

INTERNATIONAL WATERBIRD CENSUS

MEDITERRANEAN SUMMARY
REPORT FOR 13 COUNTRIES

2019 · 2023



Mediterranean Waterbirds
Oiseaux d'eau Méditerranée
الطيور المائية بمنطقة البحر المتوسط

THE MEDITERRANEAN WATERBIRDS NETWORK

The Mediterranean Waterbirds Network (MWN) supports and coordinates waterbird counts throughout the Mediterranean Basin. Created in 2012 within the AEWA African Initiative, it initially developed with five North African countries (Morocco, Algeria, Tunisia, Libya, and Egypt) in partnership with the Tour du Valat and the FBA. Since 2017, the network has expanded to other Mediterranean countries to promote exchanges and collaboration.

ITS OBJECTIVES ARE TO:

- **improve the quality and quantity of data** through training, tools, equipment, and funding;
- **exploit data collected** by publishing scientific and popular articles;
- **collaborate with other regional and international initiatives** for the conservation of wetlands and waterbirds.

ACKNOWLEDGEMENTS

This summary report, based on waterbird census data between 2019 and 2023, was made possible thanks to contributions from the coordinating bodies for international censuses in the various participating countries, listed below in alphabetical order. For the same period, these countries also produced updates to technical reports or, in some cases, their first such report. These documents are available online at: www.medwaterbirds.net

- **ALBANIA:** Albanian Ornithological Society (AOS)
- **ALGERIA:** Direction Générale des Forêts (DGF)
- **FRANCE:** Ligue pour la Protection des Oiseaux (LPO)
- **GREECE:** Hellenic Ornithological Society (HOS)
- **LIBYA:** Libyan Society for Birds (LSB)
- **NORTH MACEDONIA:** Macedonian Ecological Society (MES)
- **MOROCCO:** Groupement de Recherche pour les Oiseaux au Maroc (GREPOM)
- **MONTENEGRO:** Natural History Museum of Montenegro (NHMM)
- **PORTUGAL:** Instituto da Conservação da Natureza e das Florestas (ICNF)
- **SERBIA:** Birds Protection Serbian Scientific Society (BPSSS)
- **SPAIN:** Sociedad Española de Ornitología (SEO BirdLife)
- **TUNISIA:** Association des Amis des Oiseaux/ BirdLife en Tunisie (AAO/Birdlife en Tunisie)
- **TURKEY:** Ornithological Research Center (ORC)


 *The first chapter was drafted using data provided by two countries that were unable to produce their 2019–2023 technical reports. We would like to thank the coordinating bodies in these two countries for their valuable cooperation:*

- **EGYPT:** Egyptian Environmental Affairs Agency, Nature Conservation Sector (EEAA) -data from 2009 to 2018.
- **ITALY:** Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) – data up to 2023 for the sites available.



General report
(2009–2018)

Bibliographic reference: Dami L., Lago M., Baddour K., Vittecoq M. N. Galewski T. 2025.
International Waterbird census - Mediterranean Summary Report for 13 countries (2019–2023)

Cover image: Cattle Egrets roosting on a tree in the Camargue © A. Chen / **Photo p.2:** © J. Jalbert / **Cartography:** Marta Lago, Khalil Baddour
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NUMBER OF PARTICIPANTS IN INTERNATIONAL WATERBIRD CENSUSES IN THE 15 COUNTRIES ACTIVE IN THE NETWORK



MORE THAN
10,500
VOLUNTEERS
COUNTERS

NUMBER OF WETLANDS WITH REGULAR COUNTS (AT LEAST 7 TIMES) BETWEEN 2009 AND 2023

2,972



WETLANDS
COUNTED



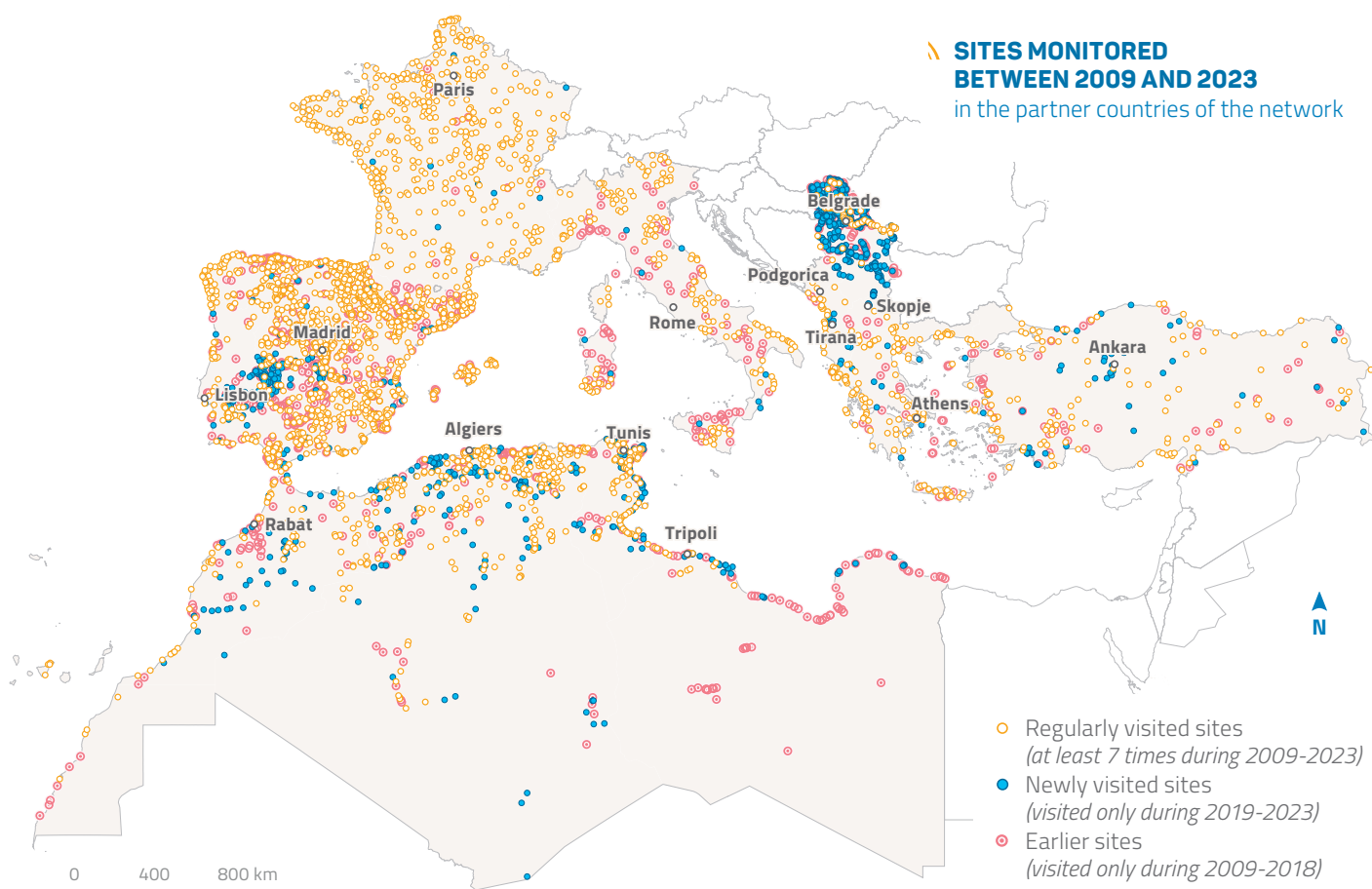
1,435 NEW WETLANDS
WITH REGULAR
BIRD COUNTS
AS OF 2019 (UNTIL 2023)

AVERAGE NUMBER OF WATERBIRDS IN THE 15 COUNTRIES ON THE MAP

83

210

SPECIES
IDENTIFIED
BETWEEN
2019
& 2023



Sources: AOS, AAO/BirdLife Tunisie, BPSSS/BirdLife Serbia, DGF Algérie, GREPOM, HOS/BirdLife Greece, ICNF, ISPRA, LPO, LSB, MES, Natural History Museum of Montenegro, ORC, SEO/BirdLife Spain, Tour du Valat, OSM, HydroSHEDS, UN-FAO et EuroGeographics

The fifteen countries represented on the map participate actively in the Medwaterbirds network. They regularly exchange information on regional trends in waterbird populations, factors of change, the mobilization of participants, and the centralization, quality, and best use of the data collected. The map above illustrates the intensity and quality of the censuses carried out in these 15 countries between 2009 and 2023. Most of them were able to showcase their data in a national report, with the exception of Italy (where the report was not renewed this time for technical reasons) and Egypt (which did not have a national coordinator at the time of writing). This map highlights the growing regularity in wetland monitoring, which is a major asset for data analysis, as regular data collection allows for a more reliable assessment of species trends.

CHANGES IN DUCK POPULATIONS IN THE MEDITERRANEAN REGION



The tables below provide a summary of Anseriforme populations that have shown a change in trend since the last international analyses carried out by Wetlands International. They provide an extract of the species listed in the previous summary report, whose status has changed according to the updated results of CSR 9 (Conservation Status Report) for the AEWA (Agreement on the Conservation of African-Eurasian Migratory Waterbirds), currently being published on the website of Waterbird Population Estimates (<https://wpe.wetlands.org/explore>).



POPULATIONS DECLINING

English name	Scientific name	Population	Years of analyses	Trends on the previous MWN report*	IUCN Status **
ANSERIFORMES					
White-headed Duck	<i>Oxyura leucocephala</i>	Algeria & Tunisia	2014-2023	➡	EN
Tundra Swan	<i>Cygnus columbianus</i>	Bewickii, Western Siberia & NE Europe/North-west Europe	2014-2023	⬇️	LC
Bean Goose	<i>Anser fabalis</i>	rossicus, West & Central Siberia/NE & SW Europe	2014-2023	⬆️	LC
Common Eider	<i>Somateria mollissima</i>	Mollissima, Baltic, North & Celtic Seas	2014-2023	➡	NT
Common Goldeneye	<i>Bucephala clangula</i>	Clangula, SE Europe & Adriatic (nbr)	2014-2023	➡ ⬇️	LC
Goosander	<i>Mergus merganser</i>	Merganser, NW & C Europe (nbr)	2014-2023	➡ ⬇️	LC
Egyptian Goose	<i>Alopochen aegyptiaca</i>	Eastern & Southern Africa	2014-2023	⬇️	LC
Common Shelduck	<i>Tadorna tadorna</i>	Black Sea & Mediterranean	2014-2023	⬆️	LC
Marbled Teal	<i>Marmaronetta angustirostris</i>	West Mediterranean/West Medit. & West Africa	2014-2023	⬇️	NT
Red-crested Pochard	<i>Netta rufina</i>	South-west & Central Europe/West Mediterranean	2014-2023	⬆️	LC
Greater Scaup	<i>Aythya marila</i>	Marila, Western Siberia/Black Sea & Caspian	2013-2022	⬇️	LC
Northern Shoveler	<i>Spatula clypeata</i>	W Siberia, NE & E Europe/S Europe & West Africa	2014-2023	⬇️	LC
Northern Shoveler	<i>Spatula clypeata</i>	W Siberia/SW Asia, NE & Eastern Africa	2014-2023	➡	LC
Garganey	<i>Spatula querquedula</i>	Western Siberia & Europe/West Africa	2014-2023	➡	LC
Mallard	<i>Anas platyrhynchos</i>	Platyrhynchos, NW Europe	2014-2023	➡	LC
Mallard	<i>Anas platyrhynchos</i>	Platyrhynchos, Northern Europe/West Mediterranean	2014-2023	➡	LC
Northern Pintail	<i>Anas acuta</i>	Western Siberia/SW Asia & Eastern Africa	2014-2023	⬇️	LC
Common Teal	<i>Anas crecca</i>	Crecca, Western Siberia/SW Asia & NE Africa	2013-2022	➡	LC

* Based on the CSR7 / ** LC = Least concern; NT = Near threatened; VU = Vulnerable; EN = Endangered

Among the Anseriforme species listed in the previous report, eight populations show a recent decline after a period of stability or increase, while six others show a decline over a longer period. These populations are evenly distributed throughout the Mediterranean. The recent decline of the Algerian-Tunisian population of the White-headed Duck and the continued decline of the Marbled Teal are of concern as these species are classified as "Endangered" and "Near Threatened" on the IUCN Red List at the global level.

HIGHLIGHTS

Some populations are declining locally as a result of climate change-related displacement (Lehikoinen *et al.*, 2013; Pavón-Jordán *et al.*, 2019), while others are experiencing habitat loss and degradation due to climate and human activities. Key sites such as Lake Ichkeul (Tunisia) and the Nile Delta (Egypt) have lost much of their ecological attractiveness since the 1990s (Smart *et al.*, 2006). It is therefore urgent to strengthen the protection and restoration of

wetlands to ensure functional habitats for birds throughout their life cycle (Gaget *et al.*, 2021). In addition, hunting pressure in wintering areas and breeding sites further exacerbates these declines for certain migratory species (Brochet *et al.*, 2016). Better regulation of hunting and the development of adaptive harvest management plans are needed to complement habitat conservation measures and promote the recovery of declining Anatidae species.



POPULATIONS INCREASING

English name	Scientific name	Population	Years of analyses	Trends on the previous MWN report*	IUCN Status **
ANSERIFORMES					
White-headed Duck	<i>Oxyura leucocephala</i>	West Mediterranean (Spain & Morocco)	2014-2023	➡	EN
Mute Swan	<i>Cygnus olor</i>	North-west Mainland & Central Europe	2014-2023	↗	LC
Tundra Swan	<i>Cygnus columbianus</i>	Bewickii, Northern Siberia/Caspian	2014-2023	↘	LC
Whooper Swan	<i>Cygnus cygnus</i>	N Europe & W Siberia/Black Sea & E Mediterranean	2014-2023	↗	LC
Greylag Goose	<i>Anser anser</i>	Anser, Central Europe/North Africa	2014-2023	↗	LC
Common Scoter	<i>Melanitta nigra</i>	W Siberia & N-W Europe & NW Africa	2014-2023	↗	NT
Smew	<i>Mergellus albellus</i>	NW & C Europe	2014-2023	➡	LC
Red-breasted Merganser	<i>Mergus serrator</i>	NW & C Europe	2014-2023	➡ ↘	LC
Red-breasted Merganser	<i>Mergus serrator</i>	NE Europe/Black Sea & Mediterranean	2014-2023	↘	LC
Red-crested Pochard	<i>Netta rufina</i>	Black Sea & E Mediterranean	2013-2022	↗	LC
Common Pochard	<i>Aythya ferina</i>	Central & NE Europe/Black Sea & Mediterranean	2014-2023	↘	VU
Tufted Duck	<i>Aythya fuligula</i>	Central Europe, Black Sea & Mediterranean	2014-2023	↘	LC
Ferruginous Duck	<i>Aythya nyroca</i>	West Mediterranean/ North & West Africa	2014-2023	↗	NT
Ferruginous Duck	<i>Aythya nyroca</i>	Eastern Europe/E Mediterranean & Sahelian Africa	2013-2022	↗	NT
Northern Shoveler	<i>Spatula clypeata</i>	NW & Central Europe	2014-2023	↗	LC
Eurasian Wigeon	<i>Mareca penelope</i>	Western Siberia & NE Europe/NW Europe	2014-2023	↘	LC
Gadwall	<i>Mareca strepera</i>	Strepera, North-west Europe	2014-2023	↗	LC
Northern Pintail	<i>Anas acuta</i>	NW Europe	2014-2023	➡	LC
Common Teal	<i>Anas crecca</i>	Crecca, NW Europe	2014-2023	↗	LC

* Based on the CSR7 / ** LC = Least concern; NT = Near threatened; VU = Vulnerable; EN = Endangered

➤ **Nineteen populations of seventeen different species have increased recently, most of them in northwestern and central Europe.** Ten show a long-term positive trend, having already increased in CSR 7, while five have reversed their decline and are now increasing. The increase in the Spanish-Moroccan population of the White-headed Duck (EN), one of the populations of the Common Pochard (VU), and the Ferruginous Duck (NT) are noteworthy.

HIGHLIGHTS

The positive dynamics of several populations in north-western and northern Europe can be partly explained by the more effective implementation of conservation policies in these countries (EEA, 2020; Nagy *et al.*, 2012). Furthermore, these regions are less exposed to the cumulative effects of climate change and anthropogenic pressures than Mediterranean areas, and benefit from a denser network of functional and nutrient-rich wetlands, providing favorable conditions for the wintering of many waterbird species, particularly in the context of rising temperatures (Lehikoinen *et al.*, 2013; Pavón-Jordán *et al.*, 2019).



Ferruginous Duck (*Aythya nyroca*) in Camargue ©T. Galewski

CHANGES IN DUCK POPULATIONS IN THE MEDITERRANEAN REGION



STABLE POPULATIONS

English name	Scientific name	Population	Years of analyses	Trends on the previous MWN report*	IUCN Status **
ANSERIFORMES					
Mute Swan	<i>Cygnus olor</i>	Black Sea	2014-2023	→	LC
Greylag Goose	<i>Anser anser</i>	Anser, NW Europe/South-west Europe	2014-2023	↗	LC
Greylag Goose	<i>Anser anser</i>	Rubrirostris, Black Sea & Türkiye	2013-2022	→	LC
Greater White-fronted Goose	<i>Anser albifrons</i>	Albifrons, NW Siberia & NE Europe/North-west Europe	2014-2023	→	LC
Long-tailed Duck	<i>Clangula hyemalis</i>	Western Siberia/North Europe (bre)	2014-2023	↘	VU
Velvet Scoter	<i>Melanitta fusca</i>	Western Siberia & Northern Europe/NW Europe	2014-2023	↘	VU
Common Goldeneye	<i>Bucephala clangula</i>	Western Siberia & North-east Europe/Black Sea	2013-2022	↗	LC
Common Goldeneye	<i>Bucephala clangula</i>	North-west & Central Europe (win)	2014-2023	→	LC
Smew	<i>Mergellus albellus</i>	Black Sea & E Mediterranean (nbr)	2014-2023	↘	LC
Goosander	<i>Mergus merganser</i>	Merganser, NE Europe/Black Sea	2014-2023	→	LC
Ruddy Shelduck	<i>Tadorna ferruginea</i>	NW Africa	2013-2022	↗	LC
Ruddy Shelduck	<i>Tadorna ferruginea</i>	East Mediterranean & Black Sea/NE Africa	2013-2022	↗	LC
Common Shelduck	<i>Tadorna tadorna</i>	NW Europe (br)	2014-2023	→	LC
Common Pochard	<i>Aythya ferina</i>	NE Europe/NW Europe	2014-2023	↘	VU
Tufted Duck	<i>Aythya fuligula</i>	NW Europe (nbr)	2014-2023	↘	LC
Greater Scaup	<i>Aythya marila</i>	Marila, Northern Europe/Western Europe	2014-2023	↘	LC
Eurasian Wigeon	<i>Mareca penelope</i>	W Siberia & NE Europe/Black Sea & Mediterranean	2014-2023	↘	LC
Gadwall	<i>Mareca strepera</i>	Strepera, NE Europe/Black Sea & Mediterranean	2014-2023	→	LC
Mallard	<i>Anas platyrhynchos</i>	Platyrhynchos, Eastern Europe/Black Sea & East Mediterranean	2014-2023	→	LC
Northern Pintail	<i>Anas acuta</i>	W Siberia, NE & E Europe/S Europe & West Africa	2014-2023	→	LC
Common Teal	<i>Anas crecca</i>	Crecca, W Siberia & NE Europe/Black Sea & Mediterranean	2014-2023	↗	LC

* Based on the CSR7 / ** LC = Least concern; NT = Near threatened; VU = Vulnerable; EN = Endangered

Twenty-one populations of 18 species have remained stable in recent years, ten of which already showed this trend in CSR7. The populations of seven species that were previously declining (including three classified as “vulnerable” in the IUCN Red List) have recently stabilized. Conversely, five populations that were increasing in CSR7 appear to have reached a plateau.

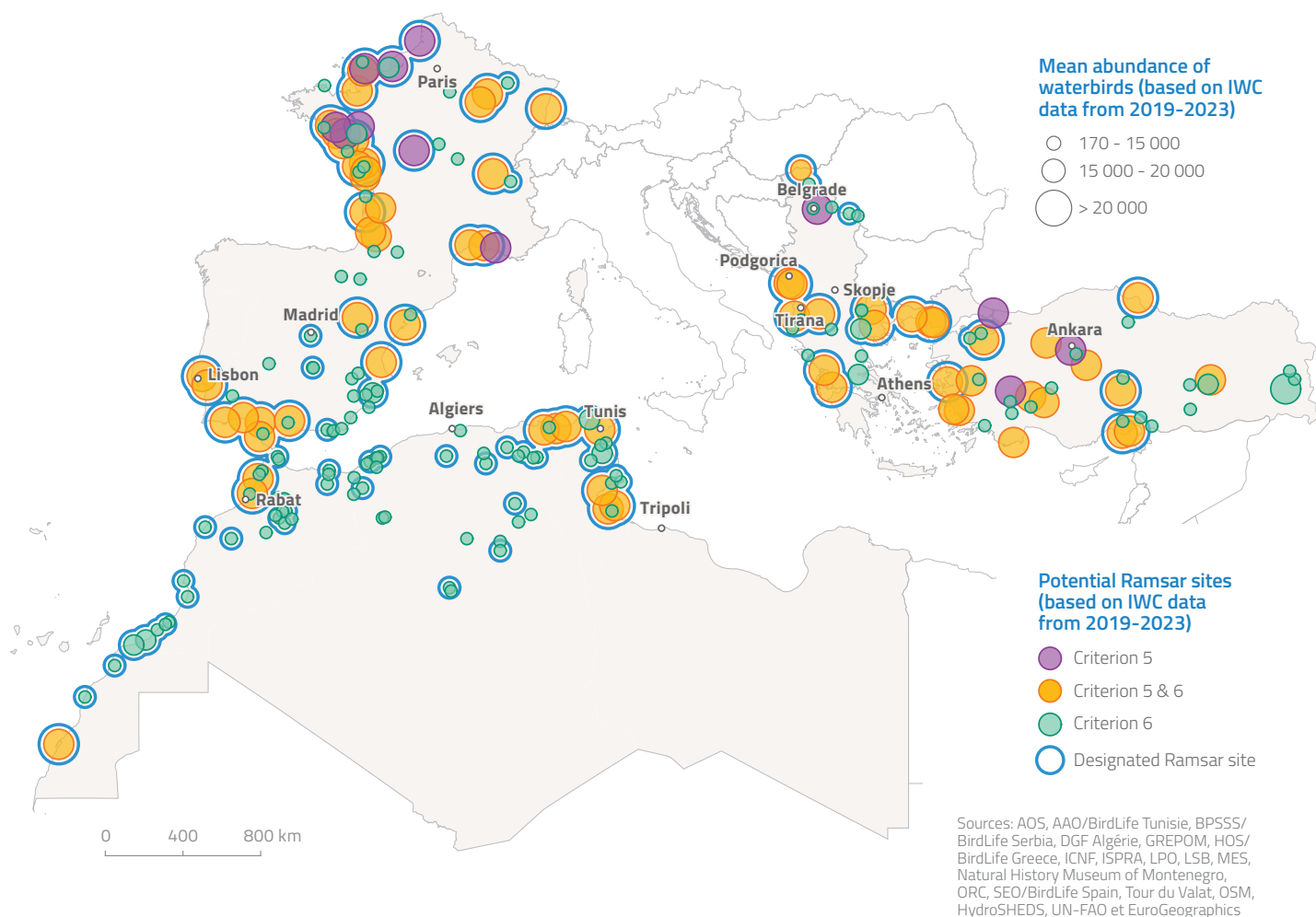


HIGHLIGHTS

Geographically, these species with stable trends are mainly found in the wetlands of western Europe, an area known for its rich and relatively well-protected habitats (Pavón-Jordán *et al.*, 2015). Among the species for which stabilization has been observed after a period of decline are three species of sea ducks (Long-tailed Duck, Velvet Scoter, and Greater Scaup), whose breeding conditions in Northern Europe have deteriorated since the 1990s (Keller V. *et al.*, 2020).

Ruddy Shelduck (*Tadorna ferruginea*)
©Helio-Van-Ingen

MORE THAN 200 WETLANDS MEET CRITERIA FOR INTERNATIONAL IMPORTANCE



🔍 The map shows the 222 sites that meet Ramsar criterion 5 or 6*, based on waterbird counts from 2019 to 2023, in the 13 countries that submitted country reports (colored on the map). Half of these sites (109) are already designated Ramsar sites, confirming their international importance. It should be noted that for the reports published this year, a stricter rule** has been applied to interpret the term "regularly" used for these criteria — in line with the interpretation that is expected to be adopted at the Ramsar COP in 2025.**

🔍 HIGHLIGHTS

The Ramsar Convention is the oldest international treaty for the conservation of wetlands and waterbirds and has led to the creation of the world's largest network of protected areas. However, its non-binding nature has raised questions about its effectiveness in protecting wintering waterbird populations at the international level. Recent studies (Gaget *et al.*, 2020) have nevertheless demonstrated that the designation of Ramsar sites can have a positive effect on waterbird population trends, particularly when action plans are implemented at these sites or in countries with limited protection instruments.

In addition, Ramsar sites, like other protected areas, can help waterbird populations adapt to global warming (Verniest *et al.*, 2023), particularly if conservation measures are implemented to protect their habitats (Jonas *et al.*, 2025).

Within the framework of the analyses conducted in the 13 countries covered by this report, nearly 220 wetlands meet the criteria for designation as sites of international importance, based on winter bird counts carried out between 2019 and 2023. Half of these sites are already RAMSAR sites, confirming their importance. For the remaining sites, winter counts could be used to justify their future designation. We therefore emphasize both the importance and the opportunity to strengthen the network of protected areas in each of these 13 countries, based on the "bird" criteria.



MORE THAN 200 WETLANDS MEET CRITERIA FOR INTERNATIONAL IMPORTANCE



- **Criterion 5:** A wetland should be considered internationally important if it regularly* supports 20,000 or more waterbirds.
- **Criterion 6:** A wetland should be considered internationally important if it regularly* supports 1% of the individuals in a population of one species or subspecies of waterbirds.

** To define the notion of “regularly,” we have applied the following rule (currently under review by COP15 RAMSAR, 2025): A wetland is considered to regularly support a population of waterbirds of a given size if either of the following conditions is met:

1. The average of the annual maxima recorded over a period of at least five years reaches or exceeds the required threshold; or
2. The required number of birds is recorded in at least two-thirds of the years for which adequate data are available, provided that data are available for at least three years in total.

COUNTRIES IN THE COUNTING NETWORK PARTICIPATING IN THE REPORT	Albania	Algeria	Spain	France	Greece	Morocco	Montenegro	Macedonia	Portugal	Serbia	Turkey	Tunisia
Number of sites meeting criterion 5 per country	2	3	7	28	6	3	1	1	3	2	19	4
Number of sites meeting criterion 6 per country	4	32	29	38	12	32	1	2	4	6	36	13
Number of species meeting criterion 6 per country	6	11	25	28	14	23	6	2	8	5	22	11
LIST OF SPECIES MEETING CRITERION 6												
Northern Pintail				6					1			1
Common Teal			1	3	2	1					3	
Mallard			1	2							1	
Greater White-fronted Goose									1			
Greylag Goose									2	1		
Lesser White-fronted Goose (VU)					1							
Ruddy Turnstone				5								
Common Pochard (VU)			1	8	2		1				6	
Tufted Duck				1								
Ferruginous Duck		1	3			6		1				
Brent Goose				12								
Cattle Egret		2	1	1		2					1	
Sanderling				1		3						
Dunlin			1	7	1							
Red Knot				5		1						
Little Stint			1			1						
Kentish Plover			3		1	3		1				2
Common Ringed Plover				2								
White Stork			1			1						
Black Stork			1									
Tundra Swan					2						2	
Whooper Swan											1	
Mute Swan				1							1	
Little Egret			2	1								
Common Coot	1				1		1				7	

COUNTRIES IN THE COUNTING NETWORK PARTICIPATING IN THE REPORT	Albania	Algeria	Spain	France	Greece	Morocco	Montenegro	Macedonia	Portugal	Serbia	Turkey	Tunisia
LIST OF SPECIES MEETING CRITERION 6												
Red-knobbed Coot						14						
Northern Bald Ibis (EN)						3						
Common Crane			4	8						2	3	
Black-winged Stilt		1	1									
Little Gull							1					
Armenian Gull											12	
Audouin's Gull (VU)						9						
Lesser Black-backed Gull			1									
Great Black-backed Gull				1								
Mediterranean Gull			2	1								1
Bar-tailed Godwit				1		1						
Black-tailed Godwit				7		1						
Eurasian Wigeon	1	3		1	3						1	2
Gadwall		1	1	5							1	
Marbled Teal		7	1			6						1
Common Scoter						1						
Smew										2	1	
Pygmy Cormorant							1			1	1	
Red-crested Pochard			5	2		1					3	
White-headed Duck (EN)		9	15		1	5					1	4
Dalmatian Pelican	1				9		1	1			7	
Great Cormorant					1		1				2	
Greater Flamingo	2	4	5	2	2	1			1		1	7
Eurasian Spoonbill	1		3		5				3		1	1
Glossy Ibis			3	1		1				2		
Grey Plover (VU)	1			5		2				1		
Black-necked Grebe			2				1				2	
Northern Shoveler	1	6	8			1			1			1
Ruddy Shelduck	14				1	4					13	
Common Shelduck	1	1	5		1							1
Common Redshank				1								

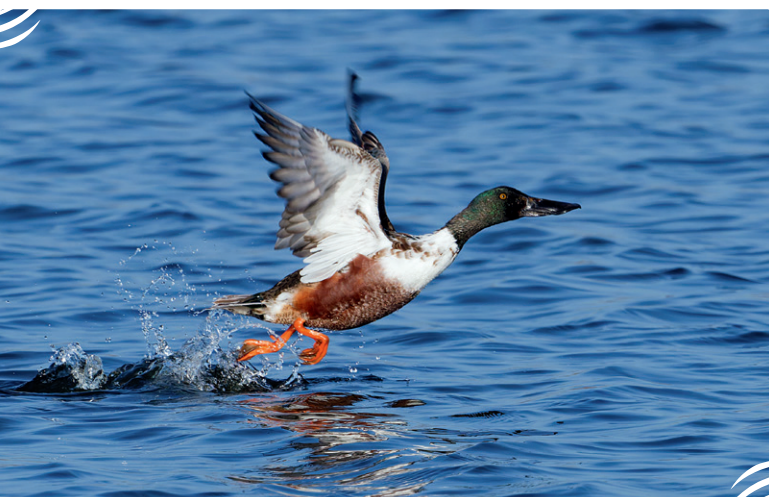
* Based on the CSR7 / ** LC = Least concern; NT = Near threatened; VU = Vulnerable; EN = Endangered

Based on analysis of data from 13 countries, only 12 have a potential list of sites that meet the criteria for designation as sites of international importance under the Ramsar Convention. Libya is an exception: due to the application of the new methodology**, no sites could be identified as meeting the two main criteria. This is due to a lack of regularity and continuity in waterbird monitoring, which prevents the “regular occurrence” requirement of the two criteria from being met.

For the twelve countries considered, 56 waterbird species enabled candidate sites to be identified that meet criterion 6 of the Convention, based on winter census data collected between 2019 and 2023. Of these 56 species, six are currently classified as “Endangered” or “Vulnerable” according to the IUCN Red List (IUCN, 2024), highlighting the critical importance of protecting sites that exceed this 1% threshold, particularly for sites that are not yet included in the Ramsar network. Seventy-nine sites meet criterion 5 (more than 20,000 birds) and are therefore sites of major importance for a large number of waterbirds. These results reinforce the idea that the designation of new Ramsar sites can play a key role in the conservation of threatened species at the regional level, particularly in the context of climate change and increasing anthropogenic pressures (Gaget *et al.*, 2020).

ZOOM ON AVIAN INFLUENZA

Avian influenza viruses have existed for millennia. They originally circulated within their natural reservoir of wild waterbirds, in particular Anatidae (ducks, geese, and swans) and Laridae (seagulls, gulls, and terns). However, since 2022, their dynamics have been changing rapidly, extending to new species and involving new challenges.



The Northern Shoveler (*Spatula clypeata*) is part of the Anatidae group, a natural reservoir for avian influenza viruses. ©T. Blanchon

Avian influenza viruses (AIVs) are highly diverse and most are low pathogenic (LPAIVs). In other words, they cause few or no symptoms in infected birds. Their circulation is therefore generally invisible. However, a small proportion of these viruses, known as H7 and H5 subtypes, can evolve towards greater pathogenicity. These are known as highly pathogenic avian influenza viruses (HPAIVs).

Historically, the circulation of HPAIVs became a matter of concern when it began to cause heavy losses on duck and then chicken farms in South-East Asia in the mid-1990s. Highly pathogenic H5N1 strains began to diversify within the huge reservoir that these farms provided, which was highly favorable to their maintenance and spread. During the winter of 2005-2006, these viruses reached Europe via the trade routes linking Asia to Europe through Russia. Many cases followed in farms, which then reached several African countries, including Egypt and Nigeria.

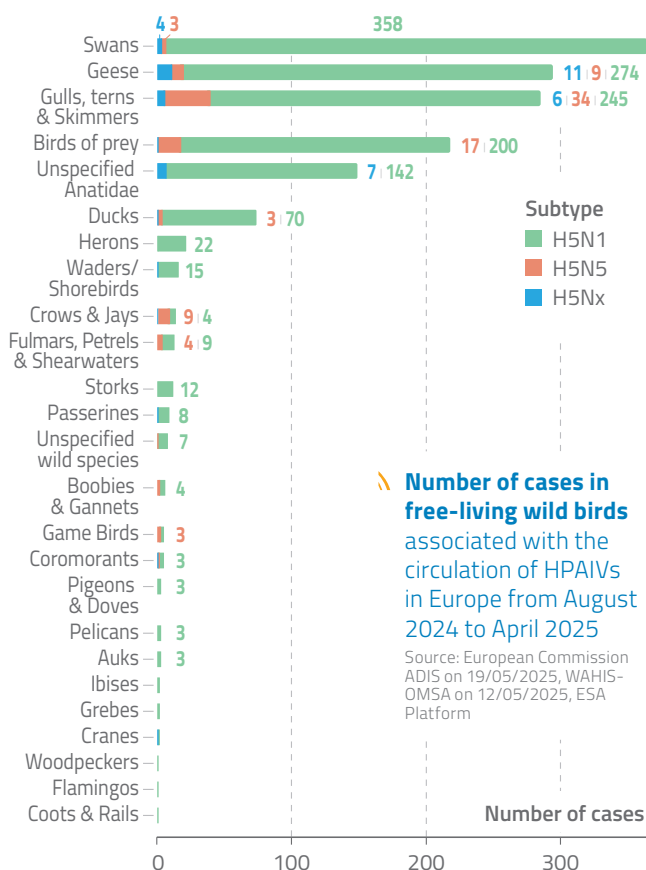
Since then, and to varying degrees depending on the year, the circulation of HPAIVs in poultry farms has represented a major economic issue in many countries, including certain Mediterranean ones like France and Egypt. This concern is associated with direct economic losses due to mortality on farms, but also, and above all, with the costs generated by control and surveillance measures aimed at limiting the spread of HPAIVs.

Although it was feared in the early 2000s that the circulation of HPAIVs would lead to a pandemic in human populations, this has not been the case to date. Fewer than 1,000 human cases of H5N1 infection have been reported worldwide between 2003 and 2024. So far, HPAIV strains have

not acquired the capacity to be transmitted sustainably from human to human. Most human cases have therefore been associated with farmed bird-to-human transmissions.

NEW DYNAMICS AND NEW CHALLENGES

The dynamics of HPAIV circulation has recently undergone rapid change, profoundly altering the associated challenges. Issues relating to poultry farming are still very much at the forefront. Their geographical extent has increased considerably, with many cases in North America. Similarly, the types of farms concerned are extremely variable, ranging from laying hens to ducks and turkeys.



The intense circulation of HPAIVs in North America has been accompanied since 2024 by the transfer of certain H5N1 strains to cattle. Inter-cattle transmission exists and is associated with numerous cases among farmers. Fortunately, despite the fact that several hundred human cases have been recorded, only one has been fatal (as of 30/04/2025). In terms of public health, therefore, the utmost vigilance is currently required, but no human pandemic linked to HPAIVs is currently underway.

ZOOM ON AVIAN INFLUENZA

Even more worryingly, the circulation of different strains of the H5N1 HPAIV has been associated with massive mortality in wild birds and marine mammals since 2022. Within these groups, colonial species are the most severely affected. These deaths are associated with the observation of cases in a wide range of mammal and bird species. The situation is therefore critical from a conservation point of view. Some seabird species have suffered such severe die-offs that their population dynamics are likely to be durably affected.

In the Mediterranean Basin, the Dalmatian pelican colony on Lake Prespa in Greece was severely affected as early as 2022, followed by numerous Laridae species in 2023 and 2024.



Evacuation of the carcasses of Dalmatian pelicans (*Pelecanus crispus*) during the avian influenza epidemic at the Lake Prespa colony in Greece in 2022 ©Dimitris Vavylis/Society for the Protection of Prespa archive

WHAT CAN BE DONE?

In the Mediterranean area, surveillance for HPAIVs in poultry is relatively well organised, despite wide geographical disparities. In contrast, there is a significant lack of surveillance in wildlife. Yet surveillance is essential if we are to understand and limit the impact of epidemics.

As a waterbird conservation stakeholder, the first thing to do is to remain informed about the rapidly evolving situation (see links at the end of this document) and to contribute to surveillance. Reporting any cases of suspicious mortality to the local health authorities can make a valuable contribution.

Conservation or research measures carried out on potentially susceptible birds must also be adapted to the known level of risk. For example, if HPAIVs are actively circulating in a population, every effort should be made to avoid exacerbating this circulation. This may involve disinfecting equipment and cleaning vehicles and shoes between sites. Similarly, operators must protect themselves with gloves, masks, etc.

Finally, in the event of mortality in the population being monitored, certain measures, to be considered on a case-by-case basis, can limit the impact of the epidemic. Depending on the context, these may involve periodically removing the carcasses or preventing any disturbance to the affected colony by prohibiting public access to the site. In order to manage this type of situation as effectively as possible, it may be advisable to prepare for it in advance by interacting with the other local players potentially involved.

In conclusion, HPAIVs currently represent a threat to the conservation of many bird species. By keeping regularly informed, contributing to surveillance, and preparing for future epidemics, we can collectively reduce their impact and prevent them from decimating populations over the long term. Focusing on HPAIVs in this way will also prepare all the players involved to meet the challenges associated with other infectious diseases that may emerge in the coming years.

Relevant links on avian influenza:

- Weekly reports in French on the situation in France and Europe: www.plateforme-esa.fr
- Monitoring of measures implemented and national risk levels: <https://agriculture.gouv.fr/influenza-aviaire-la-situation-en-france>
- Map of reported cases worldwide: www.who.org
- Monitoring of active surveillance in France and participating European countries: <https://sentinelwildbirds.lnu.se>



Collection of an oropharyngeal swab from a Yellow-legged Gull (*Larus michahellis*) © F. Jarrod

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Tunisian wetland © L. Dami (Tour du Valat)



\ MEDITERRANEAN COORDINATION CONTACT

Tour du Valat

Research institute for the conservation
of Mediterranean wetlands
Le Sambuc – 13200 Arles – France

Laura DAMI

✉ dami@tourduvalat.org

<https://tourduvalat.org>
www.medwaterbirds.net

Greater flamingos in the salt flats of the Camargue © M. Douchin (Tour du Valat)



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