

# Survey report of the SCANS-IV aerial porpoise surveys

Danish participation (TEAM 1)

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Scientific briefing from DCE – Danish Centre for Environment and Energy

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# Data sheet

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External comment: The Danish Environmental Protection Agency. The comments can be found here:  
[http://dce2.au.dk/pub/komm/N2022\\_74\\_komm.pdf](http://dce2.au.dk/pub/komm/N2022_74_komm.pdf)

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# 1 Foreword

This report summarizes the weather, strata and transects covered by the Danish team, Team 1. The report presents temporary maps of observations, but as these have not been analysed for estimated abundance yet, the maps must not be used as results of SCANS-IV. The results and final maps will be presented in the final SCANS-IV re-port with data input from all participating countries.

## 2 Overall aim of SCANS-IV

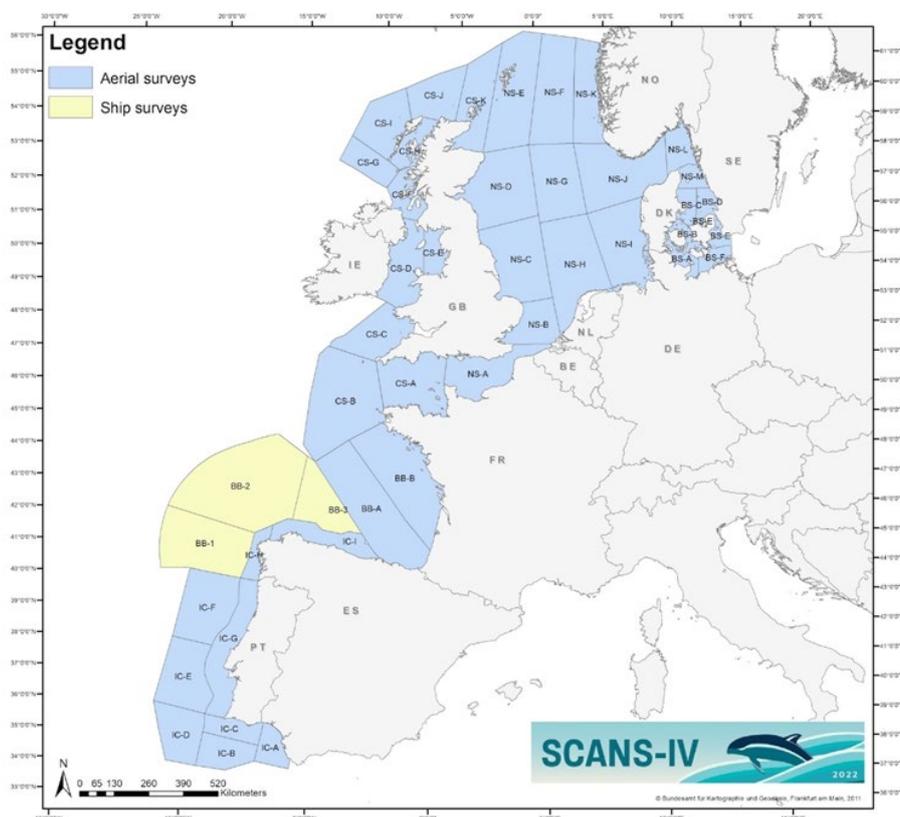
The principal objective of SCANS-IV is to estimate cetacean abundance in European Atlantic waters. This forms part of the information essential to assess the impact of anthropogenic threats (especially bycatch in fishing gear) on those populations. It is also important in determining appropriate management actions to ensure the favourable conservation status of cetacean populations and in monitoring whether those actions are having the desired effect. The data from the line transect shipboard and aerial surveys will be analysed to estimate abundance. The abundance data will then be used, along with other data, to develop a management framework to enable the conservation objectives to be met in the long and short term.

### 3 Methodology

The SCANS surveys used design-based line-transect distance sampling to estimate abundance. The survey planes follow pre-designed transects in the SCANS-IV survey area, divided into 41 blocks for the aerial surveys (Figure 1).

During line-transect distance sampling, the perpendicular distance of a sighting (a single animal or the centre of a group of animals) to the trackline is measured or estimated with an inclinometer. These distances are used in the later analyses to estimate the effective strip-width covered by the plane. To measure the distance, the plane flies at a constant altitude (600 feet = 183 m) and the vertical or 'declination' angle to the animal is measured when it comes (or is estimated to come) abeam, i.e. is at 90° from the observer. It is likely that the observation is not made when exactly abeam, in that case the position of the animal when it was (or would have been) abeam is used.

**Figure 1.** SCANS-IV survey blocks (=strata) used in the aerial surveys. For the strata covered by the Danish team see figure 2 and 3. Prefix in block names: IC=Iberian Coast, BB=Bay of Biscay, CS=Celtic Sea, NS=North Sea, BS=Belt Sea.



Apart from the pilot, three persons (including one cruise leader, CL) is in each team. Two observers located at the bubble windows on the left and right side of the plane and one team member in the front seat beside the pilot (the navigator or data recorder). The navigator is responsible for recording environmental and sightings data on a laptop during the flight.

The team members rotate positions in the plane, so all need to be familiar with the responsibilities of both navigator and observer.

Rotation between observers can occur between tracklines during long flights. Normally, rotation between the navigator and one of the observers will occur when the plane is on the ground.

More details on methods may be found in the final report on SCANS-IV.

## 4 Overall summary of fieldwork

All surveys were conducted onboard the Partenavia 68, call sign: D-GKRE from KrebsGruppe flown by pilot Matthias Köhrer.

Team 1 observers: Signe Sveegaard (Cruise lead), Line Kyhn (Cruise lead 25.-31.July 2022), Jeppe Dalgaard Balle, Marc Christian Allentoft-Larsen and Jesper Philip Aagaard Christensen.

Team 1 was standby for appropriate weather conditions for SCANS-IV surveys from 27. June until 31. July 2022. In total, seven strata were covered completely (BSB, BSC, BSD, BSE, BSF, NSM, NSL) and four of these were covered twice (All except BSC, BSF and NSL). Furthermore, additional transects in two strata in the North Sea were surveyed (NSG, NSJ). During these flights, the total observations included: 577 harbour porpoises, 37 dolphins (mainly white beaked dolphins) and 2 minke whales.

## 5 Daily reports

The survey period began with really good weather and Team 1 covered several strata in three days from 28th -30th of June (see table 1 and figure 2). The glare was a constant annoyance but most of the surveys was conducted in sea state 1. Due to changes in the transect files from the SCANS-IV strata preparation group (from single strata to team based files), the transects from the Great Belt (Strata BS-B) surveys on the 28th of June have different numbers than the final transects in the TEAM1 shape file. They do however fit the transects in the SCANS IV software SAMMOA, which is a software dedicated for aerial survey of marine megafauna and developed by the Observatoire Pelagis (Université de La Rochelle - CNRS, France, <https://www.observatoire-pelagis.cnrs.fr/les-outils/sammoa/>). This will be worked out in the final analysis.

On the 30th of June, strata BS-D were surveyed. The military area around Sjølands Odde was, however, active and that prevented a small area from being surveyed.

Following this survey, Team 1 was grounded due to bad weather for ten days. On the 11th and 12th of July, however, the wind ceased and team 1 was able to survey NS-L and NS-M. Especially observations in the NS-L area were very affected by glare. One minke whale was observed in the southern part of NS-L.

On the 19th and 21st of July, Team 1 surveyed three more strata (BS-B, BS-C and southern part of NS-M). The weather was fine, but for some reason the audio part of SAMMOA did not work on the 19th. This did not turn out to be a problem during validation of the data.

On 24th of July, we were finally able to survey BS-F, where the weather until then had been too poor. Here, the sea state was fine but a lot of glare made the observability on the right side poor on most transects and in total only 15 porpoises was observed.

On the 28th, Team 1 moved into the North Sea to help cover some of the transects in the centre of the North Sea, that, so far, had been impossible to survey due to poor weather (Figure 3). Both on NS-G and during the following day in NS-M on 29th of July, Team 1 covered several areas of really high porpoise density in NS-G and NS-M. For instance, on just three transects in NS-M, 99 porpoises were observed. Consequently, the team was not able to record all information in the database on some observations. The most relevant data e.g. angle, group size and presence of calves were recorded on the audio file and later on also recorded in the database. That some information will be missed during high density areas is common and not a problem in the analysis.

Three groups of white-beaked dolphins were observed off effort i.e. between planned transects: one of 15-20 individuals, one of 10 individuals and a mother and calf pair.

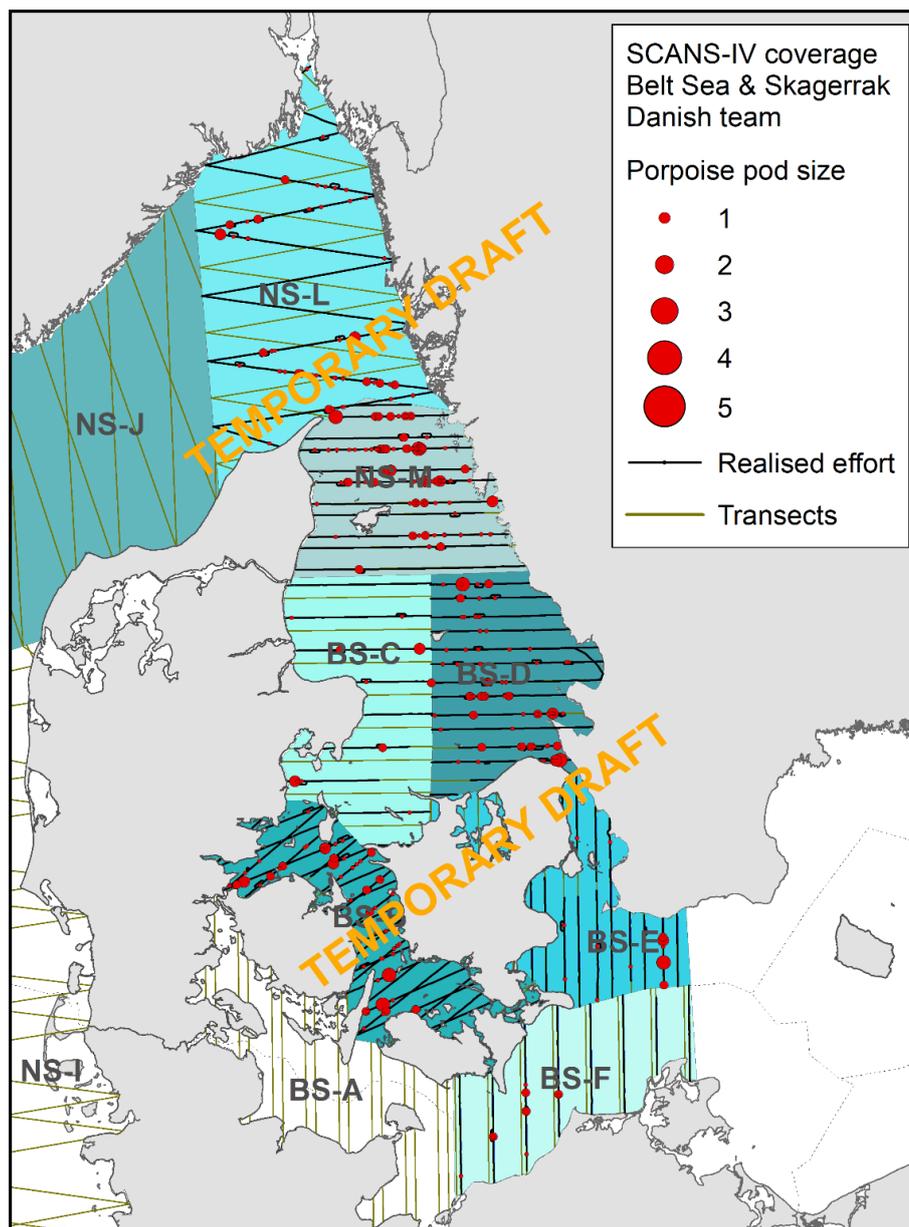
**Table 1.** Overview of survey date, transects covered, names and participants and number of porpoise sightings.

Date	Survey (flight number)	File-name SAMMOA	Block & transects covered	Pilot,observers	Sightings porpoise (n)
28-Jun-22	12	SCANS4_B_2022_06_28_FLIGHT12.sammoa	BS-B: 101-116	Matthias, ssv, lky, jdb	40
29-Jun-22	15 / 67	SCANS4_B_2022_06_29_FLIGHT15.sammoa / SCANS4_A_2022_06_29_FLIGHT67.sammoa	BS-E: 201-206, BS-D:101-103	Matthias, ssv, lky, jdb	36
30-Jun-22	68 / 17	SCANS4_A_2022_06_30_FLIGHT68.sammoa / SCANS4_B_2022_06_30_FLIGHT17.sammoa	BS-D: 103-107, BS-C: all	Matthias, ssv, lky, mcal	62
11-Jul-22	69, 70	SCANS4_A_2022_07_11_FLIGHT69.sammoa, SCANS4_A_2022_07_11_FLIGHT70.sammoa	all NS-L, NS-M: 304-305	Matthias, ssv, lky, mcal	98
12-Jul-22	71	SCANS4_A_2022_07_12_FLIGHT71.sammoa	the rest of NS-M	Matthias, ssv, lky, mcal	18
19-Jul-22	73, 74	SCANS4_A_2022_07_19_FLIGHT73.sammoa, SCANS4_A_2022_07_19_FLIGHT74.sammoa	all BS-B, and 3 transects from BS-D	Matthias, ssv, jdb, mcal	67
21-Jul-22	75, 19	SCANS4_A_2022_07_21_FLIGHT75, SCANS4_B_2022_07_21_FLIGHT19.sammoa	The rest of BS-D and 2 transects from NS-M	Matthias, ssv, jdb, mcal	20
24-Jul-22	78	SCANS4_A_2022_07_24_FLIGHT78.sammoa	BS-F: all	Matthias, jdb, ssv, mcal	15
28-Jul-22	21	SCANS4_B_2022_07_28_FLIGHT21.sammoa	NS-G: 108-110, NS-I: 106-109	Matthias,jpac, lky, mcal	109
29-Jul-22	81	SCANS4_A_2022_07_29_FLIGHT81.sammoa	NS-M: 201-203	Matthias,jpac, lky, mcal	99
30-Jul-22	22	SCANS4_B_2022_07_30_FLIGHT22.sammoa	NS-J: 110-112	Matthias,jpac, lky, mcal	28
31-Jul-22	23	SCANS4_B_2022_07_31_FLIGHT23.sammoa	BS-E: 104-108	Matthias,jpac, lky, mcal	3

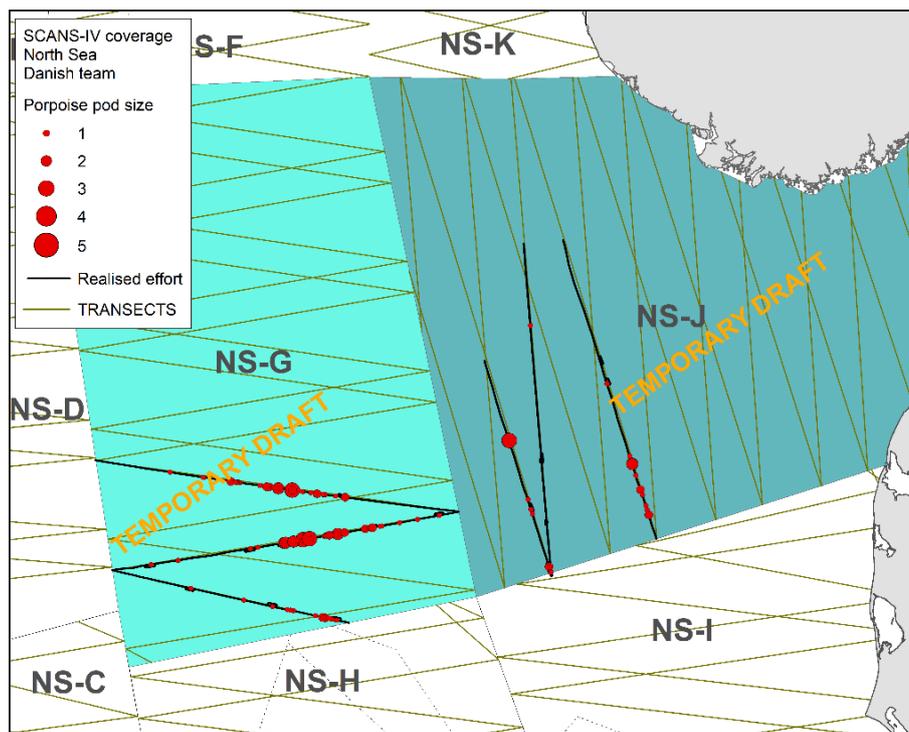
On the 30th of July, Team 1 surveyed three transects of NS-J (figure 3). They had fairly poor weather with Sea state 4 and few sightings on several transects. However, they had several dolphin observations and a minke whale.

On the last day of survey, Team 1 moved back into the Belt Sea and surveyed the second transect grid of BS-E. The Sea State was fine but there was lots of glare and very few sightings.

**Figure 2.** Map of the survey area in the Belt Seas and Skagerrak with strata and transects surveyed by Team 1. Note that this map is a temporary rough draft of effort and observations and should not be used as result output of SCANS-IV.



**Figure 3.** Map of the survey area in the North Sea with strata and transects surveyed by Team 1. Note that this map is a temporary rough draft of effort and observations and should not be used as result output of SCANS-IV.



**Figure 4.** Part of Team 1 in front of the Partenavia survey plane: Signe Sveegaard, Jeppe Dalggaard Balle, Marc Christian Allentoft-Larsen.

