

## OILED-GUILLEMOT-EcoQO

North Sea Project on Ecological Quality Objectives Issue 4. Seabirds EcoQO element [f]

### IMPLEMENTATION DOCUMENT

PROPORTION OF OILED COMMON GUILLEMOTS AMONG THOSE FOUND DEAD  
OR DYING ON BEACHES



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## ABSTRACT

The Oiled-Guillemot EcoQO describes the proportion of oiled Common Guillemots *Uria aalge* among those found dead or dying on beaches within the OSPAR area. As a result of chronic marine oil pollution, many thousands of seabirds wash ashore on beaches every year. Systematic beached bird surveys (BBS) provide an insight into species composition and oil rates (% of birds oiled of all birds found dead) and these surveys have been conducted since the early 1960s to study temporal and spatial trends in oil-related mortality in most countries bordering the North Sea. Spatial patterns in Common Guillemot oil rates reflect different levels of chronic marine oil pollution around the North Sea, whereas temporal trends in oil rates are indicative for changes in these levels over time. Common Guillemots have been selected because they are highly vulnerable to oil pollution, and are sufficiently abundant and widespread that sample sizes (number of corpses checked) each winter and in all participating countries should be large enough for statistical analysis. Oil rates are species- and area-specific, but also vary seasonally and can even be age-specific (annual natural mortality of juvenile Guillemots is proportionally higher than in adults). The use of scavenged or otherwise incomplete corpses ('remains') found on beaches may bias the results. For reasons of consistency, participants are therefore asked to systematically search for Guillemots between November and April, to identify the birds they find, to check the corpses for missing parts, to age the birds according to standardised ageing techniques, and to carefully check for oil in the feathers.

The Oiled-Guillemot EcoQO is not only meant to monitor current patterns in oil rates, but also to check if set targets are actually reached. In the most polluted parts of the North Sea, currently over 50% of the Guillemots found on beaches are oiled. Even although this means a considerable improvement in comparison with the 1960s, 1970s and even 1980s, such levels are considered unacceptable. Law enforcement, perhaps in combination with new measures to minimise chronic oil pollution at sea, should lead to further reductions, so that:

**The average proportion of oiled Common Guillemots in all winter months (November to April) should be 10% or less of the total found dead or dying in each of 15 areas of the North Sea over a period of at least 5 years.**

This Implementation Document describes the type of information collected as part of the Oiled-Guillemot EcoQO. Annual reports will be compiled based on data submitted by participants working in 15 subregions around the North Sea. National or regional co-ordinators will collect these data through volunteer networks (as in BBS schemes currently operating), by providing adequate instructions to those volunteers (field manuals). They will be responsible for ensuring that surveys take place, for receiving, checking and summarising data, and for sending their data by June to the International Co-ordinator for inclusion in an annual report.

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**The Oiled Guillemot EcoQO project was commissioned by the North Sea Directorate, Ministry of Transport, Public Works and Water Management, Rijswijk, The Netherlands**

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## INTRODUCTION

As a result of (chronic) marine oil pollution, many thousands of seabirds wash ashore on the beach every year. The Oiled-Guillemot EcoQO provides a description of the proportion of oiled Common Guillemots *Uria aalge* among those found dead on beaches within the OSPAR area. Systematic beached bird surveys (BBS) provide insight in species composition and oil rates (% of birds oiled of all birds found dead) and have been conducted since the early 1960s to study temporal and spatial trends in oil-related mortality in most countries bordering the North Sea. Spatial patterns in Common Guillemot oil rates reflect different levels of chronic marine oil pollution around the North Sea, whereas temporal trends in oil rates are indicative for changes in these levels over time.

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**The average proportion of oiled common guillemots in all winter months (November to April) should be 10% or less of the total found dead or dying in each of 15 areas of the North Sea over a period of at least 5 years.**

This Implementation Document provides a description of the type of material collected as part of the Oiled-Guillemot EcoQO. Annual reports will be compiled based on material submitted by participants working in 15 subregions around the North Sea. National or regional co-ordinators will collect these data through volunteer networks (just as in BBS schemes currently operating), by providing adequate instructions to these volunteers (field manuals), they will be responsible for ensuring that surveys take place, for receiving, checking and summarising data, and for sending their data by June each year to the International Co-ordinator for inclusion in an annual report.

This Implementation Document provides a practical manual of the "Oiled-Guillemot-EcoQO" for regional or national co-ordinators. For background information, including a summary of recent data, technical issues regarding oil rates in stranded seabirds as well as an overview the International Convention for the Prevention of Pollution from Ships and recent amendments meant to reduce the scale and impact of chronic oil pollution worldwide (MARPOL 1973/78), see the earlier document on the Oiled Guillemot EcoQO

(Camphuysen 2004). For financial implications and for estimates of national and international budgets, the same report has to be consulted.

Annex 1 of the previous document (Camphuysen 2004) was a provisional manual for volunteer participants, to enable them to identify and age Common Guillemots as well as to instruct how their presence of oil on stranded Guillemots should be stated. This manual is included within this document, but enlarged and improved. Volunteers working beaches will have to be provided with clear and short instructions that can be deduced from this manual, in the language that is most appropriate for them. No attempt has been made to include a field manual in this report, but any material required to compose such a document is available on request with the author.

### **What to do on the beach?** [collecting base data]

The necessary data can be derived from standard beached bird surveys, given that the field workers may need special instructions so that they know how to handle Guillemots for the Oiled Guillemot EcoQO. Otherwise, fieldworkers may go out especially to search for stranded birds and enlarge the sample of checked, beached Common Guillemots. Basic questions for the fieldworkers are:

- What species? Common Guillemot or not
- What age? Juvenile, adult or unknown
- What remains? Complete corpse suitable for checking oil or just remains
- Is there any oil in the feathers? Presence absence indication, or a more precise quantification

Fieldworkers record the location they worked, the distance searched (km), the date, their name and contact address, the conditions of the survey, and the numbers of birds found as in an ordinary beached bird survey, basically according to local or national guidelines. For Common Guillemots the above questions should be asked and the answers logged.

### **Identification and ageing**

We assume the fieldworkers are capable to identify a Common Guillemot and separate these from any other auks. To age the bird, fieldworkers should be instructed to check the pattern of the tips of the greater underwing coverts: clear white tips = first year birds, grey tips = older birds (termed 'adult' for convenience). In case of doubt (e.g. silvery tips in summer plumage individuals), don't record the age but log the individual as "age unknown".



*Visible inspection of white tips on the greater wing coverts in a stranded Common Guillemot (clearly present in the illustrated case, indicating that this is a juvenile bird). Photograph C.J. Camphuysen.*

### Check if the corpse is intact

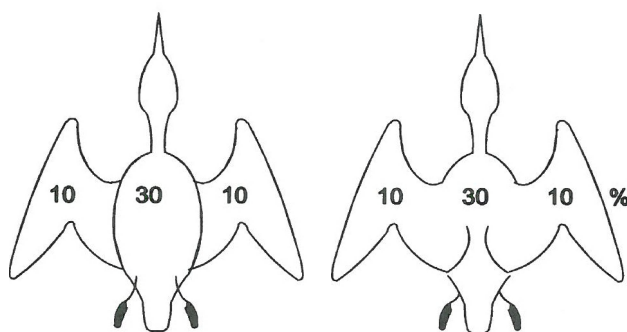
Fieldworkers should have clear instructions as what to classify as a complete corpse (entirely intact, or just basically scavenged with all major parts are available for inspection) or as 'just remains' (e.g. wings with sternum, or badly damaged corpse where substantial parts are missing). It is generally a matter of common sense to judge what corpses are sufficiently intact to be part of the main pool: complete, aged carcasses of Common Guillemots.



Corpses need to be complete for a valid inspection. Scavengers may have entered the corpse or even have torn it apart (left), but the corpse may still be considered "complete". Only when vital parts are missing (right) should the corpse be considered "incomplete" (in the illustrated case: feet, some skeleton remains, sternum and wings, head and neck torn inside out by scavenging gulls at sea). Photographs C.J. Camphuysen

### Checking for oil

All parts of the body should be checked for oil. Note that small amounts may be present around the tail, on the flanks or on the wings on otherwise, superficially clean carcasses. Blood stains, certainly in partly scavenged specimens, should not be confused with mineral oil contamination. For the EcoQO it is essential to know if a bird is oiled or not (need-to-know data). The *amount* of oil present on a corpse of a bird is interesting information, but not essential (nice-to-know data). Follow these guidelines, when possible, if information on the amount of oil is to be obtained:



Each side of the body is regarded as 30%, each wing area as 10% ( $\Sigma$  100%). Don't overdo the scores, but simplify scores as follows by rounding:

- 1% - a few specks of oil
- 5% - small oiled area
- 10% - moderate oiled area
- 25% - about one quarter oiled
- 50% - about half of corpse oiled
- 75% - nearly all of the corpse oiled
- 100% - completely covered with oil

Record the presence of oil (yes, no or unknown) and if there is any oil, do indicate the percentage covered of the corpse according to the following scheme:

### Type of oil

When the Oiled-Guillemot EcoQO is fully established, the type of oil needs be established from a representative sample of birds. This Implementation Document does not provide the guidelines for that action point, simply because the possibilities to fund this part of the monitoring programme have not been identified. Sampling oil is easy and can be done by well-instructed volunteers during their walks on beaches, the chemical analysis of oil samples is specialists' work that need be done in high quality and experienced laboratories. Sampling and analysis techniques have been proposed by Camphuysen & Dahlmann (1995).

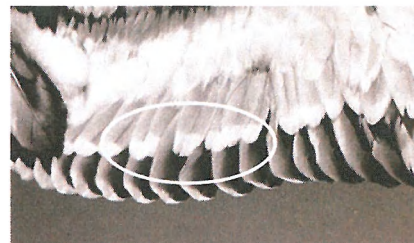
In the absence of sample taking, the identification of oil types is impossible, for different oil types cannot be separated by eye (Timm & Dahlmann 1991; Dahlmann *et al.* 1994). In fact, to say whether a substance is 'mineral oil' or any other lipophilic substance disrupting a bird's plumage is not always possible. Therefore, in the absence of a sampling programme, all substances damaging bird plumages will be included in the census and notes made by observers and regional or national co-ordinators that may shed light on the type of pollution encountered are welcomed.

### Checklist

In short, the following data need be collected

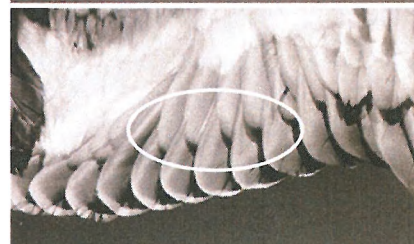
- Site, distance, date, observer
- Subregion
- Species, age (check greater underwing coverts for white tips):

- White tips present (i.e. juvenile)



- White tips absent (i.e. 'adult')



- Completeness of corpses (more or less intact / just remains)
- Oiling



It will be hard to age birds that are completely covered with oil and sometimes the ageing will be "forgotten" by field workers. To avoid losing material, and because recent oil rates will have to be compared with data collected in historical times when ageing was not common practice, the record form will accommodate such incomplete records, so that every Guillemot found can be listed. It is advisable, however, to keep pointing at the ageing characteristics that need be used, as a reminder, and as a guarantee that the highest quality data is collected.

How survey data are collected exactly is obviously up to the regional or national co-ordinator, but individual count results could look like on this example data sheet:



Oiled Guillemot EcoQO record sheet				
Subregion:	#	Date (dd/mm/yy):	-	- 20
Site:				
Contributor:				
Contact address:				
Quality of count:	poor / moderate / good		Total effort <i>km</i> :	km
Complete birds <small>(May be scavenged corpses, but all major feather parts available for inspection)</small>	Adults 	Juveniles 	Not aged	Totals
Oiled <i>n</i>				
Un油ed <i>n</i>				
Total <i>n</i>				
Oil rate	%	%	%	%
Remains	Adults	Juveniles	Not aged	Totals
Oiled <i>n</i>				
Un油ed <i>n</i>				
Total <i>n</i>				
All birds <i>n</i>				Σ
Densities <i>n/km</i>	/km	/km	/km	/km

Optional datasheet for Oiled-Guillemot EcoQO counts. Most cells ask for concrete data, the bottom rows are meant to sum up all Guillemots recorded (no matter what condition and age, including the individuals where oiling was uncertain). The 'Quality of count' box is a subjective indicator of the conditions of a survey and whether or not densities found are probably reliable or seriously biased as a result of poor conditions.

### Avoid double counts

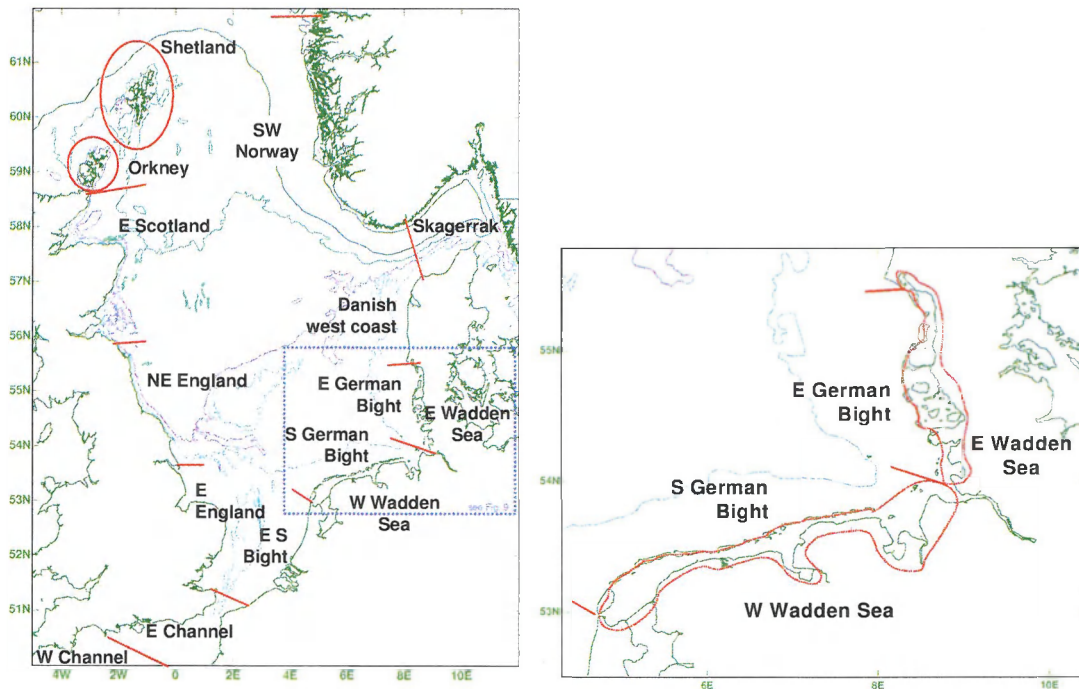
Stranded corpses should be recorded only once. Different BBS schemes have different means of avoiding double counts. Some have instructed participants to remove the corpses, others have given instructions to mark them as 'being recorded' by clipping the primaries. It is important that clear instructions are given to field workers as how to avoid double counts in this programme.

### What subregions do we use?

All North Sea countries are invited to participate in the Oiled Guillemot EcoQO by submitting data for any of the 15 subregions described below. Note that some subregions cross regional or even national borders, so that your data may *contribute* to the outcome of a given subregion rather than provide all the available material. Do not lump data that have been collected in more than one subregion and do send even very small datasets, for these may contribute to "the bigger picture" after all.

*Fifteen subregions for the Oiled Guillemot EcoQO.*

1	Shetland	Shetland Islands	UK
2a	Orkney	Orkney Islands	UK
2b	North Scotland	north coast of Scotland	UK
3	East Scotland	Duncansby Head to Berwick on Tweed	UK
4	Northeast England	Berwick on Tweed to Spurn Head	UK
5	East England	Spurn Head to North Foreland	UK
6	Eastern Channel	line between North Forland and Belgian French border to line between Cherbourg - Portland	UK, B, F
7	Western Channel	line between Cherbourg and Portland to Land's End to Ouessant	UK, F
8	Eastern Southern Bight	mainland coast Belgian/French border to Texel	B, NL
9	Southern German Bight	North Sea coast Frisian Islands Texel to Elbe	NL, FRG
10	Western Wadden Sea	mainland and Wadden Sea coast Frisian Islands Texel to Elbe	NL, FRG
11	Eastern Wadden Sea	mainland coast and Wadden Sea coast Elbe to Esbjerg	FRG, DK
12	Eastern German Bight	North Sea coast Wadden Sea Islands Elbe to Fanø	FRG, DK
13	Danish west coast	mainland coast Esbjerg – Hanstholm	DK
14	Skagerrak	east of line between Hanstholm - Kristiansund, north of a line from Skagen - Gothenburg	N, DK, S
15	SW Norway	Kristiansund to Stadt	N



*Fifteen subregions for the Oiled Guillemot EcoQO. The inset (Wadden Sea area) is enlarged in the right-hand figure. The Orkney Islands (encircled in the left hand map) includes the Scottish north coast, to the west of Duncansby Head.*

## How to collate the data regionally or nationally?

Because subregions may cross regional or even national borders, the easiest way of contributing to the joint database that will be constructed for the Oiled Guillemot EcoQO is by labelling each survey result with a date/subregion tag. It may be foreseen that, certainly shortly after implementation of the EcoQO, not every participant is able to

achieve full coverage (monthly samples of most of their study area between November to April). Therefore, the smallest unit stored into the joint database will be subregion/month data rather than subregion/winter data.

Queries from the database should produce clear and instant results on effort (km searched per subregion per month), on total numbers of Common Guillemots found (resulting in an overall density estimate), on total numbers of complete carcasses (aged/oil checked) and on total numbers of remains encountered. A relational database will be constructed in which all these data are tabulated, using a base-file and a data (bird) file, help-tables to translate particular coding, and connecting links (unique values). The maintenance of that database, including the split in separate tables is the job of the international co-ordinator or database manager. National and regional co-ordinators are requested to collate the data in a single table format, in excel or any other database or spreadsheet software, using the following fields:

*Tabulated results by regional or national co-ordinators for the Oiled Guillemot EcoQO. The headers are in bold, options are provided for each field. A database contribution for a given subregion in a given month may end up in a 27 line record (three options for age x three options for state of corpse x three options for oiling), and where fields Subreg-Km are copied down for each line of data.*

<b>Subreg</b>	<b>Ctry</b>	<b>Year</b>	<b>Month</b>	<b>Km</b>	<b>Contrib</b>	<b>Age</b>	<b>State</b>	<b>Oiling</b>	<b>Number</b>
[1-15]	[Abbrev.]	[Value]	[1-12]	[value]	[Abbrev.]	Adult	Complete	Oiled	[Value]
						Juv	Remains	Unoled	
						Unknown	Unknown	Unknown	

*Example of tabulated results, reporting survey results in subregion 8 (i.e. mainland coast Belgian/French border to Texel ), in the Dutch part of the subregion (NL), in March 2006, by Royal NIOZ, covering 25 km which resulted into a sample of 14 Common Guillemots, 10 of which were complete corpses that could be aged.*

<b>Subreg</b>	<b>Ctry</b>	<b>Year</b>	<b>Month</b>	<b>Km</b>	<b>Contrib</b>	<b>Age</b>	<b>State</b>	<b>Oiling</b>	<b>Number</b>
8	NL	2006	3	25	NIOZ	Adult	Complete	Oiled	6
8	NL	2006	3	25	NIOZ	Adult	Complete	Unoled	4
8	NL	2006	3	25	NIOZ	Juvenile	Remains	Unknown	2
8	NL	2006	3	25	NIOZ	Unknown	Remains	Oiled	2

Contributed data should be exported as excel files and sent to the international co-ordinator by e-mail.

### **What data are expected for the annual report?**

Regional or national co-ordinators are requested to check, analyse and organise the data collected and to forward the material in the fixed tabulated format shown earlier. We are interested in densities of Guillemots encountered around the North Sea (all Guillemots found dead), but mostly in accurate oil rates of birds that could be aged and that are classified as 'complete' corpses.

All data should be accompanied by a short description of the circumstances that characterise the period/area in which the material was collected. Wrecks or oil-incidents are known to affect the oil rates in different ways. Regional and national co-ordinators are therefore requested to keep a log on special events. Key issues are: were there any remarkable spills, influxes of birds, unusual weather, or major wrecks of Guillemots that may have biased the results one way or the other. The report should be a short text, with

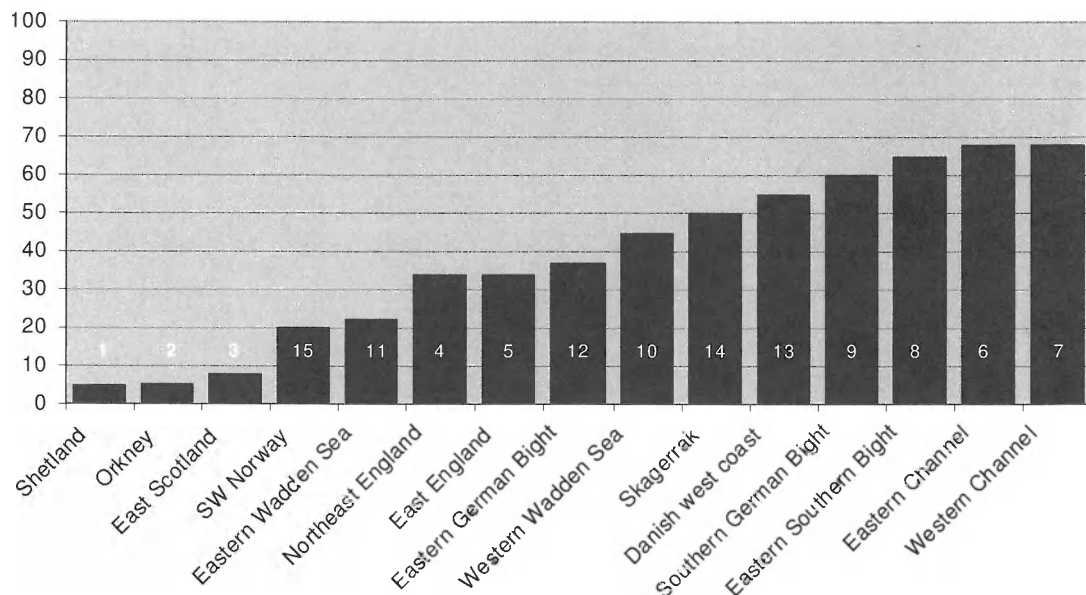
clear references to particular datasets, so that the reports can be linked to particular data in the relational database.

If some material is considered low-quality data for whatever reason, an accompanying text should make that very clear, again with clear reference to the data produced.

The database will have an open end, meaning that any data that didn't arrive in time for the annual report can be stored later, for future analysis (and long-term trends). The format is such that even small sets of data can be contributed and added; there is no reason to wait for the season to be completed before the data is sent.

## Contents of the annual report

The annual report will provide the international overview of trends in oil rates by listing updates from each of the 15 subregions (spatial patterns), and while comparing these with historical material to evaluate the temporal trends. Our basic expectation, based on collected material (Camphuysen 2004) and some educated guesswork, and while lumping the two age categories of Guillemots in the absence of the concrete data of age composition, is a pattern as shown here:



*Expectation of current oil rates of Common Guillemots around the North Sea in 15 pre-defined subregions based on recent data (Camphuysen 2004), and guesses (subregions 14 and 15). Oil rates below 10% are expected in three out of 15 areas. Numbers refer to subregion numbers (Table 1).*

The material in the annual report will be organised such that changes over time and shifting spatial patterns are most visible. This could be achieved by mapping data, and/or by the use of graphs or tables.

This update will however require an explanatory text, compiled from the reports submitted with the data from regional or national co-ordinators, indicating *why* certain values are particularly low or rather high and whether or not full coverage and adequate samples sizes have been achieved in each subregion.

## Time table

The data will be collected between November and April, summaries of results should be forwarded to the international co-ordinator *before* June of each year of monitoring, so that an Annual Report can be drafted in July and published in August, well before the next season's start.

## Overview of current monitoring

An overview of current monitoring of the Oiled-Guillemot-EcoQO by individual North Sea Contracting Parties is provided in the below table. From well-established BBS monitoring programmes in Belgium, The Netherlands, Germany, Orkney and Shetland, mostly already including the systematic ageing of beached Common Guillemots, adequate data may be expected for subregions 1, 2a, 8, 9, 10, and 11 even in the first year of implementation. Further effort is required to establish similar monitoring programmes in the remaining subregions, either by adjusting existing schemes (such as expanding the mid-winter surveys in mainland UK to a sampling programme covering the entire winter, or by expanding existing but more patchy and incomplete monitoring programmes in France, Denmark, Sweden and Norway) or by slightly adjusting field methods for existing BBS programmes.

*Overview of current monitoring of Oiled Guillemot EcoQO (summarised from Camphuysen 2004)*

	Current monitoring	Monitoring method	Needs
Norway	Some monitoring conducted intermittently	Variable	Improve regularity and establish BBS
Sweden	Some monitoring conducted intermittently	Variable	Improve regularity and expand monitoring
Denmark	Some monitoring conducted intermittently	Standard BBS	Improve regularity and expand monitoring
Germany	Annual programme	Standard BBS	None
Netherlands	Annual programme	Standard BBS	None
Belgium	Annual programme	Standard BBS	None
France	Some monitoring conducted intermittently	Variable	Improve regularity and expand monitoring
UK	Annual mid-winter surveys mainland UK, annual programme Orkney & Shetland	Standard BBS	Expand monitoring mainland UK

## Budget Oiled Guillemot-EcoQO (from Camphuysen 2004)

An important assumption for the budget presented below is that budgeted costs include *only* costs necessary for the successful completion of the project: an international combination of data. Such (annual) costs include: overall international co-ordination and an annual report (lead country only, estimated at c. € 13 250,= per annum) and national expenses on top of the costs required to run a BBS and to organise the participating volunteers (estimated at € 1500,= per annum for participating countries). The actual costs of a national BBS varies per country and these are not budgeted here, for these are seen as a national responsibility of countries represented at the North Sea Ministers Conference; those that signed the Bergen Declaration<sup>(1)</sup>

*Extra costs* are involved when the monitoring programme will include systematic oil sampling and the analysis of these samples as a study of the sources of oil. Costs would than include materials for sampling, the distribution of sampling tools and the central collection of the samples<sup>(2)</sup>. A central laboratory is the most cost-effective solution for this task. Budgeted costs are based on estimates by the Bundesamt für Seeschifffahrt und Hydrographie in Hamburg (Germany). It should be highlighted that the Oiled Guillemot EcoQO could start even if a choice regarding the need for chemical analysis of oil samples is postponed.

Co-ordination, lead country	Days	Rate (€)	Subtotal	Remarks
*Project co-ordination (work time)	10	750	7500	p.a.
*Production annual report	5	750	3750	p.a.
*Mailing, printing report, expendables		1000	1000	p.a.
*Travel		1000	1000	p.a.
Subtotal			13250	p.a.
<b>National co-ordination</b>				UK, N, DK, FRG, NL, B, F
*Running BBS			p.m.	National responsibility; costs depend on present state of volunteer network and travel expenses
*EcoQO participation	2	750	1500	p.a. per country, as a compensation for work needed to implement the EcoQO on a national level: data preparation and steering of volunteers to follow the protocols exactly
<b>Chemical analysis of oil and other substances</b>				
*technician	full time		40000	BSH, Hamburg
*supervision of work and reporting	5		3750	BSH, Hamburg
			43750	

- (1) Anonymous 2002. Bergen Declaration. Ministerial declaration Fifth International Conference on the Protection of the North Sea, 20-21 March 2002, Bergen, Norway.
- (2) Camphuysen C.J. 2002. Oil rates in Common Guillemots. CSR Report, Project INTERNAT\*NZM-DNZ, OSPAR Biodiversity Committee, BDC 03/2/4, Annex 1, 22pp.

## Frequently Asked Questions

If a full blown participation is not possible yet, should I start contributing with what data I can accumulate over a season?

*Please do. The Oiled Guillemot EcoQO is part of the first set of EcoQOs to be implemented and will therefore be seen as a pilot project. Instead of waiting until all participants are prepared, we aim at the snowball effect, with more and more participants contributing when time passes by.*

Are other birds included?

*No. Beached bird surveys tend to be organised to census all stranded birds and sometimes marine mammals. The Oiled Guillemot EcoQO is only for Guillemots. Since sample size is the key issue in obtaining robust oil rates (25 as an absolute minimum,*

*preferably considerably more corpses checked), even 'unconnected samples' taken, outside regular BBS, may be of use and can be added to the database.*

Is there a link with the Fulmar-litter-EcoQO?

*The Fulmar-litter-EcoQO is currently short-listed for implementation. Collecting Northern Fulmars is a routine that is most cost-effectively done on the same surveys where Common Guillemots are checked. In addition, however, Fulmars need be collected, temporarily stored and dissected.*

Is systematic oil-sampling foreseen?

*Yes, it is foreseen, but not immediately. For the moment the financial means to include oil-sampling and chemical analysis of samples in the Oiled Guillemot EcoQO is not available.*

## References

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