendar year
	Breeding season	February to beginning of August
	Clutch size	3–4
	Incubation period	36–41 days
	Fledgling period	36–40 days
	Food	Small mammals, birds
Breeding population size CH	Atlas 2013–2016: 1300–1700 pairs 2005–2009: 1400–1600 pairs	Assessment of breeding population is difficult. According to species experts, Northern Goshawk population seems to decrease in many regions.

<p>Breeding distribution</p> 	<p>Distribution of records during winter</p> 
<p>Migrant numbers</p>	<p>30–50</p>
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Collisions with power lines, windows and cars. • Illegal poisoning from pigeon fanciers was recorded recently. • Intense forestry (especially timber harvest during the breeding season) and human disturbance may have its impacts on breeding success. • Maintain old growth forest patches as nesting habitats (www.icunredlist.org). • The use of wind energy in remote forests may be a future threat as the species seems to be highly sensible to collision, habitat loss by construction and running of wind energy infrastructure (Strix 2012). • Birds causing substantial damage at poultry farms can be shot with exceptional permission. <p>Abroad:</p> <ul style="list-style-type: none"> • Not relevant for Swiss population
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Keeping strict protection (no hunting). • Reduce disturbances at the nest (especially no timber harvest during the breeding season). • Protect aery trees. • Ensure forest practices promoting the existence of large/dominant trees in sufficient numbers. • Consequently pursue illegal activities (poisoning). • Avoid wind energy use in remote and old growth forests.

Eurasian Sparrowhawk *Accipiter nisus*

Sperber Epervier d'Europe Sparviere

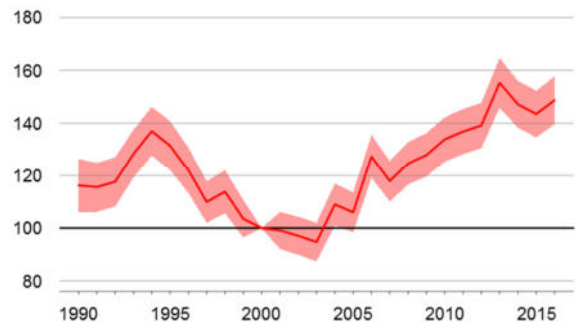

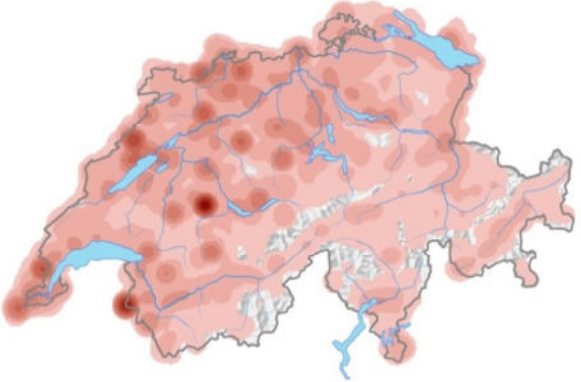


Male (© M. Burkhardt)



First year bird (© R. Aeschlimann)

Description	Length	28–38 cm
	Wingspan	58–80 cm
	Weight	100–350 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder, passage migrant, winter visitor
	Migration strategy	Resident or short-distance migrant
	Habitat requirements	Forests and different semi-open landscapes including settlements for foraging, forest trees for nesting
	Age of first breeding	2–3 rd calendar year
	Breeding season	Beginning of March to end of July
	Clutch size	4–6
	Incubation period	35 days
	Fledgling period	24–30 days
	Food	Mainly birds

<p>Breeding population size CH</p>	<p>2013–2016: 3500–6000 pairs</p> <p>2005–2009: 3000–4000 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of records during autumn migration</p> 	
<p>Migrant numbers</p>	<p>2000–3000</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • High collision risk with windows, power lines and cars. • Disturbance of reproduction by forestry activities during the breeding season. • Locally toxic substances can reduce breeding success in recent times (Maumary et al. 2007). • Collision risk with wind turbines for migrating birds. <p>Abroad:</p> <ul style="list-style-type: none"> • Not relevant for Swiss population. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Reduce disturbances at nest sites (neither timber harvest nor thinning during the breeding season). • Monitor effects of pesticides/heavy metals in birds found freshly dead (e.g. window collisions, road casualties). 	

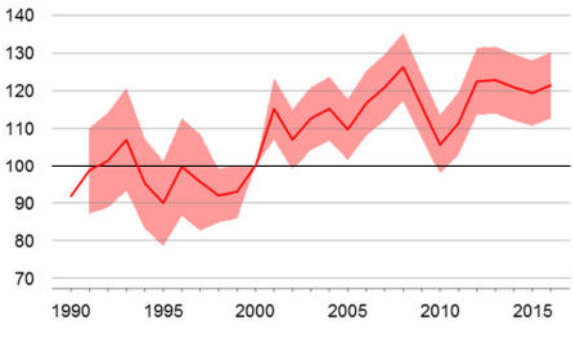

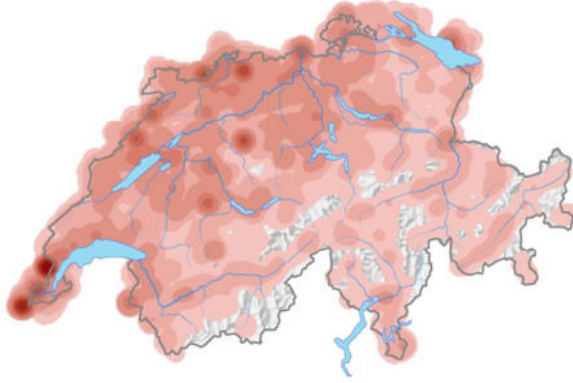
Common Buzzard *Buteo buteo*

Mäusebussard Buse variable Poiana



(© P. Donini)

Description	Length	50–57 cm
	Wingspan	113–128 cm
	Weight	600–1300 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder, passage migrant, winter visitor
	Migration strategy	Resident to short distance migrant, Swiss birds wintering in breeding area or in southern France, Scandinavian birds migrate medium distance
	Habitat requirements	Forest and farmland for foraging, trees for nesting
	Age of first breeding	2–4 th calendar year
	Breeding season	End of February to end of July
	Clutch size	2–3

	Incubation period	36 days
	Fledgling period	45–50 days
	Food	Small mammals, worms
Breeding population size CH	2013–2016: 15'000–20'000 pairs	Trend: Swiss Bird Index SBI 
	2005–2009: 20'000–25'000 pairs* *Breeding population formerly was overestimated	
Breeding distribution		
Distribution of records during autumn migration		
Migrant numbers	30'000–70'000	
Major Threats	CH: <ul style="list-style-type: none"> • Illegal deliberate/unintentional poisoning with rodenticides. • Electrocutation, collisions with power lines/pylons and cars. • Intensification of agriculture may threaten food supply. • Increased use of wind energy would enhance collision risks for foraging birds in their breeding range and for migrating birds. 	
	Abroad (www.iucnredlist.org): <ul style="list-style-type: none"> • Illegal persecution and use of wind energy (Grünkorn et al. 2016). 	
Conservation measures	<ul style="list-style-type: none"> • Keep strict protection (no hunting). • Keep high percentage of grassland. • Keep permanent ban of carbofurans and allies by law. • Defuse dangerous power lines to reduce electrocution. • Monitor use of pesticides in birds found freshly dead (e.g. road casualties). 	



Booted Eagle *Aquila pennata*

Zwergadler Aigle botté Aquila minore



Adult, light morph (© B. Rügger)

Description	Length	42–51 cm
	Wingspan	110–135 cm
	Weight	500–1250 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Rare passage migrant
	Migration strategy	Long-distance migrant, wintering in Africa south of the Sahara
	Habitat requirements	Farmland, forests, mountains
	Food	Reptiles, birds, small mammals

Distribution of records during spring migration		Distribution of records during autumn migration	
			
Migrant numbers		0–3	
Major Threats	CH:		
	<ul style="list-style-type: none"> • No major threats known 		
Conservation measures	Abroad:		
	<ul style="list-style-type: none"> • Persecution in the breeding, migration and wintering areas, contamination with biocides in the wintering areas (Maumary et al. 2007). 		
		<ul style="list-style-type: none"> • None 	

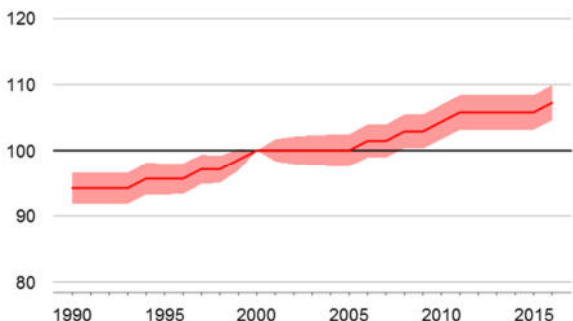


Golden Eagle *Aquila chrysaetos*

Steinadler Aigle royal Aquila reale



Adult (© M. Burkhardt)

Description	Length	75–88 cm
	Wingspan	190–225 cm
	Weight	2850–6700 g
Protection status	National Red List	Vulnerable (VU)
	National Priority List	2 = high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Mixed mountainous landscapes for foraging, rocky niches for nesting
	Age of first breeding	5–6 th calendar year
	Breeding season	February to end of August
	Clutch size	2
	Incubation period	43–44 days
	Fledgling period	74–80 days
	Food	Mammals, birds, carcasses

<p>Breeding population size CH</p>	<p>2013–2016: 350–360 pairs</p> <p>2008–2012: 320–340 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of records during migration (winter)</p> 	
<p>Migrant numbers</p>	<p>0</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Increasing outdoor activities close to nest sites (e.g. climbing, geocaching, paragliding, forestry works, and particularly photography at nesting sites), where Golden Eagles are very sensitive (Jenny & Schaad 2015). • Between 1970 and 1994 still 16 % of dead or seriously injured birds in the canton of Graubünden showed residues of shot pellets, which indicates illegal shooting (Haller 1996). • Lead shot pellets within dead ungulates can poison Golden Eagles foraging on those polluted carcasses, also illegal non-target poisoning of e.g. wolves may affect Golden Eagles. • There are also records of mortality as a result of electrocution when perching on power lines, but no data to suggest any substantial demographic impact (www.iucnredlist.org). • Wind power stations are a source of direct mortality for the species. • Collisions with cables. <p>Abroad:</p> <ul style="list-style-type: none"> • Not relevant for Swiss populations. 	

Conservation measures	<ul style="list-style-type: none">• Continue the intense monitoring of breeding populations/nesting sites.• Promote temporal protection zones at occupied nesting sites with adapted prohibitions of e.g. climbing, paragliding, geocaching, photographing.• Control of compliance with the prescription of temporary reserve zones.• Ban lead ammunition.• Develop screening of body contents within birds found dead (e.g. lead pellets, pesticides, poisoning).• No windparks within 3 km to nesting sites.
------------------------------	---


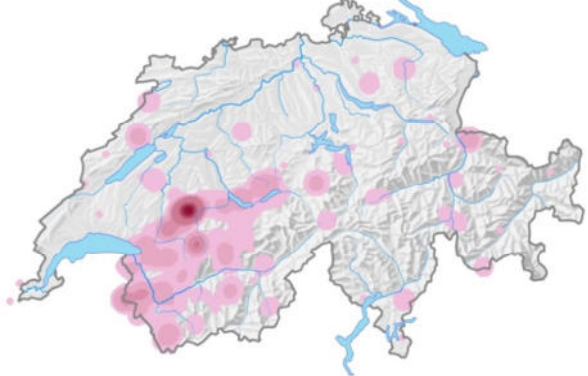
Griffon Vulture *Gyps fulvus*

Gänsegeier Vautour fauve Grifone



(© M. Burkhardt)

Description	Length	95–110 cm
	Wingspan	230–265 cm
	Weight	7500–11'000 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Summer visitor, vagrant
	Migration strategy	Mainly resident, but dispersal of immature/non-breeding birds
	Habitat requirements	CH: mainly mountainous landscapes, rich in ungulates, cattle, goats and sheep
	Food	Carcasses

<p>Distribution of spring records</p> 	<p>Distribution of records during summer</p> 
<p>Migrant numbers</p>	<p>50–150</p>

<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Reduction of food supply by removal of carcasses for hygienic reasons and by changes of livestock management practices. • Non-target poisoning (lead ammunition, potentially non-steroidal inflammatory drugs NSAIDs). • Disturbance at roosting sites due to increasing human outdoor activities. • Collisions with infrastructure (power lines, wind energy). • Electrocution. <p>Abroad:</p> <ul style="list-style-type: none"> • Non-target poisoning by baits against large mammal predators and by carcasses of cattle treated with Diclofenac recently authorized in Spain (Botha et al. 2017). • Spain: so far 1892 victims at wind power stations (Dürr 2017).
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Allow cattle, goat and sheep carcasses and placenta to remain in alpine landscapes (“Sömmerungsbereiche”). • Reduce disturbances in summer roosting areas by creating temporary exclusion zones. • Reduce electrocution of critical power lines. • Permanent ban of Diclofenac by law. • Ban lead ammunition. • No windparks in important summer roosting areas.

Bearded Vulture *Gypaëtus barbatus*

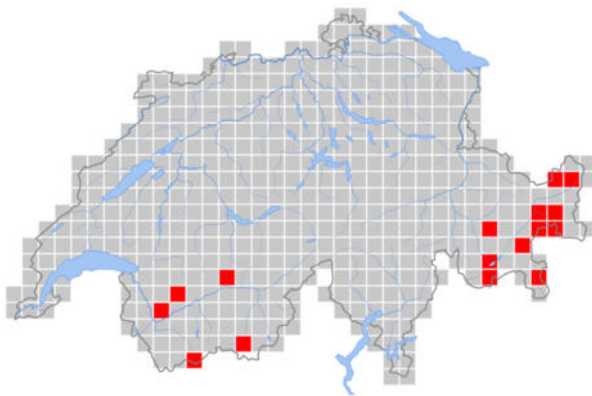
Bartgeier Gypaëte barbu Gipeto



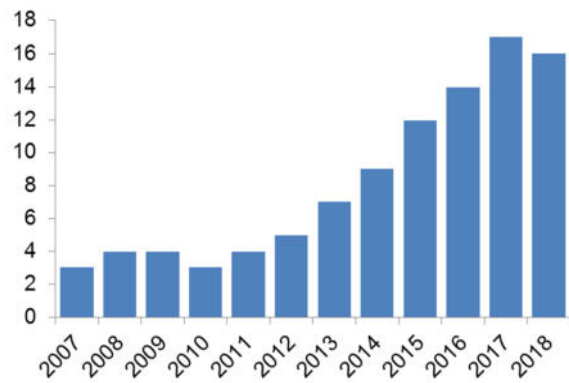
Adult (© M. Burkhardt)

Description	Length	100–115 cm
	Wingspan	250–280 cm
	Weight	5000–7000 g
Protection status	National Red List	Critically Endangered (CR)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Near Threatened (NT)
	Raptors MoU	Category 1 species
Biology	National Status	After extinction at the end of the 19 th century now regular breeder due to a still progressing international reintroduction project
	Migration strategy	Resident; dispersing immature birds explore large parts of the Alps, sometimes even beyond
	Habitat requirements	Mountainous landscapes rich in ungulate carcasses for foraging and well-protected niches in rocky walls for nesting
	Age of first breeding	6–8 th calendar year (www.bartgeier.ch)
	Breeding season	January to end of August
	Clutch size	1–2, fledged young 0–1/year
	Incubation period	55–60 days
	Fledgling period	110–130 (www.bartgeier.ch)
	Food	Mainly bones; carcass flesh for young nestlings

Breeding distribution

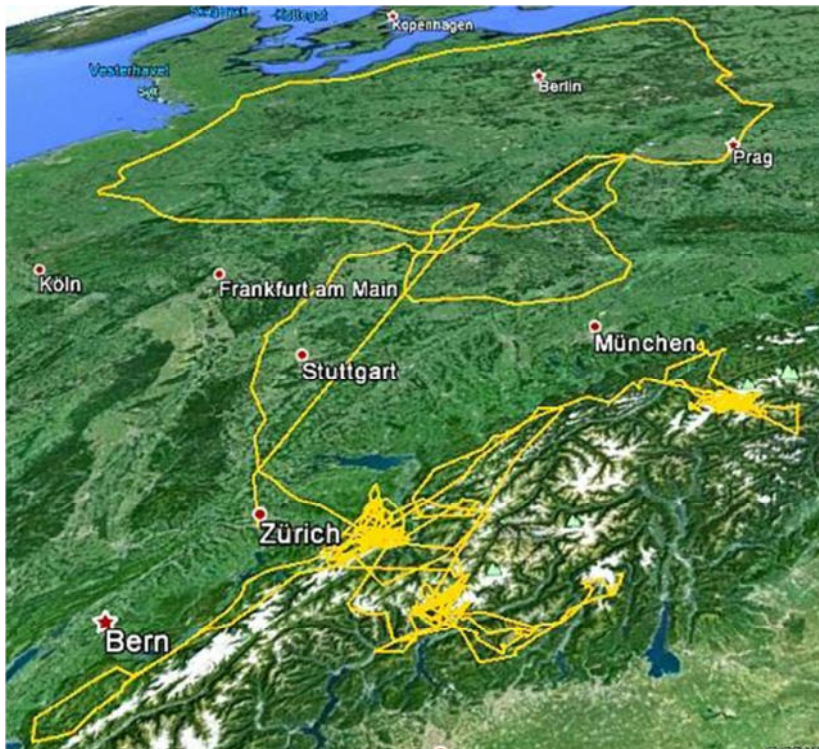


Breeding attempts in CH



In the whole Alpine arc: 220 birds (www.bartgeier.ch). Other places in the Swiss Alps and the whole Alpine arc will probably be colonized in the near future.

Dispersal map



Example of a young bird with intensive juvenile dispersal (<http://bartgeier.ch/bernd>).

<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Actual threats are collisions with powerlines and cables of cable cars and illegal shooting (Maumary et al. 2007). • Poisoning by intake/accumulation of lead originating from ammunition fragments: Less affected compared to Golden Eagle as main food source (bones) are not that contaminated with lead as tissues (Jenni et al. 2015). • Despite the provision of targeted conservation actions, the European population remains susceptible to non-target poisoning. • Collisions with wind turbines will be a serious future threat (Botha et al. 2017, IUCN 2017²). • Increasing outdoor activities close to nest sites (e.g. alpine rock climbing, paragliding and also photography) may be a future threat.
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Continue the intense monitoring of the population and the breeding sites in Switzerland. • Promote key sites, updated every 2 to 5 years, and temporal protection zones at occupied nesting sites with adapted prohibitions of e.g. climbing, paragliding, geocaching, photographing. • Control of compliance with prescriptions of temporary reserve zones. • No feeding sites, but allow cattle, goat and sheep carcasses to remain in alpine landscapes (“Sömmerungsbereiche”). • Ban lead ammunition. • No windparks and other infrastructure (power lines, cable cars, etc.) within 10 km to nesting sites (depending on orography) and to future breeding areas around actual release points. • Continue public relations.

² BirdLife International. 2017. *Gypaetus barbatus*. (amended version published in 2016) The IUCN Red List of Threatened Species 2017: e.T22695174A110638868. <http://dx.doi.org/10.2305/IUCN.UK.2017-1.RLTS.T22695174A110638868.en>. Downloaded on 11 July 2017

Hen Harrier *Circus cyaneus*

Kornweihe Busard Saint-Martin Albanella reale



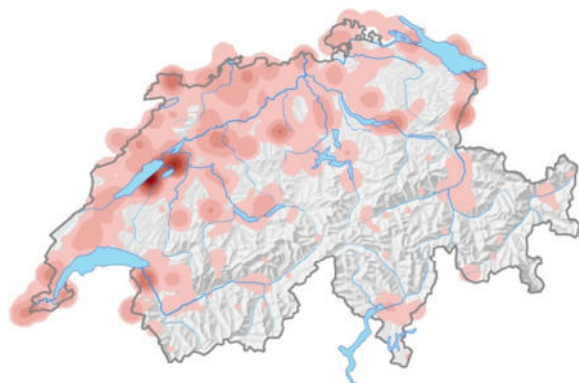
Male (© D. Occhiato)



Female (© R. Aeschlimann)

Description	Length	44–52 cm
	Wingspan	100–120 cm
	Weight	300–700 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Passage migrant, winter visitor, former breeder
	Migration strategy	Short to medium distance migrant, wintering in Central Europe and around the Mediterranean
	Habitat requirements	Open agricultural land, wetlands
	Food	Small mammals, birds

Distribution of autumn records







Distribution of records during winter



Migrant numbers

40–80

Major Threats	<p>CH:</p> <ul style="list-style-type: none"> • Has suffered historically from habitat destruction by drainage and currently by intensification of agriculture (Maumary et al. 2007).
	<p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Still on-going habitat destruction by drainage and by intensification of agriculture. • Decreasing wintering and migrating numbers may be a result of decreasing southernmost breeding populations from which the birds may have originated or may be due to climatic changes as birds may winter further north nowadays.
Conservation measures	<ul style="list-style-type: none"> • Support biodiversity promoting areas in farmland and maintain managed wetlands. • Reduce disturbances in wintering sites (e.g. no free walking dogs in fallow land).

Pallid Harrier <i>Circus macrourus</i>		
Steppenweihe Busard pâle Albanella pallida		
		
Male (© M. Schäf)		First year bird (female-like; © B. Rüegger)
Description	Length	40–50 cm
	Wingspan	97–118 cm
	Weight	300–450 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Near threatened (NT)
	Raptors MoU	Category 1 species
Biology	National Status	Vagrant
	Migration strategy	Long-distance migrant, wintering in savannahs of Africa and Asia
	Habitat requirements	Wide open areas
	Food	Small mammals, birds
Distribution of spring records		Distribution of autumn records
		
Migrant numbers		1–5

Major Threats	CH: <ul style="list-style-type: none"> • No major threats known.
	Abroad: <ul style="list-style-type: none"> • Habitat deterioration due to steppe and meadow landscape transformation into intensively used agricultural land as well as overgrazing, particularly in the European breeding areas (Maumary et al. 2007).
Conservation measures	<ul style="list-style-type: none"> • Support further biodiversity promoting areas in arable land.

Montagu's Harrier *Circus pygargus*

Wiesenweihe Busard cendré Albanella minore

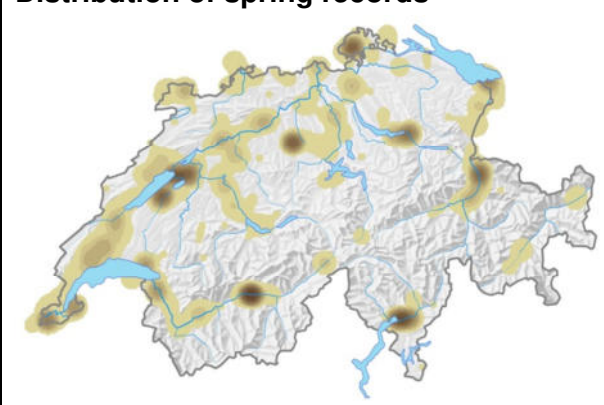
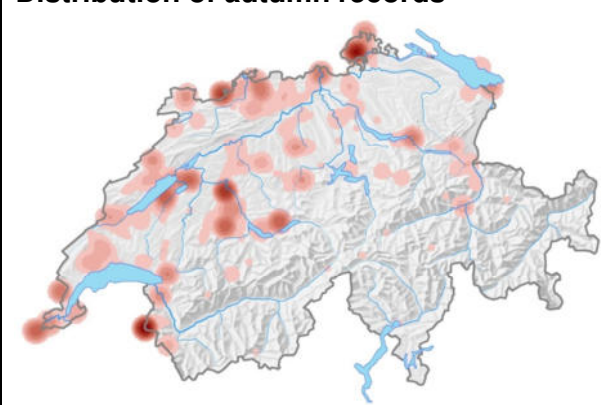


Male (© P. Donini)



Female (© M. Schäf)

Description	Length	43–47 cm
	Wingspan	96–116 cm
	Weight	225–450 g
Protection status	National Red List	Vulnerable (VU)
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Exceptional breeder, passage migrant
	Migration strategy	Long-distance migrant, wintering in Africa south of the Sahara
	Habitat requirements	Open agricultural land
	Age of first breeding	(2)–3 rd calendar year
	Breeding season	Mid of April to mid of August
	Clutch size	4–5
	Incubation period	28–29 days
	Fledgling period	35–40 days
	Food	Small mammals, insects, birds

Distribution of spring records		Distribution of autumn records	
			
Migrant numbers		20–50	
Major Threats	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture (particularly increased use of pesticides and large crop harvesters; Maumary et al. 2007) may threaten breeding and resting habitats as well as food supply. • Development of wind energy may be a future threat for migrating birds. 		
	<p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Locust control and droughts in the Sahel (Ferguson-Lees and Christie 2001). • Habitat degradation through wood harvesting, overgrazing and burning (Thiollay 2006). • Collisions with wind turbines at breeding sites and potentially during migration. 		
Conservation measures	<ul style="list-style-type: none"> • Support further biodiversity promoting areas in arable and grassland. • Reduce disturbances in potential resting places (e.g. no free running dogs in fallow land). • In case of occasional breeding: protection of nest sites with restrictions of farming and compensated shortfall in receipts if necessary and clever information policy to prevent disturbances by visitors/photographers. 		

Western Marsh Harrier *Circus aeruginosus*

Rohrweihe Busard des roseaux Falco di palude



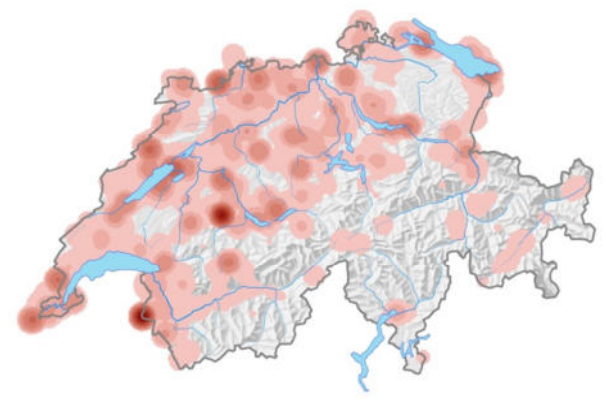
Male (© M. Schäf)



Female (© M. Schäf)

Description	Length	48–56 cm
	Wingspan	115–140 cm
	Weight	400–800 g
Protection status	National Red List	Vulnerable (VU)
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Passage migrant, summer and winter visitor, occasional breeder
	Migration strategy	Medium to long distance migrant, mainly wintering in Africa south of the Sahara
	Habitat requirements	Wetlands, farmland
	Food	Small mammals, insects, birds

Distribution of autumn records



Distribution of winter records



Migrant numbers

1000–2000

<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threat breeding and resting habitats as well as food supply. • Increasing outdoor activities leave only limited space for a successful settlement (Maumary et al 2007). • Development of wind energy may be a future threat for migrating birds. • For resting of migrating birds in Switzerland wetland desiccation and drainage might be the most limiting factor.
	<p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Major threats may be persecution by illegal shooting in overwintering areas. • Pollution, especially from excessive pesticide use in and around wetlands, and poisoning by heavy metals, notably the consumption of lead-shot pellets through feeding on contaminated waterbirds (del Hoyo et al. 1994, Ferguson-Lees and Christie 2001) in wintering areas. • The species is vulnerable to collision with wind turbines (Strix 2012). About one third of all flights at nesting places can be within their danger zone (Langgemach & Dürr 2016).
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Support and maintain managed wetlands and biodiversity promoting areas in open arable land.

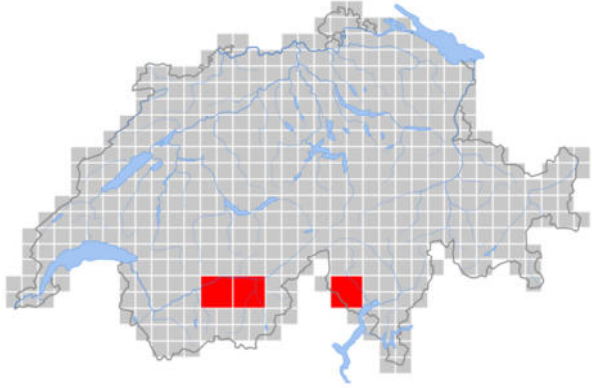

Short-toed Snake Eagle *Circaëtus gallicus*

Schlangenadler Circaète Jean-le-Blanc Biancone



Adult (© M. Varesvuo)

Description	Length	62–69 cm
	Wingspan	162–178 cm
	Weight	1100–2300 g
Protection status	National Red List	- (recently colonized)
	National Priority List	-
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	New breeding bird, summer visitor, passage migrant
	Migration strategy	Mostly long-distance migrant, wintering in the Sahel belt
	Habitat requirements	Open landscapes rich in reptiles for foraging, trees for nesting
	Age of first breeding	4–5 th calendar year
	Breeding season	End of March to end of August
	Clutch size	1
	Incubation period	45–47 days
	Fledgling period	70–75 days
	Food	Mainly reptiles

Breeding population size CH	2013–2016: 2008–2012:	3–5 pairs 0–1 pairs
Breeding distribution 	Distribution of autumn records 	
Migrant numbers		10–15
Major Threats	<p>CH:</p> <ul style="list-style-type: none"> • Changes in agricultural land use (more monocultures, hedge destructions, stronger use of pesticides or abandonment of agriculture in mountainous, steep places difficult to get to and subsequent reforestation) have reduced the extent of suitable reptile habitat and reptile populations. • Collision with power lines and electrocution are additional risks in Europe (Tucker and Heath 1994), probably in Switzerland as well. • Disturbance at the nest site by increasing forestry in breeding season and outdoor activities (e.g. climbing, geocaching, photography). <p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Loss of food source (snakes) due to increased cultivation of monocultures, hedge destruction, use of pesticides and the abandonment of traditional farmland and subsequent afforestation. 	
Conservation measures	<ul style="list-style-type: none"> • Maintain open habitats with high densities of reptiles. • Continue the monitoring of the breeding population/breeding sites. • Promote special and temporal protection zones at occupied nesting sites with adapted prohibitions of e.g. climbing, paragliding, geocaching, photographing. • Control of compliance with prescription of temporary reserve zones. • No timber harvest during the breeding season. • Reduce electrocution as a mortality factor by eliminating the sources of danger. • No windparks within at least 3 km to nesting sites (depending on orography). 	

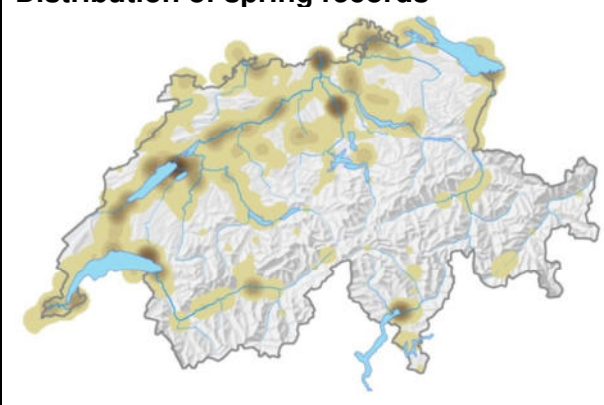
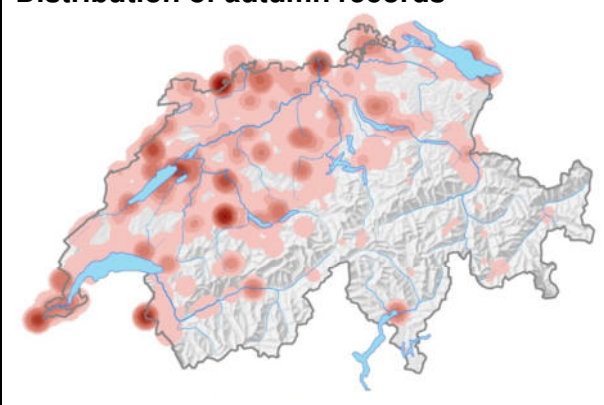
Osprey *Pandion haliaëtus*

Fischadler Balbuzard pêcheur Falco pescatore



(© M. Varesvuo)

Description	Length	52–60 cm
	Wingspan	152–167 cm
	Weight	1200–2050 g
Protection status	National Red List	Regionally Extinct (RE)
	National Priority List	2 = high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Passage migrant, summer visitor, former breeder. 2016–2018 local reintroduction/release programme
	Migration strategy	Long-distance migrant, wintering in Africa south of the Sahara
	Habitat requirements	Lakes, streams and rivers for foraging, large trees for nesting
	Food	Fish
Breeding population size CH	Reintroduction programme in course	

Distribution of spring records		Distribution of autumn records	
			
Migrant numbers		150–200	
Major Threats	CH:		
	<ul style="list-style-type: none"> • Collisions with power lines and electrocution. • Disturbance at future nest sites by humans (forestry, photography, other outdoor activities). • Development of wind energy may be a threat for migrating birds. 		
Conservation measures	Abroad (www.iucnredlist.org):		
	<ul style="list-style-type: none"> • Illegal persecution in the breeding, migration and wintering areas. • Ensure forest practices promoting the existence of protruding, dominant trees in sufficient numbers. • Mitigate dangerous power lines (electrocution). • Provide artificial nesting platforms in or close to suitable wetlands. • Avoid disturbance on water bodies close to foraging sites. • Promote special and temporal protection zones at occupied nesting sites with adapted prohibitions of outdoor activities. • Control of compliance with prescriptions of temporary reserve zones. • Public relations (fisheries). • No wind parks close to nesting sites (depending on orography). 		

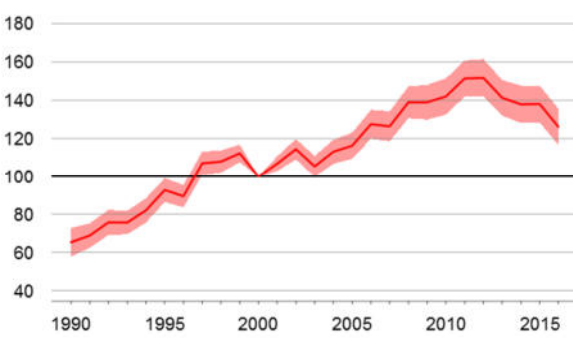
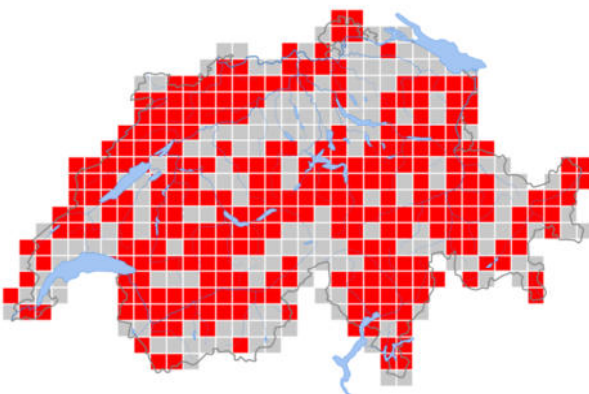

Peregrine Falcon *Falco peregrinus*

Wanderfalke Faucon pèlerin Falco pelegrino



Adult (© D. Occhiato)

Description	Length	36–48 cm
	Wingspan	89–113 cm
	Weight	600–1300 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	2 = high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder, winter visitor
	Migration strategy	Mostly resident
	Habitat requirements	Various open habitats for foraging, in winter often wetlands rich in waterbirds; crevices and buildings as breeding sites
	Age of first breeding	Mainly 3 rd calendar year
	Breeding season	February to end of July
	Clutch size	3–4
	Incubation period	29–32 days
	Fledgling period	35–42 days
	Food	Birds

<p>Breeding population size CH</p>	<p>2013–2016: 260–320 pairs</p> <p>2005–2009: 300–400 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>50</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Illegal poisoning by pigeon fanciers reduced local populations in the very last years. • Disturbance at the breeding sites by outdoor leisure activities (e.g. climbing, drones, geocaching, photography). • Wind turbines are a potentially threat to local resident and the few migrating birds. • Collisions with power lines. • Use of persistent pesticides in agriculture. <p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Illegal taking of eggs and nestlings. 	

Conservation measures	<ul style="list-style-type: none">• Continue the intense monitoring of the breeding populations/breeding sites.• Promote special and temporal protection zones at occupied breeding sites with adapted prohibitions of e.g. climbing, paragliding, geocaching, photographing.• Control of compliance with prescription of temporary reserve zones.• Provide breeding opportunities in urban areas (towers and other huge buildings).• Consequently pursue all illegal activities, particularly poisoning.• No windfarms within 3 km to nesting sites.• Keep and intensify information of stakeholders (e.g. rock climbers, pigeon fanciers).• Monitoring of chemical residues in feathers or egg shells.
------------------------------	---

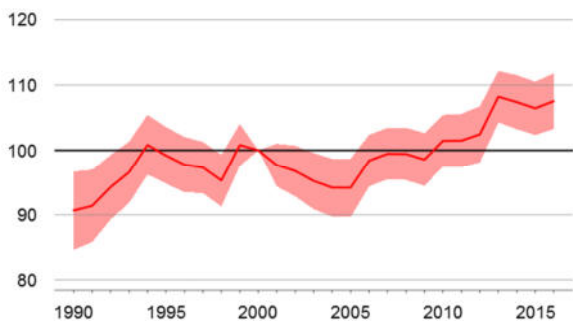

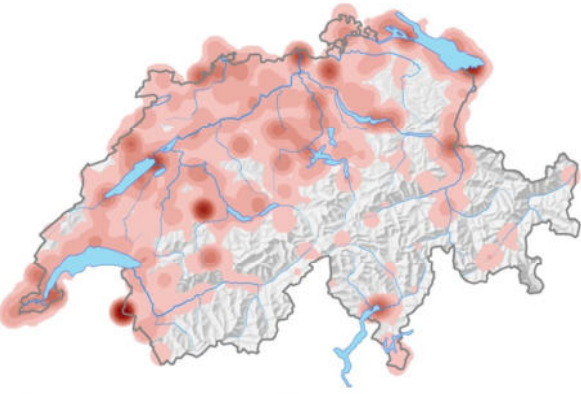
Eurasian Hobby *Falco subbuteo*



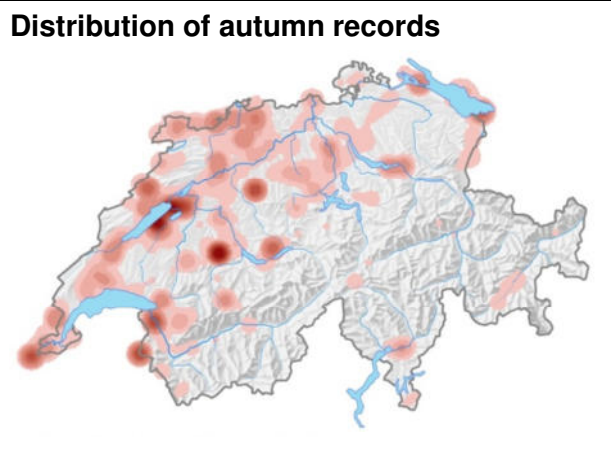
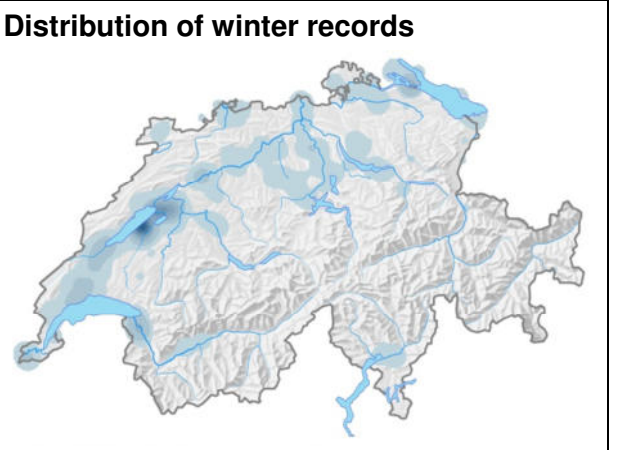
Baumfalke Faucon hobereau Lodolaio



Adult (© B. Rügger)

Description	Length	30–36 cm
	Wingspan	70–84 cm
	Weight	180–280 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	2 = high
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Regular breeder, passage migrant
	Migration strategy	Long-distance migrant, wintering in Africa south of the Sahara
	Habitat requirements	Wetlands, lakes, rivers & streams, forests and farmland for foraging, trees for breeding
	Age of first breeding	Mainly 3 rd calendar year
	Breeding season	Mid of April to mid of September
	Clutch size	3
	Incubation period	28 days
	Fledgling period	28–32 days
	Food	Birds (mainly martins and swallows), dragonflies and other large insects

<p>Breeding population size CH</p>	<p>2013–2016: 500–1000 pairs</p> <p>2005–2009: 400–600 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of autumn records</p> 	
<p>Migrant numbers</p>	<p>1000–2000</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten food supply by increased use of pesticides. • Disturbance of reproduction by intensification of forestry, particularly by timber harvest and thinning during the breeding period. • Disturbance of reproduction by increased use of wind energy: construction and running of infrastructure. • Binding twine in nests (Mebis 2014). <p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Illegal hunting and increasing disturbance. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Maintain healthy populations of Swallows and Martins. • Reduce control of cockchafer, the main food source in spring. • Provide more/maintain habitat for large dragonfly species. • Restrict wood cutting in breeding season. 	

Merlin <i>Falco columbarius</i>		
Merlin	Faucon émerillon	Smeriglio
		
Male (© M. Varesvuo)		Female or first year bird (© B. Rüegger)
Description	Length	26–33 cm
	Wingspan	55–69 cm
	Weight	125–300 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC).
	Raptors MoU	Category 3 species
Biology	National Status	Passage migrant, winter visitor
	Migration strategy	Medium distance migrant, wintering in Western and Central Europe and the Mediterranean
	Habitat requirements	Open farmland, wetlands
	Food	Small birds
Distribution of autumn records		Distribution of winter records
		
Migrant numbers		50–100

Major Threats	CH: <ul style="list-style-type: none">• Intensification of agriculture may reduce food supply in our wintering areas.• Loads with biocides taken in CH may reduce reproduction success in the foreign breeding areas.
Conservation measures	<ul style="list-style-type: none">• None

Red-footed Falcon *Falco vespertinus*

Rotfussfalke Faucon kobez Falco cucolo

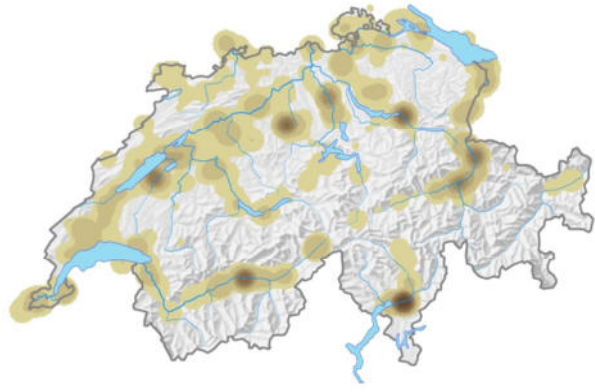
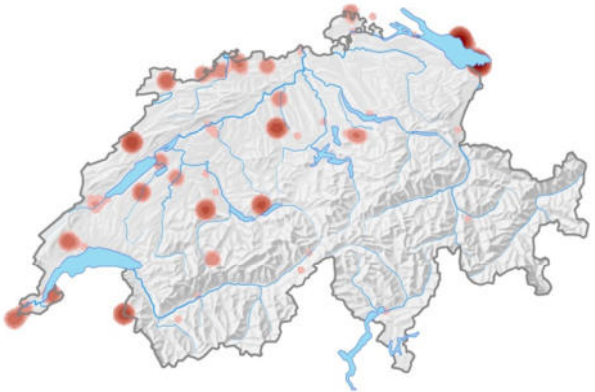




Male (© M. Burkhardt)

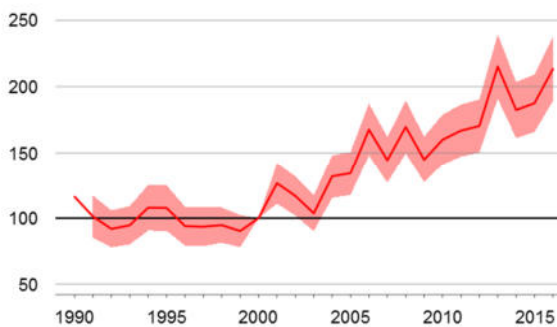




Female (© M. Burkhardt)

Description	Length	28–34 cm
	Wingspan	65–76 cm
	Weight	115–200 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Near threatened (NT)
	Raptors MoU	Category 1 species
Biology	National Status	Passage migrant (98 % in spring, 2 % in summer/autumn)
	Migration strategy	Long-distant migrant, wintering in southern Africa
	Habitat requirements	Open landscapes with sparse tree cover, resting areas in Switzerland frequently close to water bodies
	Food	Mainly swarming insects like dragonflies or cockchafer

Distribution of spring records		Distribution of autumn records	
			
Migrant numbers		20–1000 (in some years invasional character)	
Major Threats	CH:		
	<ul style="list-style-type: none"> • Wide insecticide use may reduce food sources 		
Conservation measures	Abroad (www.iucnredlist.org):		
	Food loss due to <ul style="list-style-type: none"> • Increasing agricultural use of pesticides in breeding, migration and wintering areas. • Habitat deterioration in steppe and wet habitats. 		
		<ul style="list-style-type: none"> • Reduce control of cockchafer. • Provide/maintain habitat for large dragonfly species. 	

Common Kestrel <i>Falco tinnunculus</i>		
Turmfalke Faucon crécerelle Gheppio		
		
Male (© M. Burkhardt)		Female (© M. Burkhardt)
Description	Length	32–35 cm
	Wingspan	71–80 cm
	Weight	190–300 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	1 = very high
	National flagship species	-
	IUCN Red List	Near threatened (NT)
	Raptors MoU	Category 2 species
Biology	National Status	Regular breeder, passage migrant, winter visitor
	Migration strategy	Resident or short-distance migrant, wintering in the western Mediterranean
	Habitat requirements	Open farmland for foraging, niches in rocky walls, buildings or aery trees for breeding. Also Alpine habitats
	Age of first breeding	Mainly 2 nd calendar year
	Breeding season	End of March to end of July
	Clutch size	4–6
	Incubation period:	27–31 days
	Fledgling period	27–30 days
	Food	Small mammals, birds, reptiles, insects

<p>Breeding population size CH</p>	<p>2013–2016: 5000–7500 pairs</p> <p>2008–2012: 4000–6000 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>2000–5000</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten foraging and resting habitats as well as food supply. • Development of wind energy may be a future threat for migrating birds. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Ensure agricultural practices allowing good levels of small mammals as food supply. • Support biodiversity-promoting areas in farmland. • Reduce the broad and intensive use of chemicals in agriculture. • Support volunteer groups to provide more nest boxes. 	

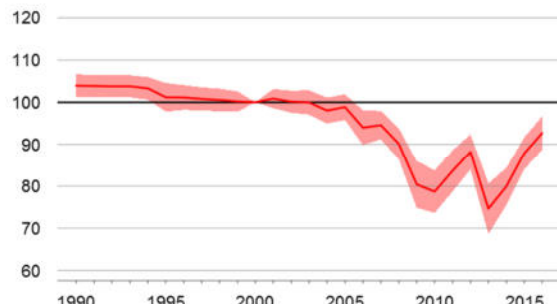


Western Barn Owl *Tyto alba*

Schleiereule Effraie des clochers Barbagianni



(© R. Aeschlimann)

Description	Length	33–35 cm
	Wingspan	85–93 cm
	Weight	290–460 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	-
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Open areas for foraging, buildings for breeding
	Age of first breeding	Mainly 2 nd calendar year
	Breeding season	February to mid-July, sometimes 2 nd brood in autumn or winter
	Clutch size	4–11
	Incubation period	33 days
	Fledgling period	63–84 days
	Food	Small mammals, birds

<p>Breeding population size CH</p>	<p>2013–2016: 200–1000 pairs</p> <p>2005–2009: 1000–2500 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>-?</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten food supply. • Unintentional disturbances at the breeding sites (nest boxes) may reduce success of reproduction. • Hard winter weather has severe effects on survival in areas with insufficient food supply. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Maintain agricultural practices allowing good levels of food supply during the whole year. • Support biodiversity promoting areas especially in arable land. • Support volunteer groups to provide more nest boxes. • Evolve measures to reduce road kills (road side management). 	

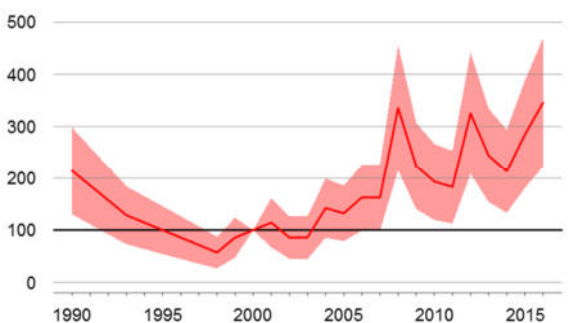
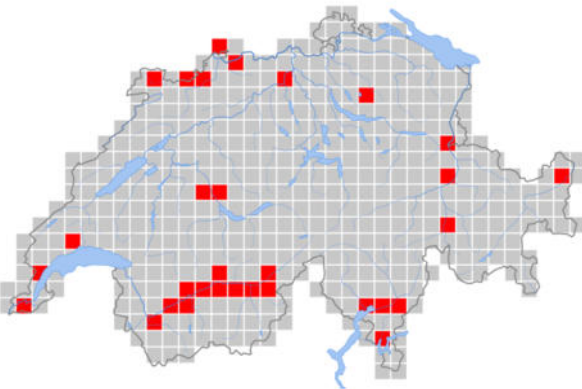
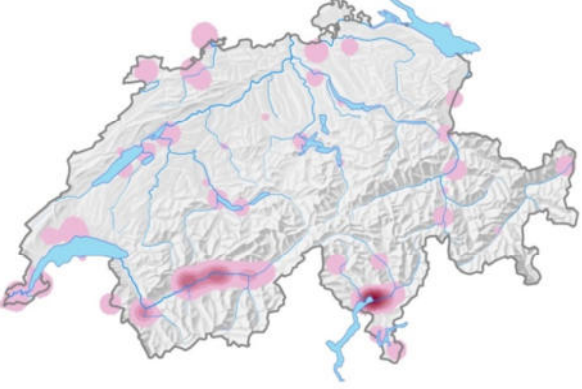
Eurasian Scops Owl *Otus scops*

Zwergohreule Petit-duc scops Assiolo



(© R. Martin)

Description	Length	19–20 cm
	Wingspan	53–63 cm
	Weight	75–95 g
Protection status	National Red List	Endangered (EN)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Regular, but localized breeder, passage migrant, summer visitor
	Migration strategy	Long-distance migrant, wintering in Africa south of the Sahara
	Habitat requirements	Farmland and orchards for foraging, tree cavities for breeding
	Age of first breeding	2 nd calendar year
	Breeding season	May to end of August
	Clutch size	4–5
	Incubation period	24–25 days
	Fledgling period	21–29 days
	Food	Large insects, mainly Tettigoniidae

<p>Breeding population size CH</p>	<p>2013–2016: 30–40 pairs</p> <p>2008–2012: 20–30 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of all records</p> 	
<p>Migrant numbers</p>	<p>?</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten breeding habitats and food supply (mostly large insects, especially Tettigoniidae). • Habitat loss due to construction activities. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Monitoring of the breeding population in the central distribution area (VS, TI). • Promote extensive agricultural practices in the breeding areas to preserve/enhance insect abundance. • Increase the number of breeding sites in the central distribution area by offering more nest boxes. • Extend these activities to other areas where Scops owls regularly occur during breeding season. 	

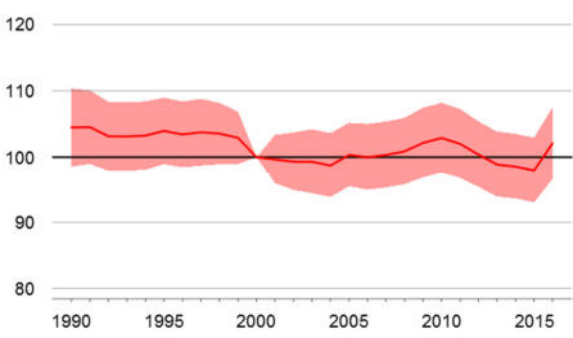
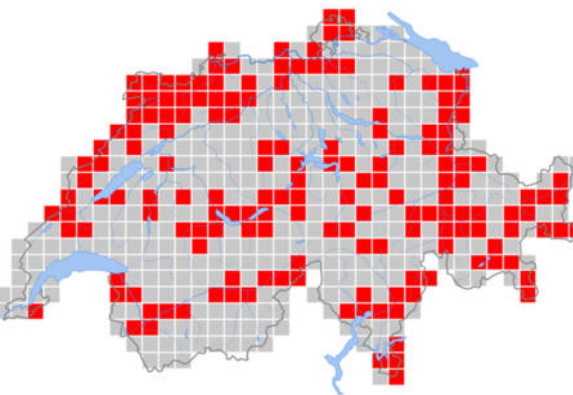

Eurasian Eagle-Owl *Bubo bubo*

Uhu Grand-duc d'Europe Gufo reale



(© R. Kistowski)

Description	Length	60–75 cm
	Wingspan	160–188 cm
	Weight	1500–3000 g
Protection status	National Red List	Endangered (EN)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	-
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Different open habitats for foraging, rocky niches for breeding
	Age of first breeding	2–4 th calendar year
	Breeding season	Mid of January to end of August
	Clutch size	2–4
	Incubation period	34–36 days
	Fledgling period	50–60 days
	Food	Mammals, birds

<p>Breeding population size CH</p>	<p>2013–2016: 200–230 pairs</p> <p>2008–2012: 100–140 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>-</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • 40 % of known causes of death of Great Eagle Owls in the Engadine valley are due to electrocution from railways (Jenny 2017) and 24 % of mortality in Valais is caused by medium voltage power lines (Schaub et al. 2010, Schaub 2012). This is known to affect populations negatively. • Collisions with wind turbines may be a future threat for breeding and dispersing Eagle-Owls. • Reproduction may be disturbed by increasing outdoor activities (e.g. climbing, photography, geocaching). 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Reduce electrocution as a mortality factor by eliminating the sources of danger. • Continue intense monitoring of breeding populations/breeding sites. • Promote temporal protection zones at occupied breeding sites with adapted prohibitions of climbing, paragliding, geocaching, photographing, etc. • Control of compliance with prescription of temporary reserve zone. • No windparks within 3 km to breeding sites. 	


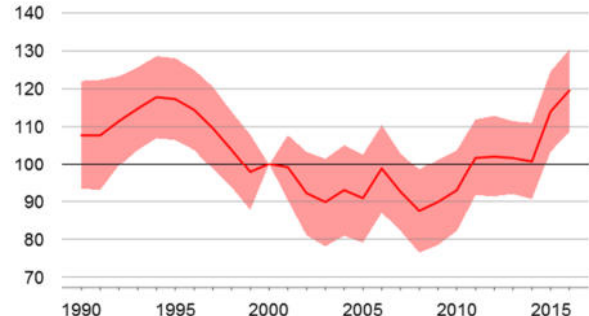
Eurasian Pygmy Owl *Glaucidium passerinum*

Sperlingskauz Chevêchette d'Europe Civetta nana



(© M. Burkhardt)

Description	Length	16–17 cm
	Wingspan	34–36 cm
	Weight	50–80 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	-
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Richly structured coniferous forests above 1000 m a.s.l.
	Age of first breeding	2 nd calendar year
	Breeding season	End of February to end of July
	Clutch size	4–7
	Incubation period	28–30 days
	Fledgling period	27–34 days
	Food	Small mammals and birds

Breeding population size CH	2013–2016: 2005–2009:	800–2000 pairs 800–1200 pairs
Breeding distribution 	Trend: Swiss Bird Index SBI 	
Migrant numbers		-
Major Threats	CH: <ul style="list-style-type: none"> • Disturbance of reproduction by intensification of forestry, particularly by timber harvest and thinning during the breeding period. 	
Conservation measures	<ul style="list-style-type: none"> • Neither timber harvest nor thinning during the breeding season in subalpine forests. 	

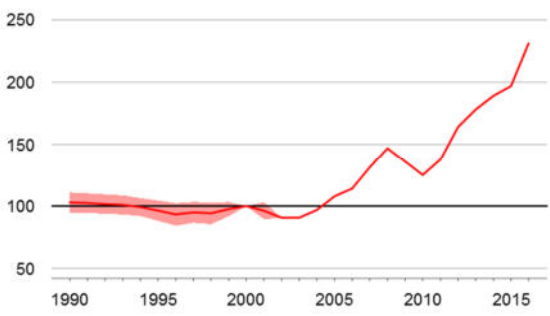


Little Owl *Athene noctua*

Steinkauz Chevêche d'Athéna Civetta



(© M. Burkhardt)

Description	Length	21–23 cm
	Wingspan	54–58 cm
	Weight	140–200 g
Protection status	National Red List	Endangered (EN)
	National Priority List	1 = very high
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	-
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Grassland and arable land of low altitude for foraging, cavities in trees or buildings for breeding
	Age of first breeding	2–3 rd calendar year
	Breeding season	February to mid of August
	Clutch size	2–5
	Incubation period	27–28 days
	Fledgling period	30–36 days
	Food	Insects, worms, small mammals, reptiles

<p>Breeding population size CH</p>	<p>2013–2016: 115–150 pairs</p> <p>2008–2012: 80–110 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>-</p>	
<p>Major Threats</p>	<p>CH:</p> <p>According to Meisser et al. (2017):</p> <ul style="list-style-type: none"> • Intensification of agriculture and increased use of pesticides decrease food supply/availability of breeding sites and disturb reproduction. • Building activities may reduce availability of foraging habitat and breeding sites. • Enhanced mortality due to collisions with rail/road and other infrastructures may negatively affect survival. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Monitoring of the breeding populations in the last distribution areas (GE, JU, TI, BE/FR/VD). • Promote extensive agricultural practices in the last distribution areas to preserve/enhance food abundance. • Increase the number of breeding possibilities in the last distribution areas by offering and attending more nest boxes. 	

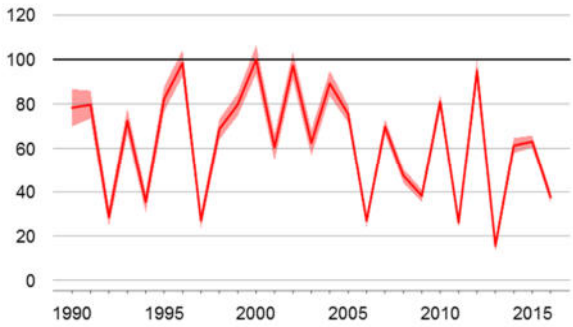
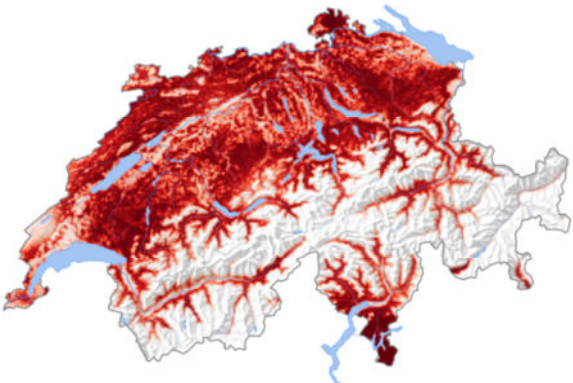

Tawny Owl *Strix aluco*

Waldkauz Chouette hulotte Allocco



(© T. Muukkonen)

Description	Length	37–39 cm
	Wingspan	94–104 cm
	Weight	330–590 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	-
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Forests, mixed farmland and tree-dotted settlements for foraging, buildings, tree holes and nest-boxes for breeding
	Age of first breeding	2–3 rd calendar year
	Breeding season	Mid-January to end of July, sometimes 2 nd brood in autumn/winter
	Clutch size	3–6
	Incubation period	28–30 days
	Fledgling period	32–37 days
	Food	Small mammals, birds

<p>Breeding population size CH</p>	<p>2013–2016: 6000–8000 pairs</p> <p>2005–2009: 5000–6000 pairs</p>	<p>Trend: Swiss Bird Index SBI</p> 
<p>Breeding distribution</p> 	<p>Distribution of winter records</p> 	
<p>Migrant numbers</p>	<p>-</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Disturbance of reproduction by intensification of forestry, particularly timber harvest during the breeding period. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • No timber harvest during the breeding season. 	

Long-eared Owl *Asio otus*

Waldohreule Hibou moyen-duc Gufo comune



(© J.-P. Luthi)

Description	Length	35–37 cm
	Wingspan	90–100 cm
	Weight	210–330 g
Protection status	National Red List	Near Threatened (NT)
	National Priority List	2 = high
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Regular breeder, passage migrant, winter visitor
	Migration strategy	Resident or short-distance migrant, wintering in the breeding area or in the western Mediterranean
	Habitat requirements	Mixed farmland and forests for foraging, trees for breeding
	Age of first breeding	2–3 rd calendar year
	Breeding season	February to mid-August, sometimes winter
	Clutch size	3–6
	Incubation period	27–28 days
	Fledgling period	>30 days
	Food	Small mammals, birds

<p>Breeding population size CH</p>	<p>2013–2016: 2000–3000 pairs</p> <p>2005–2009: 2500–3000 pairs</p>	<p>Trend: Swiss Bird Index SBI</p>
<p>Breeding distribution</p>	<p>Distribution of winter records</p>	
<p>Migrant numbers</p>	<p>?</p>	
<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten foraging habitats and food supply. • Collisions with power lines and rail/road traffic demand many victims. • Future intensification of forestry practices like timber harvest during the breeding season may disturb reproduction. • Collisions with wind turbines may be a future threat for foraging, displaying and migrating Long-eared Owls. 	
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Reduce electrocution and collision as a mortality factor by eliminating the sources of danger. • No timber harvest during the breeding season, neither in forests nor in park areas or coppices. • Ensure agricultural practices allowing good levels of small mammals as food supply, especially by the support of biodiversity promoting areas. • No wind energy infrastructure (construction and running) in areas with high densities of Long-eared Owls. 	


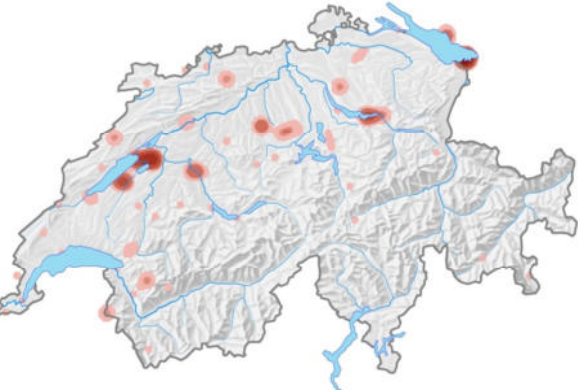
Short-eared Owl *Asio flammeus*

Sumpfohreule Hibou des marais Gufo di palude



(© P. Donini)

Description	Length	33–40 cm
	Wingspan	95–105 cm
	Weight	260–350 g
Protection status	National Red List	-
	National Priority List	-
	National flagship species	-
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 2 species
Biology	National Status	Passage migrant, scarce winter visitor, former breeder
	Migration strategy	Short- to long-distance migrant, wintering in Central and Southern Europe or in the Sahel belt in Africa
	Habitat requirements	Wetlands and open farmland
	Food	Small mammals, birds

<p>Distribution of spring records</p> 	<p>Distribution of autumn records</p> 
<p>Migrant numbers</p>	<p>5–15</p>

<p>Major Threats</p>	<p>CH:</p> <ul style="list-style-type: none"> • Intensification of agriculture may threaten resting habitats and food supply.
	<p>Abroad (www.iucnredlist.org):</p> <ul style="list-style-type: none"> • Still on-going habitat destruction by wetland drainage and intensification of agriculture. • Intensification of agriculture causes high losses of eggs/ nestlings, increased use of pesticides reduces food supply.
<p>Conservation measures</p>	<ul style="list-style-type: none"> • Support of biodiversity promoting areas in agricultural areas enhances food supply.


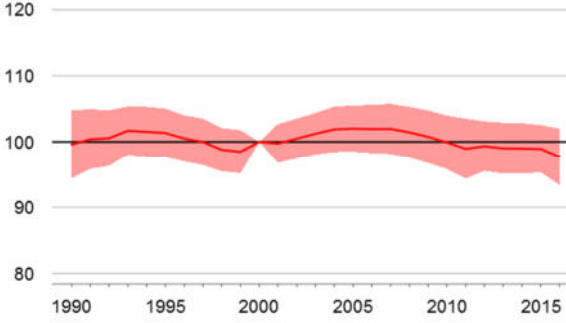
Boreal Owl *Aegolius funereus*

Raufussskauz Chouette de Tengmalm Civetta capogrosso



(© M. Burkhardt)

Description	Length	24–26 cm
	Wingspan	54–62 cm
	Weight	90–120 g
Protection status	National Red List	Least Concern (LC)
	National Priority List	3 = moderate
	National flagship species	Yes
	IUCN Red List	Least Concern (LC)
	Raptors MoU	Category 3 species
Biology	National Status	Regular breeder
	Migration strategy	Resident
	Habitat requirements	Mixed and coniferous forests above 1000 m a.s.l.
	Age of first breeding	Mainly 2 nd calendar year
	Breeding season	February to mid of August
	Clutch size	3–7
	Incubation period	25–32 days
	Fledgling period	28–36 days
	Food	Small mammals

Breeding population size CH	2013–2016: 2005–2009:	1000–3000 pairs 2000–3000 pairs
Breeding distribution 	Trend: Swiss Bird Index SBI 	
Migrant numbers	-?	
Major Threats	CH: <ul style="list-style-type: none"> • Disturbance of reproduction by intensification of forestry, particularly by timber harvest and thinning during the breeding period. • Possibly habitat disturbance by increased use of wind energy in montane forests: construction and running of power stations. 	
Conservation measures	<ul style="list-style-type: none"> • Prevent disturbances by timber harvest and thinning during the breeding season in subalpine forests. • Prevent potential disturbances by wind energy infrastructure (construction and running) in subalpine forests. • Support volunteer groups to provide more nest boxes. 	

Literature:

- Aebischer, A. 2018: Rotmilan-Schlafplatz-Zählung in der Schweiz 24. & 25. November 2018. Project-report, Fribourg.
- Aebischer, A. 2019: Rotmilan-Schlafplatz-Zählung in der Schweiz 5. & 6. Januar 2019. Project-report, Fribourg.
- Bellebaum, J., F. Korner-Nievergelt, T. Dürr & U. Mammen 2013: Wind turbine fatalities approach a level of concern in a raptor population. *Journal for Nature Conservation* 21: 394–400.
- Botha, A., J. Andevski, C. Bowden, M. Gudka, R. Safford & N.P. Williams 2017: Vulture MsAP. Multispecies Action Plan to Conserve African-Eurasian Vultures. Final Draft. 195 p.
- del Hoyo, J.; Elliott, A. & J. Sargatal 1994: Handbook of the Birds of the World, vol. 2: New World Vultures to Guinea-fowl. Lynx Edicions, Barcelona, Spain.
- Dürr, J. 2017: Vogelverluste an Windenergieanlagen / bird fatalities at wind turbines in Europe. Daten aus der zentralen Fundkartei der Staatlichen Vogelschutzwarte im Landesamt für Umwelt Brandenburg. <http://www.lugv.brandenburg.de/cms/detail.php/bb1.c.312579.de>
- Ferguson-Lees, J. & D.A. Christie 2001: Raptors of the world. Christopher Helm. London.
- Glutz von Blotzheim, U. N. & K. M. Bauer (eds.), 1980: Handbuch der Vögel Mitteleuropas, Bd. 9 Columbiformes – Piciformes. Akademische Verlagsgesellschaft, Wiesbaden.
- Glutz von Blotzheim, U. N., K. M. Bauer & E. Bezzel (eds.), 1971: Handbuch der Vögel Mitteleuropas, Bd. 4 Falconiformes. Akademische Verlags-Gesellschaft, Frankfurt a.M.
- Grünkorn, T., J. Blew, T. Coppack, O. Krüger, G. Nehls, A. Potiek, M. Reichenbach, J. von Rönn, H. Timmermann & S. Weitekamp 2016: Ermittlung der Kollisionsraten von (Greif-)Vögeln und Schaffung planungsbezogener Grundlagen für die Prognose und Bewertung des Kollisionsrisikos durch Windenergieanlagen (PROGRESS). Created by Bio-Consult SH, ARSU, IfAO & Universität Bielefeld. 332 p.
- Haller, H. 1996: Der Steinadler in Graubünden. Langfristige Untersuchungen zur Populationsökologie von *Aquila chrysaetos* im Zentrum der Alpen. BDV, Basel.
- Jenni, L., M. M., Madry, T. Kraemer, J., Kupper, H., Naegeli, H. Jenny & D. Jenny 2015: The frequency distribution of lead concentration in feathers, blood, bone, kidney and liver of golden eagles *Aquila chrysaetos*: insights into the modes of uptake. *J. Ornithol.* 156:1095–1103.
- Jenny, D. & M. Schaad 2015: Störung am Horst – zunehmend problematisch. Avinews. August 2015. Download: <http://www.vogelwarte.ch/de/vogelwarte/news/avinews/august-2015/stoerung-am-horst-zunehmend-problematisch>
- Jenny, D. 2017: Vogelschutzmassnahmen an RhB Fahrleitungen - am Beispiel des Uhus im Engadin. Schweizerische Vogelwarte, Sempach.
- Knott, J., P. Newbery & B. Barov 2009: Action plan for the red kite *Milvus milvus* in the European Union. BirdLife International for the European Union.
- Korner-Nievergelt, F., C. Brossard, R. Filliger, J. Gremaud, A. Lugon, O. Mermoud, M. Schaub & S. Wechsler 2016: Effets cumulés des éoliennes du Jura vaudois et des régions limitrophes sur l'avifaune et les chiroptères: Risque de collisions et de perte d'habitat pour quelques espèces d'oiseaux et de chiroptères. Station ornithologique suisse, Sempach.
- Langgemach, T. & J. Dürr 2016: Informationen über Einflüsse der Windenergienutzung auf Vögel. http://www.lugv.brandenburg.de/media_fast/4055/vsw_dokwind_voegel.pdf
- Maumary, L., Vallotton, L., Knaus, P. 2007: Die Vögel der Schweiz. Schweizerische Vogelwarte, Sempach.
- Mebis, T. & D. Schmidt 2014: Die Greifvögel Europas, Nordafrikas und Vorderasiens. Kosmos-Verlag, Stuttgart.

- Meisser, C., A. Brahier, R. Lardelli, H. Schudel & M. Kestenholz 2016: Aktionsplan Steinkauz Schweiz. Umwelt-Vollzug 1638.
- Molina, B. (Ed.). 2015: El milano real en España. III Censo Nacional. Población invernante y reproductora en 2014 y método de censo. SEO/BirdLife. Madrid.
- Schaub, M. 2012: Populationsbiologie als zentrales Element der Naturschutzforschung. Ornithol. Beob. 109: 185–200.
- Schaub, M., A. Aebischer, O. Gimenez, S. Berger & R. Arlettaz 2010: Massive immigration balances high human induced mortality in a stable eagle owl population. Biol. Conserv. 143: 1911–1918.
- STRIX 2012. Developing and testing the methodology for assessing and mapping the sensitivity of migratory birds to wind energy development. BirdLife International, Cambridge.
- Thiollay, J.-M. 2006. The decline of raptors in West Africa: long-term assessment and the role of protected areas. Ibis 148: 240–254.
- Tucker, G. M. & M. F. Heath 1994: Birds in Europe: their conservation status. BirdLife International (Conservation Series No. 3). Cambridge, United Kingdom.
- www.bartgeier.ch
- www.iucnredlist.org/