

## Chapter 6

### A descriptive analysis of the role of wild birds in the introduction and spread of Avian Influenza in the EU

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#### Abstract

Aim of this study was a descriptive analysis of the possible role of wild birds in introduction and spread of Avian Influenza in the European countries. Attention was focused on target species involved, mainly migratory ducks and waders and on sites valuable for their presence in order to spot major risk areas.

#### 1. Introduction

The objectives of Work Package number 4 were the identification of all species of migratory birds relevant for possible spread of Avian Influenza throughout Europe. The identification and characterization of all important locations of these migratory birds species through the provision of a comprehensive database for further analysis.

Data collection was focused on species, locations and quantity of birds related to these locations; time of year in which these locations are used, important foraging and resting places. These data were collected, when available, for the whole of Europe from various sources found in literature.

#### 2. Materials and Methods

Species considered more valuable for the spread of avian influenza viruses are Anseriformes and Charadriiformes as a result of their susceptibility and ecological habits.

Birds belonging to these families are mainly long-distance migratory birds which exhibit a clear seasonal pattern with distinct breeding and wintering sites. Another characteristic feature is their congregatory habit linked to wetland exploitation.

Related to these specific characteristics are the main sources of information available in literature: the Important Bird Areas (IBA) inventory and the International Waterbird Census (IWC).

The IBA inventory is based on site's international importance for:

1. threatened bird species;
2. congregatory bird species;
3. assemblages of restricted-range bird species; and
4. assemblages of biome-restricted bird species.

Particular attention is paid to congregatory species which determine a list of subsequent criteria to base site selection upon the presence of:

1.  $\geq 1\%$  of a biogeographic population of waterbirds;
2.  $\geq 1\%$  of the global population of seabirds;
3.  $\geq 20000$  waterbirds or  $\geq 10000$  pairs of seabirds;
4.  $\geq 1\%$  of a flyway;
5.  $\geq 1\%$  of distinct population; and
6. "bottleneck".

The IWC is undertaken annually by almost all European countries based on national Waterbird Monitoring Schemes. Counts are made simultaneously in all the wetlands valuable for birds presence. These activities are carried out based on European agreements and International Conventions, like Ramsar, for threatened birds and wetlands protection and give rise to publications of bird distribution and population estimates atlases.

Information can be provided for all European countries but at different "degrees of precision". Some countries lack birds numerical consistency or show incomplete data in sites' description or in census annual reports. Solutions are not easy going as these countries need to implement their national monitoring schemes with consequent major personnel and money investments. Furthermore the greatest number of publications concerned with birds estimates or important areas inventory regard data summarized at a national level and updated five-yearly. Much more difficult is to find data at a local level which are mostly unpublished or used for local environmental management.

### 3. Results

Data were collected for all countries belonging to geographical Europe, included European Russia, for a total of 37 nations. Important bird sites totaled 1883 spread over the entire territory (Figure 1).

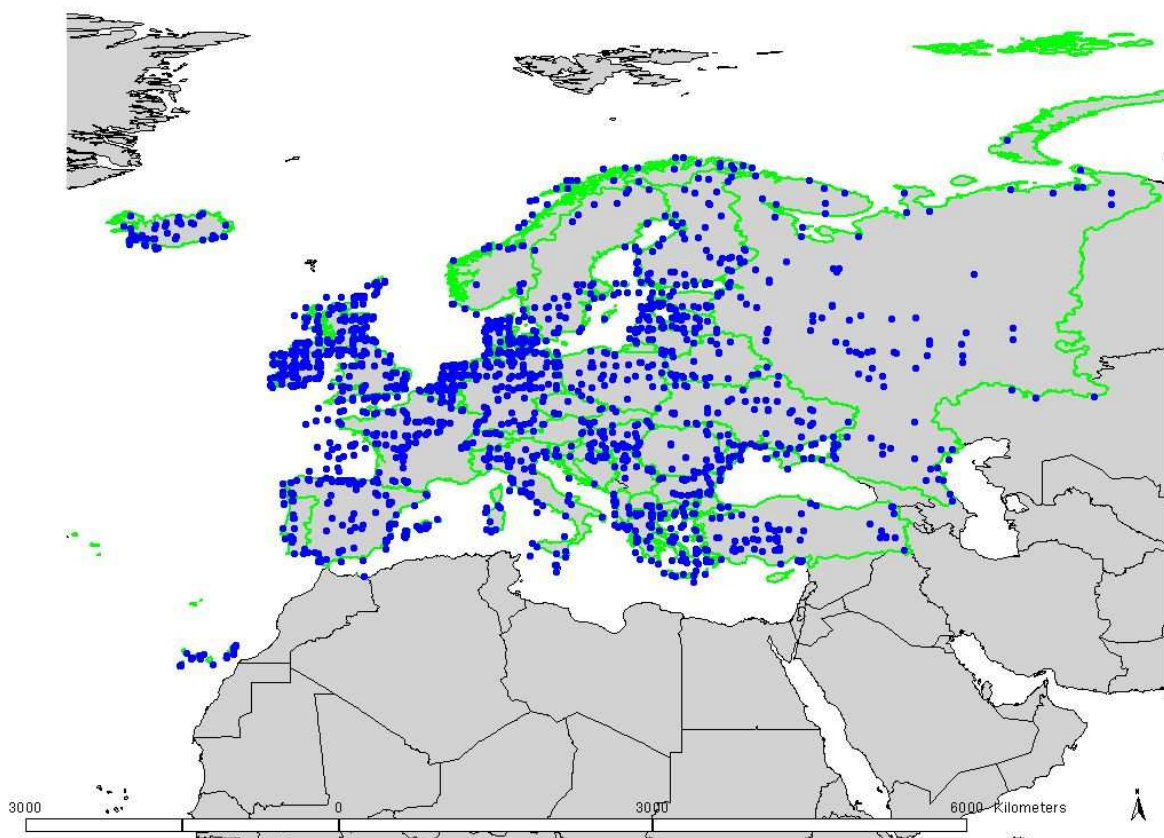


Figure 1. European Important Bird Areas

In order to investigate their ecological features sites were broadly subdivided in mainly wintering, breeding, passage and breeding+wintering areas (Table 1).

Table 1. Ecological features of IBA

WINTERING	490
BREEDING	510
PASSAGE	657
WINTERING+BREEDING	226

A substantially equal subdivision between breeding and wintering areas was found, clearly clustered over the European grounds, as it's possible to see in the following map (Figure 2).

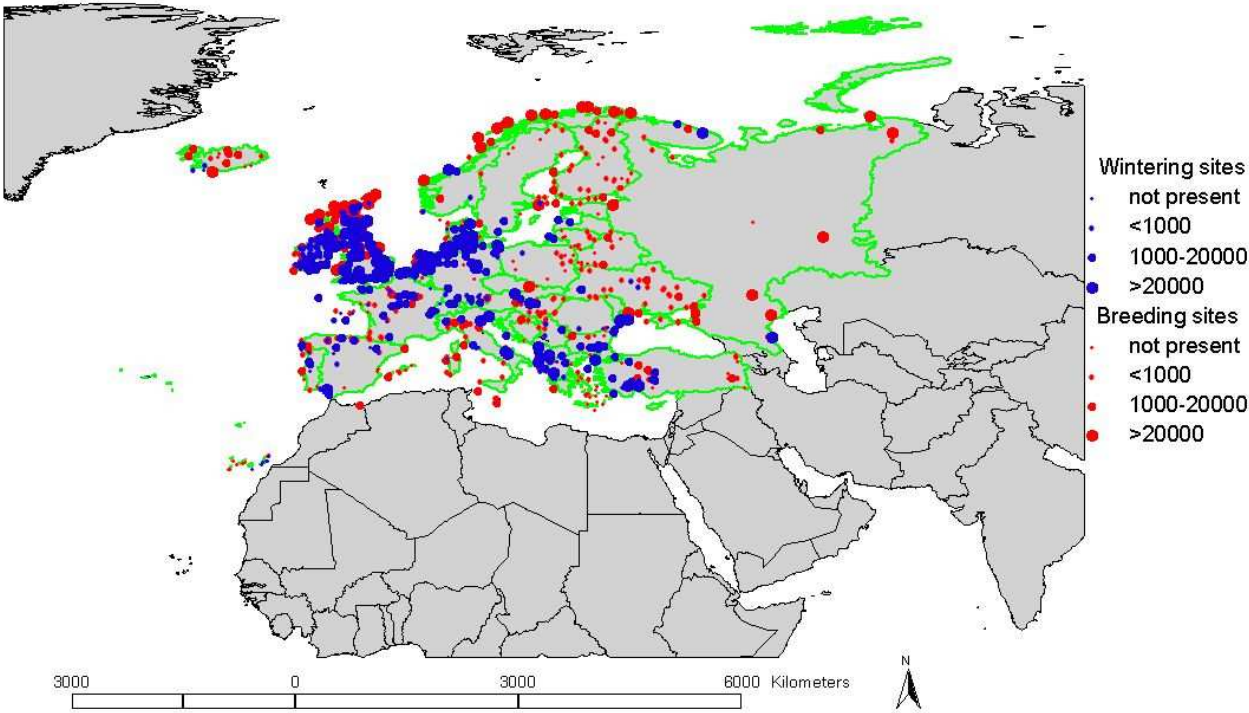


Figure 2. Location of breeding and wintering sites.

As previously mentioned information on sites' bird consistency weren't homogeneous; being completely absent or not updated for several places. In order to try ranking sites for possible importance in avian flu spread, important bird areas were divided into broad categories based also on their extension and on number of birds estimated. Scores were then assigned based on these broad categories (Table 2 and Figure 3).

Table 2. Ranking score of IBA.

TYPE of site		SCORE
	wintering	6
	wintering+breeding	5
	wintering+passage for anseriformes	4
	wintering+passage for waterbirds	3
	passage	2
	breeding	1
EXTENSION (in ha)	<900	1
	900-12000	2
	>12000	3
ABUNDANCE (N of birds)	<1000	1
	1000-20000	2
	>20000	3

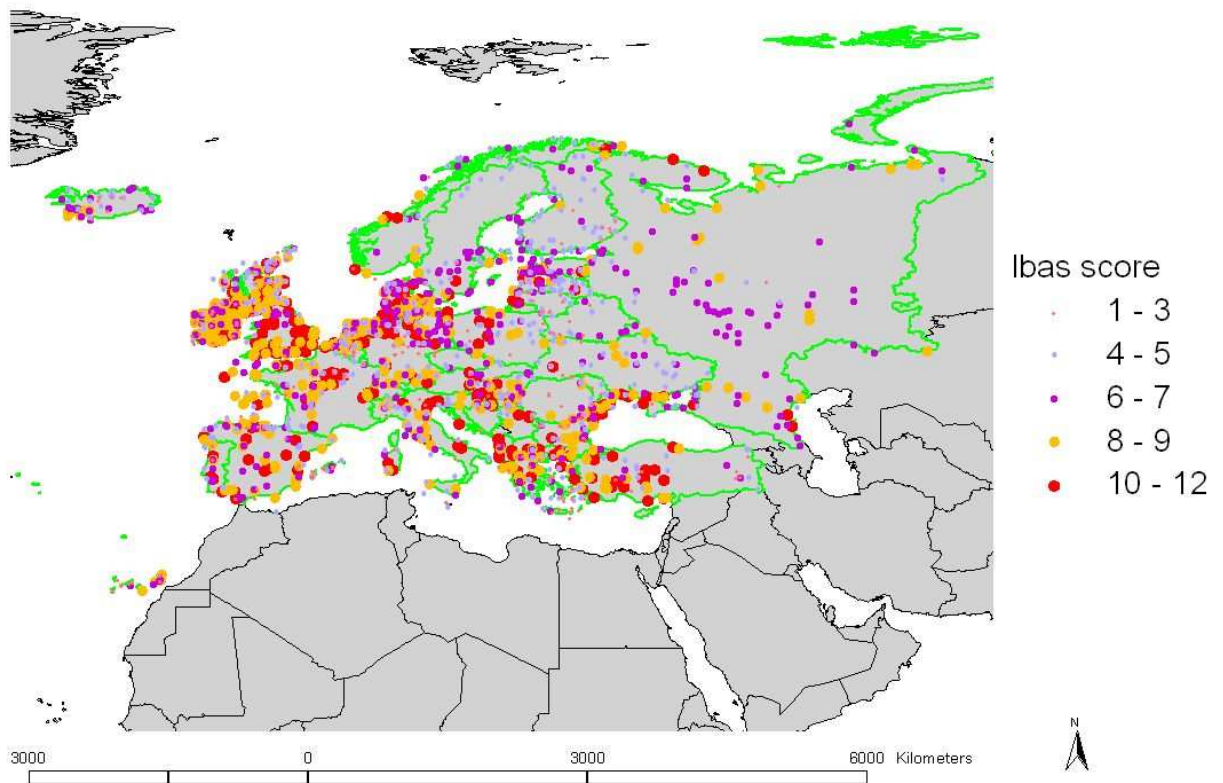


Figure 3. Location of scored IBA

Annual counts are summarized at a national level and published by BirdLife and Wetland International in reports on bird populations consistency. It was possible to refer to the results of censuses made from 1995 to 1999 to obtain mean numbers of presence for different species. Attention was paid mainly to Anatidae and coot, valuable for their high consistency and Palearctic distribution. The most numerous duck resulted mallard (*Anas platyrhynchos*) as breeding and wintering species.

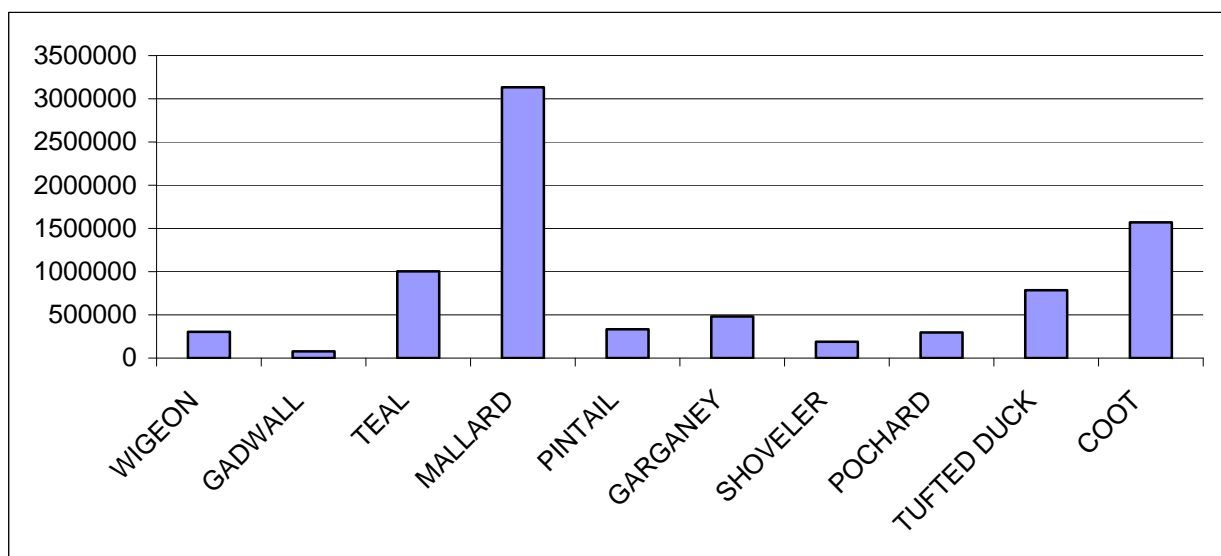


Figure 4. Consistency of European breeding ducks and coot.

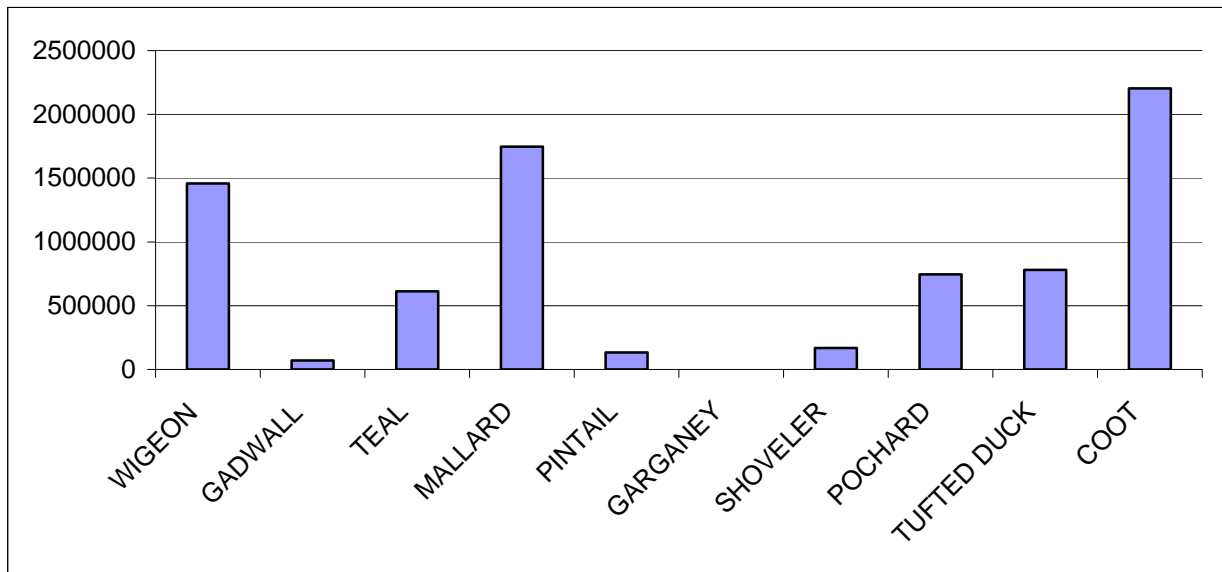


Figure 5. Consistency of European wintering ducks and coot.

European nations hosting major numbers of waterbirds resulted north-eastern countries for breeding birds and southern countries for wintering birds with The Netherlands hosting conspicuous numbers all year round (see the following Table 3).

Table 3. Wintering and breeding birds per country (wintertot=mean counts 95/99).

COUNTRY	WINTER TOT				COUNTRY	MINBREE	MAXBREE		
NETHERLANDS	1495137				RUSSIA	3832000	4837500		
UK	884841				NETHERLANDS	513320	720530		
TURKEY	857260				POLAND	341610	714420		
FRANCE	676519				FINLAND	429150	696300		
GREECE	511817				GERMANY	296215	649524		
ITALY	482628				SWEDEN	278250	425500		
SPAIN	480330				ROMANIA	221812	350495		
GERMANY	269097				HUNGARIA	186865	282435		
SWITZERLAND	269055				UKRAINE	187700	274150		
YUGOSLAVA	265583				FRANCE	84570	217607		
DENMARK	199044				UK	99549	204870		
BULGARIA	191950				BELARUS	117070	192050		
BELGIUM	179696				LITHUANA	101255	166470		
SWEDEN	157057				SPAIN	87127	134542		
ALBANA	153841				NORWEY	77606	132345		
IRELAND	124891				CZECH REP.	67990	128840		
UKRAINE	102158				YUGOSLAVA	91578	119145		
AUSTRIA	99083				DENMARK	37850	74700		
ROMANIA	84928				LATVIA	43600	60920		
POLAND	74130				TURKEY	29820	56340		
CZECH REP.	68476				ESTONIA	41750	53800		
PORTUGAL	58321				BELGIUM	35662	49728		
HUNGARIA	56347				CROATIA	13716	45805		
MACEDONIA	47046				IRELAND	13804	33754		
CROATIA	40495				ITALY	18910	33300		
SLOVAKIA	37086				SLOVAKIA	16920	29870		
SLOVENIA	18989				ICELAND	18600	28950		
NORWEY	12973				SWITZERLAND	14606	27227		
LATVIA	6630				AUSTRIA	13401	25725		
LITHUANA	6026				SLOVENIA	10363	20655		
ESTONIA	2005				PORTUGAL	3370	12315		
CYPRUS	1873				MOLDOVA	10330	11980		
ICELAND	1125				BULGARIA	2924	7048		
BOSNIA-HERZEGOVINA	386				GREECE	2110	6050		
MOLDOVA	110				MACEDONIA	1173	2115		
BELARUS	25				ALBANA	172	787		
LUXEMBURG	15				CYPRUS	223	463		

#### 4. Discussion

This qualitative review summarizes data currently available in literature confirming the importance of geographic Europe as a crossroad for migrating waterbirds. All over Europe are spread almost 2000 important sites equally distributed between breeding, wintering and passage areas. Based on ranking scores potentially important sites are concentrated in the Mediterranean basin between Turkey, Greece and Italy and in northern and Baltic regions (Figure 3). Estimated numbers of breeding and wintering birds average around 8 millions just for Anatidae and coots and are probably underestimates as data are incomplete or totally lacking in some countries reports.

Difficulty in collecting data represents one of the main problem not easily solvable without personnel and money investments. Skilled ornithologists are required to make counts and to monitor valuable sites on a local scale and on a long term base. Many aspects of birds ecology are still not well known, especially the ones related to daily flying distances and their capability to rely upon and to move between adjacent suitable sites to cope with ecological changes.

## **2.1 References**

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