Gulosus aristotelis (European Shag)

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	10–24	<1	2007-2018	partial	+	60 to 100	2007-2018	partial	+	0 to 20	1980-2018	expert	desmarestii
Bulgaria	170–250	<1	2013-2018	partial	F		2000-2018	complete	+	560 to 1000	1980-2018	partial	desmarestii
Croatia	1600–2000	2	2010-2015	partial	0		2007-2018	expert	?		1980-2018	deficient	desmarestii
Cyprus	20–60	<1	2013-2018	partial	0	0	2007-2018	partial	-	-30 to -10	1980-2018	expert	desmarestii
DK: Faroe Is	1500	2	2002	expert	?				?				
France	7300–7500	10	2016-2018	complete	+	3 to 4	2006-2018	complete	+		1978-2018	complete	aristotelis
France	800–1200	1	2009-2018	partial	?		2007-2018	deficient	F	-50 to 25	1981-2017	partial	desmarestii
Gibraltar	6–10	<1	2014-2018	partial	0	6 to 10	2001-2018	partial	0	0	1980-2018	partial	desmarestii
Greece	1300–1500	2	2013-2018	complete	0		2007-2018	partial	?		1980-2018	deficient	desmarestii
Iceland	3700–3800	5	2018	complete	-		2007-2018	complete	-		1975/84-201	complete	
Rep. Ireland	4900–5000	6	2015-2018	complete	+		2002-2018	complete	0		1987-2018	complete	aristotelis
Italy	1500–2100	2	2013-2018	expert	?		2007-2018	deficient	0		1993-2018	expert	desmarestii
Norway	28000	37	2013-2018	partial	0		2013-2018	complete	0		1980-2018	partial	
Portugal	100–150	<1	2013-2018	partial	?		2007-2018	deficient	?		1980-2018	deficient	aristotelis
Russia	900–1100	1	2008-2018	partial	0		2008-2018	expert	+	0	1980-2018	partial	G. a. aristotelis
Russia	5–15	<1	2008-2018	complete	-	-1	2004-2016	complete	-	-1	1980-2018	complete	G. a. desmarestii
Spain	2000–2100	3	2006-2007	expert	?		2007-2013	deficient	?		1980-2018	deficient	desmarestii
Spain	1600–1700	2	2017	complete	-		2007-2018	complete	+		1981-2018	complete	aristotelis
Sweden	150–200	<1	2013-2018	complete	+	15000 to 20000	2007-2018	partial	+	15000 to 20000	1980-2018	complete	aristotelis
Turkey	880–1200	1	2002-2012	partial	?		2008-2019	deficient	?		1980-2013	deficient	
Ukraine	800–1000	1	2014-2017	complete	-	-20 to -10	2007-2018	partial	-	-30 to -10	1980-2018	partial	G. a. desmarestii
United Kingdom	13600–20800	23	2015	partial	-	-52 to -29	2004-2015	complete	-	-59 to -33	1986-2015	complete	aristotelis
EU28	35400–44400	52											
Europe	**71200–81000**	**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	0–1	<1	2007-2018	complete	0	0	2007-2018	complete	0	0	1980-2018	complete	
Iceland		78	2018	partial	+		2002-2014	partial	+		1980-2014	partial	
Slovenia	50–170	<1	2013-2018	complete	-		2007-2018	complete	+		1980-2018	expert	
Spain	1300–2600	8	2013-2016	partial	0		2008-2016	partial	?		1980-2018	deficient	
Spain	700–760	3	2013-2018	expert	?		2007-2018	deficient	?		1980-2018	deficient	
Sweden	200–1200	3	2013-2018	partial	+	80 to 120	2007-2018	partial	+		1980-2018	partial	
Ukraine	1200–2500	7	2014-2017	partial	?		2007-2018	partial	?		1980-2018	partial	
EU28	2300–4800	15											
Europe	**3500–7300**	**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.

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

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

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.

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

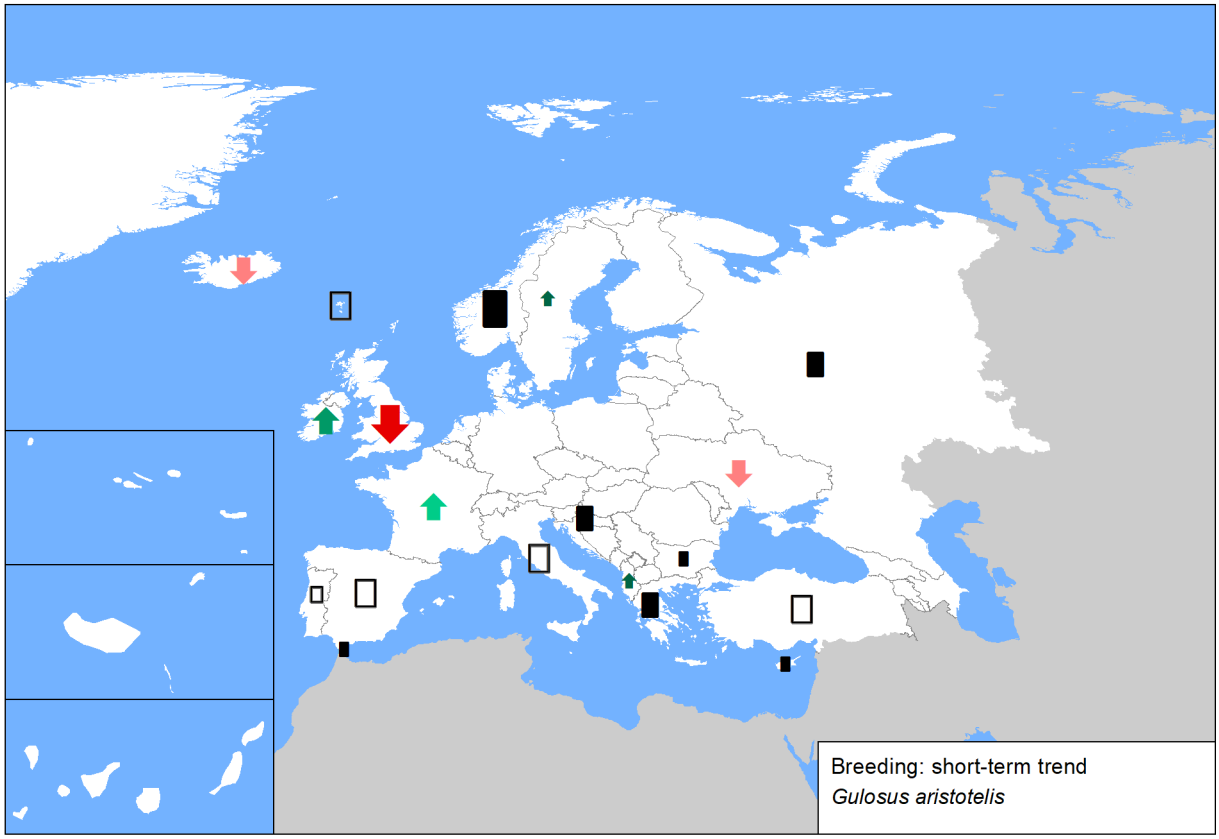


Figure 2. Breeding population sizes and long-term trends across Europe.

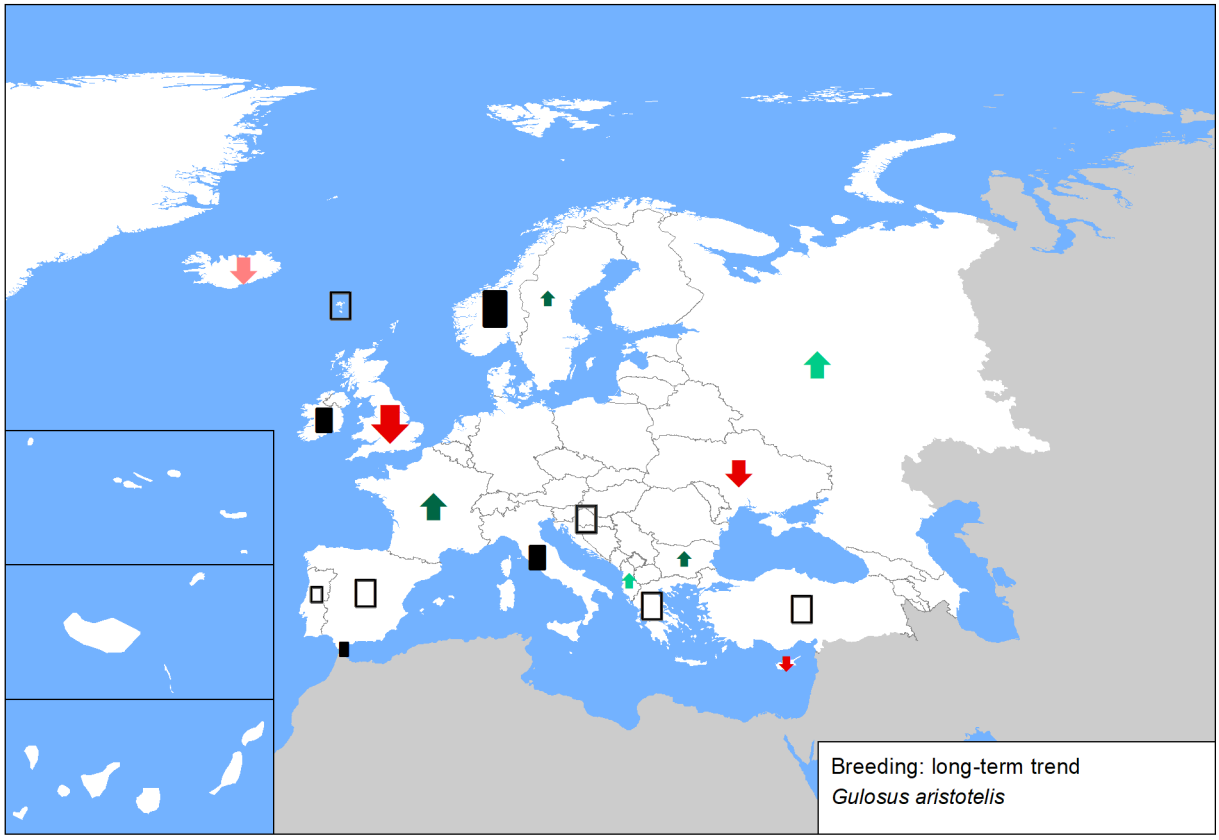


Figure 3. Reported wintering population sizes and short-term trends across Europe. Note that some countries within the species' wintering range did not report any data.

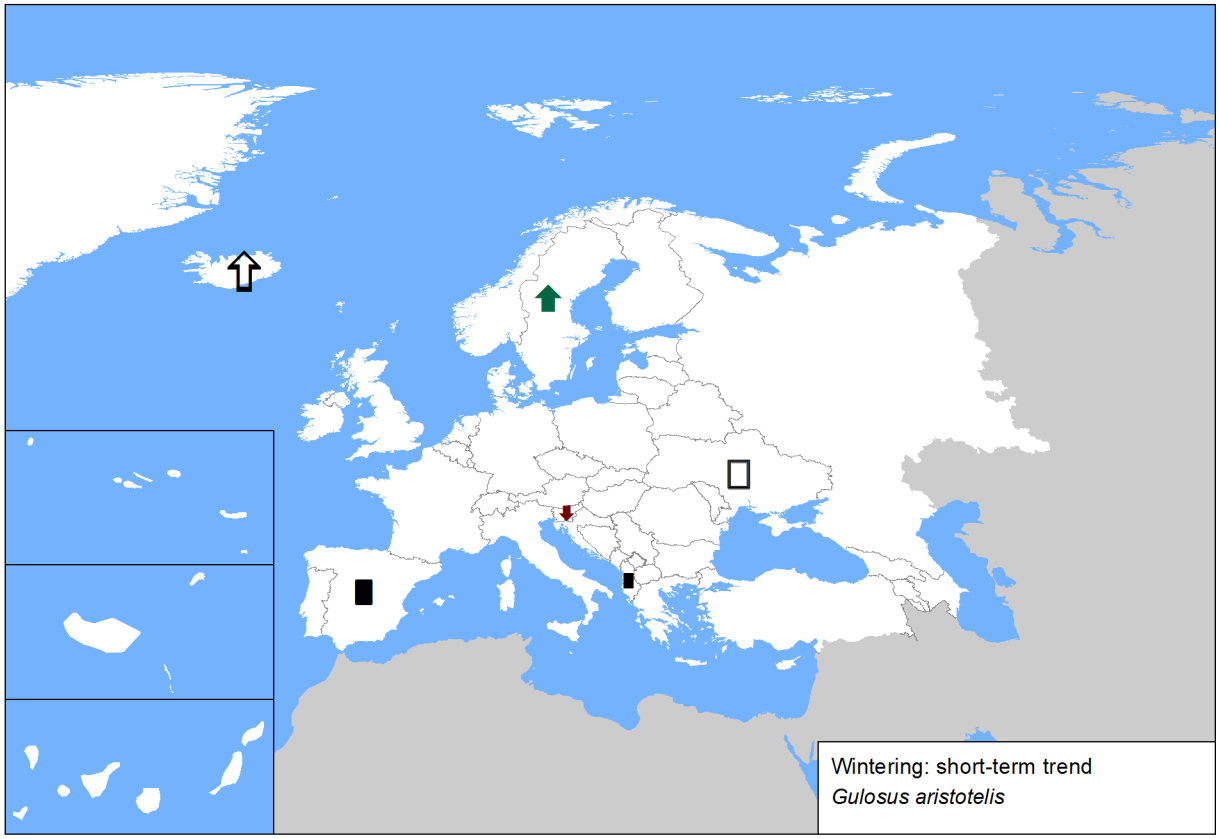
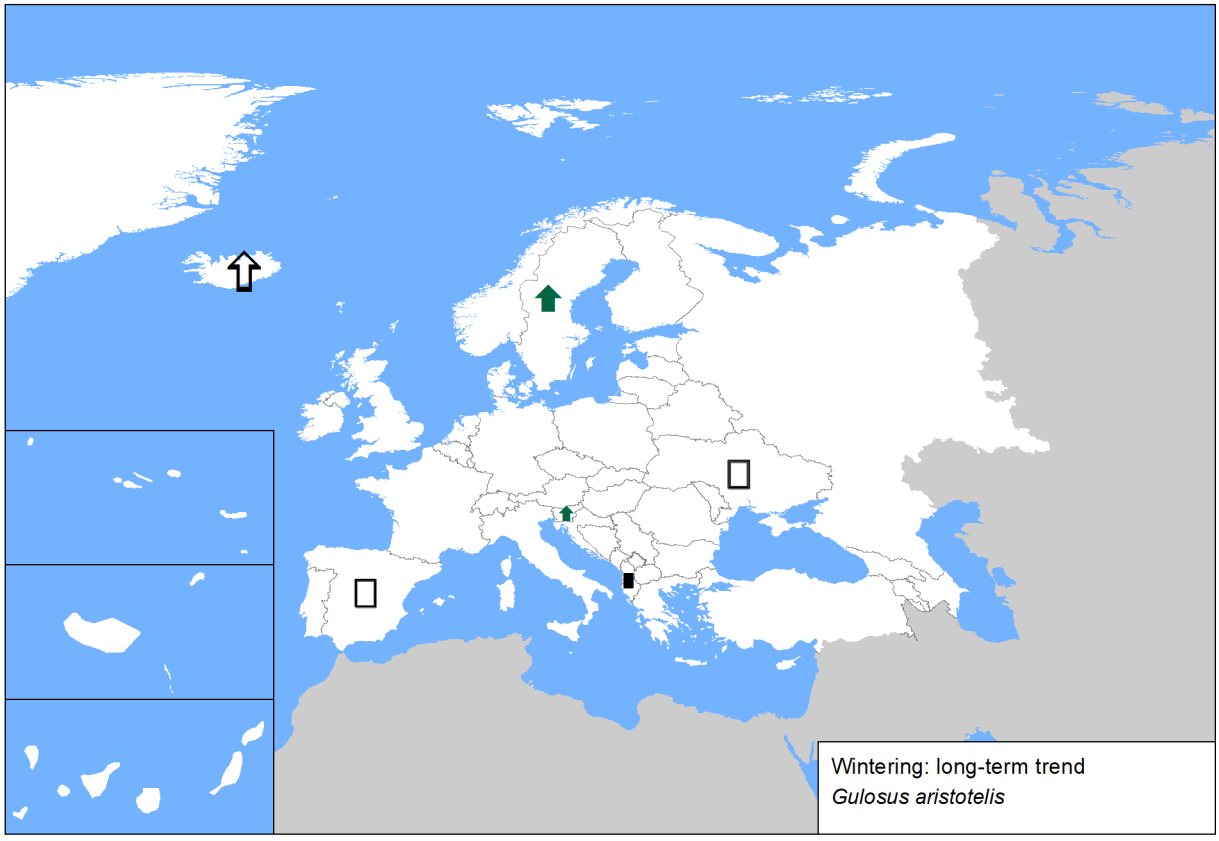


Figure 4. Reported wintering population sizes and long-term trends across Europe. Note that some countries within the species' wintering range did not report any data.



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Winter long-term trend: Bino et al. 2018

Albania: desmarestii

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Bulgaria: desmarestii

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Cyprus: desmarestii

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Gulosus aristotelis (European Shag)

France: desmarestii

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Greece: desmarestii

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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) Fric, J., Portolou, D., Manolopoulos, A. and T. Kastritis (2012). Important Areas for Seabirds in Greece. LIFE07 NAT/GR/000285 - Hellenic Ornithological Society (HOS / BirdLife Greece), Athens. 6) 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 long-term trend: Insufficient data

Iceland

Breeding population size: Arnþór Garðarsson og Ævar Petersen 2009. Íslenski toppskarfsstofninn. Bliki 30: 9–26; Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Breeding short-term trend: Arnþór Garðarsson og Ævar Petersen 2009. Íslenski toppskarfsstofninn. Bliki 30: 9–26; Guðmundur A. Guðmundsson 2018. Skarfatal 2018. Framvinduskýrsla. Náttúrufræðistofnun Íslands, 3 bls.

Breeding long-term trend: Arnþór Garðarsson og Ævar Petersen 2009. Íslenski toppskarfsstofninn. Bliki 30: 9–26; 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: aristotelis

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.

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Italy: desmarestii

Breeding population size: BirdLife International 2017. European birds of conservation concern: populations, trends and national responsibilities. Cambridge, UK: BirdLife International.

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.

Norway

Breeding population size: Anker-Nilssen, T., Barrett, R.T., Lorentsen, S.-H., Bustnes, J.O., Christensen-Dalsgaard, S., Deschamps, S., Erikstad, K.E., Fauchald, P., Hanssen, S.A., Lorenzen, E., Moe, B., Reiertsen, T.K. & Systad, G.H. 2015. SEAPOP. De ti første årene. Nøkkeldokument 2005-2014. SEAPOP, Norsk institutt for natrforskning, Norsk Polarinstitutt & Tromsø Museum - Universitetsmuseet. Trondheim & Tromsø. 58 pp.

Breeding short-term trend: Toppskarv Gulosus aristotelis, unpublished factsheet BirdLife Norway

Breeding long-term trend: Shimmings P. & Øien, I.J. 2015. Bestandsestimater og trender for norske hekkefugler. NOF-rapport 2015-2.

Portugal: aristotelis

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).

Russia: G. a. aristotelis

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

Breeding short-term trend: Ivanenko 2013; Voltzit & Kalyakin 2013-2019; Database of the project on Atlas of breeding birds of European Russia

Breeding long-term trend: Krasnov et al. 1995; 2006; Ivanenko 2013

Russia: G. a. desmarestii

Breeding population size: Lokhman 2017

Breeding short-term trend: Beskaravainiy 2008; Lokhman 2017

Breeding long-term trend: Lokhman & Mosalov 2014; Lokhman 2017

Slovenia: G. a. desmarestii

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. Koce U. & Lipej B. (2016): Varstvo sredozemskega vranjeka in drugih morskih ptic v slovenskem morju. Priročnik za uporabnike in upravljavce morskega prostora. – DOPPS, Ljubljana.

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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: G. a. aristotelis

Winter population size: Censos Xunta de Galicia y Consejería de Medio Ambiente del Principado de Asturias

Winter short-term trend: Censos Xunta de Galicia y Consejería de Medio Ambiente del Principado de Asturias 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: No hay información sobre la tendencia a largo plazo.

Spain: G. a. desmarestii

Winter population size: Generalitat de Catalunya

Winter short-term trend: 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: 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: aristotelis

Breeding population size: MARDEAVES (2016). Seguimento do número de parellas reprodutoras de Corvo mariño cristado (Phalacrocorax aristotelis) nas illas do Parque Nacional dende 1976 (https://mardeaves.org/portfolio/seguimento-da-poboacion-de-corvo-marino-cristado/) Munilla, I. (2017). Seguimiento y evaluación de las poblaciones reproductoras de cormorán moñudo (Phalacrocorax aristotelis), pardela cenicienta (Calonectris diomedea), arao común (Uria aalge) y gaviota tridáctila (Rissa tridactyla). Dirección Xeral de Patrimonio Natural, Consellería de Medio Ambiente e Ordenación do Territorio. Informe no publicado. 65 pp. Munilla, I. & Velando, A. (2008). Propuesta técnica del Plan integral de recuperación y conservación de las aves nidificantes en cantiles costeros: Uria aalge, Phalacrocorax aristotelis, Rissa tridactyla. Dirección Xeral de Conservación da Natureza, Consellería de Medio Ambiente e Desenvolvemento Sostible. Informe no publicado. 141 pp. Peón, P., Sánchez-Corominas, T. & Váquez, V.M. (en preparación). El Cormorán moñudo en Asturias. En: El Cormorán moñudo en España (2008-2017). Monografía SEO/BirdLife. SEO/BirdLe, (2019). Censo reproductor de cormorán moñudo en España, 2017. SEO/BirdLife, Madrid. (in prep). SIGMA S.L. (2017). Seguimiento y evaluación del estado de conservación del Cormorán moñudo en Asturias. Año 2017. Informe elaborado para el Principado de Asturias.

Breeding short-term trend: Álvarez, D. & Velando, A. (2007). El cormorán moñudo en España. Población en 2006-2007 y método de censo. SEO/BirdLife. Madrid. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/15_cormoran_monudo_2006_tcm30-208111.pdf) Munilla, I. (2017). Seguimiento y evaluación de las poblaciones reproductoras de cormorán moñudo (Phalacrocorax aristotelis), pardela cenicienta (Calonectris diomedea), arao común (Uria aalge) y gaviota tridáctila (Rissa tridactyla). Dirección Xeral de Patrimonio Natural, Consellería de Medio Ambiente e Ordenación do Territorio. Informe no publicado. 65 pp. Munilla, I. & Velando, A. (2008). Propuesta técnica del Plan integral de recuperación y conservación de las aves nidificantes en cantiles costeros: Uria aalge, Phalacrocorax aristotelis, Rissa tridactyla. Dirección Xeral de Conservación da Natureza, Consellería de Medio Ambiente e Desenvolvemento Sostible. Informe no publicado. 141 pp. Peón, P., Sánchez-Corominas, T. & Váquez, V. M. (en preparación). El Cormorán moñudo en Asturias. En: El Cormorán moñudo en España (2008-2017). Monografía SEO/BirdLife. SIGMA S.L. (2017). Seguimiento y evaluación del estado de conservación del Cormorán moñudo en Asturias. Año 2017. Informe elaborado para el Principado de Asturias. Seguimento do número de parellas reprodutoras de Corvo mariño cristado (Phalacrocorax aristotelis) nas illas do Parque Nacional dende 1976. (https://mardeaves.org/portfolio/seguimento-da-poboacion-de-corvo-marino-cristado/) SEO/BirdLife. (2019). Censo reproductor de cormorán moñudo en España, 2017. SEO/BirdLife, Madrid. (in prep).

Breeding long-term trend: Álvarez, D. & Velando, A. (2007). El cormorán moñudo en España. Población en 2006-2007 y método de censo. SEO/BirdLife. Madrid. (https://www.miteco.gob.es/es/biodiversidad/temas/inventarios-nacionales/15_cormoran_monudo_2006_tcm30-208111.pdf) Munilla, I. (2017). Seguimiento y evaluación de las poblaciones reproductoras de cormorán moñudo (Phalacrocorax aristotelis), pardela cenicienta (Calonectris diomedea), arao común (Uria aalge) y gaviota tridáctila (Rissa tridactyla). Dirección Xeral de Patrimonio Natural, Consellería de Medio Ambiente e Ordenación do Territorio. Informe no publicado. 65 pp. Munilla, I. & Velando, A. (2008). Propuesta técnica del Plan integral de recuperación y conservación de las aves nidificantes en cantiles costeros: Uria aalge, Phalacrocorax aristotelis, Rissa tridactyla. Dirección Xeral de Conservación da Natureza, Consellería de Medio Ambiente e Desenvolvemento Sostible. Informe no publicado. 141 pp. Peón, P., Sánchez-Corominas, T. & Váquez, V. M. (en preparación). El Cormorán moñudo en Asturias. En: El Cormorán moñudo en España (2008-2017). Monografía SEO/BirdLife. SIGMA S.L. (2017). Seguimiento y evaluación del estado de conservación del Cormorán moñudo en Asturias. Año 2017. Informe elaborado para el Principado de Asturias. Seguimento do número de parellas reprodutoras de Corvo mariño cristado (Phalacrocorax aristotelis) nas illas do Parque Nacional dende 1976 (https://mardeaves.org/portfolio/seguimento-da-poboacion-de-corvo-marino-cristado/) SEO/BirdLife. (2019). Censo reproductor de cormorán moñudo en España, 2017. SEO/BirdLife, Madrid. (in prep).

Spain: desmarestii

Breeding population size: Álvarez, D. & Velando, A. (2007). El cormorán moñudo en España. Población en 2006-2007 y método de censo. SEO/BirdLife. Madrid. SEO/BirdLife. (2019). Actualización de la evaluación inicial y buen estado ambiental para el grupo Aves, y propuesta de revisión de objetivos ambientales. Estrategias Marinas de España.

Breeding short-term trend: Álvarez, D. & Velando, A. (2007). El cormorán moñudo en España. Población en 2006-2007 y método de censo. SEO/BirdLife. Madrid. SEO/BirdLife. (2019). Actualización de la evaluación inicial y buen estado ambiental para el grupo Aves, y propuesta de revisión de objetivos ambientales. Estrategias Marinas de España.

Breeding long-term trend: Álvarez, D. & Velando, A. (2007). El cormorán moñudo en España. Población en 2006-2007 y método de censo. SEO/BirdLife. Madrid. SEO/BirdLife. (2019). Actualización de la evaluación inicial y buen estado ambiental para el grupo Aves, y propuesta de revisión de objetivos ambientales. Estrategias Marinas de España.

Sweden: G. a. aristotelis

Winter population size: Artportalen, Species Observation System www.artportalen.se

Winter short-term trend: rtportalen, Species Observation System www.artportalen.se

Winter long-term trend: Fågelåret, BirdLife Sweden yearly reports

Sweden: aristotelis

Breeding population size: Ottosson, U., Ottvall, R., Elmberg, J., Green, M., Gustafsson, R., Haas, F., Holmqvist, N., Lindström, Å., Nilsson, L., Svensson, M., Svensson, S. & Tjernberg, M. 2012. Fåglarna i Sverige – antal och förekomst. SOF, Halmstad. Swedish Bird Survey. BirdLife Sverige, Annual Bird reports.

Breeding short-term trend: Species observation system, www.artportalen.se

Breeding long-term trend: BirdLife Sverige annual reports

Turkey

Breeding population size: Hayri Dagli, Maria Perez personal communication (2019), Black Seabirds Project unpublished data, Doğa Derneği, Akarsu F. 2014.Identification of terresterrial and marine bird fauna in Seferihisar district, in Ozkirli B. Seferihisar Natural Heritage Project Report, Doga Dernegi, İzmir pg: 723-726, Eken G., Bozdoğan M., İsfendiyaroğlu S., Kılıç D.T., Lise Y. (2006) Türkiye'nin Önemli Doğa Alanları. Doğa Derneği, Ankara.

Ukraine: G. a. desmarestii

Breeding population size: 1. Бескаравайный М.М. (2015): Баклан хохлатый средиземноморский. - Красная книга Республики Крым. Животные. Симферополь: ООО «ИТ «АРИАЛ». 301. 2. Кучеренко В.М., Прокопенко С.П., Жеребцова Т.А., Жеребцов Д.Ю. (2017): Нові дані по рідкісних птахах Криму. - Беркут. 26 (1): 1-4. 3. Atlas work, non-published data.

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Ukraine: G. a. desmarestii

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United Kingdom: aristotelis

Breeding population size: JNCC Seabird Monitoring Programme. The UK population estimates were derived from a method first used in APEP3: Musgrove, A.J., Aebischer, N.J., Eaton, M.A., Hearn, R.D., Newson, S.E., Noble, D.G., Parsons, M., Risely, K. & Stroud, D.A. 2013. Population estimates of birds in Great Britain and the United Kingdom. British Birds 106: 64-100. Population estimates were calculated using the long-term Thomas trend index from the year 1986 - 2015 (using counts from a sample of colonies monitored by the UK Seabird Monitoring Programme), anchored to the last census count, Seabird 2000. To test the robustness of the Thomas trend an estimation the Seabird 2000 population was produced using the trend index between 1986-2000 and anchored to the 1986 (SCR) census population for the species. If this estimate had a variance of 30% (or over) from the actual Seabird 2000 population, the method was not used (and an alternative is given, such as the Seabird 2000 census). Thomas trend methodology can be found here http://jncc.defra.gov.uk/page-3201

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

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