JOINT OSPAR/HELCOM/ICES WORKING GROUP ON SEABIRDS (JWGBIRD; outputs from 2023 meeting)

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Contents

i Executive summary

This report closes the triennium work plan of JWGBIRD for 2021–2023 and summarizes the working group outputs during that period, relying on two previously published ICES Scientific Reports from the JWGBIRD meetings in 2021 and 2022. The present summary report is organized such as each section covers one of the terms of reference (or tasks) of the 2021–2023 work plan. References to the previous JWGBIRD reports are indicated at the beginning of each section to point the reader to more detailed descriptions of the work JWGBIRD accomplished during the past years. In general, and despite the difficulties post-pandemic of adapting the work to hybrid meeting formats, JWGBIRD achieved most of the tasks in the work plan, including critically reviewing and updating the seabird assessments for OSPAR QSR2023 and for HELCOM HOLAS 3, as well as developing methods to ensure better, less uncertain assessments for a number of seabird indicators. Additionally, JWGBIRD contributed importantly to the shaping of the OSPAR Regional Action Plan for Marine Birds (RAP-Bird) in the Northeast Atlantic (2024–2030). JWGBIRD also supported several ICES services, including discussing the needs from WGBYC regarding bycatch data, helping in the elaboration of a dedicated workshop on bycatch in the NEAFC regulatory areas, and continuing the development of the European Seabird at Sea (ESAS) database. Other tasks summed up here and in the two earlier reports include a review of the consequences of the Highly Pathogenic Avian Flu (HPAI) on seabird populations in Europe, an overview of the risks posed by litters for seabird species, a discussion on the interest of stranded seabird data collection for assessments, and the impact of extreme weather events and oil spills on bird populations. JWGBIRD work plan for 2024–2026 will prolong these tasks, focusing on the effects of interactions between seabirds and anthropogenic activities (e.g. fisheries, litter and pollution, offshore energy production), ecological challenges (e.g. habitat loss, climate change, extreme events), and on informing other expert groups and policy-makers in both HELCOM, ICES, and OSPAR through a final year scientific report in 2026 and, intersessionally, contributing to ad-hoc advice and peer-reviewed publications.

ii Expert group information

Expert group name	Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD)
Expert group cycle	Multiannual fixed term
Year cycle started	2020
Reporting year in cycle	3/3
Chairs	Gildas Glemarec, Denmark
	Matt Parsons, UK
	Volker Dierschke, Germany
Meeting venues and dates	1/3: 08–11 November 2021, online meeting (41 participants)
	2/3: 28 November–02 December 2022, Oostende, Belgium (56 participants)
	3/3: 25–29 September 2023, Gdańsk, Poland (39 participants)

1 Task A: Impacts on populations of extreme events including oil spills and extreme weather

This topic is covered in section 4 of ICES (2023b)

A dedicated task on the impact of extreme events on populations of seabirds has been a subject of interest for JWGBIRD since at least 2018 and the meeting in Oostende (BE) that year. The task on extreme events was postponed once to be later integrated into the 3-year workplan 2021–2023.

In 2022, during the meeting in Oostende, Maite Louzao presented the results of some previous work her research group had conducted. The presentation of this work on the consequences of extreme weather events on seabird mortality in the Bay of Biscay (Louzao *et al*., 2019) is summarized in ICES (2023b).

In short, the study on the Spanish Basque coast, using data from 2004 to 2014, found that extreme winter wind events significantly increase seabird mortality, leading to mass stranding events. Monitoring these events could help predict and mitigate future strandings. The method used could be applied in other regions to understand and prevent seabird mass mortality.

To explore the impacts on seabird populations of extreme events further, the new 3-year workplan for the period 2024–2026 integrates this task again with some initial work planned during the first annual meeting in Faro (PT) in November 2024.

1.1 References

ICES. 2023b. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2022 meeting). ICES Scientific Reports. 5:108. 45 pp. https://doi.org/10.17895/ices.pub.24591936

Louzao, M., Gallagher, R., García-Barón, I., Chust, G., Intxausti, I., Albisu, J., Brereton, T. and Fontán, A., 2019. Threshold responses in bird mortality driven by extreme wind events. Ecological Indicators, 99, pp. 183–192.

2 Task B: Impacts of litter on seabirds (i.e. ingestion, entanglement) reviewing evidence and proposing further research priorities

This topic is covered in section 1 of ICES (2023a)

Initiated by David Fleet (The Schleswig-Holstein Agency for Coastal Defence, National Park, and Marine Conservation) and chaired by Nina O'Hanlon (British Trust for Ornithology), the problem of litter affecting seabirds was addressed during the 2021 online meeting of JWGBIRD (ICES, 2023a). Based on a draft report chapter compiled by David, available information was reviewed and put into the context of litter ingestion and entanglement with litter. The methods available for studying these issues as well as the coverage of seabird-litter interactions in ongoing studies in the Northeast Atlantic were reviewed. Finally, conclusions were drawn regarding research and monitoring by listing topics to be investigated and regularly monitored. The report chapter in ICES (2023a) contains valuable tabular compilations on the state of knowledge of the many individual seabird species and ongoing monitoring projects, both in the regions of responsibility of OSPAR, HELCOM, and ICES.

2.1 References

ICES 2023a. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2021 meeting). ICES Scientific Reports. 5:19. 60 pp. https://doi.org/10.17895/ices.pub.21602508

3 Task C: Plan bird assessments for OSPAR QSR 2023

Bird assessments are published (Dierschke *et al.*, 2023). This topic is also covered in sections 3 and 5 of ICES (2023a) and section 1 of ICES (2023b)

3.1 C-2) Set baseline values for B1 marine bird abundance indicator

The baseline for each species should be set at a population size that is considered desirable for each species. Refinement was done in baseline setting and assessment value. In the absence of baseline values being provided by contracting parties (CP), the following method was adopted. Whereas in the intermediate assessment 2017 (IA 2017) the abundance as of 1992 was used as the baseline, in QSR 2023 the baseline adopted was the calculated value for 1991 derived from a significant trend over the years 1991–2000 (Figure 1; in the absence of a significant trend, the mean abundance 1991–2000 was used as a baseline instead).

Specifically, baseline values were obtained based on predictions using a generalized linear model (GLM) to detect yearly trends for the first ten years of the observed period (1991 to 2000). All p-values and confidence intervals were calculated using a quasi-Poisson distribution to account for data overdispersion. In case of a significant regression over these ten years (regression p-value ≤ 0,05), the predicted value for the first year (1991) was used as the baseline value, otherwise the mean of the first ten years, ignoring missing years, served as baseline value. The geometric mean of the last six years (i.e. 2015 to 2020) was assessed against the baseline value. The threshold value for good status is 70% of the baseline value (80% in species laying only one egg per year). It is acknowledged that the year on which the baseline is set is highly influential in determining the outcome of the indicator, especially in situations where population declines are predominant. The period considered in the assessment was shifted forward from 1980 to 2020 to 1991 to 2020 because of data scarcity before 1991. This could risk an 'optimistic' bias in the indicator's outputs, with more species reaching the threshold value relative to the baseline 1991–2000 than they would, relative to 1980–1989. However, by calculating the baseline from regression analysis on the first 10 years of the time-series (or using the mean from 1991 to 2000 if no significant regression) rather than simply using the first year of the time-series, it was possible to account for declining trends and minimize the risk of such "optimistic" bias.

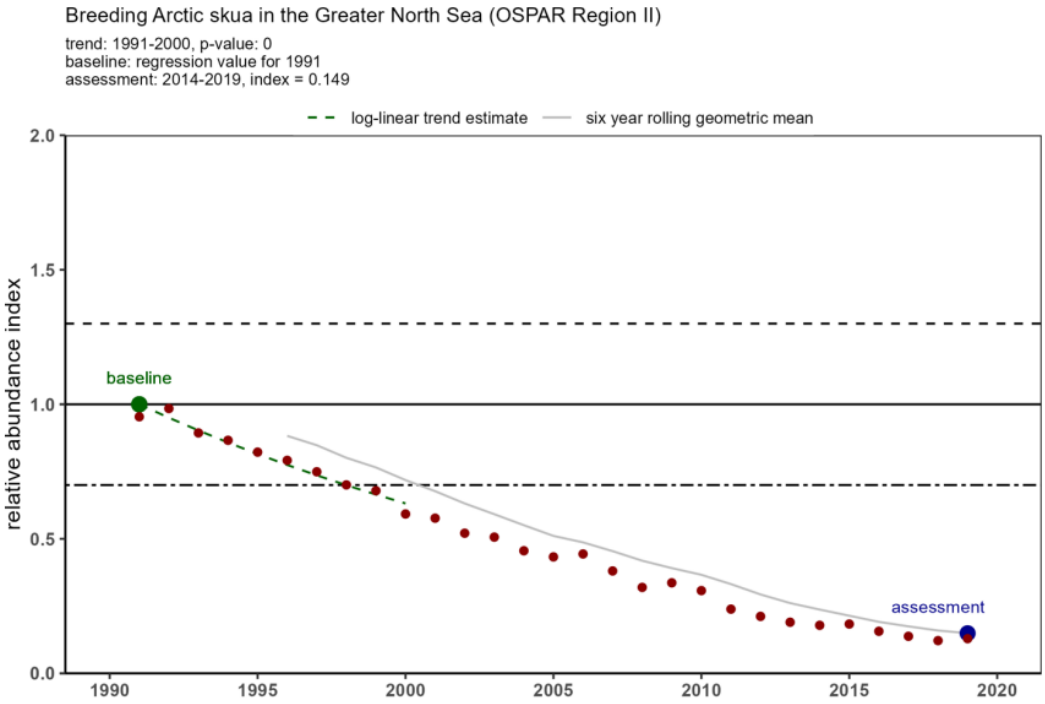

Figure 1. An example of species-specific trend of the B1 indicator. The figure shows temporal trends in relative abundance of the Arctic Skua in the Greater North Sea obtained from breeding data. Datapoints represent yearly relative abundance values, and the grey line represent the six-year rolling relative abundance geometric mean. The black line indicates the baseline which is calculated from the regression over the first ten years of data (broken green line). The black dotted line indicates the lower threshold value of 0.7 (for species that lay >1 egg) or 0.8 for species that lay 1 egg only); the black dashed line indicates the upper threshold value of 1.3. In this example, the value obtained from the last six years of the time-series is below the baseline, meaning that the species has failed the threshold value.

3.2 C-3) Draft proposals for a pilot assessment of at-sea abundance data in the southern North Sea

For the first time, QSR 2023 saw an assessment for wintering birds offshore, based on data from ship-based and aerial surveys. OSPAR's Biodiversity Committee 2022 agreed to forward the candidate indicator pilot assessment proposal to OSPAR 2022 (BDC 22/04/13 Add1) with a recommendation for publication and inclusion in the QSR 2023**.** This was ultimately published (Dierschke *et al.,* 2022b).

A pilot assessment was conducted for seven species wintering in the North Sea sections of Belgium, the Netherlands and Germany. In principle, the approach is very much the same as for breeding birds and for birds counted from the shore in winter, also using relative abundance as a metric. Details of the method are provided in Dierschke *et al.* (2022b). The offshore survey data are analysed using species distribution Generalized Additive Models (sdGAM), which are described by Mercker *et al.* (2021a).

3.3 C-4) Review progress on revising indicator B3 marine bird breeding productivity

ICG-COBAM conveners presented proposals for the assessment threshold for B3 (BDC 21/4/7; Add1 B3), which was agreed by BDC 2021. Previously, BDC (2) 2020 had agreed to revised proposals for an assessment method for the B3 common indicator. The indicator was published in Frederiksen *et al.* (2022); see also Frederiksen *et al.* (2024).

Since 2018, JWGBIRD has been developing the OSPAR common indicator B3 "Marine bird breeding success/failure" (ICES, 2018). It was found that the proportion of failing breeding colonies in a given number of years does not adequately reflect the state of a species, not least because threshold values were arbitrarily set. Still using the same kind of breeding productivity data but approaching the consequences of productivity levels for species status differently, the novel approach directly tests what impact observed breeding success has on population growth rates.

The expected growth rates are projected into the future (three times generation length, variable among species). The threshold for good status is set at the species-specific growth rate which would cause a population decline of 30% over the next three generations, assuming average breeding productivity as observed in the last six years of the time-series, but also using other demographic data (including mortality rates) from literature and trends in population size from the abundance indicator. The threshold value is based on the IUCN red list criterion that a population is "Vulnerable" if the decline in population size exceeds 30% over three generations (IUCN, 2012). For more details, see the former description of this approach (ICES, 2018).

3.4 C-5) Draft proposal for a pilot assessment of B5 seabird bycatch mortality

Following the recommendations of the OSPAR-HELCOM workshop to examine possibilities for developing indicators for incidental bycatch of birds and marine mammals (OSPAR and HELCOM, 2019), a candidate indicator addressing the bycatch of marine birds in fishing gear was developed in both Regional Sea Conventions (RSC). The candidate indicator B5 *Marine Bird Bycatch* (OSPAR) and the core indicator *Number of drowned mammals and waterbirds in fishing gear* (HELCOM) use the same concept (Figure 2). In Assessment Method 1, bird bycatch rates are combined with bird demographic data and fishing effort data to investigate whether bycatch mortality "threatens the long-term viability of populations, using population modelling (e.g. a Population Viability Analysis, PVA).". If data are insufficient to conduct a PVA, then two fallback methods are proposed to assess this indicator for species included on the OSPAR List of Threatened and/or Declining Species and Habitats (or on the HELCOM Red List of Baltic Sea species in danger of becoming extinct (HELCOM, 2013)). Assessment Method 2 compares the estimated number of birds taken as bycatch annually with the number of birds representing 1% of annual adult mortality. If even this is impossible due to lack of data, then Assessment Method 3 investigates whether there is any bycatch occurring in these threatened species – either from reported bycatch or from the spatio-temporal overlap of marine birds and fisheries known to cause bycatch in the respective species. A pilot assessment including all three assessment methods was conducted for QSR 2023 (Dierschke *et al.*, 2022a).

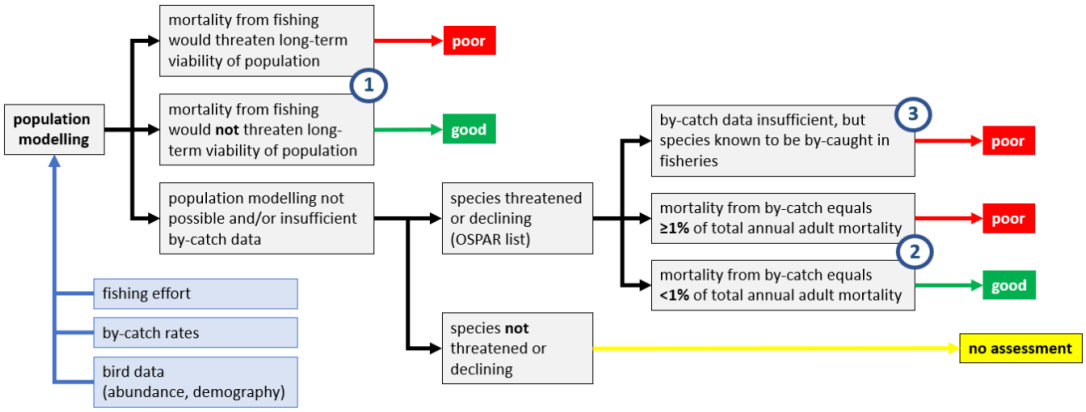

Figure 2. Schematic illustration of the evaluation of bird bycatch in fishing gear for OSPAR and HELCOM pilot assessments. Numbers denote the sequence of applicable Evaluation Methods 1, 2, and 3, depending on data availability. * Threatened species are those listed as "threatened and declining" by OSPAR and classified as vulnerable, endangered, or critically endangered by HELCOM, respectively.

3.5 C-6) Draft proposal for a pilot assessment of B6 Marine Bird Distribution

No substantial progress was made during 2021–2023 due to capacity, funding, and data constraints.

3.6 C-7) Draft proposal for a new candidate indicator and pilot assessment of offshore habitat quality (combining task D-3 for HELCOM)

The newly developed indicators B7 Marine bird habitat quality (OSPAR) and Waterbird habitat quality (HELCOM) assess the disturbance of marine birds from human activities by comparing the observed quantitative distribution with a model distribution from which the effects of the activities are removed. This allows one to identify, cumulatively, where and by which activity the birds are disturbed (Mercker *et al.*, 2021b) and therefore can help to plan targeted measures. The indicator was applied to six marine bird species in the southern North Sea sections of Belgium, the Netherlands and Germany (Dierschke and Mercker, 2022), but did not enter the integrated assessment of OSPAR's marine bird thematic assessment. In HELCOM, the indicator was not adopted for HOLAS 3, but results from a pilot study (Mercker *et al.*, 2021b) are used descriptively in the bird thematic assessment.

Applying integrative regression techniques (namely species-distribution generalized additive models, sdGAMs; for details see Mercker *et al.* (2021a)) to bird data from offshore surveys and considering environmental variables (water depth, distance to coast, chlorophyll A concentration, sea surface temperature), the effects of bottom-trawling fisheries, offshore wind farms, and shipping on bird distribution were analysed. Negative effects (avoidance) were found for offshore wind farms in three species (red-throated diver, common guillemot, black-legged kittiwake) and for shipping in four species (red-throated diver, northern gannet, common guillemot, great black-backed gull), while positive effects (attraction) of bottom trawling were indicated for five of the six species (Table 1). The assessment value D_{global}, which combines the effects of the three activities and stands for the percentage of disturbed individuals in the population of the assessment area, is highest in red-throated divers (41%), relatively low in the three gull species

(0–5%), and intermediate in northern gannet (20%) and common guillemot (10%). The indicator does not have an agreed threshold yet; therefore, it cannot be used in an integrated assessment.

The pilot assessment for long-tailed duck and herring gull in the German section of the Baltic Sea showed significant avoidance of areas used for offshore wind farms (herring gull), shipping (long-tailed duck), and bottom trawling (long-tailed duck), while herring gulls were attracted to bottom-trawling areas. The cumulative disturbance as expressed by the D_{global} value is 6% in the long-tailed duck and 1% in the herring gull (Mercker *et al.*, 2021b).

Avoidance and attraction found for the species in the indicators is largely in line with studies addressing avoidance of offshore wind farms and shipping lanes and the attraction of seabirds using discards from fishing vessels (e.g. Garthe and Hüppop, 1994; Schwemmer *et al.*, 2011; Vanermen *et al.*, 2019).

Table 1. Habitat quality in terms of disturbance from human activities for six marine bird species in the southern North Sea. The value D_{global} represents the proportion of birds of a species disturbed by human activities. Positive (+) and negative (-) effects of the three activities are shown (significant cases printed in colour); in empty cells, the respective covariate was not selected during model selection and thus not included in the model.

Species	D_{global} [C.I.]	Offshore wind farms	Shipping	Bottom-trawling fishery
red-throated diver	41% [22%, 59%]	- (p=0,000)	- (p=0,000)	+ (p=0,007)
northern gannet	20% [1%, 53%]	+ (p=0,152)	- (p=0,000)	+ (p=0,004)
common guillemot	10% [2%, 27%]	- (p=0,005)	- (p=0,019)	- (p=0,059)
black-legged kittiwake	1% [0%, 8%]	- (p=0,000)		+ (p=0,000)
great black-backed gull	5% [0%, 26%]		- (p=0,000)	+ (p=0,000)
herring gull	0% [0%, 0%]	+ (p=0,362)		+ (p=0,000)

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4 Task D: Plan bird assessments for HELCOM HOLAS 3

This topic is covered in section 4 of ICES (2023a)

The JWGBIRD work plan for the period 2021–2023 fell into the final stage of the third holistic assessment of the state of the Baltic Sea (HOLAS 3) by HELCOM. This period saw the analyses for four indicators. Analyses for two indicators also related to the MSFD criterion D1C2 (*Abundance of waterbirds in the breeding season*, *Abundance of waterbirds in the wintering season*) were conducted by Ainars Aunins and Volker Dierschke on behalf of the indicator lead country Germany, represented by the Federal Agency for nature Conservation (BfN). The same applies to a pilot assessment for the indicator *Breeding success of waterbirds* (aligned to MSFD criterion D1C3), where Morten Frederiksen (Aarhus University) carried out the analyses. The bycatch indicator *Number of drowned mammals and waterbirds in fishing gear* (MSFD criterion D1C1) was embedded in the EU funded project HELCOM BLUES, and most work was done by Volker Dierschke, Sven Koschinski and Sara Königson (SLU)[1].

The indicator development was assisted by JWGBIRD, with discussions at various stages of HOLAS 3 in the JWGBIRD annual meetings (up to 2021) and informal consultations (from 2022), but partly also intersessionally. For example, in autumn 2020 a dedicated workshop was held to bring forward an indicator addressing habitat quality (MSFD criterion D1C5) in relation to disturbance from human activities (see section 3.6). This work resulted in a scientific paper (Mercker *et al.*, 2021b) and a pilot assessment for the OSPAR QSR 2023 (see Task C, section 3.6), but in HELCOM this indicator did not find approval from all Contracting Parties.

The HELCOM Thematic assessment of biodiversity 2016–2021[2] was compiled by the HELCOM Secretariat without involvement of JWGBIRD.

4.1 References

ICES 2023a. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2021 meeting). ICES Scientific Reports. 5:19. 60 pp. https://doi.org/10.17895/ices.pub.21602508

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[1] The indicator reports are available at: https://indicators.helcom.fi/

[2] https://helcom.fi/wp-content/uploads/2023/03/HELCOM-Thematic-assessment-of-biodiversity-2016-2021-Main-report.pdf

5 Task E: Review of results from offshore (at-sea) surveys of the Baltic and planning future work

This topic was postponed to the next triennium plan and included as a new ToR in the 2024–2026 work plan

6 Task F: Develop methods for measuring and communicating confidence in OSPAR and HELCOM assessments

This topic is covered in section 5 of ICES (2023a)

Marine bird assessments for OSPAR QSR 2023 and HELCOM HOLAS 3 are based on a huge amount of data and numerous indicator assessments on the level of species/populations, integrated to a much smaller number of species group assessments. Before starting the assessments, both conventions have defined how confidence shall be assessed and reported. This section briefly describes the approaches taken by OSPAR and HELCOM for their marine bird assessments.

Confidence statements for OSPAR QSR 2023: OSPAR laid down methods for confidence assessments in their QSR 2023 Guidance Document. For the marine bird assessments, confidence has to be assessed on two levels, the indicator assessments for species/populations and the integrated assessments for species groups. The ecosystem component *marine birds* is not assessed and therefore does not need to be treated in terms of confidence. In the two Common Indicators, which were widely used across species and regions (B1 *Marine Bird Abundance*, B3 *Marine Bird Breeding Productivity*) there is no confidence assessment for the status assessments of individual species because the assessment values are running means of yearly index values for relative abundance and expected population growth rates. Rather, it was qualitatively assessed for the indicator as a whole in terms of data availability and consensus in methodology/maturity of methodology. Both criteria use three levels of confidence (high, moderate, low) and are summarized in Table 2 and Table 3. Consideration of confidence in integrated assessments in OSPAR is provided in ICES (2023a).

Table 2. Description of high, moderate, and low data availability in OSPAR indicator assessments (taken from the QSR 2023 Guidance Document, OSPAR Agreement 2019-02).

Data availability (spatially and temporally)	Description
High	There are no significant data gaps identified, for example: • The assessment is undertaken using data with sufficient spatial coverage within the area being assessed. • The assessment is undertaken using sufficient temporal data collected over a period pertinent to the assessment.
Moderate	Some data gaps are evident, but this does not impact the overall outcome of the assessment, for example: • The assessment is undertaken using data with a mostly sufficient spatial coverage for the area assessed, but gaps are apparent in certain areas. • The assessment is undertaken using data with a mostly sufficient temporal coverage collected over a period pertinent to the assessment. Although some gaps are apparent.
Low	Significant data gaps have been identified (both spatially and temporally), for example: • The assessment is undertaken using limited data with poor spatial coverage within the area assessed. • The assessment is undertaken using limited data collected over a period that is limited (and therefore not pertinent to the assessment) or the assessment is largely informed by expert judgement.

Table 3. Description of high, moderate, and low consensus in methodology/maturity of methodology in OSPAR indicator assessments (taken from the QSR 2023 Guidance Document, OSPAR Agreement 2019-02).

Consensus in methodology / maturity of methodology	Description
High	The assessment methodology requires only limited further development and updating for future assessments, for example: • The methodology used is widely accepted and is used in published international assessments. The methodology has been in use for a number of years. • There is a strong consensus within the scientific community regarding this methodology / approach to assessment.
Moderate	The assessment methodology could benefit from some further development for future assessments, for example: • The methodology presented is often used to assess this indicator and has been used previously in published assessments, but it is acknowledged that one or two aspects require further development. • There is consensus within the scientific community regarding this methodology, but there remain some questions around the methodology.
Low	The assessment methodology requires further development for future assessments, for example: • The methodology used has been developed specifically for this assessment and has not been used in a previously published assessment. • There is limited consensus within the scientific community regarding this methodology.

Confidence statements for HELCOM HOLAS 3: For waterbird assessments in HELCOM HOLAS 3, the confidence of indicator results of individual species or populations is evaluated for four criteria: accuracy of estimate, temporal coverage, spatial representability, and methodology. A score of high, intermediate, or low is allocated to each species assessment in an indicator according to the descriptions in Table 4, Table 5, Table 6, and Table 7. If indicators allow the calculation of standard error, this value is used for further integration (see below) rather than an estimate of accuracy. For the integration of species group status and to higher levels of the assessment of the status of the Baltic Sea the BEAT tool is used (HELCOM, 2018). To allow the integration, the confidence estimates originally provided in categorical form (as low, intermediate, and high) are translated into numerical values (0, 0.5, and 1), where higher values mean higher confidence. The four confidence criteria are then averaged for each indicator input result (species or population) to a single confidence score. This confidence score is then used in the BEAT integration: species -> species group -> overall bird result, in each assessment unit. The final confidence score is presented in categorical form, where confidence scores are classified as low below 0.5, intermediate from 0.5 up to and including 0.75, and as high above 0.75.

Table 4. Description of high, intermediate, and low accuracy estimates of HELCOM indicator results.

Score	Evaluation criteria
High	Does a compliance check to the threshold value show a clear signal whether GES has been achieved or not? i.e. GES has been / has not been achieved by at least 90% probability
Intermediate	Does a compliance check to the threshold value show that values are generally clearly GES/sub-GES, though some outliers and variation in the data are present? i.e. GES has been / has not been achieved by 70 – 89% probability
Low	Does a compliance check to the threshold value not show clearly whether the data points are GES/sub-GES, and/or the overall evaluation is very close to the boundary? i.e. GES has been / has not been achieved by less than 70% probability

Table 5. Description of high, intermediate, and low temporal coverage of HELCOM indicator results.

Score	Evaluation criteria
High	Does monitoring data cover the entire HOLAS II assessment period? i.e. if year-to-year variation occurs, are all years in the range 2016–2021 included? if year-to-year variation does not occur, are the requirements set for temporal frequency of monitoring met?
Intermediate	Does the monitoring data cover most of HOLAS II assessment period? i.e. if year-to-year variation occurs, are 3 or 4 years in the range 2016–2021 included?
Low	Does the monitoring data cover the HOLAS II assessment period inadequately? i.e. if year-to-year variation occurs, are only 1 or 2 years in the range 2016–2021 included? if year-to-year variation does not occur, are the requirements for temporal frequency of monitoring not met?

Table 6. Description of high, intermediate, and low spatial representability of HELCOM indicator results.

Score	Evaluation criteria
High	Is the monitoring data are considered to cover the full spatial variation of the indicator parameter in the assessment area? i.e. does the data represent reliably at least 90% of the relevant habitat type(s) in the assessment area? if a clear spatial gradient or patchiness is shown in the parameter value, is the monitoring set to cover at least 90% of this variation?
Intermediate	Is the monitoring data considered to cover most of the spatial variation of the indicator parameter in the assessment area? i.e. does the data represent reliably at least 70–89% of the relevant habitat type(s) in the assessment area? if a clear spatial gradient or patchiness is shown in the parameter value, is the monitoring set to cover 70–89% of this variation?
Low	

Table 7. Description of high, intermediate, and low methodological confidence of HELCOM indicator results.

Score	Evaluation criteria
High	For indicator parameters that have HELCOM guidelines for monitoring: has the monitoring been conducted according to these? and Is the data quality assured according to HELCOM or other internationally accepted guidelines?
Intermediate	For indicator parameters that have HELCOM guidelines for monitoring: has the monitoring been conducted only partly according to these? and / or Is the data from mixed sources, partly quality assured according to HELCOM or other international standards? and / or Is the data quality assured, but according to local standards?
Low	For indicator parameters that have HELCOM guidelines for monitoring: has the monitoring data not been collected according to these? or Is the monitoring data not quality assured?

6.1 References

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7 Task G: Support ICES advisory services

This topic is covered in section 6 of ICES (2023a) and section 2 of ICES (2023b)

JWGBIRD supports ICES work by providing general information on seabird ecology, including population assessment and monitoring, and by discussing the risks for seabirds stemming from interactions with anthropogenic activities, including bycatch in fishing gears and offshore energy development. In the period 2021–2023, JWGBIRD work in relation to ICES revolved around 3 main themes: contribute to a special request from NEAFC (North East Atlantic Fisheries Commission) on seabird bycatch in the NEAFC Regulatory Areas (task G1), support the ICES roadmap for bycatch advice by assembling data and qualitative information on seabirds (including demographic and abundance trends; task G2), and assess the effects of anthropogenic activities on marine birds other than incidental bycatch (task G3). Additionally, JWGBIRD was asked to determine and further advance methods to assess the resilience of protected bird species to bycatch (task G'). Although this was discussed during the meetings, the group did not progress importantly with this task during the 2021–2023 period.

The work on these tasks took place primarily during the JWGBIRD meetings in 2021 and 2022 and is summarized in ICES (2023a) and ICES (2023b), respectively. For convenience, the present section re-utilizes the text presented in these reports, and the corresponding sections are reproduced hereunder, with some additional corrections and amendments where necessary for clarity.

7.1 Initiatives on seabirds within ICES

7.1.1 JWGBIRD integration to the ICES workflow

In line with an ecosystem approach to fisheries management, the primary role of ICES is to inform fisheries authorities with expert knowledge and to recommend the most adequate course of action based on scientific data. The work stemming from JWGBIRD is essential to incorporate considerations of seabird ecology, including the interactions between seabird populations and fisheries, into fisheries management decisions. JWGBIRD is notably tasked with assembling data on seabirds for the Working Group on Bycatch of Protected Species (WGBYC), which evaluates bycatch data/information from multiple sources for advisory purposes (ICES, 2022). To this end, JWGBIRD can identify and describe all potential new data sources and propose options for improving data availability and quality (e.g. through monitoring), either directly in the annual working group reports or by answering specific requests from ICES. At a regional level, ecosystem overviews and fisheries overviews summarize all relevant knowledge of the pressures exerted on ecosystems for each ICES ecoregion. In particular, incidental captures of seabirds in fishing gears and impact of litter on seabirds are considered specifically, following inputs from inter alia JWGBIRD. The ICES Advisory Committee (ACOM) is then responsible for translating the scientific outputs stemming from the ICES network into advice on the sustainable use, provision of services, and protection of marine ecosystems. With regards to seabird conservation, it is therefore crucial that JWGBIRD delivers sound and timely information to incorporate this knowledge into ecosystem-based management advice.

7.1.2 Other Initiatives in ICES

Direct contributions from JWGBIRD experts to the ICES network enhance the work outputs of other working groups, including but not limited to WGCATCH, WKRARE, or WKGEOSSF. Although not directly related to ICES, the four Regional Coordination Groups (RCGs), which facilitate cooperation and coordination between countries (both European Union [EU] Member States and third countries in the same marine region) in terms of data collection and reporting are closely interlinked with the work produced by the ICES expert network. This coordination is essential to understand and eventually act upon the decline of many seabird populations affected by anthropogenic activities (e.g. pollution, incidental captures, competition with fisheries for prey), increased mortality from diseases like avian flu, or the consequences of climate change (e.g. habitat loss, extreme weather, and larger-scale regime shifts).

7.1.3 Support ICES advisory service

The Directorate-General for Maritime Affairs and Fisheries of the European Commission (DG-MARE) requires ICES to deliver annual advice on endangered, threatened, and protected (ETP) species bycatch in EU fisheries. A WGBYC annual data call collates and reports information on bycatch observations per métier and area and estimates the corresponding multiannual bycatch rates (as individuals/Days at Sea observed). JWGBIRD can help increase the precision of these estimates of bycatch rate for selected species/areas of particular bycatch concern by sharing its expertise with WGBYC and recommending suitable mitigation measures, where appropriate. The group agreed to establish a short list of species of priority concern intersessionally and to communicate that list to WGBYC ahead of its annual meeting. The definition of the criteria to use for prioritization was left to the judgment of JWGBIRD.

To answer a request from the Directorate-General for Environment of the European Commission (DG-ENV) and following a preliminary workshop (ICES, 2019), ICES planned a series of workshops in 2023 on bycatch of ETP species in fisheries. These workshops ("WKPETSAMP2" in April 23 and "WKPETSAMP3" in November 2023) aim to create guidelines and tools to help fisheries managers decide on the most appropriate sampling schemes to monitor ETP species bycatch (including seabirds), based on factual data and on simulations. In parallel, another workshop on seabird bycatch monitoring in the NEAFC Regulatory Area ("WKBB") took place in May 2023, focusing on seabird bycatch in the North East Atlantic Fisheries Commission (NEAFC) Regulatory Areas (RA). With the support of JWGBIRD experts and other external experts, WKBB aimed to highlight the current knowledge gaps and data deficiencies in the region in terms of fishing effort and seabird ecology. A preliminary draft of the ToRs was presented to JWGBIRD and discussed more in-depth during the informal meeting in Oostende in December 2022. In January 2023, a summary business report was published by ICES, highlighting the gaps in knowledge and data that currently impede the elaboration of management advice to NEAFC (ICES, 2023c). Building upon this report and the results of the first of the two WKPETSAMP meetings, the WKBB workshop elaborated actions to monitor NEAFC fisheries effectively and assess the magnitude of seabird bycatch in the NEAFC RA (ICES, 2023d) and was followed by an official ICES special request advice in September 2023 (ICES, 2023e). An additional special request advice was published by ICES in 2024, identifying high bycatch risk gears for seabirds in the NEAFC regulatory areas (ICES, 2024).

7.2 Other initiatives on seabird bycatch in HELCOM/ICES/OSPAR

7.2.1 Inventory of bird bycatch data in support of the ICES roadmap for bycatch advice

To support the ICES roadmap for bycatch advice, ICES requested JWGBIRD to assemble bird bycatch data and information from additional sources other than the data call contributing to the work of WGBYC, including data on seabird stranding and entanglement, interviews, research projects, and national or local monitoring programmes. The working group JWGBIRD understood this request as listing additional sources of information on bird bycatch not mentioned in WGBYC reports, including information on the absence of bycatch where available; Table 6.1 in ICES (2023a). Entanglement in man-made objects (e.g. fishing nets, fishing lines, rubber balloons, plastic bags and sheeting, or metal cans) was not considered in this section, as it is covered in detail in section 1 of ICES (2023a). The sources of information used in the present report section were primarily an OSPAR report supporting the OSPAR indicator B5 *Marine Bird Bycatch*, commissioned by JNCC (Oliveira *et al.*, in prep.), which supplemented the WGBYC database with bycatch surveys from 41 additional sources in the OSPAR region, with data stemming from OSPAR-contracting as well as non-members countries. In the Baltic area, HELCOM ACTION (2021) provided an extra source of data on bycatch, and other reports were also used as additional sources.

7.2.2 Additional sources of bycatch data

The number of incidental captures of seabirds in fishing gears can vary greatly in space and in time, and seabird bycatch is both a fishery- and a species-dependant phenomenon. The bycatch and fishing effort data made available to ICES WGBYC are supposed to procure a scientific basis for assessing the levels of bycatch in Northern-Atlantic fisheries, but these data are largely incomplete for some species (or populations) of seabirds and for some fisheries. Often, the data reported to WGBYC may not be statistically representative, i.e. the temporal stratification and the spatial sampling units used in bycatch and fishing effort monitoring programmes do not adequately reflect the distribution and intensity of the fleet's fishing effort, and of the subsequent bycatch rates (Oliveira *et al.*, in prep.). As such, data on bycatch and effort should be given at the finer spatio-temporal scale possible, including as detailed information as possible on fishing gears and on captured animals (including notably species, and, when possible, sex and information on the sexual maturity of the taken as bycatch individuals). Besides the spatio-temporal distribution of birds and fisheries, many parameters are susceptible to influence bycatch rates, including e.g. population demographics, prey availability, or environmental variables (water temperature, occurrence of storms, etc.). Despite the importance of these factors to explain and eventually predict bycatch occurrences, these data are only seldomly recorded in fisheries operating in the OSPAR, HELCOM, and ICES areas. Given on the one hand the low bycatch monitoring effort in some fisheries in the OSPAR/HELCOM/ICES regions, particularly in small-scale fisheries, and on the other hand the lack of accuracy in the bycatch recordings (e.g. no reporting of zero-bycatch in many datasets, fishing effort reported at a coarse scale, or simply absence of bycatch/effort data), seabird bycatch numbers are difficult to estimate with precision from the WGBYC database alone (ICES, 2019; ICES, 2021). These data can be complemented with additional sources to reduce the uncertainty around the bycatch estimates when it is possible to evaluate or to identify areas where seabird bycatch is presumably problematic in data-limited fisheries. To that end, stranding data can help cast a light on fisheries or areas where incidental captures are higher than what is reported in official records (e.g. Hamel *et al.*, 2009). Drift models

can help identify the provenance and possible cause of death of stranded individuals, by comparing the plausible origin of the carcass to the distribution of fisheries, as conducted for marine mammals in the Bay of Biscay (Peltier and Ridoux, 2015; ICES, 2020a; Peltier *et al.*, 2020), or recently for seabirds in Norway (Christensen-Dalsgaard *et al.*, 2022). Collection of beached birds is done routinely in all ICES Member Countries either by established research bodies, by citizen-based initiatives, or both, so such modelling approaches could be initiated in future to learn more about the provenance of dead seabirds across European waters. Nevertheless, until now, previously published research using bird stranding data focused mostly on evaluating the impact of oiling on populations (Camphysen and Heubeck, 2001), and bycatch in fishing gears seems to have received less interest in comparison (but see Žydelis *et al.*, 2006). Although data from beached bird surveys may be partial and insufficient to assess the magnitude of bycatch occurrence, they can bring valuable information on the areas of higher bycatch risks and the species impacted (Žydelis *et al.*, 2009). In the absence of direct evidence of bycatch, or to complement patchy datasets, interviews with fishers who may capture birds in their gears are useful to appraise the scale of the problem locally. In the Baltic Sea, there is evidence that bycatch in small-scale gillnet fisheries is putting some seabird populations under pressure (Žydelis *et al.*, 2009; Glemarec *et al.*, 2020; Marchowski *et al.*, 2020; HELCOM ACTION, 2021; Larsen *et al.*, 2021; Morkūnas *et al.*, 2022). Yet, important gaps in vessel monitoring exist that limit understanding of the spatio-temporal distribution of the fisheries susceptible to elevated levels of seabird bycatch. For instance, the German gillnet fleet, which operates principally in the western part of the Baltic Sea, is composed mostly of vessels below 8 metres (Meyer and Krumme, 2021), which are not legally required to fill in logbooks to report their fishing activity, but only monthly declarations. Bellebaum (2013) estimated the average minimal total bird bycatch in the German Baltic fleet above 17 500 animals annually during the period 2006–2009 using a mixture of interviews and field studies. Recently, Barz *et al.* (2020) documented how bycatch mitigation is perceived by German coastal fishers, and how this may influence future fisheries management decisions and bycatch research. In a heterogeneous fishing fleet as is the German Baltic fleet, and in the absence of precise recordings of effort, fishing effort intensity can be reconstructed by analysing sequences of landings (Meyer and Krumme, 2021). Until all small-scale fishers record and report bird bycatch accurately, studies combining interviews and local monitoring are likely the way forward to map seabird bycatch high-risk areas in the Baltic region (Psuty and Calkiewicz, 2021). Nevertheless, the EU seems aware of the recurring issues regarding fisheries-dependant data paucity in the smallest segments of the fleet and is working on amending the current control regulations (EU/EC, 2018). This proposal would require all vessels regardless of size to register and report detailed information on fishing effort, notably by implementing mandatory usage of a tracking system for all vessels, alongside with compulsory logbook displaying detailed information on fishing gear characteristics for each fishing trip. If voted by the European Parliament, the proposed amendments will considerably improve our knowledge of the fishing effort distribution in the EU and eventually allow us to calculate or refine bycatch mortality estimates at the scale of the Union.

7.2.3 Summary of seabird bycatch estimates in EU waters

Daniel Mitchell from BirdLife Europe was invited to the meeting in Oostende in 2022 to present the preliminary results of a large review of seabird bycatch in European waters, covering all bird species and all gear types. This study aimed to review all the available published data on seabird bycatch in Europe, compile country-level bycatch assessments and compare these with previous estimates (where these are available), identify locations of concerns for seabird bycatch, and highlight data gaps and priorities for action to reduce bycatch of seabirds in European waters. The supporting manuscript was still unpublished at the time of the meeting in 2022 but is now available (Ramírez *et al.*, 2024). The main conclusions of this review were that there were at least

192 000 birds captured in fishing gears yearly in Europe. Yet, at the time of writing, there were still no seabird bycatch estimates in 12 out of the 33 European coastal states included in the study, while for those countries with available estimates, these were generally not covering the entire national fishing fleet, i.e. only some métiers or areas are monitored for bycatch, so that these figures are likely an underestimation.

7.2.4 Data needs for future PVA assessments

Nuno Oliveira presented the results of the JNCC report on B5 *Marine Bird Bycatch* indicator testing in the OSPAR region. In particular, this presentation re-emphasized the importance of collecting comprehensive data on seabird population ecology, and on fishing effort and bycatch data for all fisheries in every OSPAR region to be able to estimate the long-term effects of incidental captures for individual populations using population viability analyses (PVA). Subsequently, a subgroup worked on establishing the data needs for future PVA assessments. The discussion centred on some of the inherent caveats of this type of stochastic model that, in the cases presented by N. Oliveira, predicts the population changes (structure and/or numbers) using predetermined values for the population demographics and bycatch levels. Notably, in the absence of "real" bycatch data, simulations were used to predict the state of a population 50 years in future, by forcing a constant annual bycatch mortality rate on that population (respectively, comparing the effects of 1%, 5%, and 10% annual bycatch mortality). As pointed out by several experts, such a situation (i.e. a fixed percentage of the population taken annually in fishing gear) is highly unlikely in reality. Although arguably more complex to develop, a modelling approach taking account of possible changes in fishing effort intensity and patterns could be more informative. This suggests that instead of PVAs, Integrated Population Models (IPM; Riecke *et al.*, 2019) could be developed specifically to examine the response of seabird populations to bycatch for selected populations of seabirds. The data needed for modelling population effects of bycatch were also discussed in plenary. The group agreed to create and maintain a database listing the scientific publications in English and grey literature (in national languages) on seabird bycatch in the HELCOM and OSPAR regions to support and facilitate access to these data sources (in Annex 2, Table 7 of ICES, 2023b). JWGBIRD's interest in a similar compendium of information on seabird population demographics was also discussed, but several experts pointed out that such a list would be more difficult to establish and maintain and that instead, JWGBIRD could focus on creating such a dataset for a concise list of priority species.

7.3 Determine and further advance methods to assess the resilience of protected bird species to bycatch

Still in an early stage. It appears that as long as DGMARE has not explicitly formulated objectives and guidance, JWGBIRD was not able to advance on this task during the period 2021–2023.

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8 Task H: Migration of ESAS database to ICES Data Centre Subgroup of JWGBIRD working on data policy, model, and format

This topic is covered in section 7 of ICES (2023a) and in section 4 of ICES (2023b)

The international cooperation referred to as the European Seabirds at Sea (ESAS) database has its origin in the 'Seabirds at Sea' project that was initiated as early as 1979, and the first European-wide data assembly in 1991 gave birth to the ESAS database as we know it today. Following a vivid start of this initiative, the organization of (joint) ship-based at-sea surveys and regular updates of the database by the OSPAR community, there was not much activity after 2011. Therefore, in 2020 as part of a project within the Dutch WOZEP research programme, the ESAS database was updated with more recent Dutch, German, and Belgian data. The database format was amended to better include aerial surveys and underwent a thorough quality control. The updated ESAS database was then migrated to the ICES Data Centre. ICES provides a data portal where the data model is explained, new data can be uploaded, and the data can be consulted[3]. With the support of the Research Institute for Nature and Forest (INBO), ICES set up a GitHub repository where examples of R-scripts can be found on how to handle and transform data[4].

The ESAS database migration to an internationally established data host was first discussed in 2016, at a meeting among ESAS contributors in Büsum, resulting in explorative meetings with the ICES Data Centre in the course of 2017. Within the ESAS revitalization project, discussions were picked up again and monthly meetings were organized between the project group and the ICES Data Centre from October 2020 onwards. The database migration was achieved in several steps:

- Discussions among ESAS contributors about the requirements of a future-proof ESAS database;
- Aligning vocabularies between ESAS contributors and updating the database with Belgian, German, and Dutch data;
- Discussions between the project group and the ICES Data Centre to achieve a fully revised data model that complies with ICES Data Centre standards;
- Discussions on setting up an application at the ICES data portal, with modules for data validation, data upload and data download[5].

The current ESAS database at ICES now holds almost three million observations of birds and marine mammals, most of which were collected in the North Sea. Data were delivered by 14 institutes from 7 countries and over 90% of the data are flagged as open access. Restricted data can be accessed after approval of the data rights holder, and contact persons are automatically notified through e-mail following the online request.

A governance group representing data owners and managers to discuss data issues, data use and development of derived products is needed but has not yet been formalized. Instead, ESAS

[3] https://www.ices.dk/data/data-portals/Pages/European-Seabirds-at-sea.aspx

[4] https://github.com/ices-tools-dev/esas

[5] See: https://esas.ices.dk

database work is currently steered by a dedicated ESAS working group within JWGBIRD dealing with database issues within sub-sessions during JWGBIRD meetings. In 2023, for example, a few issues on species coding and nomenclature raised by ICES were discussed in the ESAS working group. JWGBIRD members were generally enthusiastic about regularly updating the ESAS database with existing data and uploading historical at-sea monitoring data to the ICES data portal, but also some hurdles were identified. Time constraints and reluctance to translate existing data into ICES standard format were raised as major issues. Furthermore, active participation in a governance group or intersessional working groups as well as involvement in the publication of the ESAS data were identified as strong incentives for future participation. Also, the inclusion of at-sea data in the D1C2 abundance indicator, future HELCOM indicators, and national needs for at-sea data for MSFD reporting would stimulate regular updates.

8.1 References

ICES 2023a. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2021 meeting). ICES Scientific Reports. 5:19. 60 pp. https://doi.org/10.17895/ices.pub.21602508

9 Task I: Conduct Indicator Assessments for OSPAR QSR 2023

This topic is covered in section 5 of ICES (2023a) and in section 1 of ICES (2023b)

9.1 I-1) B1 - Marine bird abundance (update of common indicator)

Dierschke *et al.* (2022c) provide a comprehensive report of the B1 assessment made for QSR2023.

Bird abundance is assessed in the OSPAR Common Indicator B1 *Marine bird abundance* (dealing with both breeding and non-breeding birds).

Method: the mean abundance of the last six years of the time-series is compared against a baseline value derived from the years 1991–2000. The baseline is either the mean abundance in these years or the predicted value for 1991 if there is a significant trend in these ten years. Time-series is any year between 2016 and 2020, depending on data availability. A species is in good status if the abundance in the assessment period is at least 70% of the baseline value (80% in species laying only one egg per year). A species group is in good status if at least 75% of the species assessed achieve the threshold. Breeding and non-breeding populations are assessed separately and enter the integration into species groups independently. The integration from species to species group on the level of an indicator is not part of MSFD assessments, where the first species status is integrated across criteria (European Commission, 2022).

Abundance is assessed on two spatial scales: Regions I to V represent the higher level – but no assessment is available for Region V (the Wider Atlantic) – while subdivisions are assessed in Regions I (Arctic Waters) and II (Greater North Sea).

9.2 I-2) B1 - Marine bird abundance (PILOT using at-sea data)

A pilot assessment was conducted for seven species wintering in the North Sea sections of Belgium, the Netherlands, and Germany. In principle, the approach is very much the same for breeding birds and for birds counted from the shore in winter, also using relative abundance as a metric. Details of the method are provided in Dierschke *et al.* (2022b). The offshore survey data are analysed using species distribution Generalized Additive Models (sdGAM), which are described by Mercker *et al.* (2021a).

9.3 I-3) B5 - Marine bird bycatch (PILOT)

Dierschke *et al.* (2022a) provides a comprehensive overview of the pilot assessment of this candidate indicator.

9.4 I-4) B7 - Marine bird habitat quality (PILOT)

Dierschke and Mercker (2022) provides a comprehensive overview of the pilot assessment of marine bird habitat quality.

9.5 I-5) B3 - Marine bird breeding productivity

Frederiksen *et al.* (2022) provides a comprehensive overview of the OSPAR assessment for marine bird breeding productivity.

9.6 References

Dierschke, V., Christensen-Dalsgaard, S., Koschinski, S., Parsons, M., Oliveira, N. 2022a. Pilot Assessment of Marine bird bycatch. In: OSPAR, 2023: The 2023 Quality Status Report for the North East Atlantic. OSPAR Commission, London. https://oap.ospar.org/en/ospar-assessments/quality-status-reports/qsr-2023/indicator-assessments/marine-bird-bycatch-pilot/

Dierschke, V., Markones, N., Mercker, M. 2022b. Pilot Assessment of Marine Bird Abundance – Non-Breeding Offshore Birds. In: OSPAR, 2023: The 2023 Quality Status Report for the North East Atlantic. OSPAR Commission, London. https://oap-cloudfront.ospar.org/media/filer_public/fb/10/fb105620-fed1-4d1e-b0a9-0cfe68283277/p00853_pilot_marine_bird_abundance_offshore_b1.pdf

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ICES. 2023b. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2022 meeting). ICES Scientific Reports. 5:108. 45 pp. https://doi.org/10.17895/ices.pub.24591936

10 Task J: Conduct OSPAR Thematic Assessment of marine birds for QSR 2023

OSPAR 2023 provides a comprehensive summary of the Thematic Assessment and its main results.

Through its Quality Status Report 2023 (QSR 2023), OSPAR aimed to assess the environmental status of the Northeast Atlantic against the objectives of the Northeast Atlantic Environmental Strategy 2010–2020 (NEAES 2020), to evaluate any updated or additional objectives from NEAES 2020–2030, and identify the priority elements for actions to achieve OSPAR's objectives for a clean, healthy, biologically diverse sea, used sustainably. As part of the marine environment, the assessment of birds contributed to the knowledge of the quality status of the five OSPAR Regions. The QSR 2023 Guidance Document (OSPAR Agreement 2019-02) advised on how assessments should be structured and produced (Figure 3).

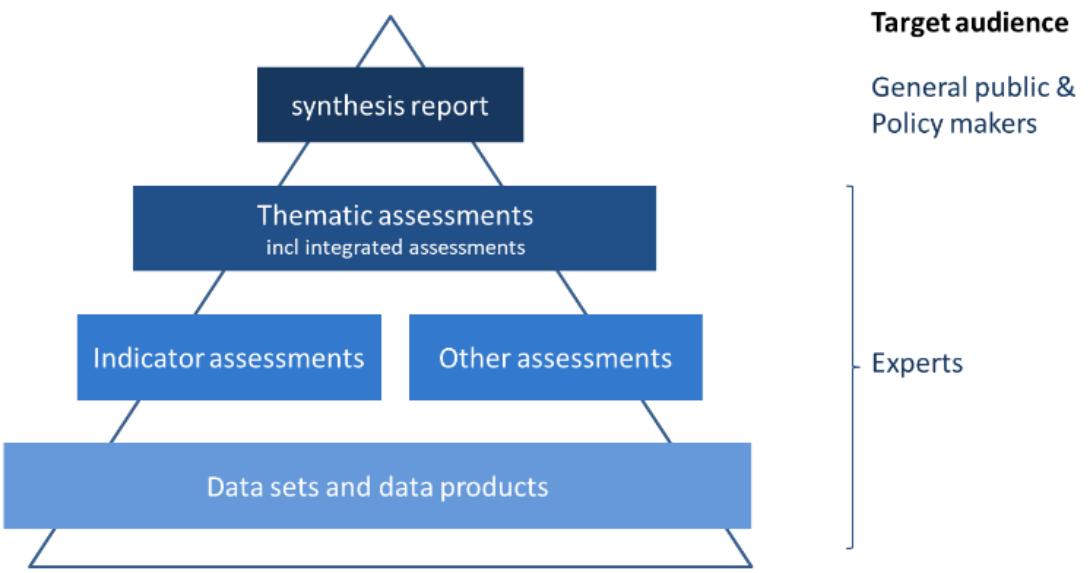

Figure 3. Structure of the OSPAR Quality Status Report 2023

Based on the indicator assessments and added by some assessments of threatened and declining species conducted under ICG-POSH, the status of marine bird species groups feeds into the Marine Bird Thematic Assessment. The function of thematic assessments is to combine an integrated assessment of the status of marine birds with other relevant information causing the status and deriving from it. All information is aligned to a DAPSIR framework (Figure 4), where the capital letters stand for the chapters about the social and economic Drivers for human Activities, which cause Pressures on marine birds. Pressures have impact on the State of marine birds, and the state has Impact on the ecosystem services of the birds. Finally, there is Response to state and its changes in the form of measures.

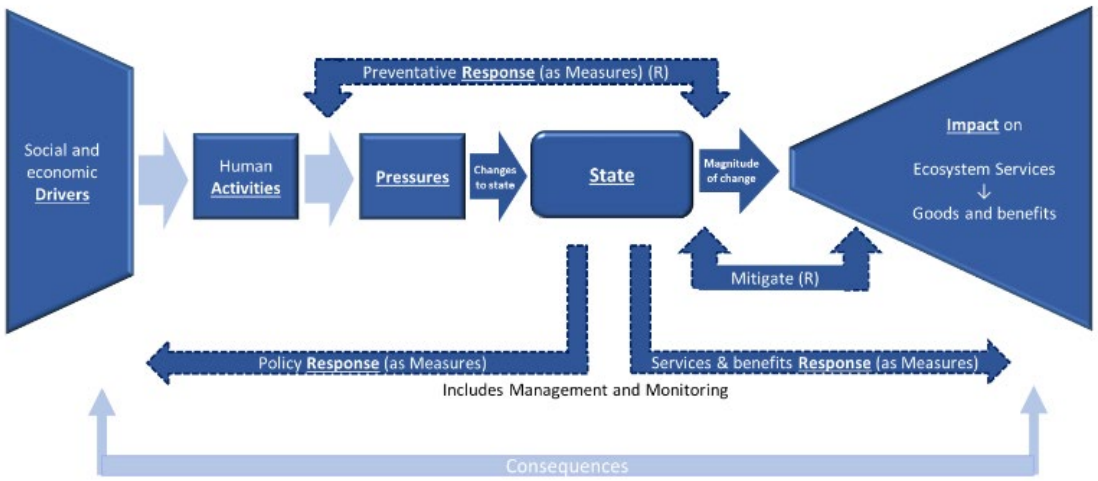

Figure 4. Framework to underpin thematic assessments, using the DAPSIR approach.

These chapters focus on the quality status of the Northeast Atlantic and its Regions for marine birds, the extent to which (quality) objectives and/or (management) targets have been achieved in the OSPAR Regions and trends or the direction of change for each of the aspects. The connections between the elements of the individual chapters are shown by the help of a bow-tie-analysis. A separate section is dedicated to the effects of climate change.

The State chapter brings together the indicator results to assess the status of species and species groups. This integrated assessment follows the integration methods developed by JRC (Dierschke *et al.*, 2021) and is included in the Article 8 MSFD Assessment Guidance (European Commission, 2022). Thus, conditional rules will be applied to assess the status of species based on the indicator results. The integration from species-to-species group will follow the proportion that a species group is in good status if at least 75% of the species are in good status. Figure 5 shows a summary of the State chapter of the Thematic Assessment.

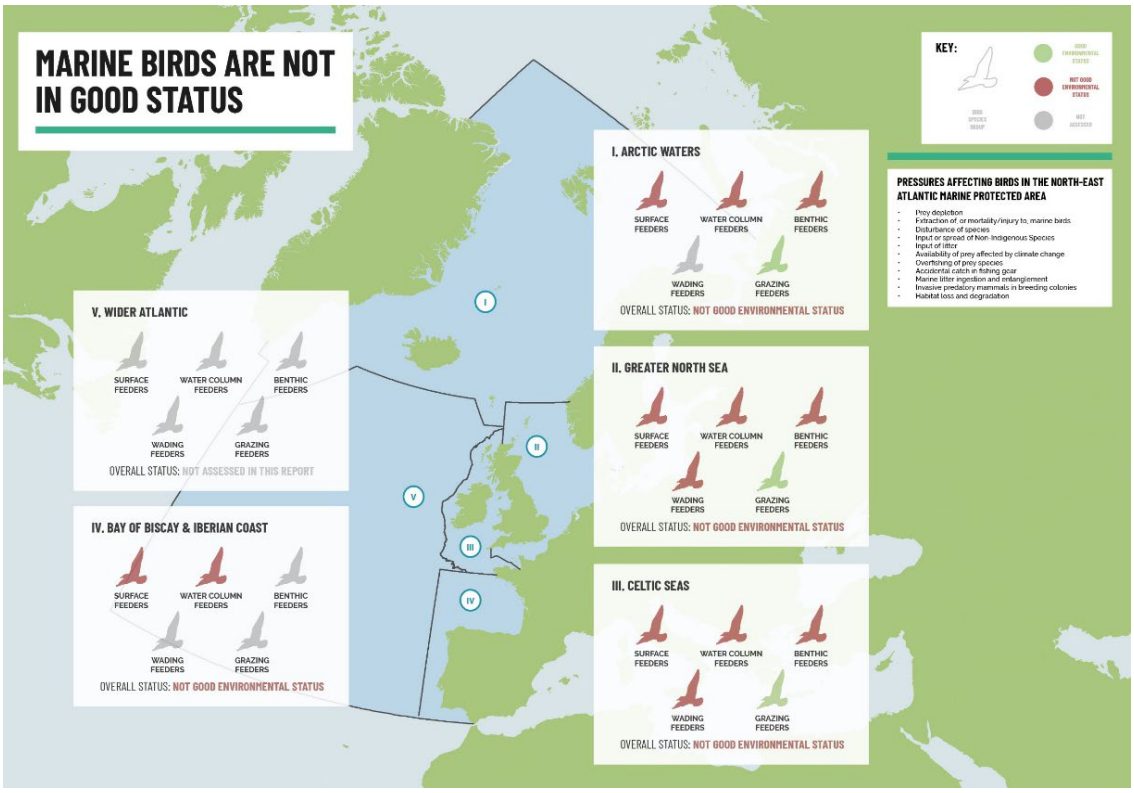

Figure 5. Integrated status of marine birds in the different Regions of the OSPAR Maritime Area (from: OSPAR, 2023)

10.1 References

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11 Task K: Develop and submit - OSPAR Regional Action Plan for Marine Birds (Task S5.O4.T1 under OSPAR NEAES 2020-30 Implementation Plan)

This topic is covered partially in section 3 of ICES (2023b).

The OSPAR Regional Action Plan for Marine Birds (RAP-Bird), was developed under Task S5.O4.T1 of the OSPAR NEAES Implementation Plan. This task was proposed by the Protection of Species and Habitats (POSH) Intersessional Correspondence Group and agreed upon by the Biological Diversity Committee (BDC; 2021). The stages of development are summarized in Table 8 and described below.

RAP-Bird will recommend action to reduce and eliminate, where possible, the main pressures and activities impacting marine birds. RAP-Bird will aim to achieve OSPAR's NEAES 2030 Strategic Objective S5.O4 to "take appropriate actions to prevent or reduce pressures to allow the recovery of marine species and benthic and pelagic habitats to reach and maintain good environmental status as reflected in relevant OSPAR status assessments, with action by 2023 to halt the decline of marine birds". The process involved the proposal of ten 'concept actions' which were then developed into a Recommendation on the reduction of seabird bycatch and nine Tasks (NEAES Implementation Plan) based on the other concept actions (see Figure 6).

Table 8. Summary of the stages of development of OSPAR Regional Action Plan for Marine Birds (RAP-Bird).

Activity	Period	Detail
1. Scoping	June – December 2022	ICG POSH 24–27 October JWGBIRD 2022
2. Initial plan development	January – April 2023	JWGBIRD/POSH workshop 7 March '23 EIHA 20–24 March [input on concept actions] BDC 17–21 April [review concept actions]
3. Engagement (CPs and stakeholders)	May – Sept 2023	CoG 22–23 May OSPAR Commission 26–30 June [progress report]
4. Drafting	August – November 2023	JWGBIRD (25–29 Sept) Stakeholder workshop 12 Oct ICG POSH (14–17 Nov; 20 Oct document deadline) COBAM (28–30 Nov; 6 Nov document deadline)
5. Review and fine-tuning	December 2023 – February 2024	Draft Rec. and BD for bycatch to BDC (23 Dec) JWGBIRD (intersessional –post POSH)
6. Finalization and adoption	March – June 2024	Agreement at BDC (18–22 March 2024) Adoption at OSPAR (June 2024)

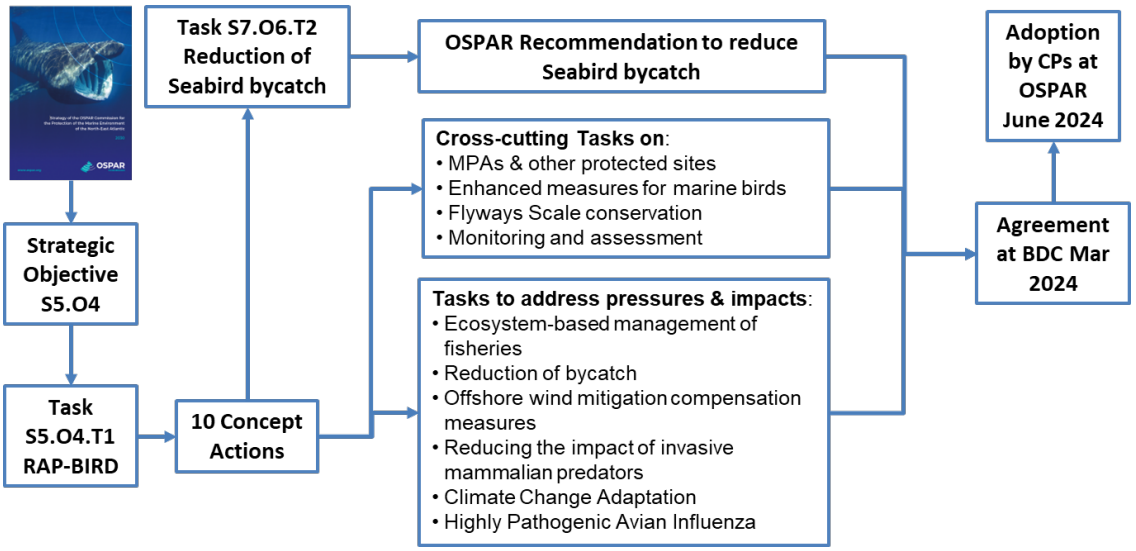

Figure 6. Schematic showing the process that was followed by the Task and Finish Group to turn concepts into a RAP-Bird.

In October 2022, the OSPAR Secretariat and the UK presented an initial scoping paper to ICG-POSH 22. This paper contained an analysis of existing OSPAR Actions and outlined the main aims and objectives of the RAP-Bird. ICG-POSH 22 agreed to set up a Task and Finish Group (TFG) to progress the development of the Action Plan. The TFG is made up of the UK, Norway, the Netherlands, Spain, and the OSPAR Secretariat.

The TFG used the conclusions of the QSR23 Thematic Assessment of Marine Birds, an analysis of existing OSPAR Actions, and input from OSPAR groups (EIHA, JWGBIRD, and ICG-POSH) to propose concepts for ten actions to be further developed. The TFG used a set of criteria to select the concept actions. The actions will:

a) Target the most important pressures and activities impacting on marine birds within the OSPAR Maritime Area (e.g. referring to the Marine Bird Thematic Assessment);
b) Benefit from the collective approach/cooperation between Contracting Parties;
c) Fill evidence, policy, or implementation gaps;
d) Add value to other existing processes or efforts (i.e. EU, other regional bodies, and global bodies).

RAP-bird was adopted by the OSPAR Commission in June 2024 and published in July 2024[6].

11.1 References

ICES. 2023b. Joint OSPAR/HELCOM/ICES Working Group on Seabirds (JWGBIRD; outputs from 2022 meeting). ICES Scientific Reports. 5:108. 45 pp. https://doi.org/10.17895/ices.pub.24591936

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[6] https://www.ospar.org/documents?v=58061

12 Task L: Organize JWGBIRD-Plus

The workshop JWGBIRD-Plus, later redefined as "NEA-PANACEA: From Assessment to Action" was one of the tasks of the project NEA-PANACEA (North East Atlantic project on biodiversity and eutrophication assessment integration and creation of effective measures). NEA PANACEA was an EU-funded project in which 8 partners from 5 OSPAR Contracting Parties (Germany, France, the UK, Spain, and the Netherlands) collaborated to deliver biodiversity assessments for OSPAR's Quality Status Report (QSR) 2023.

The project focus was specifically on pelagic habitats, benthic habitats, foodwebs, and marine birds' assessments. These assessments can be used by EU member states in the North East Atlantic region to inform their reporting to the EU for the Marine Strategy Framework Directive (MSFD). The project supported the development of new biodiversity indicators as well as the improvement of existing ones, for example in terms of data flow, indicator operability, expansion of geographical coverage, or the development of threshold values. In addition, the project explored the best ways to integrate multiple indicators to deliver a single integrated assessment of a specific ecosystem component (e.g. marine birds).

NEA PANACEA also aims to have value for those members of the OSPAR family who are not directly involved. For this reason, one task of the project concerned the organization of a workshop dedicated to the exchange of experience and information about marine birds between the 4 European regional sea conventions. The workshop aimed to share approaches to GES assessments of marine birds within the different Regional Seas within Europe to identify regional synergies and differences and to define an action plan detailing priorities for future co-working and establishing best practices for assessment.

There are four Regional Sea Conventions (RSCs) in Europe comprising national governments as contracting parties, the European Commission being also a contracting party to all bar to the Bucharest convention:

- The Convention for the Protection of the Marine Environment in the North East Atlantic of 1992 – the OSPAR Convention (OSPAR)
- The Convention on the Protection of the Marine Environment in the Baltic Sea Area of 1992 – the Helsinki Convention (HELCOM)
- The Convention for the Protection of Marine Environment and the Coastal Region of the Mediterranean of 1995 – the Barcelona Convention (UNEP-MAP)
- The Convention for the Protection of the Black Sea of 1992 – the Bucharest Convention (Black Sea Commission)

All four RSCs in Europe support their contracting parties in the implementation of the Marine Strategy Framework Directive (MSFD) through their regional monitoring and assessment programmes.

To achieve the workshop aims, experts involved in the four RSCs were invited by the organizers. The workshop was originally planned to be fully face-to-face; however, given that several experts could not join in person for various reasons (including e.g. difficulties in obtaining VISA permits within the time frame provided), it was decided to opt for a hybrid approach and to allow joining online each session to increase the participation to the discussions.

This workshop took place in a period of increasing international tensions in Europe following the Russian invasion of Ukraine. This meant the following:

- Unfortunately, none of the invited experts from the Black Sea involved in the Bucharest Convention could attend the workshop. However, they provided some information on

assessment approaches in the Black Sea ahead of the workshop which were made available to workshop attendees.

- In line with the EU policy at the time of the workshop in relation to international engagement with the Russian Federation, it was not possible to host experts from the Russian Academy of Sciences, despite their interest in attending.
- The workshop and online attendees hosted 24 experts on marine birds from various European and African countries of the North East Atlantic Ocean, the Baltic Sea, and the Mediterranean Sea regions.

The workshop covered four main themes which were discussed through a series of presentations, followed by discussion sections with breakout groups and plenary within four sessions:

- **Approaches to GES in the 4 regions**. In summary: there are obviously differences among RSCs (and among CPs within individual RSCs) on the data available and indicators used for assessing GES. Although there is a good overlap between HELCOM and OSPAR in terms of species groups assessed, indicators applied and integration methodologies, the picture in the Barcelona Convention is more heterogeneous and strongly driven by the various national approaches. There would be a benefit in increased coordination among CPs of the Barcelona Convention to identify which species are useful to be monitored in the Mediterranean, reach agreement on thresholds to apply, and secure funding for reporting.
- **Interpreting and communicating assessments**. In summary: it is important to consider critically the raw data at the basis of an assessment as well as the results, ideally with a peer-review approach, to avoid artifacts or misinterpretations. Results should also be interpreted in light of available information on the distribution of species as, for example, meeting or failing certain thresholds might have different ecological meanings for local species vs. species with wider distribution. The ecosystem services approach adopted e.g. by OSPAR, has the value of presenting in a clear manner the importance of a biodiversity component. However, this approach is subject to various critiques by the scientific community, as corroborated by the declining use of this approach in some EU countries. Critiques include e.g. too much emphasis on quantifiable variables risking downplaying qualitative values that are difficult to monetise, and the risk of underestimating a particular biodiversity component without a clear and complete picture of interspecific relationships in the ecosystem. To accurately assess the effects of climate change, indicators of distribution that could detect mesoscale geographical shifts would be beneficial to develop and implement. This reinforces the need for global distribution surveys (e.g. via the International Waterbird Census) to be able to detect, understand, and respond to such shifts.
- **From Assessment to Action; policy responses to marine bird declines.** In summary: There is a need for improved integration between Regional Seas in approaches being taken to recover declining marine bird populations while recognizing that regional differences sometimes require bespoke solutions. In addition, greater alignment between countries within Regional Seas would increase effectiveness and efficiency of delivery.
- Sectors, where trans-regional cooperation is especially beneficial, include fisheries and shipping because here resources are shared and spatially connected. Greater emphasis should be placed on transboundary marine spatial planning (supported by sensitivity maps at similar scales). Effective conservation objectives for Marine Protected Areas are often lacking, risking ineffective "paper parks". But, especially in the Mediterranean Sea, even site identification is incomplete. Priority actions across Regional Seas include fisheries bycatch, wind energy impacts (especially because capacity is planned to increase massively to meet energy security and carbon reduction targets), invasive mammalian predators, and light pollution (terrestrial and marine sources).

- **Recap, Conclusions and Way Forward.** In summary: This workshop identified a need for and a desire among participants to maintain and develop collaboration between RSCs, both for future assessment and reporting of GES and also to share best practices and collaborate on future action on seabird recovery. Participants discussed the possible existing fora that might be used as a basis for taking forward such collaborations. The two that received the most discussion were JWGBIRD and AEWA; BirdLife International was also suggested as a possibility. It is proposed to explore in more detail the pros and cons of using either JWGBIRD or AEWA; these can be explored in parallel during a scoping exercise with each body in 2023. Specifically: JWGBIRD chairs to consult with their respective Secretariats and OSPAR chair of JWGBIRD (also the UK's advisor to AEWA TC on seabird conservation priorities) to take soundings within AEWA TC. To report back to workshop attendees, for possible further online discussion/e-mail correspondence, as required.

12.1 References

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13 Other tasks

13.1 HPAI (Avian flu)

This topic is covered in section 4 of ICES (2023b)

In 2022, significant mortalities from wide-spread infections with the Highly Pathogenic H5N1 Avian Influenza (HPAI) were observed in seabirds such as gulls, terns, skuas, gannets and auks, (as well as many other avian taxa and also some mammals) marking a "step-change" in the profile of the virus and its prevalence in wild bird populations. Putting aside the ecological consequences, this raises a number of challenges for those who study and conserve birds, including obtaining accurate estimates of mortality and any consequent population-level impacts; monitoring and assessment requirements; understanding of epidemiology and transmission routes; contingency planning and emergency response (e.g. carcass removal). With migratory populations breeding and intermixing across large geographical areas, involving many different administrations, the need for standardized approaches and international coordination is heightened. During the 2022 annual consultation in Oostende, JWGBIRD heard from case studies of seabird mortalities around the HELCOM and OSPAR regions, including in the Netherlands, Belgium, France, Denmark, and the UK. However, it is currently beyond the remit (or capacity) of JWGBIRD to act as a formal or comprehensive mechanism by which mortality estimates are gathered, collated, or reported.

Periodic outbreaks of Highly Pathogenic H5N1 Avian Influenza (HPAI) have occurred in recent decades, but until 2022 mortalities were generally confined to waterbirds and predominantly occurred in winter. Since 2020, an increase in H5N1 cases has been observed in wild birds and poultry. Furthermore, high-pathogenicity avian influenza H5N1 virus clade 2.3.4.4b became enzootic from summer of 2021 onward (Banyard *et al.*, 2022; Pohlmann *et al.*, 2022). Soon after, the virus caused massive die-off in many colonial seabirds. In 2022, 67 countries across five continents reported H5N1 HPAI outbreaks in poultry and wild birds to WOAH (Dupas *et al.*, 2024). What started in poultry in Asia, soon devastated seabird colonies in Europe and Africa (Klaassen and Wille, 2023), after which it reached the Americas and Antarctica (Leguia *et al.*, 2023; Banyard *et al.*, 2024; Avery-Gomm *et al.*, 2024). Worldwide, over 100 seabird species – including multiple endangered ones – were affected by this panzootic (FAO, 2024), with the total number of deaths running in the 100 000 s and possibly millions.

In Europe significant seabird mortalities were observed in 2022 and 2023, predominantly affecting gulls, terns, skuas, gannets, and auks (Camphuysen *et al.*, 2022; Klaassen and Wille, 2023; Knief *et al.*, 2024; Lane *et al.*, 2024), but also other avian taxa and some mammals marking a "step-change" in the profile of the virus and its prevalence in wild bird populations. Putting aside the ecological consequences, this raises a number of challenges for those who study and conserve them, including: obtaining accurate estimates of mortality and any consequent population-level impacts; monitoring and assessment requirements; understanding of epidemiology and transmission routes; contingency planning and emergency response (e.g. carcass removal). With migratory populations breeding and intermixing across large geographical areas, involving many different administrations, the need for standardized approaches and international coordination is heightened. JWGBIRD heard from case studies of seabird mortalities around the HELCOM and OSPAR region, including in the Netherlands, Belgium, France, Denmark, and the UK.

However, it is currently beyond the remit (or capacity) of JWGBIRD to act as a formal or comprehensive mechanism by which mortality estimates are gathered, collated, or reported.

Instead, in 2022 and 2023 thematic sessions on HPAI were held during the JWGBIRD meetings attended by JWGBIRD members and national experts on the topic. In 2022 presentations on the occurrence and the impact were given by Belgium and the Netherlands (Eric Stienen), Germany (Volker Dierschke), France (Antoine Chabrolle) and the UK (Liz Humphreys), Wouter Langhout from Birdlife International gave an overview of the key characteristics of HPAI. This resulted in the first European overview of the number of mortalities per species and recommendations for monitoring prioritization, future research to fill in knowledge gaps and best practice guidelines (see (ICES, 2023) for more details).

In 2023, JWGBIRD members were asked to fill in a table with national estimates of the number of suspected HPAI victims found among seabirds in 2022 and 2023 (Table 9). Mainly Great Skua, Northern Gannet and Sandwich Tern appear to be affected, but also other gull and tern species. Various countries reported high adult mortality in 2022, while in 2023 post-fledging mortality was high. Furthermore, smaller gull and tern species seemed to be particularly affected by the virus in 2023, more so than in 2022. In 2022, colonies around the Mediterranean Sea were almost not infected, but the virus spread to this region in 2023. In the breeding seasons 2022 and 2023, Belgium, Denmark, France, Finland, Germany, Poland, Sweden, and the UK each reported 1000s of victims, while mortality was higher (10 000s) in the Netherlands and Norway.

Table 9. Summary of national estimates of suspected HPAI victims among seabirds in 2022 and 2023.

Country	Counts of presumed victims	Testing for HPAI	Victims 2022	Victims 2023	Remarks	Magnitude
Belgium	YES	limited	Mainly Sandwich Tern,Common Tern, Black-headed gull, Herring Gull	Common Tern, Black-headed and Med gull, some Sandwich Terns	high postfledging mortality reported in 2023	1000s
Denmark	SOME	limited	Mainly Sandwich Tern	Mainly Black-headed Gull and Herring Gull	high juvenile mortality reported in 2023, there were only a few attempts to count the dead adults	1000s
France	SOME		Northern Gannet, ….	Mainly Sandwich Tern and Mediterenean Gull	Compared with the 2022 the population of Gannet fell by 50%, Black-headed Gull in central France spread virus to Atlantic coast.	1000s
Finland	YES	?	Some waterbirds	Some Black-headed Gulls	no juvenile mortality reported in 2023	1000s
Germany	YES	?	Mainly Common Tern, Sandwich Tern, Northern Gannet, some Black-headed Gulls	Mainly Black-headed Gull, some Common Terns and Guillemots	high pullus/juvenile mortality reported in both years, Gannets were performing well in 2023	1000s
Netherlands	YES	yes	Mainly Common Tern, Sandwich Tern,Black-headed Gull, Herring Gull, Lesser Black-backed Gull and Common Shelduck	Common and Arctic Tern, Black-headed and Med gull, some shorebirds	high pullus/juvenile mortality reported in 2023, geographical differnces in 2023 many victims in south and northeast, less in north	10000s
Norway	SOME	limited	Mainly Great Skua, locally Northern Gannet, Great Black-backed Gull and White-tailed Eagle	Mainly Black-legged Kittiwake, locally Northern Fulmar, Herring Gull and Mute Swan	difference between mainland coast and Norwegian Arctic	10000s
Poland	SOME	limited	Sandwich Tern	Mainly Black-headed Gull, some Common Terns	dead birds in many colonies but not identified to the species	1000s
Sweden	NO	limited	unknown	Black-headed Gull	high juvenile mortality reported in 2023	1000s
United Kingdom	SOME	limited	Great Skua, Northern Gannet, Sandwich Tern			10000s

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Annex 2: Resolutions

OSPAR-HELCOM-ICES Joint Working Group on Marine Birds (JWGBIRD)

Work programme 2021–2023

JWGBIRD work themes

This work programme provides a thematic overview of the work carried out by JWGBIRD. Tasks under each theme are listed in Annex 1 and will be updated on an annual basis.

The aim of describing a three-year work programme is to facilitate the sign-off process that follows different annual schedules for OSPAR, HELCOM and ICES. The aim is also to enable long-term planning and delivery of significant products that may require several components to be developed during consecutive years.

1) **Database and data products**

This work theme encourages JWGBIRD to move towards a more transparent way of working with data and assessments (i.e. TAF, transparent assessment framework) and enables JWGBIRD to produce seamless cross-regional data products.

Work under this theme includes:

a) Definition of appropriate, and whenever possible, compatible formats for data submissions and storage,
b) resolving data issues associated with the database and/or specific datasets,
c) providing checks for re-submissions to the databases,
d) developing data products for assessments, advice and public use
e) specifying technical aspects of how to make data stream processes operational, e.g. to automate delivery of indicator assessments through scripts.

JWGBIRD will provide input to the ICES Data Centre that hosts the biodiversity portal containing the *OSPAR seabird database*. The database contains data on breeding numbers and productivity of seabird and waterbird species collected at breeding sites across the OSPAR Area. It also contains data on numbers of wintering and passage waterbirds (incl. waders) from coasts and estuaries, which are counted mostly from land and in some cases, from the air. These data will be used to construct regional indicators, baselines and thresholds to assesses OSPAR's common indicators on B1 – marine bird abundance and B3 – Marine bird productivity. The OSPAR seabird database could be expanded to cover the Baltic Sea, and become a cross-regional database. JWGBIRD will explore the possibility of including data on numbers of breeding and wintering waterbirds and seabirds in the Baltic. HELCOM Biodiversity Database hosts data for all species relevant for the Baltic Sea region and, where possible, automated harvesting between the two databases should be explored

JWGBIRD will oversee the *European Seabirds at Sea (ESAS) database*, which is the only current cross-regional data product considered by the group. The database is in the process of being migrated to ICES at the beginning of the JWGBIRD work programme. ICES Data Centre together with JWGBIRD experts are preparing to take over the hosting, maintenance and development from the previous hosts. The ESAS database work will be further steered by the dedicated ESAS subgroup of JWGBIRD.

The ESAS database covers the entire ICES area and includes 'at-sea' data. The data can be used for ICES advisory products and for OSPAR and HELCOM assessments.

To support the work on migrating birds under the auspice of JWGBIRD there is a need to establish functioning dataflows and agreed data hosting for *data specific for migration*, such as telemetry and tracking data, migration count data etc. For this purpose, existing options should be identified and their suitability for the needs of the group explored.

2) Monitoring

Work under this theme includes:

f) Providing a forum for discussion of monitoring programmes, focusing on the development of joint or coordinated monitoring e.g. at-sea protocols, and contributing to ICES advisory products regarding monitoring practices and programmes as appropriate.
g) Providing updates to OSPAR CEMP guidelines and appendices[1], HELCOM monitoring programmes and guidelines when required.
h) Providing expert opinion on the development and implementation of new monitoring strategies and guidelines for birds, e.g. in relation to threatened and declining species, bycatch, wintering birds, migration routes and distribution.

3) Assessments

Work under this theme includes:

i) Ensure information flow with regular communication to all three convention secretariats on policy development relevant to JWGBIRD and/or general bird related issues.
j) Providing updates of indicators for the OSPAR Quality Status Report 2023 (QSR 2023) and for the HELCOM HOLAS III
k) Developing further, existing Common and Candidate Indicators and/or develop new indicators, where a need has been identified by one or more of the Conventions, including requirements concerning the criteria addressed in MSFD assessments to be conducted by Member States of the European Union.
l) Developing integration methods and other aspects of indicator assessment, which require further development to be in line with MSFD assessment requirements under the revised Commission Decision (2017/848).
m) Deliver a Thematic Assessment of marine birds for the OSPAR QSR 2023, which includes an integrated assessment of status of species and species groups, an assessment of pressure impacts and on the effectiveness of current measures.
n) Carrying out other assessments, including for example assessments of threatened and declining species, and biogeographic analysis.
o) Contributing bird-related information to assessments carried out by other relevant groups, e.g. on issues such as incidental bycatch or food-webs.

4) Ad hoc expert consultation

[1] Co-ordinated Environmental Monitoring Programme (CEMP) – the CEMP guidelines and appendices are published for each OSPAR Common Indicator. They provide instructions on how to collect data to construct the indicators and on how to assess state or trends in the indicator.

Responding, as needed, to queries from the parent organisations and their respective subsidiary bodies relating to bird issues by providing expert opinions.

5) **Provision of expert input to ICES advisory process**

Provide expert input to advice requests in ICES including the ecosystem and fisheries overviews. Such input would be peer reviewed and quality assured, before ICES advice is published.

Ways of working.

JWGBIRD annual meetings

To date much of the work of JWGBIRD has been concentrated around the annual meetings. These usually take place in either October or November and should, when possible, be timed to ensure delivery of products into the respective parent organisation's processes. Annual meetings can be held online if required by public health issues.

Where project resources are available, specific actions carried out by JWGBIRD can be resourced through projects, for example co-financed projects. This might have implications for the timing of completing actions in specific years or months. Whenever a project resourced activity is planned, JWGBIRD will communicate details on the planning to OSPAR, HELCOM and ICES well in advance of the activity to enable dissemination of the information to all possibly concerned parties.

An additional meeting is planned in Spring 2022 as part of the NEA-PANACEA project (details below). This extra meeting, called 'JWGBIRD-PLUS' will be extended to seabird experts from the Mediterranean and Black Sea, in order to promote dialogue and cooperation across the four European regions.

Sub-group working

Sub-groups may be defined in order to work more thematically, especially where it is foreseen that completing the task would require substantive work which might stretch across several meeting cycles.

Task descriptions should be developed for each sub-group individually.

At present, work related to European Seabirds at Sea (ESAS) database is carried out by the ESAS subgroup of the JWGBIRD. In addition, the need to establish a designated subgroup focusing on bird migration has been identified and supported.

Intersessional work

JWGBIRD may be asked for expert opinion and/or intersessional work at short notice. These requests may not always be directly related to the environmental programmes of the conventions, but may be relevant to other international processes and policies. When such actions are requested of JWG BIRD the group will keep OSPAR, HELCOM and ICES respectively informed of ongoing actions. Expert opinion may be required at more frequent intervals than annual, and the annual meeting cycle and reporting format of the group may not necessarily be the most appropriate forum in which to deal with such requests (e.g. due to mismatched deadlines). Correspondence and intersessional work between relevant group members should be used to provide a timely delivery of required outputs. Contracting Parties of the various conventions will need to be made aware of the resources (i.e. time of experts) that will be required for all aspects of the Group's work.

Delivery of results

The JWGBIRD annual report includes products under each work theme that are specific to the annual list of tasks required of the group. Products developed and delivered intersessionally shall be appended to the report. The report is co-authored by the three organisations.

The group, or a co-chair as a representative of the group, can deliver communications or short expert opinions when required at short notice and independent of the annual timing of the JWGBIRD meeting. If possible, such responses should be summarised in the annual report.

The group should also aim, where possible and appropriate, to submit some products for publication in scientific journals or to be presented at conferences.

At the end of the three-year period covered by this work programme, the group shall present an overview of the products delivered. The overview should detail the products delivered under each of the themes outlined above. The overview will feed into an ICES, peer review and advice process as relevant.

Group membership

Membership of JWGBIRD is obtained by experts seeking nomination from their national delegations to either ICES, OSPAR or HELCOM. It is important that all members of JWGBIRD have a firm connection to their national delegations.

The JWGBIRD co-chairs can also invite non-members to attend the annual meeting or to take part in intersessional work. Invited experts should demonstrate particular skills that are relevant to the delivery of a specific request. A list of members and their affiliations is available on the JWGBIRD web pages (link) and is updated annually.

The group is open to connect with other relevant bird groups and networks, for example groups working in the Arctic region and/or non-governmental organizations.

This group is led by three co-chairs representing each of the conventions. There is currently no limit on the length of tenure of each co-chair.[2] This arrangement should be reviewed by members on an annual basis. The arrangements of the relevant sponsoring convention for each chair should be followed if a chair is to be replaced.

Convention specificities

OSPAR

JWGBIRD reports to OSPAR's Biological Diversity Committee (OSPAR BDC) via the Intersessional Correspondence Group on Co-ordination of Biodiversity Assessment and Monitoring (ICG-COBAM). There is also a need for JWGBIRD to collaborate with national leads to deliver actions on OSPAR's Threatened and Declining bird species via ICG-POSH (Protected Species and Habitats) which is also under OSPAR BDC.

Key OSPAR work areas for JWGBIRD during 2021-2023 will centre around delivery of the Quality Status Report 2023. This includes the updated assessment of common indicators, pilot assessments of candidate indicators and an integrated Thematic Assessment of marine birds (see Table 1 and annex 1).

Table 1: Indicators assessments to be delivered by JWGBIRD for the OSPAR QSR 2023

[2] ICES operate a 3-year limited tenure on the chairs of each of their working groups. This has not been applied, as yet, to JWGBIRD.

Indicator name	Type	Lead	Region I	Region II	Region III	Region IV	Region V
B1 - Marine bird abundance	Common	Ian Mitchell (UK), Volker Dierschke (DE)	*update (R1 data in IA2017)*	*Update plus at-sea data pilot*	*update*	*new*	
B 3 - Marine bird breeding success	Common	Ian Mitchell (UK), Volker Dierschke (DE)	*update (R1 data in IA2017)*	*update*	*update*	*new*	
B5 - Marine bird bycatch	Candidate	Volker Dierschke (DE), Signe Christensen-Dalsgaard (NO), Sven Koschinski (DE)	*Pilot*	*Pilot*	*Pilot*	*Pilot*[3]	*Pilot*[3]
B7 - Marine bird habitat quality	Candidate	Volker Dierschke (DE)		*Pilot*			

Some outputs for the OSPAR QSR2023 will be delivered through a project partly funded by the European Maritime and Fisheries Fund (EMFF) and the UK Joint Nature Conservation Committee (JNCC) – NEA-PANACEA (North East Atlantic Project on biodiversity and eutrophication assessment integration and creation of effective measures). The work on marine birds under NEA-PANACEA will be led by Ian Mitchell and Volker Dierschke (co-chairs of JWGBIRD at the beginning of the work programme) and will aim to deliver an assessment of the OSPAR Common Indicator B3 – marine bird productivity and a Thematic Assessment of marine birds for the OSPAR QSR2023. As part of the wider delivery of NEA-PANACEA, OSPAR-nominated members of JWGBIRD will be invited to join members of the other OSPAR biodiversity expert groups at the SUPER-COBAM meeting in October 2021. SUPER-COBAM will address common issues being faced by the different expert groups in delivering indicator assessments and thematic assessments for the OSPAR QSR 2023.

OSPAR has identified a need to prioritise work on measures and actions to improve the status of seabirds to enable their recovery. JWGBIRD will be involved in developing this work in the period covered by this work programme.

HELCOM

JWGBIRD reports to the HELCOM State and Conservation working group. JWGBIRD is required to collaborate, as needed, with national leads and co-leads of HELCOM indicators related to seabirds and with national leads of HELCOM recommendations, including but not limited to:

Recommendation 34E-1 'Safeguarding important bird habitats and migration routes in the Baltic Sea from negative effects of wind and wave energy production at sea', and

Recommendation 37-2 'Conservation of Baltic Sea species categorized as threatened according to the 2013 HELCOM red list'.

The group can also work on other HELCOM projects that support the commitments mentioned above.

Key HELCOM work areas for JWGBIRD during 2021-2023 will be the preparation and delivery of bird assessments for the next holistic assessment of the Baltic Sea (HOLAS III, see Table 2). One bird indicator addressing bird and mammal bycatch in fishing gear is partly funded by EMFF in the project HELCOM BLUES (HELCOM biodiversity, litter, underwater noise and effective regional measures for the Baltic Sea).

[3] Development of a pilot assessment in Regions IV and V may be constrained by a lack of data. This issue is being explored by the indicator leads.

Table 2: Indicators assessments to be delivered by JWGBIRD for HELCOM HOLAS III

Indicator name	Type	Lead	Region V
Number of drowned mammals and waterbirds in fishing gear	Core	Sven Koschinski (DE), Volker Dierschke (DE),	*update*
Abundance of waterbirds in the breeding season	Core	Volker Dierschke (DE), Fredrik Haas (SE)	*update*
Abundance of waterbirds in the wintering season	Core	Volker Dierschke (DE), Fredrik Haas (SE)	*update* [3]
Waterbird habitat quality	Candidate	Volker Dierschke (DE)	*pilot*

ICES

JWGBIRD reports at present to ICES ACOM. The group's task list will be reviewed annually by both ICES ACOM and SCICOM, but substantive comments will only be taken in relation to issues that are helping delivery of the ICES strategy, or require knowledge creation/synthesis to respond to the advice request by ICES. At present such work includes:

- Development of an ICES region wide (i.e. across HELCOM/OSPAR) set of operational indicators in line with the Transparent Assessment Framework TAF and follow FAIR (findable, accessible, interoperable, and reusable) data principles.
- Assessment of effects of anthropogenic activities on marine birds other than incidental bycatch / fisheries).
- Assemble bird bycatch data and qualitative information from other sources not covered by ICES Working Group on Bycatch of Protected Species (WGBYC) (incl. strandings, entanglement, interviews, research projects, national/local monitoring).
- Determine and further advance methods to assess the resilience of protected bird species to bycatch, and make these available to WGBYC. Provide input to ICES advisory products.

The bycatch-relevant work of JWGBIRD will be according to the ICES roadmap for bycatch advice. Contribution to advice will follow the Guide to ICES advisory framework and principles.

Annex 1 Task List

The JWGBIRD task lists are typically reflective of the autumn-to-autumn work of the group, however delivery deadlines for tasks can also be related to schedules in HELCOM, OSPAR or ICES.

The task list is updated annually by the co-chairs and is a 'living document'. The task list is used as a communication tool towards OSPAR, HELCOM and ICES.

JWGBIRD task list

Task	Lead	Started in the year	Included in JWGBIRD report	Other outputs	Delivery to specific meeting/ date
A) Impacts on populations of extreme events incl. oil spills and extreme weather. {Deferred to meeting in Autumn 2021 due to the COVID-19 pandemic}	Maite Louzao Arsuaga	2021			
B) Impacts of litter on seabirds (i.e. ingestion, entanglement) – reviewing evidence and proposing further research priorities.	David Fleet	2021	Yes**2020/21**	?	
C) Plan bird assessments for OSPAR QSR2023:	Ian Mitchell				
C-1) Agree format of datacall. {Datacall to be issued Sep-Dec 2020}	Ian Mitchell	2020	Yes – summary of data returns & append data format – 2020/21		
C-2) Set baseline values for B1 marine bird abundance indicator {Retain current baselines (start of timeseries) – defer selection of more objective baselines to next indicator update}	Ian Mitchell	Not conducted due to COVID			
C-3) Draft proposals for a pilot assessment of at-sea abundance data in southern North Sea.	Nele Markones		Yes – draft results – 2020/21	Papers to OSPAR	COBAM 31/11/20 BDC 22/03/21

Task	Lead	Started in the year	Included in JWGBIRD report	Other outputs	Delivery to specific meeting/ date
	& Eric Stienen			BDC and COBAM	
C-4) Review progress on revising indicator B3 marine bird breeding success	Morten Frederiksen and Tycho Anker-Nilssen, Ian Mitchell	2020	Yes - *brief update on decisions and progress in OSPAR – 2020/21*	Proposal for B3 thresholds	BDC 22/03/21
C-5) Draft proposal for a pilot assessment of B5 seabird bycatch mortality.	Signe Christensen-Daalsgaard Sven Koschinski, Volker Dierschke	2020	Yes - *brief proposal on what could be included in the pilot assessment of B5 and how it will be produced, including resource requirements and working arrangements with ICES WGBYC*	*Proposal for COBAM 2020 and BDC 2021*	COBAM 31/11/20 BDC 22/03/21
C-6) Draft proposal for a pilot assessment of B6 Marine Bird Distribution {Deferred until at least 2022 due to funding and data constraints}	TBC	Deferred to 2022			
C-7) Draft proposal for a new candidate indicator and pilot assessment of offshore habitat quality. (*merge with task D-3)*	Volker Dierschke	2020	Yes – draft results – 2020/21	proposal to COBAM	COBAM 31/11/20 BDC 22/03/21

Task	Lead	Started in the year	Included in JWGBIRD report	Other outputs	Delivery to specific meeting/ date
				2020 and BDC 2021	
D) Plan bird assessments for HELCOM HOLAS III D-1) Agree procedures for waterbird abundance indicators. D-2) Discuss possibilities to expand waterbird assessments to other MSFD criteria. D-3) Draft proposal for a new candidate indicator and pilot assessment of offshore habitat disturbance. (*merge with task C-7)*	Volker Dierschke Volker Dierschke and Ainars Aunins (TBC) Volker Dierschke Volker Dierschke	 2020 2020 2020	 Yes – brief update on decisions and progress – 2020/21 No Yes – draft result – 2020/21s	 No Candidate Indicator proposal to S&C 2021	 no no Yes HELCOM to specify date
E) Review of results from offshore (at-sea) surveys of the Baltic and planning future work.	Ainars Aunins and Ib Krag Petersen		Possibly?		
F) Develop methods for measuring and communicating confidence in OSPAR & HELCOM assessments. Lead.	Ian Mitchell		Yes	No	
G) Support ICES advisory services G-1) Request from NEAFC on bird by-catch: Present request and progress at JWGBIRD 2021 and provide feedback. G-2) In support of the ICES roadmap for bycatch advice, assemble bird bycatch data and qualitative information from additional sources than by	Nele/ICES Sec?	2021	Possibly	G-1) Participation in dedicated workshop in 2022	no

Task	Lead	Started in the year	Included in JWGBIRD report	Other outputs	Delivery to specific meeting/ date
WGBYC (incl. strandings, entanglement, interviews, research projects, national/local monitoring). G-3) Assessment of effects of anthropogenic activities on marine birds other than incidental bycatch/fisheries				G-2) Report to ICES WGBYC	
G') Methods development G'-1) Determine and further advance methods to assess the resilience of protected bird species to bycatch					
H) Migration of ESAS database to ICES Data Centre **Subgroup of JWGBIRD working on data policy, model and format.**	Nele/Carlos (ICES)	2020	Possibly	Database	
I) Conduct Indicator Assessments for OSPAR QSR 2023 (see table 1) I-1) B1 - Marine bird abundance (update of common indicator)	Ian Mitchell / Volker Dierschke	2021	Yes 2021/22	*Draft to COBAM Dec 2021* *Final to BDC 2022*	*COBAM Dec 21* *BDC Mar/Apr 2022*
I-2) B1 - Marine bird abundance (PILOT using at-sea data)	Nele Markones				
I-3) B5 - Marine bird bycatch (PILOT)	Volker Dierschke / Signe Christensen-Dalsgaard, Sven Koschinski				
I-4) B7 - Marine bird habitat quality (PILOT)	Volker Dierschke				
I-5) B 3 - Marine bird breeding success	Ian Mitchell / Morten Frederiksen	2021	Yes 2021/22	*Draft to COBAM 2021*	*COBAM Dec 21* *BDC Mar/Apr 2022*

Task	Lead	Started in the year	Included in JWGBIRD report	Other outputs	Delivery to specific meeting/ date
				Final to BDC 2022 *NEA-PANACEA reports*	
J) Conduct OSPAR Thematic Assessment of marine birds for QSR 2023	Ian Mitchell / Volker Dierschke	2021	Yes 2022/23	*Draft to BDC 2022* *Final to BDC 2023* *NEA-PANACEA reports*	*BDC Mar 2022* *BDC Mar 2023*
K) Develop and submit - *OSPAR Marine Bird Recovery Action Plan (Task S5.O3.T1 under OSPAR NEAES 2020-30 Implementation Plan)*	Matt Parsons/ Ian Mitchell / Volker Dierschke	2021	Yes 2023/24	*Drafts to BDC 2022 & 2023* *Final to OSPAR 2023*	*BDC Mar 2022 & Mar 2023* *OSPAR JUN 2023*
L) Organise JWGBIRD-Plus	Ian Mitchell / Matt Parsons	2022	Yes 2022/23	*NEA-PANACEA Reports*	*COBAM Dec 2022*

Supporting Info

Task L - In Spring 2022 an additional meeting of JWGBIRD will be held, as part of the NEA-PANACEA project (details below). This extra meeting, called 'JWGBIRD-PLUS' will be hosted by JNCC in Aberdeen, UK and will be open to all JWGBIRD members, plus invited seabird experts from countries in the Mediterranean and Black Sea regions, who are also assessing the status of marine birds as part of the Marine Strategy Framework Directive. JWGBIRD-PLUS will identify the synergies and differences between GES assessments of marine birds in the four European Regions. This will provide capacity to involve and promote dialogue and cooperation with relevant stakeholders across the four regions. It will also create an action plan detailing priorities for future co-working and establishing best practice.

Intersessional: Support HELCOM conservation initiatives and assessments	Volker Dierschke	No		Yes – brief activity report	*ad hoc responses required to various questions from Secretariat.*	
Intersessional: Publish guidance on best practices, methods and reporting for at-sea monitoring of seabirds in the Baltic Sea	Nele Markones	Summer 2020?		No	HELCOM S&C Sep 2020	
Intersessional: Review assessments of OSPAR Threatened and Declining Species *Thick-billed Murre (Uria lomvia)*	Ian Mitchell	2020		No	*Review of draft assessments to ICG-POSH in Nov 2020 and March 2021*	*ICG POSH 20/11/20*
fuscus subspecies of Lesser Black-backed gull (Larus fuscus fuscus -NO)	Ian Mitchell	No	2021	No	*Review of draft assessments*	*ICG POSH 05/03/21*

					to ICG-POSH in March 2021	
Roseate tern (**PT**), Balearic shearwater (ES), Black-legged kittiwake (UK), Iberian guillemot (ES/PT)	Matt Parsons	No	2021	No	*Review of draft assessments to ICG-POSH in Nov 2021*	*ICG POSH Nov 2021*
Ivory gull, Macaronesian shearwater (*Puffinus baroli*), Stellers eider	Matt Parsons	No	2023	No	*ICG-POSH 2023*	*ICG POSH Nov 2023*