Phalacrocorax carbo (Great Cormorant)

European Red List of Birds

Supplementary Material

The European Union (EU28) Red List assessments were based principally on the official data reported by EU Member States to the European Commission under Article 12 of the Birds Directive in 2019-20. For the European Red List assessments, similar data were sourced from BirdLife Partners and other collaborating experts in other European countries and territories. For more information, see BirdLife International (2021).

Contents

Recommended citation

BirdLife International (2021) European Red List of Birds. Luxembourg: Publications Office of the European Union.

Further information

http://datazone.birdlife.org/info/euroredlist
http://www.birdlife.org/europe-and-central-asia/european-red-list-birds-0
http://www.iucnredlist.org/regions/europe
http://ec.europa.eu/environment/nature/conservation/species/redlist/

Data requests and feedback

To request access to these data in electronic format, provide new information, correct any errors or provide feedback, please email science@birdlife.org.

Table 1. Reported national breeding population size and trends in Europe[1].

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (pairs)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Albania	0–9	<1	2007-2018	partial	0		2007-2018	partial	0		1980-2018	expert	
Armenia	560–770	<1	2013-2018	complete	+	3 to 5	2007-2018	complete	+	10 to 20	2003-2018	partial	
Austria	100–160	<1	2013-2017	complete	-		2007-2017	complete	+		1981-2017	complete	sinensis
Azerbaijan	2000–4000	<1	1996-2019	complete	?		2013-2019	expert	?		1980-2019	partial	
Belarus	3000–3500	<1	2010-2018	partial	0	-10 to 10	2012-2019	expert	+	3000 to 3500	1980-2019	expert	P. c. sinensis
Belgium	1400–2100	<1	2013-2018	complete	0	-14 to 29	2008-2018	complete	+	6264 to 9445	1973-2018	partial	sinensis
Bosnia & HG	200–400	<1	2015-2018	complete	+	10 to 20	2007-2018	complete	?		1980-2018	deficient	
Bulgaria	2600–4800	<1	2005-2018	partial	+	5 to 10	2000-2018	partial	+	30 to 50	1980-2018	partial	sinensis
Croatia	1200–1700	<1	2012-2018	complete	-	-40 to -30	2007-2018	partial	-	-60 to -40	1980-2018	partial	sinensis
Czechia	230–320	<1	2014-2017	complete	+	19 to 45	2001-2017	complete	+		1981-2017	complete	sinensis
Denmark	33100–33200	7	2017-2017	complete	-		2004-2017	complete	+		1982-2017	complete	sinensis
DK: Greenland	5000	1	2010	complete	+		2007-2018	partial	+		1989-2018	expert	
Estonia	15000–25000	4	2013-2018	complete	+	68 to 72	2006-2017	complete	+	1398 to 18242	1980-2017	complete	sinensis
Finland	18600–26800	5	2013-2018	complete	+		2007-2018	complete	+		1996-2018	complete	sinensis
France	7700–7800	2	2018-2018	complete	+		2006-2018	complete	+		1982-2018	complete	sinensis
France	1800–1900	<1	2018-2018	complete	-		2006-2018	complete	+		1982-2018	complete	carbo
Georgia	43–430	<1	2013-2017	partial	?			deficient	?				
Germany	26000	6	2016-2016	complete	0	-11 to 12	2004-2016	complete	+	1443 to 3567	1980-2016	complete	sinensis
Greece	6000–8000	2	2015	partial	+		2007-2018	partial	+		1980-2018	partial	sinensis
Hungary	2300–2800	<1	2013-2017	complete	0		2007-2018	complete	F		1980-2018	partial	sinensis
Iceland	4700–4800	1	2018	complete	+		2006-2018	complete	+		1975/84-201	complete	
Rep. Ireland	4600–4700	1	2015-2018	complete	+		2002-2018	complete	+		1987-2018	complete	carbo
Italy	3000–3300	<1	2011	expert	?		2007-2018	deficient	+	6340 to 10070	1993-2018	expert	sinensis
Latvia	2300–3500	<1	2013-2017	partial	0	1 to 2	2012-2017	partial	+	1845 to 1898	1991-2017	partial	sinensis
Lithuania	5600–5800	1	2013-2018	partial	0	0	2013-2018	partial	+	550900 to 570900	1980-2018	partial	sinensis
North Macedonia	800–1000	<1	2014-2019	expert	0		2007-2018	partial	+	800 to 1000	1980-2019	partial	
Moldova	500–1000	<1	2014-2017	partial	+		2007-2018	partial	0		1990-2018	expert	
Montenegro	800–1500	<1	2013-2018	partial	+		2007-2018	expert	?				P. c. sinensis
Netherlands	18600–22500	4	2013-2017	complete	0	-25 to 10	2006-2017	complete	+	173 to 177	1980-2017	complete	sinensis
Norway	16500–21000	4	2013-2018	partial	?		2013-2018	deficient	-	-10 to -5	1980-2018	partial	P. c. carbo
Norway	2500	<1	2013-2018	partial	+	5 to 10	2013-2018	expert	+	0 to 10	1980-2018	partial	P. c. sinensis
Poland	25700–30100	6	2013-2018	complete	+		2010-2018	complete	+	1600 to 1900	1980-2018	complete	sinensis

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Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (pairs)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Portugal	200–500	<1	2013-2018	partial	+	870 to 2174	2014-2018	expert	?				sinensis
Romania	12000–20000	3	2013-2018	expert	?		2007-2018	deficient	+	1 to 100	1980-2018	expert	sinensis
Russia	75000–90000	18	2008-2018	partial	+	0	2008-2018	partial	-	-1 to 0	2008-2018	expert	P. c. sinensis
Russia	1600–2100	<1	2008-2018	partial	?		2008-2018	deficient	+	0	1980-2018	partial	P. c. carbo
Serbia	1600–2400	<1	2013-2018	complete	+	30 to 49	2007-2018	complete	+	50 to 79	1980-2018	complete	
Slovakia	100–180	<1	2013-2018	complete	+	20 to 70	2007-2018	complete	-	-30 to -10	1980-2018	complete	sinensis
Spain	1600–1700	<1	2012	complete	+		2007-2012	complete	+		1980-2012	complete	sinensis
Sweden	35000–45000	9	2013-2018	partial	0	-30 to 30	2007-2018	complete	+	35000 to 45000	1980-2018	partial	sinensis
Switzerland	1200–2100	<1	2013–2016	complete	+	520 to 854	2007-2018	complete	+	1625576 to 28302315	1990-2018	complete	P. c. sinensis
Turkey	4000–6000	1	2002-2012	expert	?		2008-2019	deficient	?		1980-2013	deficient	
Ukraine	60000–80000	15	2014-2018	complete	F	10 to 30	2007-2018	complete	+	1000 to 2000	1980-2018	complete	P. c. sinensis
United Kingdom	7300–7400	2	1999-2002	complete	-	-45 to -7	2004-2015	complete	+	-28 to 18	1986-2015	complete	carbo
United Kingdom	1500–1600	<1	2012	partial	?		2007-2018	deficient	+	15500	1981-2011	complete	sinensis
EU28	222000–267000	53											
Europe	**414000–515000**	**100**											

[1] See 'Sources' at end of factsheet, and for more details on individual EU Member State reports, see the Article 12 reporting portal at http://bd.eionet.europa.eu/article12/report.
[2] The designation of geographical entities and the presentation of the material do not imply the expression of any opinion whatsoever on the part of IUCN or BirdLife International concerning the legal status of any country, territory or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.
[3] In the few cases where population size estimates were reported in units other than those specified, they were converted to the correct units using standard correction factors.
[4] The 'method used' (replacing the data 'quality' assessment in the 2015 European Red List) is reported as: a) Complete: complete survey or a statistically robust estimate; b) Partial: based mainly on extrapolation from a limited amount of data; c) Expert: based mainly on expert opinion with very limited data; d) Defficient: insufficient or no data available.
[5] The robustness of regional trends to the effects of any missing or incomplete data was tested using plausible scenarios, based on other sources of information, including any other reported information, recent national Red Lists, scientific literature, other publications and consultation with relevant experts.
[6] Trend directions are reported as: increasing (+); decreasing (-); stable (0); fluctuating (F); or unknown (?).
[7] Trend magnitudes are rounded to the nearest integer.

Table 2. Reported national wintering population sizes and trends in Europe[1]. Note that some countries within the species' wintering range did not report any data, and that only minimum totals are presented, to avoid double-counting of birds moving between countries.

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (individuals)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Albania	1200–12700	<1	2007-2018	complete	+	20 to 429	2007-2018	complete	+	0 to 20	1980-2018	complete	
Andorra		<1			?				?				
Armenia	1000–3000	<1	2013-2018	partial	+		2007-2018		?		2003-2018	deficient	
Austria	2700–3900	<1	2013-2018	complete	+		2007-2018	complete	+		1981-2014	complete	
Azerbaijan	5000–10000	<1	1996-2019	partial	?		2010-2019	partial	?		1980-2019	expert	
Belarus	5–20	<1	2013-2018	partial	0	-10 to 10	2000-2012	partial	?				
Belgium	6200–8500	<1	2013-2018	complete	0	-18 to 13	2007-2018	complete	+	43 to 106	1992-2018	complete	
Bosnia & HG	4000–7000	<1	2015-2018	complete	+	5 to 10	2007-2018	complete	?		1980-2018	deficient	
Bulgaria	7800–24000	2	2013-2018	partial	F		2000-2018	partial	+	30 to 70	1980-2018	partial	
Croatia	12000–20000	2	2011-2011	partial	?		2007-2018	deficient	?		1980-2018	deficient	
Czechia	11900–14200	1	2015-2019	complete	-		2008-2019	complete	+		1980-2019	complete	
Denmark	15300–15400	2	2016-2016	complete	F		2006-2017	complete	+		1987-2017	complete	
DK: Faroe Is	0–10	<1	1992		?				?				
DK: Greenland	10000–20000	2	2017	partial	+		2007-2018	expert	+		1989-2018	expert	
Estonia	300–1000	<1	2013-2017	complete	+	20 to 50	2006-2017	complete	+		1980-2017	complete	
France	96000–101000	11	2018-2018	complete	+	5 to 7	2005-2018	complete	+		1983-2018	complete	
France	6000–11000	<1	2018-2018	expert	?		2006-2018	expert	+	150 to 300	1980-2012	expert	
Georgia	250–1400	<1	2017-2018	partial	?				-			partial	
Germany	73000	8	2011-2016	complete	-	-17 to -10	2003-2016	complete	+	806 to 933	1980-2016	complete	
Germany	0	<1	2011-2016	deficient	?		2003-2016	deficient	?		1980-2016	deficient	
Gibraltar	11–50	<1	2014-2018	partial	+	90 to 100	2001-2018	complete	+	100	1980-2018	complete	
Greece	23800–55400	4	2013-2018	partial	+		2007-2018	partial	+		1980-2018	partial	
Hungary	2000–10000	<1	2013-2018	partial	F		2007-2018	partial	F		1980-2018	partial	
Iceland	23000	2	2018	complete	+		2002-2014	partial	+		1980-2014	partial	
Rep. Ireland	7900–8000	<1	2011-2016	partial	-		2004-2016	partial	+		1987-2016	partial	
Italy	74900–86400	9	2013-2015	partial	+	20 to 30	2009-2015	partial	+	85 to 115	1991-2015	partial	
Kosovo	4	<1	2019	complete	?				?				
Luxembourg	350–450	<1	2013-2018	complete	0	0 to 10	2007-2018	complete	+	100 to 4500	1980-2018	complete	
North Macedonia	500–2000	<1	2013-2018	complete	0		2010-2019	complete	+	150 to 400	1988-2018	complete	
Moldova	120–650	<1	2018-2019	partial	F		2007-2018	partial	0		1990-2018	expert	
Montenegro	10000–20000	2	2013-2018	expert	+		2007-2018	expert	?				

Table 2. Reported national wintering population sizes and trends in Europe[1]. Note that some countries within the species' wintering range did not report any data, and that only minimum totals are presented, to avoid double-counting of birds moving between countries.

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (individuals)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Netherlands	30100–55200	4	2013-2017	complete	0	-9 to 57	2006-2017	complete	+	618 to 1148	1981-2017	complete	
Norway	110000	12	1994-2018	complete	?		2013-2018	deficient	?		1980-2018	deficient	
Norway		<1			?		2013-2018	deficient	?		1980-2018	deficient	
Poland	12900–23400	2	2013-2018	complete	+	132 to 231	2011-2018	complete	?		1980-2018	deficient	
Portugal	3600–7700	<1	2013-2018	complete	?	-31 to 1	2007-2018	complete	?		1988-2018	partial	
Romania	2800–14200	<1	2013-2018	partial	?	-6 to 1	2013-2018	complete	+	0 to 5	2000-2018	complete	
Serbia	8000–20000	1	2013-2018	complete	F		2013-2018	complete	+	50 to 79	1980-2018	complete	
Slovakia	4800–6700	<1	2013-2018	complete	0		2007-2018	complete	+	600 to 1000	1980-2018	expert	
Slovenia	2000–3300	<1	2013-2018	complete	0		2007-2018	complete	+	10 to 50	1980-2018	expert	
Spain	68400–71400	8	2013-2018	complete	0		2007-2018	complete	+		1980-2018	partial	
Spain	68400–71400	8	2013-2018	complete	0		2007-2018	complete	+		1980-2018	partial	
Sweden	7000–21000	2	2013-2018	complete	+	104 to 169	2007-2018	complete	+	414 to 539	1980-2018	complete	
Switzerland	4500–4900	<1	2015-2019	complete	+	19 to 25	2008-2019	complete	+	10 to 14	1980-2019	complete	
Turkey	39300–58700	5	2013-2019	complete	?		2008-2019	deficient	?		1980-2019	deficient	
Ukraine	10000–15000	1	2012-2017	partial	+		2007-2018	partial	+		1980-2018	partial	
United Kingdom	58300–58400	6	2012	complete	+		2005-2016	complete	+		1987-2016	complete	
United Kingdom	6100–6200	<1	2012	partial	?		2005-2016	deficient	?		1980-2016	deficient	
EU28	602000–757000	72											
Europe	**832000–1080000**	**100**											

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[6] Trend directions are reported as: increasing (+); decreasing (-); stable (0); fluctuating (F); or unknown (?).
[7] Trend magnitudes are rounded to the nearest integer.

Trend maps

A symbol appears in each country where the species occurs: the shape and colour of the symbol represent the population trend in that country, and the size of the symbol corresponds to the proportion of the European population occurring in that country.

KEY

- Large increase (≥50%)
- Moderate increase (20–49%)
- Small increase (<20%)
- Increase of unknown magnitude
- Stable or fluctuating
- Unknown
- Present (no population or trend data)
- Extinct since 1980
- Large decrease (≥50%)
- Moderate decrease (20–49%)
- Small decrease (<20%)
- Decrease of unknown magnitude

Each symbol, with the exception of Present and Extinct, may occur in up to three different size classes, corresponding to the proportion of the European population occurring in that country.

- Large: ≥10% of the European population
- Medium: 1–9% of the European population
- Small: <1% of the European population

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Figure 1. Breeding population sizes and short-term trends across Europe.

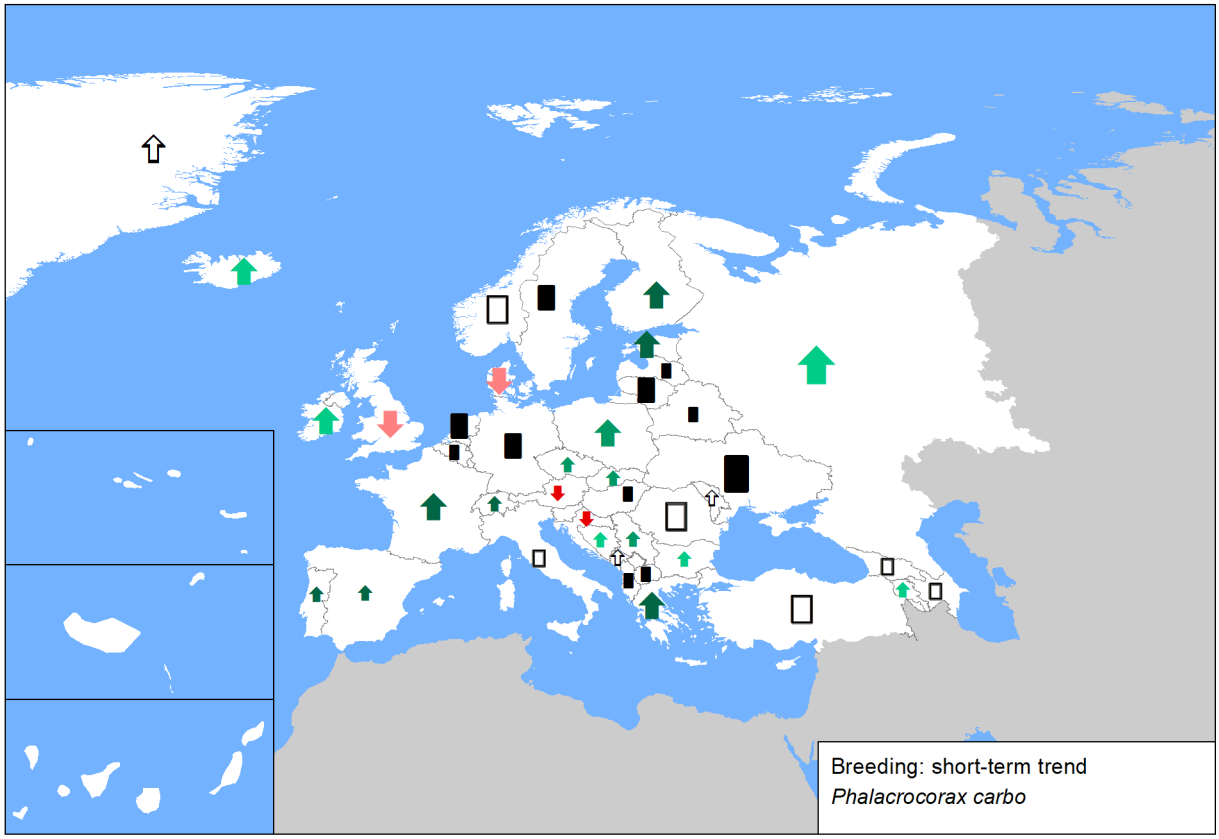


Figure 2. Breeding population sizes and long-term trends across Europe.

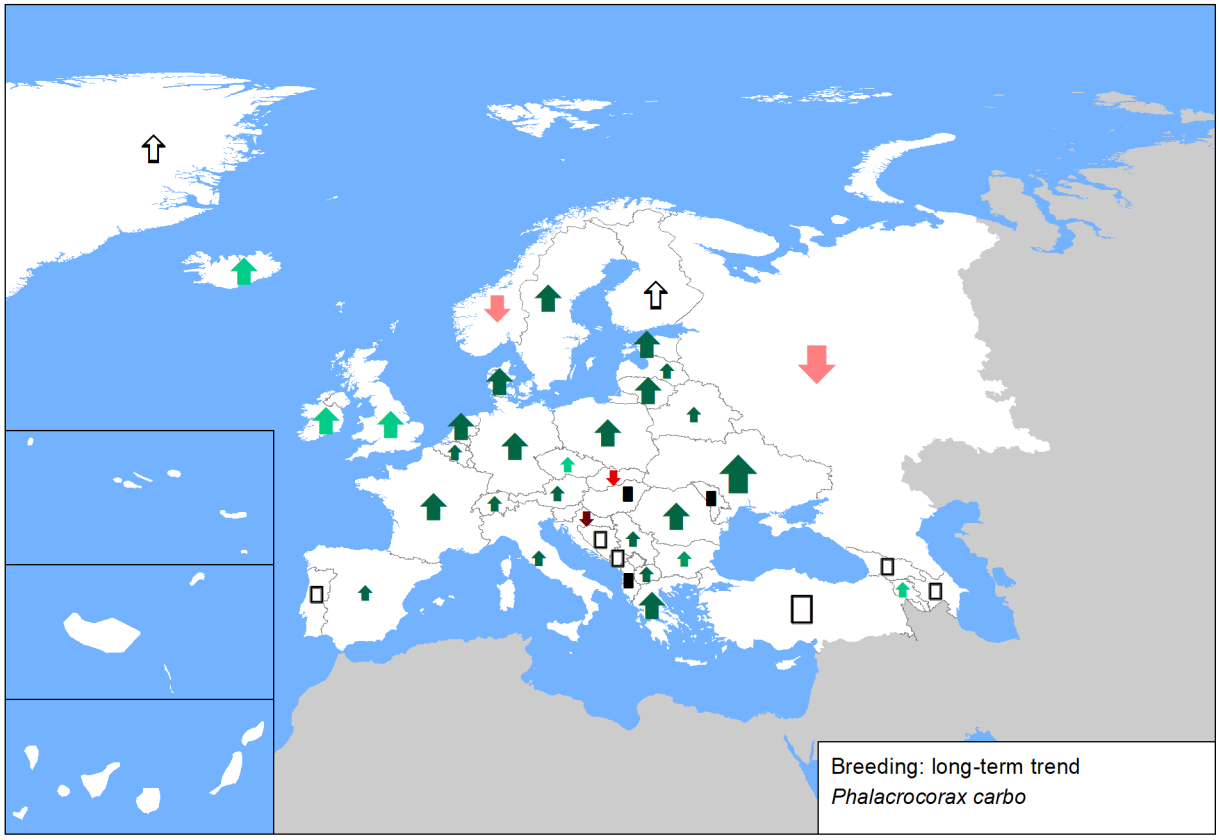


Figure 3. Reported wintering population sizes and short-term trends across Europe. Note that some countries within the species' wintering range did not report any data.

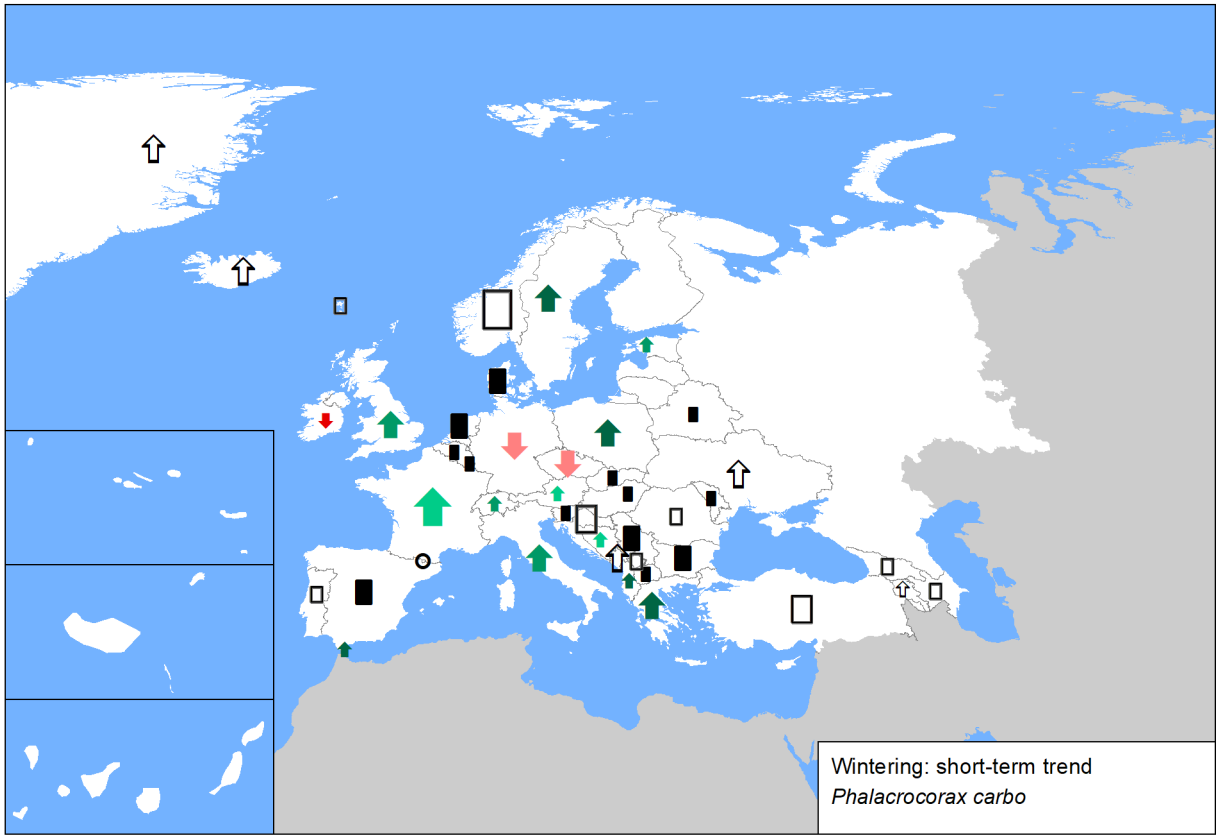
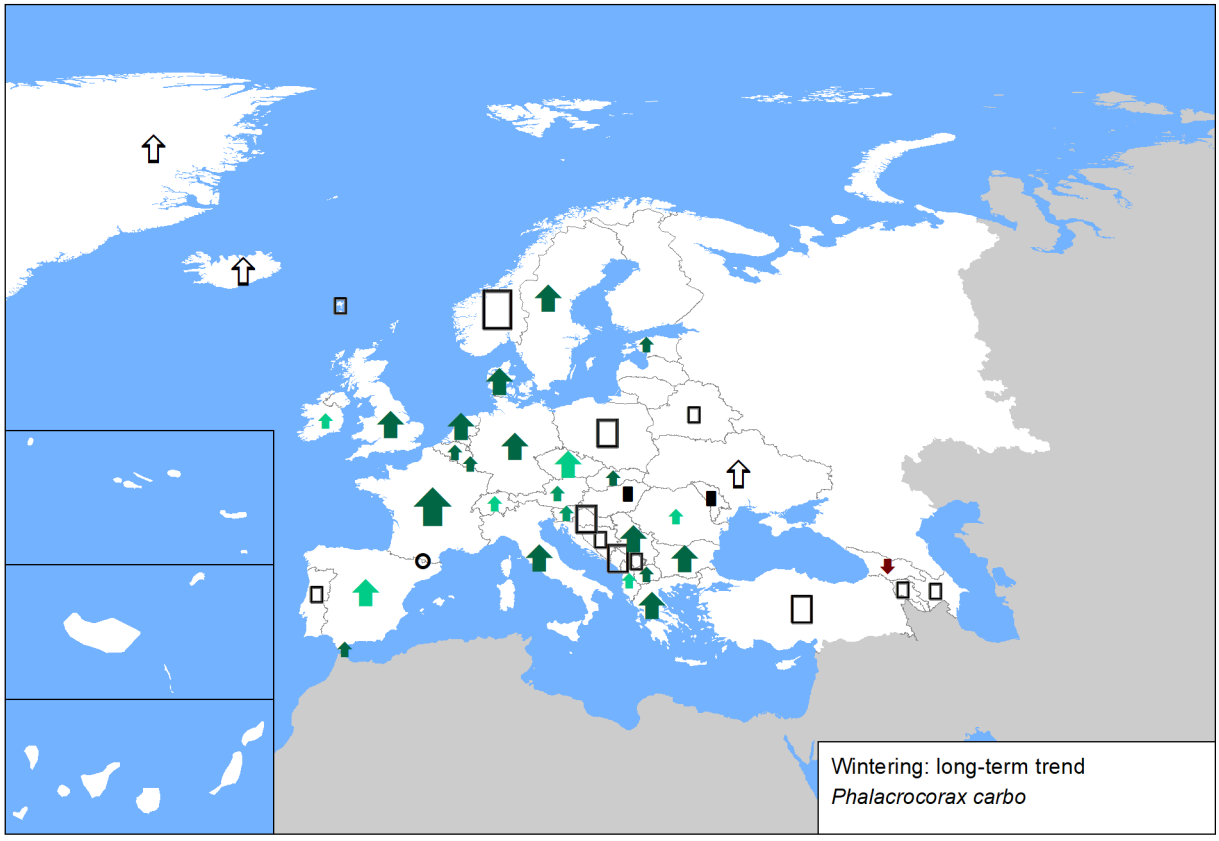


Figure 4. Reported wintering population sizes and long-term trends across Europe. Note that some countries within the species' wintering range did not report any data.



Sources

Albania

Breeding population size: Bino & Xeka 2020 in EBBA 2
Breeding short-term trend: Bino & Xeka pers. obs.
Breeding long-term trend: Bino pers. obs.
Winter population size: Bino pers. obs.
Winter short-term trend: Bino et al. 2018
Winter long-term trend: Bino et al. 2018

Andorra

Winter short-term trend: Population trend not analysed for wintering birds

Armenia

Breeding population size: TSE NGO National Bird Monitoring data.
Breeding short-term trend: TSE (2020) The Atlas of the Breeding Birds in Armenia. In preparation.
Breeding long-term trend: TSE (2020) The Atlas of the Breeding Birds in Armenia. In preparation.
Winter population size: TSE NGO, National Bird Monitoring
Winter short-term trend: TSE calculations using TRIM
Winter long-term trend: TSE calculations using TRIM

Austria: P. c. sinensis

Winter population size: BirdLife Austria, data of the International Waterfowl Counts (January count)
Winter short-term trend: BirdLife Austria, data of the International Waterfowl Counts (January count)
Winter long-term trend: BirdLife Austria, unpublished data based on indices calculated by the program TRIM

Austria: sinensis

Breeding population size: BirdLife Austria, unpublished data from the bird monitoring programm of the Neusiedler See - Seewinkel national park, Thomas Zuna-Kratky, unpublished data (Marchauen), W. Niederl (2013-2017) unpubliahed data and reports (Rheindelta)
Breeding short-term trend: BirdLife Austria, unpublished data from the bird monitoring programm of the Neusiedler See - Seewinkel national park, Thomas Zuna-Kratky, unpublished data (Marchauen), W. Niederl (2013-2017) unpubliahed data and reports (Rheindelta)
Breeding long-term trend: BirdLife Austria, unpublished data from the bird monitoring programm of the Neusiedler See - Seewinkel national park, Thomas Zuna-Kratky, unpublished data (Marchauen), W. Niederl (2013-2017) unpubliahed data and reports (Rheindelta), Dvorak, Ranner & Berg 1993 (Atlas of Austrian breeding birds 1981-1985)

Azerbaijan

Breeding population size: AOS data base
Breeding short-term trend: AOS data base
Breeding long-term trend: AOS Data Base
Winter population size: AOS data base
Winter short-term trend: AOS Data Base
Winter long-term trend: AOS Data Base

Belarus

Winter population size: Bogdanovich I.A. - personal communication
Winter short-term trend: Bogdanovich I.A. - personal communication

Belarus: P. c. sinensis

Breeding population size: Research work of the National Academy of Sciences of the Republic of Belarus “Dynamics and predictive assessment of changes in the state of populations of the main resource and biocenotically most important bird species in Belarus”
Breeding long-term trend: Samusenko I.E., Nikiforov M.E. Great Cormorant (Phalacrocorax carbo) in Belarus: dynamics and current population status // Subbuteo: the Belarusian ornithological bulletin. – Vol. 11. (in press.) Samusenko I., Pavlushchick T. Current status and trends of Great Cormorant Phalacrocorax carbo population in Belarus // Proceeding 7th International Conference on Cormorants, Villeneuve, Switzerland 23-26 November 2005 / Wetlands International-IUCN Cormorant Research Group; eds.: Van Eeerden, M.R., van Rijn, S., Keller V. – Lelystad, 2011. - P. 53-59. Samusenko I. Status of the breeding population of Great Cormorants in Belarus. 2013. National reports from the 2012 breeding census of Great Cormorants Phalacrocorax carbo in parts of the Western Palearctic / IUCN-Wetlands International Cormorant Research Group Report. Technical Report from DCE – Danish Centre for Environment and Energy. Aarhus University: T. Bregnballe (eds.) [et al.]. - P. 14-18.

Belgium: P. c. sinensis

Winter population size: Waterbird database INBO
Winter short-term trend: Waterbird database INBO & Aves
Winter long-term trend: Waterbird database INBO & Aves

Belgium: sinensis

Breeding population size: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.

Breeding short-term trend: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.

Breeding long-term trend: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.

Bosnia and Herzegovina

Breeding population size: Based on data for EBBA2

Breeding short-term trend: more individual articles e.g published in magazine Bilten mreže posmatrača ptica u Bosni i Hercegovini-see https://ptice.ba/bs/category/bilteni_/), individual reports (e.g. for EBBA2, projects etc)

Winter population size: based on IWC reports-all reports published in magazine Bilten mreže posmatrača ptica (www.ptice.ba)

Winter short-term trend: based on IWC reports-all reports published in magazine Bilten mreže posmatrača ptica (www.ptice.ba)

Winter long-term trend: There are no qualitative data before 2005 to make estimates

Bulgaria: P. c. sinensis

Winter population size: Wetlands International (2019): Submitted IWC data for Bulgaria for period 2013-2018.; National Art. 12 reporting database 2013-2018; National workshop of experts, Sofia 27-29.8.2019.

Winter short-term trend: 1. BSPB Bird Database; National Art. 12 reporting database 2013-2018; Expert for contact: Svilen Cheshmedjiev, svilen.cheshmedjiev@bspb.org

Winter long-term trend: 1. BSPB Bird Database 2. Botev, B. (ed.) 1985. Red Data Book of Bulgaria, Vol. 2, Animals, Sofia, Bas Expert for contact: Svilen Cheshmedjiev, svilen.cheshmedjiev@bspb.org

Bulgaria: sinensis

Breeding population size: 1. Iankov, P. (ed.) 2007 Atlas of Breeding Birds in Bulgaria. Bulgarian Society for the Protection of Birds, Conservation Series, Book 10, Sofia, BSPB, 679 p.; National Art. 12 reporting database 2013-2018; 2. BSPB Bird Database 3. WWF Green borders LIFE+ Project Reports Expert for contact: Svilen Cheshmedjiev, svilen.cheshmedjiev@bspb.org

Breeding short-term trend: 1. Iankov, P. (ed.) 2007 Atlas of Breeding Birds in Bulgaria. Bulgarian Society for the Protection of Birds, Conservation Series, Book 10, Sofia, BSPB, 679 p.; National Art. 12 reporting database 2013-2018; 2. BSPB Bird Database 3. WWF Green borders LIFE+ Project Reports Expert for contact: Svilen Cheshmedjiev, svilen.cheshmedjiev@bspb.org

Breeding long-term trend: 1. Iankov, P. (ed.) 2007 Atlas of Breeding Birds in Bulgaria. Bulgarian Society for the Protection of Birds, Conservation Series, Book 10, Sofia, BSPB, 679 p. 2. Botev, B. (ed.) 1985. Red Data Book of Bulgaria, Vol. 2, Animals, Sofia, Bas 3. BSPB Bird Database 4. WWF Green borders LIFE+ Project Reports Expert for contact: Svilen Cheshmedjiev, svilen.cheshmedjiev@bspb.org

Croatia: P. c. sinensis

Winter population size: BirdLife International 2015: European Red List of Birds. Luxembourg: Office for Official Publications of the European Communities.). http://datazone.birdlife.org/info/euroredlist Report on the implementation of AEWA for the period 2009-2011 - Croatia. Http://www.unep-aewa.org/en/document/national-report-croatia-2

Winter short-term trend: no data available

Winter long-term trend: no data available

Croatia: sinensis

Breeding population size: Dumbović Mazal V., Pintar V., Zadravec M. (2019): Prvo izvješće o brojnosti i rasprostranjenosti ptica u Hrvatskoj sukladno odredbama Direktive o pticama

Breeding short-term trend: Dumbović Mazal V., Pintar V., Zadravec M. (2019): Prvo izvješće o brojnosti i rasprostranjenosti ptica u Hrvatskoj sukladno odredbama Direktive o pticama Report on the implementation of AEWA for the period 2009-2011 - Croatia. Http://www.unep-aewa.org/en/document/national-report-croatia-2

Breeding long-term trend: Dumbović Mazal V., Pintar V., Zadravec M. (2019): Prvo izvješće o brojnosti i rasprostranjenosti ptica u Hrvatskoj sukladno odredbama Direktive o pticama Report on the implementation of AEWA for the period 2009-2011 - Croatia. http://www.unep-aewa.org/en/document/national-report-croatia-2

Czechia: P. c. sinensis

Winter population size: Waterbird numbers were recorded in mid-January by regular citizen-science monitoring programme - the International Waterbird Census (IWC) – see Gilissen et al. 2002, Wetlands International 2006, Wetlands International 2019. Hundreds of volunteer birdwatchers conduct the mid-January counts on predetermined dates and sites each year, aiming to maximize synchrony (Gilissen et al. 2002, Musil et al. 2011, Musilová et al. 2014). The estimation of population size was calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). 'Time Totals' values of the data (i.e. the actual count values plus the numbers of birds estimated by the TRIM software) for all 1155 sites included in the analysis were used to generate total estimates of the range of numbers of the waterbird species wintering in the Czech Republic between 2015 and 2019. We use the range (min–max) of population estimates due to the effect of between-year variation in numbers because of variable climatic conditions (Musil et al. 2008, Musilová et al. 2018). Gilissen N, Haanstra L, Delany S, Boere G, Hagemeijer W (2002) Numbers and distribution of wintering waterbirds in the Western Palearctic and Southwest Asia in 1987, 1988 and 1999. Results from the International Waterbird Census. Wetlands International Global Series No. 11, Wetlands International, Wageningen, The Netherlands. Musil P, Darolová A, Jureček J, Musilová Z, Podhrázský M, Slabeyová K (2008) The long-term trends in numbers of wintering geese in the Czech Republic and Slovakia in 1991–2007. Tichodroma 20: 61–67. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460. Musilová Z, Musil P, Zouhar J, Adam M (2018) Changes in habitat suitability influence non-breeding distribution of waterbirds in central Europe. Ibis: 160: 582–596. Musilová Z, Musil P, Zouhar J, Bejček V, Šťastný K, Hudec K (2014) Numbers of wintering waterbirds in the Czech Republic: long-term and spatial-scale approaches to assess population size. Bird Study 61: 321–331.

Czechia: P. c. sinensis

Winter short-term trend: Waterbird numbers were recorded in mid-January by regular citizen-science monitoring programme - the International Waterbird Census (IWC) – see Gilissen et al. 2002, Wetlands International 2006, Wetlands International 2019. Hundreds of volunteer birdwatchers conduct the mid-January counts on predetermined dates and sites each year, aiming to maximize synchrony (Gilissen et al. 2002, Musil et al. 2011, Musilová et al. 2014). The individual species trends in numbers was calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). The additive slope (i.e. the change in indices from one year to the next) was used to estimate the Czech trend, see also Fouque et al. (2009), Musil et al. (2011), Musilová et al. (2015), Musilová et al. (2018 a, b). Fouque C, Guillemain M, Schricke V (2009) Trends in the numbers of Coot Fulica atra and wildfowl Anatidae wintering in France and their relationship with hunting activity at wetland sites. Wildfowl. Special Issue 2: 42–59. Gilissen N, Haanstra L, Delany S, Boere G, Hagemeijer W (2002) Numbers and distribution of wintering waterbirds in the Western Palearctic and Southwest Asia in 1987, 1988 and 1999. Results from the International Waterbird Census. Wetlands International Global Series No. 11, Wetlands International, Wageningen, The Netherlands. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460. Musilová Z, Musil P, Zouhar J, Adam M (2018a) Changes in habitat suitability influence non-breeding distribution of waterbirds in central Europe. Ibis: 160: 582–596. Musilová Z, Musil P, Zouhar J, Adam M, Bejček V (2018b) Importance of Natura 2000 sites for wintering waterbirds: Low preference, species' distribution changes and carrying capacity of Natura 2000 could fail to protect the species. Biological Conservation 228: 79–88. Musilová Z, Musil P, Zouhar J, Bejček V, Šťastný K, Hudec K (2014) Numbers of wintering waterbirds in the Czech Republic: long-term and spatial-scale approaches to assess population size. Bird Study 61: 321–331. Musilová Z, Musil P, Zouhar J, Romportl D (2015) Long-term trends, total numbers and species richness of increasing waterbird populations at sites on the edge of their winter range: cold-weather refuge sites are more important than protected sites. J Ornithol: 1–10. Pannekoek J, Van Strien AJ (2005) TRIM 3 Manual (TRends and Indices for Monitoring Data). Statistics Netherlands, Voorburg, The Netherlands. Wetlands International (2006) Waterbird population estimates. Fourth Edition. Wetlands International, Wageningen, The Netherlands. Wetlands International (2019) Waterbird Population Estimates. Available at: wpe.wetlands.org (accessed 10 March 2019).

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Czechia: sinensis

Breeding population size: Šťastný et Bejček in prep. - Atlas hnízdního rozšíření ptáků ČR 2014-2017 and annual breeding pair survay (Musil et al. 2016) Musil P., Macháček P., Musilová Z., Pavelka K. & Podhrázský M. 2016. Numbers of breeding pairs of Great Cormorants in the Czech Republic in 2014-2016.

Breeding short-term trend: Trends in waterbird breeding population size were estimated using changes in population data from nation-wide numbers project of "Atlas of Breeding Bird Distribution" carried out in whole Czech Republic in 2001 -2003 and 2014 – 2017. Range of relative change in breeding population size was used as the measurement of population trend. The values of relative rate of change were compared with data from annual monitoring (census in May – see Musil & Fuchs 1994, Musil et al. 2001, Čehovská et al. 2019 for the methods) on limited amount of sites (fishpond regions in south and central Bohemia - see Musil & Fuchs 1994). Čehovská M., Musil P., Musilová Z., Poláková, K. & Zouhar J. 2019: Diving duck census efficiency based on monitoring of individually marked females: the influence of breeding stage of individual females and timing of census. Bird Study in press. Musil P. Cepák J. Hudec K. & Zárybnický J. 2001. The long-term trends in the breeding waterfowl populations in the Czech Republic. OMPO, Institute of Applied Ecology, Kostelec nad Černými lesy. Musil P. & Fuchs R. 1994: Changes in abundance of water birds species in southern Bohemia (Czech Republic) in the last 10 years. Development in Hydrobiology. In: Kerekes J. J. [ed.]: Aquatic Birds in Trophic Web of Lakes. Hydrobiologia 279/280: 511–519.

Breeding long-term trend: The long-term trends were analysed using data from annual waterbird census carried out in May (see Musil & Fuchs 1994, Musil et al. 2001, Čehovská et al. 2019 for the methods) on limited amount of sites (fishpond regions in south and central Bohemia – see Musil & Fuchs 1994). The individual species trends in numbers were calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). The additive slope (i.e. the change in indices from one year to the next) was used to estimate the Czech trend, see also Fouque et al. (2009), Musil et al. (2011). Čehovská M., Musil P., Musilová Z., Poláková, K. & Zouhar J. 2019: Diving duck census efficiency based on monitoring of individually marked females: the influence of breeding stage of individual females and timing of census. Bird Study in press. Fouque C, Guillemain M, Schricke V (2009) Trends in the numbers of Coot Fulica atra and wildfowl Anatidae wintering in France and their relationship with hunting activity at wetland sites. Wildfowl. Special Issue Musil P. Cepák J. Hudec K. & Zárybnický J. 2001. The long-term trends in the breeding waterfowl populations in the Czech Republic. OMPO, Institute of Applied Ecology, Kostelec nad Černými lesy. Musil P. & Fuchs R. 1994: Changes in abundance of water birds species in southern Bohemia (Czech Republic) in the last 10 years. Development in Hydrobiology. In: Kerekes J. J. [ed.]: Aquatic Birds in Trophic Web of Lakes. Hydrobiologia 279/280: 511–519. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460.

Denmark: P. c. sinensis

Winter population size: Nielsen, R.D., Holm, T.E., Clausen, P., Bregnballe. T., Clausen, K.K., Petersen, I.K., Sterup, J., Balsby, T.J.S., Pedersen, C.L., Mikkelsen, P. & Bladt, J. (2019). Fugle 2012-2017. NOVANA. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi. - Videnskabelig rapport nr. 314. http://dce2.au.dk/pub/SR314.pdf and http://novana.au.dk/fugle/

Winter short-term trend: Nielsen, R.D., Holm, T.E., Clausen, P., Bregnballe. T., Clausen, K.K., Petersen, I.K., Sterup, J., Balsby, T.J.S., Pedersen, C.L., Mikkelsen, P. & Bladt, J. (2019). Fugle 2012-2017. NOVANA. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi. - Videnskabelig rapport nr. 314. http://dce2.au.dk/pub/SR314.pdf and http://novana.au.dk/fugle/

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Denmark: sinensis

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DK: Faroe Is

Winter population size: BirdLife International 2004

DK: Greenland

Breeding population size: Boertmann & Bay: The Greenland Red list: http://www.natur.gl/roedliste/

Breeding long-term trend: Boertmann & Bay: The Greenland Red list: http://www.natur.gl/roedliste/

Winter population size: Merkel et al. submitted. Status of wintering seabirds off Southwest Greenland, 2017

Estonia: P. c. sinensis

Winter population size: Estonian Working Group on Bird Status and Numbers

Winter short-term trend: Estonian Working Group on Bird Status and Numbers

Winter long-term trend: Estonian Working Group on Bird Status and Numbers

Estonia: sinensis

Breeding population size: [1] Estonian Working Group on Bird Status and Numbers [2] Linnualade inventuurid 2012-2018. Avaldamata.

Breeding short-term trend: Estonian Working Group on Bird Status and Numbers

Breeding long-term trend: Estonian Working Group on Bird Status and Numbers

Finland: sinensis

Breeding population size: Lehikoinen, A. , Below, A., Jukarainen, A., Laaksonen, T., Lehtiniemi, T., Mikkola-Roos, M., Pessa, J., Rajasärkkä, A., Rusanen, P., Sirkiä, P., Tiainen, J. & Valkama, J. 2019: Suomen lintujen pesimäkantojen koot. – Linnut-vuosikirja 2018: 38-45.

Breeding short-term trend: https://www.ymparisto.fi/fi-FI/Luonto/Lajit/Lajien_seuranta/Merimetsoseuranta

Breeding long-term trend: https://www.ymparisto.fi/fi-FI/Luonto/Lajit/Lajien_seuranta/Merimetsoseuranta

France: P. c. carbo

Winter population size: Debout Gérard 2015. L'hivernage du grand cormoran en Normandie1990-2014. Le Cormoran 20(2)82, Caen124-128 ; Debout Gérard 2017. Les grands cormoransnicheurs en Normandie : enquête 2015 et historique. Le Cormoran 21(1)85, Caen33-36 ; Marion Loïc 2018. Recensement national de sgrands cormorans hivernant en France durant l'hiver 2017-2018. Rapport, Rennes55

France: P. c. sinensis

Winter population size: Marion Loïc 2018. Recensement national de sgrands cormorans hivernant en France durant l'hiver 2017-2018. Rapport, Rennes55

Winter short-term trend: Marion Loïc 2018. Recensement national de sgrands cormorans hivernant en France durant l'hiver 2017-2018. Rapport, Rennes55

France: carbo

Breeding population size: . Recensement national des grands cormorans nicheurs en France en 2018. Rapport final. Marion 2019.

Breeding short-term trend: . Recensement national des grands cormorans nicheurs en France en 2018. Rapport final. Marion 2019. ; Cadiou B., Pons J.-M. & Yésou P. (éds) 2004. Oiseaux marins nicheurs de France métropolitaine (1960-2000), Éditions Biotope, Mèze. 218 p.

Breeding long-term trend: Cadiou B. et les coordinateurs régionaux, coordinateurs départementaux et coordinateurs-espèce 2011. Cinquième recensement national des oiseaux marins nicheurs de France métropolitaine 2009-2011, 1ère synthèse : bilan intermédiaire 2009-2010, Brest, Gisom et AAMP. 80 p. http://files.biolovision.net/www.atlas-ornitho.fr/pdffiles/ROMN2009-2010RP1-mars2011-9035.pdf

France: sinensis

Breeding population size: . Recensement national des grands cormorans nicheurs en France en 2018. Rapport final. Marion 2019.

Breeding short-term trend: . Recensement national des grands cormorans nicheurs en France en 2018. Rapport final. Marion 2019.

Breeding long-term trend: Cadiou B. et les coordinateurs régionaux, coordinateurs départementaux et coordinateurs-espèce 2011. Cinquième recensement national des oiseaux marins nicheurs de France métropolitaine 2009-2011, 1ère synthèse : bilan intermédiaire 2009-2010, Brest, Gisom et AAMP. 80 p. http://files.biolovision.net/www.atlas-ornitho.fr/pdffiles/ROMN2009-2010RP1-mars2011-9035.pdf; . Recensement national des grands cormorans nicheurs en France en 2018. Rapport final. Marion 2019.

Georgia

Breeding population size: EBBA Georgia, prepared by Sabuko-Society for nature conservation, Ilia state university, NGO "psovi".

Winter population size: Zurab Gurgenidze Zurab.Gurgenidze@Sabuko.ge; observation.org

Winter long-term trend: BirdLife international; Zurab Gurgenidze Zurab.Gurgenidze@Sabuko.ge; observation.org

Germany: P. c. carbo

Winter short-term trend: keine Angabe

Phalacrocorax carbo (Great Cormorant)

Germany: P. c. carbo

Winter long-term trend: keine Angabe

Germany: P. c. sinensis

Winter population size: Dachverband Deutscher Avifaunisten e.V. und Forschungs- und Technologiezentrum Westküste, Universität Kiel

Winter short-term trend: Dachverband Deutscher Avifaunisten e.V. (http://www.dda-web.de)

Winter long-term trend: Dachverband Deutscher Avifaunisten e.V. (http://www.dda-web.de)

Germany: sinensis

Breeding population size: Monitoring seltener Brutvögel (http://www.dda-web.de/index.php?cat=monitoring&subcat=ga&subsubcat=kontakt)

Breeding short-term trend: Monitoring seltener Brutvögel (http://www.dda-web.de/index.php?cat=monitoring&subcat=ga&subsubcat=kontakt)

Breeding long-term trend: Monitoring seltener Brutvögel (http://www.dda-web.de/index.php?cat=monitoring&subcat=ga&subsubcat=kontakt)

Gibraltar: P. c. sinensis

Winter population size: Bensusan, K.J. & Perez, C.E. (2003). A Conservation Action Plan for MOD sites in Gibraltar: Gibraltar Ornithological & Natural History Society. GONHS. Cortes, J .E. (1978). Conservation – A Future? Semi - natural Nature Reserve, Gibraltar: A Management Plan. Gibraltar Ornithological and Natural History Society. GONHS. Cortes, J.E, (1996). Windmill Hill Flats: a good view of migration across the Straits of Gibraltar. Almoraima 15:163-184. Cortes, J.E., Finlayson J.C., Garcia, E.F.J., Mosquera, M.A.J., (1980). The Birds of Gibraltar. Gibraltar Books. Gibraltar. Environmental Action & Management Plan (2012). Government of Gibraltar. Gibraltar Bird Reports (2006 - 2012). Gibraltar Ornithological & Natural History Society Gibraltar Nature News (2006 – 2012). Bi-annual Publication. Gibraltar Ornithological & Natural History Society. Nature Protection Act 1991 (2013). Perez, C.E. (2013). Report on the Conservation of Terrestrial Flora & Fauna in Gibraltar (2012). Wildlife (Gibraltar) Ltd Perez, C.E. & Bensusan, K. J. (2005). Upper Rock Nature Reserve A Management and Action. Plan. Gibraltar: The Gibraltar Ornithological & Natural History Society (GONHS). Perez, C.E. (2006). Biodiversity Action Plan, Gibraltar: Planning for Nature. Gibraltar: Gibraltar Ornithological & Natural History Society (GONHS). Southern Waters of Gibraltar Management Scheme EU Natura 2000 Site (2012).

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Greece: P. c. sinensis

Winter population size: 1) Midwinter Counts Database (1967 - 2019), Hellenic Ornithological Society 2) BirdLife International (2017). European birds of conservation concern: populations, trends and national responsibilities. Cambridge. UK: BirdLife Internationa. ISBN 978-1-912086-00-9, 3) Portolou, D., Bourdakis, S., Vlachos, C., Kastritis, T., and Dimalexis. T. (eds.) 2009. Important Bird Areas of Greece: Priority sites for conservation. Hellenic Ornithological Society. Athens. 4) Λεγάκις Α. & Μαραγκού Π. 2009. Το Κόκκινο Βιβλίο των Απειλούμενων Ζώων της Ελλάδος. Ελληνική Ζωολογική Εταιρεία, Αθήνα, 528 σελίδες. 5) Δημαλέξης Τάσος. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της Ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικων απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 7) Natura Viewer 8) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη.

Winter short-term trend: 1) Δημαλέξης, Τ., Καστρίτης, Θ., Γρίβας, Κ., Μανωλόπουλος, Α., Καρδακάρη, Ν., Κακαλής, Λ., Ξηρουχάκης, Σ., Τσαϊτουρίδης, Χ., Papazoglou, C. & Barov, B. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικών απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 2) Natura Viewer (http://natura2000.eea.europa.eu/#). 3) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη. 4) Midwinter Counts Database (1967 - 2019), Hellenic Ornithological Society 5) BirdLife International (2017). European birds of conservation concern: populations, trends and national responsibilities. Cambridge. UK: BirdLife Internationa. ISBN 978-1-912086-00-9, 6) Portolou, D., Bourdakis, S., Vlachos, C., Kastritis, T., and Dimalexis. T. (eds.) 2009. Important Bird Areas of Greece: Priority sites for conservation. Hellenic Ornithological Society. Athens.

Winter long-term trend: 1) Handrinos,G., & Akriotis, T., (1997) The birds of Greece. C. Helm, A & C Black, London. 2) Δημαλέξης, Τ., Καστρίτης, Θ., Γρίβας, Κ., Μανωλόπουλος, Α., Καρδακάρη, Ν., Κακαλής, Λ., Ξηρουχάκης, Σ., Τσαϊτουρίδης, Χ., Papazoglou, C. & Barov, B. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικών απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 3) Natura Viewer (http://natura2000.eea.europa.eu/#). 4) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη.

Greece: sinensis

Breeding population size: 1) Δημαλέξης, Τα., Καστρίτης, Θ., Γρίβας, Κ., Μανωλόπουλος, Α., Καρδακάρη, Ν., Κακαλής, Λ., Ξηρουχάκης, Σ., Τσαϊτουρίδης, Χ., Papazoglou, C. & Barov, B. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικών απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 2) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη.

Breeding short-term trend: 1) BirdLife International (2004) Birds in Europe:Population estimates, trends and conservation status. Cambridge, UK: Birdlife International (Birdlife Conservation Series No. 12). 2) Natura Viewer (http://natura2000.eea.europa.eu/#). 3) Δημαλέξης, Τ., Καστρίτης, Θ., Γρίβας, Κ., Μανωλόπουλος, Α., Καρδακάρη, Ν., Κακαλής, Λ., Ξηρουχάκης, Σ., Τσαϊτουρίδης, Χ., Papazoglou, C. & Barov, B. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικών απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 4) Πορτόλου, Δ., Μπουρδάκης, Σ., Βλάχος, Χ., Καστρίτης, Θ. & Δημαλέξης, Τ. (επιμ.).2009. Οι Σημαντικές Περιοχές για τα Πουλιά της Ελλάδας: Περιοχές Προτεραιότητας για τη Διατήρηση της Βιοποικιλότητας. Ελληνική Ορνιθολογική Εταιρεία, Αθήνα. 5) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη.

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Hungary: P. c. sinensis

Winter population size: Magyar Vízivad Közlemények Hungarian Waterfowl Monitoring Database (http://vadgazdalkodas.emk.uni-sopron.hu/content/index/id/3955)

Winter short-term trend: Hungarian Waterfowl Monitoring Database (http://vadgazdalkodas.emk.uni-sopron.hu/content/index/id/3955)

Winter long-term trend: Oláh J., Oláh J., Ecsedi Z. (2003): A kárókatona (Phalacrocorax carbo) halastavi kártétele és kárértékbecslése. Fishpond damages done by the Cormorant and the estimation of the value of the damage. Magyar Vízivad Közlemények 10., p.337-379. Csörgő T. et al (2009): Magyar madárvonulási atlasz. Kossuth Kiadó, Budapest, 672 p. Hungarian Waterfowl Monitoring Database (http://vadgazdalkodas.emk.uni-sopron.hu/content/index/id/3955)

Hungary: sinensis

Breeding population size: National Park Directorates' database on complete, national surveys covering all known colonies, carried out annually in the years 2012-2017 (Annual survey of colonially breeding and strictly protected bird species).

Breeding short-term trend: National Park Directorates' database on complete, national surveys covering all known colonies, carried out annually in the years 2012-2017. However, the trend is only estimated for previous years back to 2007. It is assumed that the trend was in those years about the same as since 2012, i.e. stable (with slight fluctuations from year to year).

Breeding long-term trend: Oláh J., Oláh J., Ecsedi Z. (2003): A kárókatona (Phalacrocorax carbo) halastavi kártétele és kárértékbecslése. Fishpond damages done by the Cormorant and the estimation of the value of the damage. Magyar Vízivad Közlemények 10., p.337-379. National Park Directorates' database Faragó, S. (2002): Vadászati állattan. Mezőgazda Kiadó, p. 496.

Iceland

Breeding population size: Gardarsson, Arnthor & Jónsson, Jón. (2019). Numbers and distribution of the Great Cormorant in Iceland: Limitation at the regional and metapopulation level. Ecology and Evolution. 9. 10.1002/ece3.5028; Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Breeding short-term trend: Gardarsson, Arnthor & Jónsson, Jón. (2019). Numbers and distribution of the Great Cormorant in Iceland: Limitation at the regional and metapopulation level. Ecology and Evolution. 9. 10.1002/ece3.5028.; Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Breeding long-term trend: Gardarsson, Arnthor & Jónsson, Jón. (2019). Numbers and distribution of the Great Cormorant in Iceland: Limitation at the regional and metapopulation level. Ecology and Evolution. 9. 10.1002/ece3.5028; Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Winter population size: Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Winter short-term trend: Icelandic Institute of Natural History. Mid-winter bird counts, https://www.ni.is/greinar/vetrarfuglatalningar-nidurstodur; Icelandic Institute of Natural History, unpubl.data.

Winter long-term trend: Icelandic Institute of Natural History. Mid-winter bird counts, https://www.ni.is/greinar/vetrarfuglatalningar-nidurstodur; Icelandic Institute of Natural History, unpubl.data.

Republic of Ireland: P. c. carbo

Winter population size: Burke, B., Lewis, L. J., Fitzgerald, N., Frost, T., Austin, G. & Tierney, T. D. (2018) Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. Irish Birds 11, 1-12.

Winter short-term trend: Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. Irish Wildlife Manuals, No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland. Population estimates on which these trends are based, though consistent in terms of data collection and statistical analysis, are likely to be underestimates of the true population numbers due to the relatively poor I-WeBS coverage of some of the areas that this species is distributed over.

Winter long-term trend: Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. Irish Wildlife Manuals, No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Republic of Ireland: carbo

Breeding population size: Cummins, S., Lauder, C, Lauder, A & Tierney, T. D. (2019) The status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Irish Wildlife Manuals, No. XXX. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
Breeding short-term trend: Cummins, S., Lauder, C, Lauder, A & Tierney, T. D. (2019) The status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Irish Wildlife Manuals, No. XXX. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
Breeding long-term trend: Cummins, S., Lauder, C, Lauder, A & Tierney, T. D. (2019) The status of Ireland's Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Irish Wildlife Manuals, No. XXX. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.

Italy: P. c. sinensis

Winter population size: ISPRA-IWC Database
Winter short-term trend: ISPRA-IWC Database - Zenatello M., Baccetti N., Borghesi F., 2014. Risultati dei censimenti degli uccelli acquativi svernanti in Italia. Distribuzione, stima e trend delle popolazioni nel 2001-2010. ISPRA, Serie Rapporti, 206/2014, pp: 24-28.
Winter long-term trend: ISPRA-IWC Database; Baccetti N, Dall'Antonia P, Magagnoli P, Melega L, Serra L, Soldatini C, Zenatello M 2002. Risultati dei censimenti degli uccelli acquatici svernanti in Italia: distribuzione, stima e trend delle popolazioni nel 1991-2000. Biol. Cons. Fauna 111: 19-20.

Italy: sinensis

Breeding population size: Volponi et al. 2011. How many Great Cormorants Phalacrocorax carbo breed in Italy? Results from the 2011 national colony census. 8th International Conference on Cormorants (Medemblick, NL).
Breeding short-term trend: No recent data available
Breeding long-term trend: Brichetti P., Meschini E., 1993. Stima delle popolazioni di uccelli nidificanti. In Meschini E., Frugis S.,1993. Atlante degli uccelli nidificanti in Italia. Suppl. Ric. Biol. Selvaggina, 20, 1-345.

Kosovo

Winter population size: Maxhuni, Q., Bino, T., Xeka, E., Sevo, B., Bejko, E. & Muhaxhiri, J. (2019) First International Waterbird Census (IWC) in Kosovo, MESP/KEPA

Latvia: sinensis

Breeding population size: Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv
Breeding short-term trend: Millers K. 2013: Status of the breeding population of Great Cormorants in Latvia in 2012. Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv
Breeding long-term trend: Strazds M., Priednieks J., Vaverins G. 1994. [Size of Latvian bird populations.] (in Latvian) In: Putni dabā, 4: 3–18 Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv

Lithuania: sinensis

Breeding population size: Expert working group of the Lithuanian Ornithological Society (lod@birdlife.lt) 2015-2018. Lietuvos perinčių paukščių atlaso duomenų bazė (Lithuanian Breeding Birds Atlas Database). Vilnius. Ministry of Environment of the Republic of Lithuania. 2012. Status and trends of bird populations (Article 12, Birds Directive 2009/147/EC) National Summary 2008-2012 Lithuania.
Breeding short-term trend: Expert working group of the Lithuanian Ornithological Society (lod@birdlife.lt) 2015-2018. Lietuvos perinčių paukščių atlaso duomenų bazė (Lithuanian Breeding Birds Atlas Database). Vilnius. Ministry of Environment of the Republic of Lithuania. 2012. Status and trends of bird populations (Article 12, Birds Directive 2009/147/EC) National Summary 2008-2012 Lithuania.
Breeding long-term trend: Logminas, V. (ed.). 1991. Lietuvos fauna: paukščiai. Vilnius: „Mokslas". Kurlavičius, P. (ed.) 2006. Lietuvos perinčių paukščių atlasas. Kaunas: „Lututė". Expert working group of the Lithuanian Ornithological Society (lod@birdlife.lt) BirdLife International/European Bird Cencus Council. 2000. European bird populations: estimates and trends. Cambridge, UK: BirdLife International (BirdLife Conservation Series No. 10). Raudonikis L. 2004. Important Bird Areas of the European Union Importance in Lithuania. Lithuanian Ornithological Society & Institute of Ecology of Vilnius University. Lutute, Vilnius. Jusys, V., Karalius, S., Raudonikis, L. 2012. Lietuvos paukščių pažinimo vadovas. Kaunas: „Lututė". Ministry of Environment of the Republic of Lithuania. 2012. Status and trends of bird populations (Article 12, Birds Directive 2009/147/EC) National Summary 2008-2012 Lithuania. Expert working group of the Lithuanian Ornithological Society (lod@birdlife.lt) 2015-2018. Lietuvos perinčių paukščių atlaso duomenų bazė (Lithuanian Breeding Birds Atlas Database). Vilnius.

Luxembourg: P. c. sinensis

Winter population size: Proess R., T. Keller, P. Lorgé (2009): Der Kormoran Phalacrocorax carbo sinensis in Luxemburg. Regulus Wissenschaftliche Berichte, 24: 1-21; Ornitho.lu (2018): online database natur&ëmwelt asbl & Dachverband Deutscher Avifaunisten (DDA) e.V.; Luxembourg Recorder (2018): database Musée national d'histoire naturelle; Luxembourg Lorgé P., E. Melchior (2016): Die Vögel Luxemburgs. Natur&ëmwelt Luxembourg. ISBN: 978-2-919920-01-3
Winter short-term trend: Proess R., T. Keller, P. Lorgé (2009): Der Kormoran Phalacrocorax carbo sinensis in Luxemburg. Regulus Wissenschaftliche Berichte, 24: 1-21; Ornitho.lu (2018): online database natur&ëmwelt asbl & Dachverband Deutscher Avifaunisten (DDA) e.V.; Luxembourg Recorder (2018): database Musée national d'histoire naturelle; Luxembourg Lorgé P., E. Melchior (2016): Die Vögel Luxemburgs. Natur&ëmwelt Luxembourg. ISBN: 978-2-919920-01-3; LUXOR (2018): natur&ëmwelt – Bird-database, Luxembourg
Winter long-term trend: Proess R., T. Keller, P. Lorgé (2009): Der Kormoran Phalacrocorax carbo sinensis in Luxemburg. Regulus Wissenschaftliche Berichte, 24: 1-21; Ornitho.lu (2018): online database natur&ëmwelt asbl & Dachverband Deutscher Avifaunisten (DDA) e.V.; Luxembourg Recorder (2018): database Musée national d'histoire naturelle; Luxembourg Lorgé P., E. Melchior (2016): Die Vögel Luxemburgs. Natur&ëmwelt Luxembourg. ISBN: 978-2-919920-01-3; LUXOR (2018): natur&ëmwelt – Bird-database, Luxembourg; Proess R. (2016): Der Kormoran Phalacrocorax carbo sinensis in Luxemburg. Abschlussbericht Bestandsaufnahme der überwinternden Population.

North Macedonia

Breeding population size: unpublished data from the European Breeding Bird Atlas 2
Breeding short-term trend: unpublished data from the European Breeding Bird Atlas 2
Breeding long-term trend: unpublished data of the Macedonian Ecological Society

North Macedonia: P. c. sinensis

Winter population size: unpublished IWC data of the Macedonian Ecological Society
Winter short-term trend: unpublished IWC data of the Macedonian Ecological Society

North Macedonia: P. c. sinensis

Winter long-term trend: Micevski, B. (1991). Faunistical analysis and structure of Dojran Lake winter ornithofauna. God. zb., Biol. 43–44: 65–73; Micevski, B. (1999). Winter census of the waterfowl on the Macedonian part of Ohrid Lake in January 1998 (with structural, dietary and evaluation analyses. In: Special issues of Macedonian Ecological Society. pp. 313–323. MES.; Micevski, B. (1992). Structural and faunistical characteristics of the Prespa Lake winter ornithofauna. God. zb., Biol. 45: 51–55; Micevski, B., Schneider, M. (1997). Winter census of waterfowl in Macedonian part of Prespa Lake in January 1997 (with structural, dietary and evaluation analyses). In: Towards Integrated Conservation and Sustainable Development of Transboundary Macro and Micro Prespa Lakes pp. 160–164. Towards Integrated Conservation and Sustainable Development of Transboundary Macro and Micro Prespa Lakes. Preservation and Protection of Natural Environment in Albania, Korcha, Albania.; Micevski, B. (1996). Ohrid Lake winter ornitofauna (Faunistical and Structural Characteristics). God. Zb., Biol. 49: 85–93; Fremuth, W., Bino, T., Bego, F., Jorgo, G., Micevski, B., Anastasovski, V., Tzvetkov, T., Hristov, I., Schneider-Jacoby, M., Shumka, S. (2000). Four years of simultaneous wintering waterbird census at the Ohrid and Prespa Lakes 1997-2000. In: Grupche, Lj. & Kungulovski, Gj. (eds.). Proceedings of the International Symposium 'Sustainable development of Prespa Region' pp. 28–38. Macedonian Ecological Society; Catsadorakis, G., Aleksi, P., Avramoski, O., Bino, T., Bojadzi, A., Brajanoski, Z., Fremuth, W., Kazoglou, Y., Koutseri, I., Logotheti, A., Malakou, M., Nikolaou, H., Nikolaou, L., Putilin, K., Shumka, S., Uzunova, D., Velevski, M. (2013). Waterbirds wintering at the Prespa lakes as revealed by simultaneous counts in the three adjoining littoral states. Macedonian Journal of Ecology and Environment 15(1): 23–31; unpublished IWC data of the Macedonian Ecological Society

Moldova

Breeding population size: Moldova`s contribution for the second European Breeding Bird Atlas (EBBA2)

Breeding short-term trend: SPPN expert opinion (sppn.moldova@gmail.com)

Breeding long-term trend: SPPN expert opinion (sppn.moldova@gmail.com)

Winter population size: International Waterbird Census

Winter short-term trend: SPPN expert opinion (sppn.moldova@gmail.com)

Winter long-term trend: SPPN expert opinion (sppn.moldova@gmail.com)

Montenegro

Winter population size: Rubinić,B., Sackl, P. & Gramatikov, M. (2019): Conserving of wild birds in Montenegro. The first inventory of potential Special Protection Areas in Montenegro. Aam Consulting. Budapest xiii + 328 pp.

Montenegro: P. c. sinensis

Breeding population size: Rubinić,B., Sackl, P. & Gramatikov, M. (2019): Conserving of wild birds in Montenegro. The first inventory of potential Special Protection Areas in Montenegro. Aam Consulting. Budapest xiii + 328 pp.

Netherlands: P. c. sinensis

Winter population size: NEM waterbird monitoring scheme (Sovon, RWS, CBS, provincies)

Winter short-term trend: NEM waterbird monitoring scheme (Sovon, RWS, CBS, provincies)

Winter long-term trend: NEM waterbird monitoring scheme (Sovon, RWS, CBS, provincies)

Netherlands: sinensis

Breeding population size: Sovon NEM (Sovon, CBS and provincies) and Bird atlas (Sovon 2018)

Breeding short-term trend: NEM (Sovon, RWS, CBS, provincies)

Breeding long-term trend: Sovon

Norway: P. c. carbo

Breeding population size: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) Lorentsen, S.-H. 2014b. Trends and status of the breeding population of Great Cormorants in Norway with regard to the Atlantic sub-species Phalacrocorax carbo carbo. S. 155-160 i: Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., Carss, D.N. & van Eerden, M.R. (red.) Breeding numbers of great cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCN-Wetlands International Cormorant Research Group Report. Scientific report from DCE – Danish Centre for Environment and Energy, Aarhus University. No. 99.

Breeding short-term trend: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) Lorentsen, S.-H. 2014b. Trends and status of the breeding population of Great Cormorants in Norway with regard to the Atlantic sub-species Phalacrocorax carbo carbo. S. 155-160 i: Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., Carss, D.N. & van Eerden, M.R. (red.) Breeding numbers of great cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCN-Wetlands International Cormorant Research Group Report. Scientific report from DCE – Danish Centre for Environment and Energy, Aarhus University. No. 99.

Breeding long-term trend: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) Lorentsen, S.-H. 2014b. Trends and status of the breeding population of Great Cormorants in Norway with regard to the Atlantic sub-species Phalacrocorax carbo carbo. S. 155-160 i: Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., Carss, D.N. & van Eerden, M.R. (red.) Breeding numbers of great cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCN-Wetlands International Cormorant Research Group Report. Scientific report from DCE – Danish Centre for Environment and Energy, Aarhus University. No. 99.

Winter population size: Svorkmo-Lundberg, T., Bakken, V., Helberg, M., Mørk, K., Røer, J.E. & Sæbø, S. 2006. Norsk VinterfuglAtlas. Fuglenes utbredelse, bestandsstørrelse og økologi vinterstid. Norsk Ornitologisk Forening, Trondheim. 496 pp.

Winter short-term trend: Artsobservasjoner www.artsobservasjoner.no

Norway: P. c. sinensis

Breeding population size: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) Lorentsen, S.-H. 2014. Lorentsen, S.-H. 2014a. Status of the breeding population of Great Cormorants in Norway in 2012 with regard to the continental sub-species Phalacrocorax carbo sinensis. S. 151-154 i: Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., Carss, D.N. & van Eerden, M.R. (red.) Breeding numbers of great cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCNWetlands International Cormorant Research Group Report. Scientific report from DCE – Danish Centre for Environment and Energy, Aarhus University. No. 99.

Norway: P. c. sinensis

Breeding short-term trend: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) Lorentsen, S.-H. 2014. Lorentsen, S.-H. 2014a. Status of the breeding population of Great Cormorants in Norway in 2012 with regard to the continental sub-species Phalacrocorax carbo sinensis. S. 151-154 i: Bregnballe, T., Lynch, J., Parz-Gollner, R., Marion, L., Volponi, S., Paquet, J.-Y., Carss, D.N. & van Eerden, M.R. (red.) Breeding numbers of great cormorants Phalacrocorax carbo in the Western Palearctic, 2012-2013. IUCNWetlands International Cormorant Research Group Report. Scientific report from DCE – Danish Centre for Environment and Energy, Aarhus University. No. 99.

Breeding long-term trend: (a) Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2. (b) www.seapop.no

Poland: P. c. sinensis

Winter population size: State Environmental Monitoring / Chief Inspectorate of Environmental Protection (survey: MZPW – Wintering Waterbird Survey & MZPM – Wintering Seabirds Survey)

Winter short-term trend: State Environmental Monitoring / Chief Inspectorate of Environmental Protection (survey: MZPW)

Winter long-term trend: Chief Inspectorate of Environmental Protection & Polish Society for the Protection of Birds (OTOP) / BirdLife Poland

Poland: sinensis

Breeding population size: State Environmental Monitoring / Chief Inspectorate of Environmental Protection (survey: MKO – Great Cormorant Census)

Breeding short-term trend: State Environmental Monitoring / Chief Inspectorate of Environmental Protection (survey: MKO)

Breeding long-term trend: Krzywosz T., Piotr Traczuk P. 2013. Populacja lęgowa kormorana czarnego Phalacrocorax carbo w Polsce w 2013 r. Komunikaty Rybackie Nr 4 (135)/2013: 12-36; Tomiałojć L. & Stawarczyk T. 2003. Awifauna Polski: rozmieszczenie, liczebność i zmiany. PTPP "pro N

Portugal: P. c. sinensis

Winter population size: Programa Nacional de Monitorização de Aves Aquáticas Invernantes

Winter short-term trend: Programa Nacional de Monitorização de Aves Aquáticas Invernantes

Winter long-term trend: Sousa J (2002b). Tendências populacionais de aves aquáticas. Relatório de estudo integrado no Projecto do Instituto da Conservação da Natureza "Livro Vermelho dos Vertebrados de Portugal - Revisão"/Programa Operacional do Ambiente, não publicado.; Programa Nacional de Monitorização de Aves Aquáticas Invernantes

Portugal: sinensis

Breeding population size: eBird (2019). eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org/portugal/home. (Accessed: October 22, 2018).

Breeding short-term trend: eBird: An online database of bird distribution and abundance [web application]. eBird, Ithaca, New York. Available: http://www.ebird.org/po

Romania: P. c. sinensis

Winter population size: International Waterbird Census, Romania, Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database

Winter short-term trend: International Waterbird Census, Romania, Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database

Winter long-term trend: International Waterbird Census, Romania, Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database

Romania: sinensis

Breeding population size: Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database, Rombird (Romanian Rarity Commission) Database

Breeding short-term trend: Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database, Rombird (Romanian Rarity Commission) Database

Breeding long-term trend: Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database, Rombird (Romanian Rarity Commission) Database

Russia: P. c. carbo

Breeding population size: Voltzit & Kalyakin 2013-2019; Database of the project on Atlas of breeding birds of European Russia

Breeding long-term trend: Krasnov et al. 2008; Koryakin 2012; Semashko et al. 2012

Russia: P. c. sinensis

Breeding population size: Voltzit & Kalyakin 2013-2019; Database of the project on Atlas of breeding birds of European Russia

Breeding short-term trend: Bregnballe et al. (eds.) 2014

Breeding long-term trend: Belik et al. 2003; Bregnballe et al. (eds.) 2014

Serbia

Breeding population size: EBBA2 project; Puzović, S., Radišić, D., Ružić, M., Rajković, D., Radaković, M., Pantović, U., Janković, M., Stojnić, N., Šćiban, M., Tucakov, M., Gergelj, J., Sekulić, G., Agošton, A. & Raković, M. 2015. Birds of Serbia: Breeding Population Estimates and Trends for the Period 2008-2013. Bird protection and study society of Serbia, and Department of Biology and Ecology, Faculty of Sciences, University of Novi Sad, Novi Sad.

Breeding short-term trend: Puzović, S., Radišić, D., Ružić, M., Rajković, D., Radaković, M., Pantović, U., Janković, M., Stojnić, N., Šćiban, M., Tucakov, M., Gergelj, J., Sekulić, G., Agošton, A. & Raković, M. 2015. Birds of Serbia: Breeding Population Estimates and Trends for the Period 2008-2013. Bird protection and study society of Serbia, and Department of Biology and Ecology, Faculty of Sciences, University of Novi Sad, Novi Sad.

Breeding long-term trend: Puzović, S., Radišić, D., Ružić, M., Rajković, D., Radaković, M., Pantović, U., Janković, M., Stojnić, N., Šćiban, M., Tucakov, M., Gergelj, J., Sekulić, G., Agošton, A. & Raković, M. 2015. Birds of Serbia: Breeding Population Estimates and Trends for the Period 2008-2013. Bird protection and study society of Serbia, and Department of Biology and Ecology, Faculty of Sciences, University of Novi Sad, Novi Sad.

Winter population size: IWC database

Winter short-term trend: IWC database

Winter long-term trend: IWC database; Bioras database http://www.bioras.petnica.rs/home.php

Phalacrocorax carbo (Great Cormorant)

Slovakia: P. c. sinensis

Winter population size: Coordinatory group for reporting 2019. Slabeyová K., Ridzoň J., Karaska D., Topercer J. & Darolová A. 2011: Správa zo zimného sčítania vodného vtáctva na Slovensku 2009/10, SOS/BirdLife Slovensko, Bratislava, 160 s. Joint SOS+SAC+SNC SR roost count Lešová A. & Adamec M. (eds.) 2015: kormorán – kontroverzia jeho ochrany. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 122 p. Lešová A. & Adamec M. (eds.) 2015: Biológia, distribúcia a potravná ekológia kormorána veľkého v Európe. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 112 p. Lešová A. & Adamec M. (eds.) 2015: Prevencia a ochrana pred kormoránmi v rybnom hospodárstve. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 122 p. Danko Š. (2011): Vtáctvo Senného v minulosti a dnes. Slovenská ornitologická spoločnosť, Slovensko 135 p.

Winter short-term trend: Coordinatory group for reporting 2019, AVES-Symfony Database 2013-2018, KIMS Database 2013-2018. Slabeyová K., Ridzoň J., Karaska D., Topercer J. & Darolová A. 2011: Správa zo zimného sčítania vodného vtáctva na Slovensku 2009/10, SOS/BirdLife Slovensko, Bratislava, 160 s.

Winter long-term trend: Coordinatory group for reporting 2019, AVES-Symfony Database 2013-2018, KIMS Database 2013-2018. Slabeyová K., Ridzoň J., Karaska D., Topercer J. & Darolová A. 2011: Správa zo zimného sčítania vodného vtáctva na Slovensku 2009/10, SOS/BirdLife Slovensko, Bratislava, 160 s.

Slovakia: sinensis

Breeding population size: Coordinatory group for reporting 2019. Lešová A. & Adamec M. (eds.) 2015: kormorán – kontroverzia jeho ochrany. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 122 p. Lešová A. & Adamec M. (eds.) 2015: Biológia, distribúcia a potravná ekológia kormorána veľkého v Európe. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 112 p. Lešová A. & Adamec M. (eds.) 2015: Prevencia a ochrana pred kormoránmi v rybnom hospodárstve. Štátna ochrana prírody Slovenskej republiky, Banská Bystrica, 122 p. Danko Š. (2011): Vtáctvo Senného v minulosti a dnes. Slovenská ornitologická spoločnosť, Slovensko 135 p.

Breeding short-term trend: Coordinatory group for reporting 2019, AVES-Symfony Database 2013-2018, KIMS Database 2013-2018.

Breeding long-term trend: Coordinatory group for reporting 2019, AVES-Symfony Database 2013-2018, KIMS Database 2013-2018.

Slovenia: P. c. sinensis

Winter population size: Božič L. (2013): Rezultati januarskega štetja vodnih ptic leta 2013 v Sloveniji. – Acrocephalus 34 (156/157): 93–103. Božič L. (2014): Rezultati januarskega štetja vodnih ptic leta 2014 v Sloveniji. – Acrocephalus 35 (160/161): 73–83. Božič L. (2015): Rezultati januarskega štetja vodnih ptic leta 2015 v Sloveniji. – Acrocephalus 36 (164/165): 57–67. Božič L. (2016): Rezultati januarskega štetja vodnih ptic leta 2016 v Sloveniji. – Acrocephalus 37 (170/171): 209–219. Božič L. (2017): Rezultati januarskega štetja vodnih ptic leta 2017 v Sloveniji. – Acrocephalus 38 (174/175): 203–215. Božič L. (2018): Rezultati januarskega štetja vodnih ptic leta 2018 v Sloveniji. – Acrocephalus 39 (178/179): xx–xx.

Winter short-term trend: Božič L. (2007): Rezultati januarskega štetja vodnih ptic leta 2007 v Sloveniji. – Acrocephalus 28 (132): 23–31. Božič L. (2008a): Rezultati januarskega štetja vodnih ptic leta 2008 v Sloveniji. – Acrocephalus 29 (136): 39–49. Božič L. (2008b): Rezultati januarskega štetja vodnih ptic leta 2009 v Sloveniji. – Acrocephalus 29 (138/139): 169–179. Božič L. (2010): Rezultati januarskega štetja vodnih ptic leta 2010 v Sloveniji. – Acrocephalus 31 (145/146): 131–141. Božič L. (2011): Rezultati januarskega štetja vodnih ptic leta 2011 v Sloveniji. – Acrocephalus 32 (148/149): 67–77. Božič L. (2012): Rezultati januarskega štetja vodnih ptic leta 2012 v Sloveniji. – Acrocephalus 33 (152/153): 109–119. Božič, L. (2008): Monitoring populacij izbranih vrst ptic – Zimsko štetje vodnih ptic 2002–2008. Končno poročilo. – DOPPS, Maribor. Rubinić, B. & Božič, L. (2009): Monitoring populacij izbranih vrst ptic. Rezultati zimskega štetja vodnih ptic 2009, rezultati popisov preleta uped v jesenski sezoni 2008. 2. vmesno poročilo. – DOPPS, Ljubljana. Božič, L. (2010): Monitoring populacij izbranih ciljnih vrst ptic – Zimsko štetje vodnih ptic. Poročilo. – DOPPS, Ljubljana. Božič, L. (2011): Monitoring populacij izbranih ciljnih vrst ptic – Zimsko štetje vodnih ptic. Poročilo. – DOPPS, Ljubljana.

Winter long-term trend: Birdlife International (2004): Birds in Europe: population estimates, trends and conservation status. BirdLife Conservation Series No. 12. – Birdlife International, Cambrige. Sovinc, A. (1994): Zimski ornitološki atlas Slovenije. – Tehniška založba Slovenije, Ljubljana.

Spain: P. c. carbo

Winter population size: Información procedente de las Comunidades Autónomas. Molina, B. (2013). El cormorán grande en España. Población reproductora e invernante en 2012- 2013 y método de censo. SEO/BirdLife. Madrid. (https://doi.org/10.31170/0047)

Winter short-term trend: Del Moral, J.C. & De Souza, J.A. (2004). Cormorán Grande Invernante en España. II Censo Nacional. SEO/BirdLife. Madrid. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/1_cormoran_grande_2003_tcm30-208244.pdf) Información procedente de las Comunidades Autónomas. Molina, B. (2013). El cormorán grande en España. Población reproductora e invernante en 2012- 2013 y método de censo. SEO/BirdLife. Madrid. (https://doi.org/10.31170/0047) SEO/BirdLife (2012). Atlas de las aves en invierno en España 2007-2010. Ministerio de Agricultura, Alimentación y Medio Ambiente-SEO/ BirdLife. Madrid. 817 pp. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/atlas_aves_invierno_tcm30-198034.pdf)

Winter long-term trend: Del Moral, J.C. & De Souza, J.A. (2004). Cormorán Grande Invernante en España. II Censo Nacional. SEO/BirdLife. Madrid. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/1_cormoran_grande_2003_tcm30-208244.pdf) Molina, B. (2013). El cormorán grande en España. Población reproductora e invernante en 2012- 2013 y método de censo. SEO/BirdLife. Madrid. (https://doi.org/10.31170/0047) SEO/BirdLife (2012). Atlas de las aves en invierno en España 2007-2010. Ministerio de Agricultura, Alimentación y Medio Ambiente-SEO/ BirdLife. Madrid. 817 pp. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/atlas_aves_invierno_tcm30-198034.pdf)

Spain: P. c. sinensis

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Spain: sinensis

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Phalacrocorax carbo (Great Cormorant)

Spain: sinensis

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Sweden: P. c. sinensis

Winter population size: Nilsson, L. & Haas, F. 2016. Distribution and numbers of wintering waterbirds in Sweden in 2015 and changes during the last fifty years. Ornis Svecica 26: 3-60. Haas, F. & Nilsson, L. 2018. International counts of staging and wintering waterbirds and geese in Sweden. Annual report for 2017/2018. Lund University.

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Sweden: sinensis

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Winter long-term trend: Strebel, N. (2019): Überwinternde Wasservögel in der Schweiz: Ergebnisse der Wasservogelzählungen 2018/2019. Schweizerische Vogelwarte, Sempach./Strebel, N. (2019): Monitoring hivernal des oiseaux d'eau en Suisse: Résultats des recensements des oiseaux d'eau 2018/2019. Station ornithologique suisse, Sempach.

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Winter long-term trend: Midwinter bird counts 1980-2019 and Historical Records come from OSME and other midwinter counts

Ukraine

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Ukraine: P. c. sinensis

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Ukraine: P. c. sinensis

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United Kingdom: P. c. carbo

Winter population size: Derived from breeding multiplied the number of breeding adults (i.e. 1,559 x 2) by 0.46 to estimate the number of non-breeding 1st and 2nd year birds and then adding one chick per breeding pair as an estimate of the number of chicks still surviving at the end of the breeding season

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United Kingdom: P. c. sinensis

Winter population size: Derived from breeding multiplied the number of breeding adults (i.e. 1,559 x 2) by 0.46 to estimate the number of non-breeding 1st and 2nd year birds and then adding one chick per breeding pair as an estimate of the number of chicks still surviving at the end of the breeding season

Winter short-term trend: Frost, T.M., Austin, G.E., Calbrade, N.A., Mellan, H.J., Hearn, R.D., Stroud, D.A., Wotton, S.R. & Balmer, D.E. (2018). Waterbirds in the UK 2016/17: The Wetland Bird Survey. BTO, RSPB and JNCC, in association with WWT. British Trust for Ornithology, Thetford. 40 pp.

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United Kingdom: carbo

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Breeding long-term trend: JNCC 2016. Seabird Monitoring Programme data (http://www.jncc.defra.gov.uk/page-3201). Joint Nature Conservation Committee.

United Kingdom: sinensis

Breeding population size: Newson in litt.

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