

# Manual to count Great Cormorant colonies

The 2012 breeding colony count in the Western Palearctic

Version 2 – March 2012



**IUCN/Wetlands International Cormorant Research Group (CRG)**

**& The European Commission project 'CorMan'**

# 1 Quick Guide / Summary

Count the number of apparently occupied nests. Report your best estimate if you cannot count nest numbers precisely. Keep disturbance of the breeding colony at a minimum when counting nests.

Report your count results:

- Through the count project homepage <http://www.cormocount.eu/> after you have been registered as a counter (see the sub-page 'Login', top right corner)
- By filling an Excel form. Can be downloaded at <http://www.cormocount.eu/instructions.aspx> or <http://cormorants.freehostia.com/index.htm>  
Mail the file with the filled form to the National Coordinator
- Or in another way as you have been informed by the National Coordinator.

As a minimum you must report

- **Name of observer**
- **E-mail address** of the person reporting the count result
- Name of your **country**
- **Name of the colony** (add name of place/area/province)
- **Coordinates**. Give Latitude and Longitude in decimal degrees. See guide at <http://www.cormocount.eu/instructions.aspx>
- **Nest numbers**. Give your best estimate of nest numbers.

Counters should submit their count results **no later than 1 September 2012** or earlier if pointed out by the National Coordinator.

Questions concerning the counts should be addressed to the relevant National Coordinator or to the Area Coordinators (see Appendix I).

## 2 Introduction

The IUCN/Wetlands International Cormorant Research Group is collaborating with the new EC project 'CorMan' in order to assess the number and distribution of great cormorants in Europe during breeding and winter.

The aim of the joint cormorant count project ***Cormorant Counts in the western Palearctic*** is to organise a pan-European census of breeding colonies in 2012 and a census of winter roosts in January 2013. Most countries will report the results at the national level. The joint count project will report the major results from the count

- On the homepage of the IUCN/Wetlands International Cormorant Research Group (<http://cormorants.freehostia.com/index.htm>)
- On the official EU Cormorant Platform ([http://ec.europa.eu/environment/nature/cormorants/home\\_en.htm](http://ec.europa.eu/environment/nature/cormorants/home_en.htm)).

This short guidance about how to report count results and how to count breeding colonies of cormorants is partly based on the count section of the 'The INTERCAFE Field Manual' (Bregnballe *et al.* 2012).

Questions concerning the counts (how to count and how to report the results of the counts etc.) should be addressed to the relevant National Coordinator (or Sub-national/Provincial coordinator) or to the relevant Area Coordinators (see Appendix I).

## 3 Reporting of results

### 3.1 How to report

The National Coordinator will give you the instructions about how he or she would like you to report the results of your colony count(s). Some countries are using already existing data-collection-systems for counts of cormorants.

**Report through the project homepage.** In some countries most observers will report through the homepage developed specifically for reporting results from counts of cormorant colonies: <http://www.cormocount.eu/>

Only registered users can log on and enter data through this home page. If you would like to register, please go to the subpage 'Login', go to the top on the right, above the cormorant picture, and click on 'HERE'.

Your National Coordinator will then automatically receive an e-mail and he or she will accept you as a user of the homepage. You automatically receive an e-mail with username and password.

**Other ways of reporting results.** In some countries the National Coordinator offers the observer the option of reporting back by entering data in Excel format if that is preferred. The count project has designed a common spread sheet in Excel that can be used for data collection (see Appendix III in this manual). It can be downloaded from:

- The count project homepage under 'Instructions'  
<http://www.cormocount.eu/instructions.aspx>
- The homepage of the IUCN/Wetlands International Cormorant Research Group  
<http://cormorants.freehostia.com/index.htm>

Or you can receive it by e-mail from the relevant National Coordinator or Area Coordinator.

Mail the file with the filled form to the National Coordinator

Some National Coordinators are willing to receive count results in other ways, e.g. as text in an e-mail or through an already existing national system for reporting count results.

## 3.2 What to report

**Required information.** For the joint cormorant count project 'Cormorant Counts in the western Palearctic' we need, as a minimum, the following information:

- **Name of observer**
- **E-mail address** of the person reporting the count result
- Name of your **country**
- **Name of the colony** (maybe adding name of place/area/province, e.g. 'Markviksgrunden, Ulvön, Gulf of Botnia')
- **Coordinates.** Give Latitude and Longitude in decimal degrees. A guide to find the coordinates in decimal degrees by use of Google Earth is given on <http://www.cormocount.eu/instructions.aspx>
- **Nest numbers.** Give best estimate of nest numbers.

**Useful supplementary information.** Your National Coordinator may ask for more details. Suggestions for other relevant supplementary information that you could give, are listed in the Excel spreadsheet shown in Appendix I in this manual.

## 3.3 When to report

We recommend that you report immediately after the count either through the home page or directly to the National Coordinator. By doing this, you increase the probability that you have your data at hand and the count fresh in your memory. You can always add supplementary information later.

The National Coordinator has probably given you a deadline for reporting your colony count(s). The National Coordinator has to report to conclusion about nest numbers for all the counted colonies before 15 October 2012. Since the National Coordinator needs time for quality checks and for communication with individual counters to clear up questions, most National Coordinators ask the counters to submit their count results **no later than 1 September 2012.**

# 4 Defining a colony and its size

## 4.1 How is a colony defined

It is recommended that a colony is defined as a separate colony if it is isolated from other group(s) of nests by at least 2000 m. Therefore, a group of nests is defined as belonging to the same colony as the other groups of nests if it is located within 2000 m from the nearest neighbouring group of nests ("sub-colony"). We recommend that a single nest is sufficient to have a colony as long as it is not located within 2000 m from other colonies. The definition of a colony has varied among countries. Therefore, there

may be historical and/or biological reasons not to follow this recommendation for colonies that have already existed for some years.

## 4.2 How is a colony size defined

We recommend that colony size is defined as the number of apparently occupied nests (often referred to as “AON”). An apparently occupied nest is a nest that is in use and sufficiently finished to hold one or more eggs (i.e. a well-built nest). Apparently occupied nests thus includes all nests in use, except those under construction that are not capable of holding an egg. Nests under construction can be recorded separately. There is some variation among and within countries with respect to whether or not unfinished cormorant nests are included in nest counts.

# 5 The counting of a colony

## 5.1 Timing of the count

Counts should be made when the maximum numbers of nests are occupied. If the nests are counted several times within the same season, one should use the maximum number.

See Appendix II for details about timing of breeding and factors affecting the ability of the observer to count at the time when nest numbers culminate.

## 5.2 Counts of ground nesting colonies

Cormorants breeding on the ground tend to nest in discrete and well-defined groups but the exact location of these groups might shift from year to year. Care must therefore be taken to check the potentially suitable sites for presence of isolated or newly-established groups.

**Counts from the ground.** Care should be taken to minimize disturbance. We therefore recommend that entering the colony is avoided if possible. Instead the observer should find a suitable vantage point (or several if necessary) and count the nests from here. Registering nest content is not essential for counting nests, but if possible a general assessment of the stage of the breeding cycle should be given. If repeated counts are performed the highest number registered should be used as the total number of AON's for the colony. In some colonies it is not possible to see all parts from the vantage point(s) selected. Keep a note and a map of the parts of the colony that is not visible and try to estimate (minimum-maximum) for the number of AON's likely to be hidden, based on numbers on visible sections. When reporting these numbers make clear that they are of unknown reliability.

Entering the colony may be the only option available in some ground nesting colonies because vantage points are unavailable. In that case it may be an advantage to put sticks in the ground inside the colony or use spray paint on selected nests to keep track of the parts of the colony where nests have been counted. The duration of disturbance can be reduced by being two or three persons that carry out the count together.

The extent of disturbance will in some areas be lower if the count is carried out during the night. This is frequently done in Norway (N. Røv pers. comm.). The advantages of counting during the night are that the adults tend to leave their nest at a closer range and that gull predation is lower than during disturbance in daytime.

In cases where the only option available is to walk through the colony when counting it, and the observers intend to record nest contents, we recommend that information about nest contents is dictated to a tape recorder. This enables the observer to keep a better track of which nests have and have not been counted and it minimizes the duration of disturbance. When recording nest contents, we recommend that the observer for each nest dictates numbers of eggs, numbers of chicks and estimated age of the oldest chick in the brood (give age in days).

**Using aerial photographs.** For some colonies, the best method for counting will be to photograph the colony from the air. This is the case for most ground nesting colonies and a few tree nesting colonies. Subsequently, one should count the nests on the computer screen or make large prints of the photos, or project slides on a large sheet of paper or the wall. Finally nests are counted by marking them. Be aware of double-counting sites if several photos from the same colony are used. It is recommended that several observers count the same photo and that the mean is used as the size of the colony.

### 5.3 Counts of tree nesting colonies

In planning the date of the count it should be considered that the visibility of nests usually starts decreasing a few days after foliage. Before disturbing the colony it should be explored whether some sectors of the colony can be counted from outside the colony, thereby minimizing disturbance. However, it is usually necessary to walk through the entire colony to count all nests and keep track of which nests have and have not been counted. It is helpful to make maps of the colony and use features in the landscape (e.g. certain trees) to keep track of the sections of the colony that have been counted.

Counting of nests in tree nesting colonies will often cause extensive disturbance of the colony. Be aware that incubating cormorants that suddenly detect a person may flush from the nest immediately whereby one or more eggs fall out of the nest. A nest count in a tree nesting colony will frequently lead to exposure of eggs and small young to predation from crows and magpies. Therefore, please try moving around in a way that minimizes the number of nests disturbed within a time period.

Be aware that cormorants sometimes breed in mixed colonies with other species like herons and that heron nests may be mistaken as cormorant nests.

## 6 Literature

- T. Bregnballe, D. Carss, S.-H. Lorentsen, S. Newson, J. Y. Paquet, R. Parz-Gollner, S. Volponi (2012). Counting cormorants. Chapter 3 in: Carss, D.N., Parz-Gollner, R. & Trauttmansdorff, J. (eds.) The INTERCAFE Field Manual - research methods for cormorants, fishes and the interactions between them. COST Action Final Report II. ISBN 978-1-906698-08-9
- Newson, S.E., Hughes, B., Hearn, R. & Bregnballe, T. 2005: Breeding performance and timing of breeding of inland and coastal breeding Cormorants *Phalacrocorax carbo* in England and Wales. - Bird Study 52(1): 10-17.
- Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W. & Tasker, M.L. 1995. Seabird monitoring handbook for Britain and Ireland. JNCC / RSPB / ITE / Seabird Group, Peterborough.
- Harris, M.P. & R. Forbes 1987: The effect of date on counts of nests of Shags *Phalacrocorax aristotelis*. - Bird Study 34: 187-190.

# Appendix I - Area Coordinators

Area Coordinators maintain contact with national coordinators. Communication with individual counters will normally either be through the National Coordinator or through a Provincial Coordinator. However, you are welcome to address questions to the relevant Area Coordinators. There are two Cormorant Count Area Coordinators for the breeding count in each major area of Europe and the countries further east.

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## Area WEST (orange):

Loic Marion [Loic.marion@univ-rennes1.fr] & Jean-Yves Paquet [jean-yves.paquet@aves.be]  
Belgium, France, Ireland, Luxembourg, Portugal, Spain, The Netherlands, United Kingdom

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## Area NORTH (blue):

Thomas Bregnballe [tb@dmu.dk] & Stefan Pihl [sp@dmu.dk]  
Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway, Russia, Sweden

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## Area CENTRAL & EAST (green):

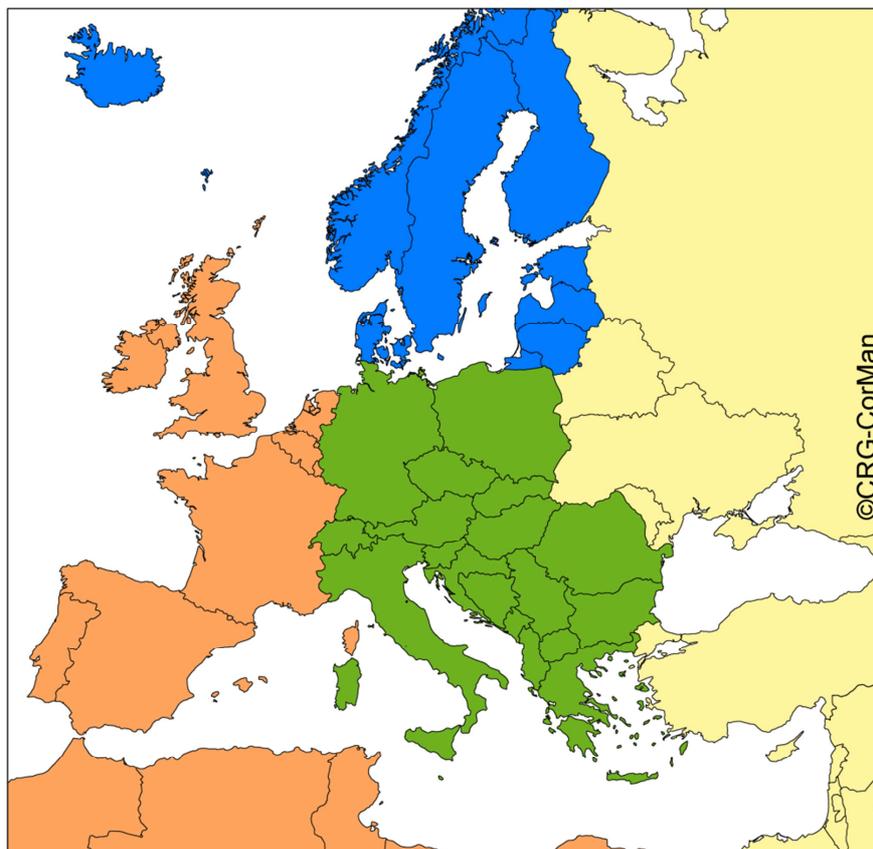
Rosemarie Parz-Gollner [parz@boku.ac.at] & Stefano Volponi [stefano.volponi@isprambiente.it]  
Austria, Albania, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Greece, Italy, Hungary, Kosovo, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Switzerland

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## Area FURTHER EAST (yellow):

Stefan Pihl [sp@dmu.dk] & Thomas Bregnballe [tb@dmu.dk]  
Belarus, Georgia, Moldova, Russia, Turkey, Ukraine

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# Appendix II - Timing of Breeding

The ability of the observer to count at the time when nest numbers culminate will often be constrained by several factors.

First of all, the observer rarely knows at exactly what time of the season nest numbers can be expected to culminate. In planning the time of a nest count the observer may also have to take into account

- a) that the number of nests tends to reach a maximum later in the season in newly founded colonies than in older colonies,
- b) that the visibility of nests in trees declines after foliation, and/or
- c) that nests traditionally have been counted at a certain stage in the breeding cycle.

The observer may also be forced to count at a suboptimal time because of other duties or poor weather conditions on the day when the count was planned to be carried out.

The time of culmination in nest numbers may vary among years and colonies. Table 1 gives a best guess for timing of culmination in nest numbers in different countries. These periods may be taken into account when planning the timing of counts in each country. The timing of culmination in nest numbers in Europe is partly related to location of the colony in relation to a North-South and East-West gradient, but it also varies locally, partly depending on seasonal variation in food availability. It was found in Great Britain that cormorants breeding on the coast initiated breeding several weeks later than cormorants breeding in inland colonies (Newson et al. 2005).

**Table 1.** Best guess of timing of culmination in nest numbers in great cormorant colonies given for different countries in Europe.

Country	Period when nest numbers culminate	Comments
Norway <sup>1</sup>	1 May-15 June	coastal colonies of <i>P.c. carbo</i>
Denmark <sup>3</sup>	25 April - 10 May	coastal as well as inland colonies
England <sup>4</sup>	12 April – 17 May	Inland colonies of mixed <i>sinensis/carbo</i>
Wales <sup>4</sup>	10 May – 7 June	Coastal colonies of <i>P. c. carbo</i>
Italy <sup>5</sup>	15 April – 30 May	New colonies settle later
Czech Republic <sup>6</sup>	25 April – 5 May	south Bohemia
The Netherlands <sup>7</sup>	March	Inland colonies
The Netherlands <sup>7</sup>	April	IJsselmeer colonies
The Netherlands <sup>7</sup>	May/beginning of June	Coastal colonies
Germany <sup>8</sup>	First half of May	

<sup>1</sup> Røv & Lorentsen unpublished; <sup>3</sup> J. Eskildsen, J. Gregersen, J. Sterup & T. Bregnballe unpublished; <sup>4</sup> S. Newson unpublished; <sup>5</sup> S. Volponi unpublished; <sup>6</sup> Martincová & Musil unpublished; <sup>7</sup> S. van Rijn & M.R. van Eerden unpublished; <sup>8</sup> W. Knief unpublished.

The number of nests present at the time of the season when nest numbers reach their maximum will in most cases be lower than the total number of nests built in the colony. Thus nests may disappear before and new nests may be built after the culmination in nest numbers (Harris & Forbes 1987). Furthermore, the number of pairs attempting to breed will usually be higher than the number of nests at the time of the season when nest numbers reach their maximum (Harris & Forbes 1987, Walsh et al. 1995). Thus a nest built by a pair that gave up early in the season may be taken over by a new pair.

- Newson, S.E., Hughes, B., Hearn, R. & Bregnballe, T. 2005: Breeding performance and timing of breeding of inland and coastal breeding Cormorants *Phalacrocorax carbo* in England and Wales. - *Bird Study* 52(1): 10-17.
- Walsh, P.M., Halley, D.J., Harris, M.P., del Nevo, A., Sim, I.M.W. & Tasker, M.L. 1995. Seabird monitoring handbook for Britain and Ireland. JNCC / RSPB / ITE / Seabird Group, Peterborough.
- Harris, M.P. & R. Forbes 1987: The effect of date on counts of nests of Shags *Phalacrocorax aristotelis*. - *Bird Study* 34: 187-190.

# Appendix III

## Colony Count Form in Excel format

Can be downloaded from

<http://www.cormocount.eu/instructions.aspx>

or

<http://cormorants.freehostia.com/index.htm>

# Great Cormorants in the Western Palearctic

## Breeding colony census 2012

Organised by

IUCN/Wetlands International Cormorant Research Group (CRG)  
& The European Commission project CorMan



* NAME - Person that filled this form	Anders Hedenström
* E-MAIL ADDRESS - for correspondence	<a href="mailto:a.heden@hotmail.com">a.heden@hotmail.com</a>
* NAME OF OBSERVER(s)	Lars Hansson
E-MAIL ADDRESS OF MAIN OBSERVER	<a href="mailto:l.hansson@hotmail.com">l.hansson@hotmail.com</a>
* COUNTRY	Sweden

Issue (* = obligatory)	DATA
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Colony	* COLONY NAME	Markviksgrunden, Ulvön
	AREA / REGION	Gulf of Botnia
	COLONY NUMBER (if known)	GB24
	* LATITUDE, decimal degrees	62.972533°
	* LONGITUDE, decimal degrees	18.614752°
	Latitude - In another coordinate system	62°58'21.44"N
	Longitude - In another coordinate system	18°36'58.89"E
	What other coordinate system is used	Degrees, Minutes, Seconds
	MAIN HABITAT TYPE COLONY	Ground
	COLONY EXPOSED TO MANAGEMENT	Yes
Count	DATE OF COUNT (dd-mm-yr)	10-05-12
	COUNTING METHOD	Nest count from inside colony
	* NUMBER OF NESTS (best estimate)	400
	MINIMUM NUMBER OF NESTS	360
	MAXIMUM NUMBER OF NESTS	440
	% BREEDING ON GROUND	100%
Remarks	REMARKS - The count	The count was not very precise, because one of the persons oiling eggs did not count the nests. He just gave an estimate. Lower numbers of nests were counted on other dates.
	REMARKS - Nest distribution	The oiled part of the colony was located 200 m from the sub-colony not exposed to egg oiling
	REMARKS - Management	The local authorities oil eggs in 50% of the nests most years. Eggs in approximately 200 of the nests were exposed to egg oiling in 2012. The part of the colony not exposed to egg-oiling had 186 nests. Egg oiling took place also before and after this date.
	REMARKS - Disturbance	Only when eggs are oiled.
	REMARKS - Predation	White-tailed Eagles appear regularly in the breeding season. They take young and disturb the parents, causing predation from gulls.
	REMARKS - Clutch size / Brood size / Breeding success	Clutch size on 10/5 was 3.54 (n=153 nests with eggs). Brood size at chick age 20-30 days was 2.9 (n= 43 broods with chicks)
	REMARKS - Other topics	The cormorant colony is located next to a colony of Herring Gulls

# Great Cormorants in the Western Palearctic

## Breeding colony census 2012

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& The European Commission project **CorMan**



* <b>NAME - Person that filled this form</b>	
* <b>E-MAIL ADDRESS - for correspondence</b>	
* <b>NAME OF OBSERVER(s)</b>	
E-MAIL ADDRESS OF MAIN OBSERVER	
* <b>COUNTRY</b>	

<b>Issue</b> (* = obligatory)	<b>DATA</b>
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<b>Colony</b>	* <b>COLONY NAME</b>	
	AREA / REGION	
	COLONY NUMBER (if known)	
	* <b>LATITUDE</b> , decimal degrees	
	* <b>LONGITUDE</b> , decimal degrees	
	Latitude - In another coordinate system	
	Longitude - In another coordinate system	
	What other coordinate system is used	
	MAIN HABITAT TYPE COLONY	
	COLONY EXPOSED TO MANAGEMENT	
<b>Count</b>	DATE OF COUNT (dd-mm-yr)	
	COUNTING METHOD	
	* <b>NUMBER OF NESTS (best estimate)</b>	
	MINIMUM NUMBER OF NESTS	
	MAXIMUM NUMBER OF NESTS	
	% BREEDING ON GROUND	
<b>Remarks</b>	REMARKS - The count	
	REMARKS - Nest distribution	
	REMARKS - Management	
	REMARKS - Disturbance	
	REMARKS - Predation	
	REMARKS - Clutch size / Brood size / Breeding success	
	REMARKS - Other topics	