## **Interim report**

# FRENCH PART OF THE FOURTH SURVEY ON SMALL CETACEANS IN EUROPEAN ATLANTIC WATERS AND THE NORTH SEA (SCANS-IV)

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### Report for the Office Francais de la Biodiversité (OFB)

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## 1. Introduction

The Small Cetaceans in European Atlantic waters and the North Sea surveys (SCANS) are regionally coordinated synoptic surveys that started almost 30 years ago with the aim of monitoring whales, dolphins and porpoises on the shelf and offshore waters of the European Atlantic. Since 1994, the survey expanded in the European Atlantic to cover all shelf waters in 2005 (SCANS-II), and to include offshore waters in 2007 (CODA survey). In 2016, SCANS-III used three ships and seven aircraft to monitor cetaceans: it provided knowledge on the abundance and distribution of ten species, enabling all countries to report under the Marine Strategy Framework Directive, the Habitats Directive as well as to complete assessments within OSPAR and HELCOM.

The objective of the SCANS-IV project is to estimate the abundance of cetacean species in shelf and oceanic waters of the European Atlantic through a large-scale multinational aerial and shipboard survey in the summer of 2022. This is the most appropriate survey timing because of the higher probability of good sighting conditions, and also to ensure that results are comparable with those from previous SCANS surveys conducted in 1994, 2005/2007 and 2016 (Hammond et al. 2002, 2013, 2021).

The outputs of the project are timely for Member States obligations for reporting under the Marine Strategy Framework Directive (MSFD Article 8: due 2024) and the next reporting round under the Habitats Directive (Article 17: 2019 - 2024). The estimates are also needed for impact assessments of offshore industries and fisheries.

The project will be achieved through the successful completion of six work packages (WP, Appendix 1). The first two WPs (WP1 & WP2) focus on collecting data on cetacean abundance and distribution through implementation of aerial surveys on the continental shelf and shipboard surveys in offshore waters. The data will be analysed in WP3 to generate abundance estimates, trends and perform spatial habitat modelling. WP4 will consider the long-term security of the large-scale cetacean monitoring SCANS programme in the Northeast Atlantic and propose a governance structure to ensure the continuation into the future. WPs 5 & 6 will focus on dissemination of results, project management and reporting.

This interim report details the tasks undertaken between June 2022 and October 2022, specifically targeting the French seaboard.

## 2. Tasks completed

### WP 1 – Recruit survey teams and cruise leaders

To cover all the aerial survey blocks in the same time window in summer 2022, a total of eight teams in eight aircrafts was needed. The selection for experienced survey cruise leaders and experienced observers was drawn from established survey teams within the survey region. Most curise leaders and observers also took part in SCANS-III in 2016.

### WP 1 – Training workshop for aerial cruise leaders

A workshop to train aerial cruise leaders and to field test the equipment using the SCANS-IV protocol was organized in La Rochelle at LRUniv (Appendix 2) between 30 May and 03 June 2022. Cruise leaders from all teams involved in the SCANS aerial surveys, and those involved in the ObSERVE surveys<sup>1</sup>, met in La Rochelle to discuss the SCANS-IV protocol and learn how to use the SAMMOA software<sup>2</sup> for aerial data acquisition (Figure 1). Installation of the software on the Toughbooks to be used during the survey was done. Trouble-shooting and testing the software in the field were also performed during the workshop.



Figure 1: Workshop in La Rochelle, hosted by the Observatoire Pelagis. Training of participants to use the inclinometer to measure angles.

<sup>&</sup>lt;sup>1</sup> <u>https://www.gov.ie/en/publication/12374-observe-programme/</u>

<sup>&</sup>lt;sup>2</sup> SAMMOA is a software dedicated for aerial survey of marine megafauna and developed by the Observatoire Pelagis (Université de La Rochelle - CNRS, France). It builds on the previous data collection software in SCANS, "VOR". <u>https://www.observatoire-pelagis.cnrs.fr/les-outils/sammoa/</u>

### WP 1 – SAMMOA software development

Further developments of the SAMMOA software to accommodate circle-backs and add additional fields for later data analysis were realized in June 2022 and involved many exchanges with the Code Lutin company to ensure data acquisition in line with the SCANS-IV protocol.

Further, TiHo worked closely with Pelagis on streamlining the outputs of SAMMOA to TiHo's current analytical pipeline for estimating abundance by writing dedicated R scripts (R Core Team 2022).

### <u>WP 1 – Survey design</u>

In May and June 2022, the complete survey area of 1,750,028 km<sup>2</sup> was stratified into 44 survey blocks (41 aerial and 3 ship survey blocks) based on species distribution, habitat characteristics, regional/population/management boundaries as well as logistics (e.g., endurance of aircraft) in May and June 2022. The transect lines to be surveyed within each block were designed to provide equal coverage probability. The design on blocks and transects to be surveyed in waters adjacent to the French seaboard are depicted on Figure 2. Five blocks (NS-A, CS-A, CS-B, BB-A and BB-B) are spanning the waters adjacent to the French seaboard.



Figure 2: Survey blocks and designed transects in two sampling plans to be covered by established teams from Observatoire Pelagis during the SCANS-IV survey.

The sampling plan is comparable to that of the 2016 SCANS-III survey (Hammond et al. 2021). Blocks were designed as to extend as much as possible, safety permitting, in offshore waters in the Bay of Biscay and Celtic Seas.

### WP 2 - Coordinate and conduct the aerial surveys to take place in summer 2022

Aircraft companies with suitable planes (Vulcan Air/P 68 or Brit Norman BN2) were subcontracted. For the survey in the French seaboard, a total of two teams were needed (Team 5 and 6). Team 5 operated in the English Channel and covered blocks CS-A and NS-A (Figure 2). Team 6 operated in the Bay of Biscay and Celtic Seas, and covered blocks CS-B, BB-A and BB-B (Figure 2).

Table 1: Daily log of flights performed by Teams 5 and 6 surveying waters adjacent to the Fren	ch
seaboard. "-" means no flight performed by a team.	

Date	Team flying	Date	Team flying	Date	Team flying
27/06/2022	-/-	15/07/2022	5/-	02/08/2022	5/6
28/06/2022	-/-	16/07/2022	-/-	03/08/2022	-/-
29/06/2022	5/-	17/07/2022	-/-	04/08/2022	-/-
30/06/2022	-/-	18/07/2022	-/-	05/08/2022	-/-
01/07/2022	-/6	19/07/2022	-/-	06/08/2022	-/-
02/07/2022	-/6	20/07/2022	-/-	07/08/2022	-/-
03/07/2022	-/-	21/07/2022	5/-	08/08/2022	-/-
04/07/2022	5/6	22/07/2022	-/-	09/08/2022	-/-
05/07/2022	5/6	23/07/2022	5/-	10/08/2022	-/-
06/07/2022	5/-	24/07/2022	-/6	11/08/2022	-/-
07/07/2022	5/-	25/07/2022	-/-	12/08/2022	-/6
08/07/2022	-/-	26/07/2022	5/-	13/08/2022	-/-
09/07/2022	-/-	27/07/2022	5/6	14/08/2022	-/-
10/07/2022	-/-	28/07/2022	5/6	15/08/2022	-/-
11/07/2022	5/6	29/07/2022	-/6	16/08/2022	-/-
12/07/2022	5/6	30/07/2022	5/6	17/08/2022	-/-
13/07/2022	5/6	31/07/2022	-/6	18/08/2022	-/-
14/07/2022	-/-	01/08/2022	-/-	19/08/2022	-/-

Both teams managed to cover most of the planned transects during July 2022 with at least one sampling plan (replica) completed (Figure 3). Team 6 remained mobilised during early August

(Table 1) in an unsuccessful attempt to complete the second sampling plan where two transects offshore La Rochelle could not be covered (Figure 3, Table 2).

Table 2: Summary statistics for total effort during the SCANS-IV survey in waters adjacent to the French seaboard (blocks NS-A, CS-A, CS-B, BB-A and BB-B). Numbers are rounded to the nearest integer.

Sampling plan	Effort (km)	
1	7 541	
2	7 430	
Total	14 971	



Figure 3: Realized sampling effort (in km flown) during SCANS-IV in blocks NS-A, CS-A, CS-B, BB-A and BB-B. The colour code indicates sea state on a Beaufort scale. The underlying grey line shows the planned survey design as produced under WP1.

Most of the effort (97%) was realized in good sighting conditions with a sea state inferior or equal to 3, and nearly four firths (80%) were realized in sea state inferior or equal to 2 (Table 3).

Sea state	Effort (km)	Percentage (%)	Cumulative (%)
0	1 407	9%	9%
1	4 439	30%	39%
2	5 817	39%	78%
3	2 805	19%	97%
4	388	3%	99%
5	114	1%	100%
Total	14 971	10	0%

Table 3: Summary statistics for effort, stratified by sea state (on a Beaufort scale), during the SCANS-IV survey in waters adjacent to the French seaboard (blocks NS-A, CS-A, CS-B, BB-A and BB-B). Numbers are rounded to the nearest integer.

The digital STORMM high-definition image acquisition system (already used during the French SAMM2 Atlantic winter 2021 campaign) was deployed by Team 6 in blocks CS-A, CS-B, BB-A and BB-B to take pictures of their sightings for species confirmation in the data validation step (Figure 4). STORMM was deployed on 15 flights from 2022-07-01 to 2022-08-28, representing 5,526 km of effort (Table 4). These digital pictures enhance data quality, but their analysis requires manpower as a human operator systematically reviews each photo to confirm or determine dolphin species identity and group size. In particular, this allows to re-allocate sightings of unidentified common or striped dolphins into the correct species. Samples of STORMM digital data are provided as deliverables.

Table 4: Summary statistics for total effort with STORMM deployment during the SCANS-IV
survey in waters adjacent to the French seaboard (blocks, CS-A, CS-B, BB-A and BB-B).
Numbers are rounded to the nearest integer.

Strata	Effort (km)
CS-A	221
CS-B	1 786
BB-A	1 464
BB-B	2 056
Total	5 527



Figure 4: Realized sampling effort (in km flown) during SCANS-IV in blocks NS-A, CS-A, CS-B, BB-A and BB-B. The blue colour code indicates STORMM deployment for digital data acquisition. The grey line materializes the planned design of the survey elaborated in WP1.

### WP2 - Conduct in-field data validation and quality checks

Data were acquired in the field using the SAMMOA software and checked after each flight for validation. The raw data were archived daily on the dedicated shared folder for the SCANS-IV project. The validated data from Team 5 and Team 6 were collated in a geopackage database, including effort data, GPS data and sightings records collected during the aerial surveys.

The STORMM digital data are currently hosted on the LRUniv servers: the data represent a volume of 3.7 To, corresponding to approx. 410,000 high resolution pictures.

## 3. Work in progress

### WP2 - Conduct in-field data validation and quality checks

STORMM data analysis is underway and is expected to be completed in 2023. The STORMM data are analysed using dedicated software "STORMM-GS". Data to be analysed represent some 4 600 sightings. Marine mammal data are prioritised and represent an estimated 500 sightings.

### WP3 - Validate and compile the collected data into a database

SCANS-IV is the first of the SCANS series to use the SAMMOA software for data acquisition. In order to streamline the process of data analysis already developed during the SCANS projects, a dedicate suite of functions (hereafter, a pipeline) was written in the R language (R Core Team 2022) and bundled into a documented package called 'sammoa2vor' hosted on a gitlab. This pipeline is being co-developed with Pelagis.

### WP5 - Dissemination of results

A "SCANS" website is under development, bringing project information, promotion of project activities and results from SCANS-IV and previous SCANS surveys into one webspace. As project social media outlet, a twitter handle (@scans\_4) has been created in May 2022 and was regularly updated during the field season. Several ArcGIS storymaps were created and press releases published to inform the interested public as well as stakeholders. The targeted distribution of survey success and achieved coverage has commenced by giving a presentation on survey effort and first sightings maps for the ASCOBANS AC 27 meeting, 29 Sep 2022. The survey plan has been communicated to ICES, HELCOM and OSPAR.

### WP 6 - Project Management and Reporting

The project management is ensuring that milestones and deliverables are met and communicates progress to the project's steering group.

## 4. Preliminary results

### Protocol

Depending on the taxa surveyed, a multi-species protocol was followed in waters adjacent to the French seaboard: a sampling with an angle measurement to estimate the distance to the transect (distance sampling) and a strip sampling (strip transect) for the most abundant categories to minimise disturbance to the observation. Birds, sunfish in the Atlantic area (due their large abundance), fishing buoys and litter can be surveyed in a 200 m strip on either side of the aircraft's path. Boats are surveyed within 500 m on either side. For other taxa (cetaceans, elasmobranchs, turtles and other large pelagic fish, including sunfish in the English Channel), an angle is recorded using an inclinometer (Figure 1) to estimate the distance perpendicular to the transect. Both methods have the advantage of producing spatial distribution data and allowing relative densities to be estimated with an associated uncertainty measure. Furthermore, the impact of the multi-species protocol does not have a significant impact on cetacean estimates (Lambert et al. 2019). This multi-species protocol has been used in previous national surveys of megafauna in waters adjacent to the French seaboard.

### <u>Sightings</u>

### Seabirds

Seabird sightings are registered under the multi-species protocol. Although not of direct relevance to the SCANS-IV project's objectives, a map of seabird sightings is provided on Figure 5.



Figure 5: Sightings of seabirds within a 200-m strip on both side of the plane during the SCANS-IV aerial survey in summer 2022. Seabird taxonomic families are color-coded.

Gannets and gulls were the most sighted seabirds. Gannets were mostly sighted in blocks NS-A, CS-A and CS-B, with few sightings near the coastline the Bay of Biscay (block BB-B) and offshore (block BB-A). Gulls could form large aggregation of individuals, especially close to the coastlines.

Alcidae (razorbills, guillemots and puffins) were sighted close to the shorelines of Devon in the UK (Figure 5). Procellariidae (shearwaters and petrels, excluding storm-petrels) were sighted in high numbers in the offshore waters of the Celtic Seas and Bay of Biscay (blocks CS-B, BB-A and BB-B).

At-sea bird wreck data were collected ad-hoc as part of the response to the 2022 outbreak of Avian Influenza (HPAI) (Table 5). These were most numerous in the northern most waters adjacent to the French seaboard (Figure 6). Few sightings of dead seabirds were registered in the Bay of Biscay, and none on the shelf area.

Block	Description	No of sightings
NS-A	few dead birds	14
CS-A	few dead birds	4
CS-B	few dead birds	4
CS-B	few dead birds	1
BB-A	few dead birds	1
Total	few dead birds	24

Table 5: Summary statistics for the sightings of dead birds during SCANS-IV.



Figure 6: Sightings of dead seabirds within a 200-m strip on both side of the plane during the SCANS-IV aerial survey in summer 2022.

### Marine mammals

A total of 1 091 sightings of marine mammals (including seals, and unidentified cetacean species) were registered on effort during the SCANS-IV survey. These sightings corresponded to 6 131 individuals. Worthy of note was a sighting of a blue whale (*Balaenoptera musculus*) in the offshore waters of the Bay of Biscay (block BB-A). Summary of sightings are provided in Tables 6, 7 and 8 below.

# Table 6: Summary statistics for the sightings of marine mammals during SCANS-IV in waters of the MSFD sub-region « Greater North Sea » adjacent to the French seaboard.

Block	Marine Mammal	Taxon	No of sightings	No of individuals
	Small odontocetes	harbour porpoise	21	32
		common dolphin	1	12
		white-beaked dolphin	1	1
NS-A		small cetacea sp.	3	8
	Seals	grey seal (Atlantic seal)	7	7
		harbour seal	2	2
		seal sp.	6	6

# Table 7: Summary statistics for the sightings of marine mammals during SCANS-IV in waters of the MSFD sub-region « Celtic Seas » adjacent to the French seaboard.

Block	Marine Mammal	Taxon	No of sightings	No of individuals
	Small odontocetes	harbour porpoise	19	24
		common dolphin	76	335
		striped / common dolphin	16	111
CS-A		small cetacea sp.	3	7
		bottlenose dolphin	6	28
		delphinid sp.	7	24
	Baleen whales	minke whale	1	1
CS-B	Small odontocetes	harbour porpoise	29	51
		common dolphin	228	1257

Block	Marine Mammal	Taxon	No of sightings	No of individuals
		striped dolphin	8	60
		striped / common dolphin	130	723
		small cetacea sp.	13	23
		bottlenose dolphin	17	130
		delphinid sp.	36	286
	Deep-diving odontocetes	risso's dolphin	10	52
		long-finned pilot whale	10	47
	Baleen whales	minke whale	1	1
		fin whale	3	3
		balaenopterid sp.	1	1
	Cetaceans	medium cetacea sp.	2	3
		large cetacea sp.	1	1
		cetacea sp.	2	8

Table 8: Summary statistics for the sightings of marine mammals during SCANS-IV in waters of the MSFD sub-region « Bay of Biscay and Iberian Coast » adjacent to the French seaboard.

Block	Marine Mammal	Taxon	No of sightings	No of individuals
	Small odontocetes	harbour porpoise	2	2
		common dolphin	24	256
		striped dolphin	28	394
BB-A		striped / common dolphin	48	723
		small cetacea sp.	1	5
		bottlenose dolphin	11	77
		delphinid sp.	17	281

Block	Marine Mammal	Taxon	No of sightings	No of individuals
	Baleen whales	blue whale	1	1
		fin whale	17	17
		balaenopterid sp.	6	8
	Deep-diving odontocetes	long-finned pilot whale	2	4
		risso's dolphin	3	12
		cuvier's beaked whale	6	9
		beaked whale unid.	1	1
		sperm whale	1	1
	Cetaceans	medium cetacea sp.	1	1
		large cetacea sp.	1	2
BB-B	Small odontocetes	harbour porpoise	5	11
		common dolphin	115	511
		striped dolphin	3	19
		striped / common dolphin	88	434
		small cetacea sp.	8	13
		bottlenose dolphin	2	2
		delphinid sp.	27	88
	Baleen whales	fin whale	2	2
		balaenopterid sp.	1	1
	Deep-diving odontocetes	long-finned pilot whale	3	4
		Risso's dolphin	1	1
		sperm whale	1	1
	Cetaceans	medium cetacea sp.	2	3
		large cetacea sp.	1	1

Sightings of pinnipeds were registering only in the block NS-A, corresponding to the eastern part of the English Channel (Table 6). The most sighted cetacean species in waters adjacent

to the French seaboard were the common dolphin (*Delphinus delphis*) and striped dolphin (*Stenella coeruleoalba*).

Sightings of harbour porpoise (*Phocoena phocoena*) were most abundant in blocks NS-A and CS-A, corresponding to the English Channel (Figure 7). These sightings corresponded in their majority of a single individual. A handful of sightings of harbour porpoise were registered in offshore waters of the Bay of Biscay, although these sightings were made close to the shelf break (Figure 7).



Figure 7: Sightings of harbour porpoises during the SCANS-IV aerial survey in summer 2022.

Only one sighting of common dolphin was registered in block NS-A. Common dolphins were mostly sighted on shelf areas, i.e. in blocks CS-B and BB-B (Tables 7 and 8). Striped dolphins were mostly sighted (and identified) in offshore waters in blocks CS-B and BB-A. Large aggregations of individuals were occasionally observed, especially in offshore waters (Figure 8).



Figure 8: Sightings of common and striped dolphins (including unidentified common or striped dolphins) during the SCANS-IV aerial survey in summer 2022. Sightings made off-effort are represented by a triangle.

Sightings of unidentified common or striped dolphins (Delphinus/Stenella) in blocks CS-B, BB-A and BB-B will be further analysed, and when possible disambiguated, with the analysis of the STORMM data.

Most sightings of bottlenose dolphins (*Tursiops truncatus*) were registered in offshore waters of blocks CS-B and BB-A. A few sightings were registered in coastal waters where resident populations are known to occur (Tables 6, 7 & 8, Figure 9).



Figure 8: Sightings of bottlenose dolphins during the SCANS-IV aerial survey in summer 2022. Sightings made off-effort are represented by a triangle.

No baleen whales were sighted in the eastern part of the English Channel (block NS-A), and two minke whales (*Balaenoptera acutorostrata*) were sighted in the western part (blocks CS-A and CS-B). Most sightings were registered in offshore waters of the Bay of Biscay (block BB-A). In particular, a blue whale (*Balaenoptera musculus*) was sighted there (Figure 10).



Figure 10: Sightings of baleen whales, including minke whales (*Balaenoptera acutorostrata*), common fin whales (*B. physalus*), blue whale (*B. musculus*) and unidentified balaenopterids during the SCANS-IV aerial survey in summer 2022. Sightings made off-effort are represented by a triangle.

Deep-diving cetacean species were sighted in blocks CS-B, BB-A and BB-B (Tables 7 & 8, Figure 11). In the latter, there were comparatively few sightings as this block mostly spans the shelf area of the Bay of Biscay. Beaked whale species, including Cuvier's beaked whales (*Ziphius cavirostris*), were mainly sighted in the southern part of the surveyed area. In contrast, long-finned pilot whales (*Globicephala melas*) and Risso's dolphins (*Grampus griseus*) were mainly sighted in the north-western part of the surveyed area.



Figure 11: Sightings of long-finned pilot whales (*Globicephala melas*), Risso's dolphins (*Grampus griseus*), Cuviers' beaked whales (*Ziphius cavirostris*), unidentified beaked whales (Mesoplodon spp.) and sperm whales (*Physeter macrocephalus*) during the SCANS-IV aerial survey in summer 2022. Sightings made off-effort are represented by a triangle.

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#### Other marine megafauna

Sightings of other marine megafauna were numerous, including large fish species and jellyfish (Figure 12). The most frequently sighted fish species was the sunfish (*Mola mola*), registered over the whole surveyed area. Some shark species, including the blue shark (*Prionace glauca*), the porbeagle shark (*Lamna nasus*) and the basking shark (*Cetorhinus maximus*), were registered. Sighting of blue sharks were numerous in blocks CS-B and BB-B, and less so in block BB-A. Unidentified tuna species were registered mainly in the southern part of the surveyed area, although there was one sighting in the western part of the English Channel (block CS-A).



Figure 12: Sightings of other marine megafauna, including large fish such as tunas, swordfish, sharks *etc.*, during the SCANS-IV aerial survey in summer 2022.

### Marine mammal sighting rates

Sighting rates for marine mammal taxa were computed from sightings and linear effort (in km). These maps are descriptive and reveal area of high density of sightings of a species. These maps (Figures 13-16) have common color scale that reflect the number of sightings per km of effort. Sighting rates are described below in descending order, starting with the most sighted cetacean taxa (common and striped dolphins).

Sighting rates of common and striped dolphins (including unidentified common or striped dolphins) were the highest in the western part of the surveyed area, at the boundary between blocks CS-B and BB-A (Figure 13). These rates decrease in the southern and eastern part of the surveyed area.



Figure 13: Raw sighting rates of common and striped dolphins (including unidentified common or striped dolphins) during the SCANS-IV survey in waters adjacent to the French seaboard. Striped cells indicate low effort and a possibly unreliable estimated sighting rate.

For the harbour porpoise, the area of highest sighting density was in the Eastern-most part of the English Channel, as the boundary with other blocks covering the North Sea (Figure 14). Sighting rates of harbour porpoise were the lowest in the Bay of Biscay: there was a clear northeast – southwest gradient in sighting rates.



Figure 14: Raw sighting rates of harbour porpoises during the SCANS-IV survey in waters adjacent to the French seaboard. Striped cells indicate low effort and a possibly unreliable estimated sighting rate.

Sighting rates of bottlenose dolphins were highest in offshore waters of the surveyed area (Figure 15). Sighting rates were low on the shelf area of the Bay of Biscay.



Figure 15: Raw sighting rates of bottlenose dolphins during the SCANS-IV survey in waters adjacent to the French seaboard. Striped cells indicate low effort and a possibly unreliable estimated sighting rate.

There were only two sightings of minke whales in the surveyed area during the summer of 2022. Accordingly, sighting rates of minke whales were low (in the north-western part) to nil in the surveyed area (Figure 16).



Figure 16: Raw sighting rates of minke whales during the SCANS-IV survey in waters adjacent to the French seaboard. Striped cells indicate low effort and a possibly unreliable estimated sighting rate.

## 5. Miscellaneous

Various communications and reach-out actions were realized between May 2022 and October 2022. The main ones are listed below:

- Communications on institutional websites <u>https://www.tiho-hannover.de/en/clinics-institutes/institutes/institute-for-terrestrial-and-aquatic-wildlife-research-itaw/scans-iv-survey</u>

https://www.tiho-hannover.de/universitaet/aktuellesveroeffentlichungen/pressemitteilungen/detail/internationale-walzaehlung-gestartet

https://www.observatoire-pelagis.cnrs.fr/survol-des-eaux-europeennes-a-venir/

https://www.observatoire-pelagis.cnrs.fr/la-campagne-scans-iv-dans-les-eaux-francaises/

https://www.centre-limousin-poitou-charentes.cnrs.fr/fr/cnrsinfo/mammiferes-marinsretour-sur-la-mission-scans-iv

https://www.ofb.gouv.fr/actualites/premiers-resultats-pour-la-campagne-derecensement-de-la-megafaune-marine-en-atlantique

- Communications in French newspapers, radio and television

https://www.sudouest.fr/environnement/mer/la-rochelle-les-specialistes-europeensde-l-observation-des-mammiferes-marins-preparent-la-campagne-estivale-1121104.php

https://www.francebleu.fr/infos/environnement/une-grande-campagne-derecensement-des-cetaces-se-prepare-a-la-rochelle-1653918605

 ArcGIS storymaps <u>https://storymaps.arcgis.com/stories/90250af8d1ff48be9a8a40ec63a8476c</u>

## 6. Conclusion

The SCANS-IV survey in waters adjacent of the French seaboard was carried out successfully in July-August 2022, with nearly 15 000 km of aerial survey effort conducted by two teams of experienced observers. These observers collected more than 1 000 sightings of marine mammals, corresponding to more than 6 000 individuals. In addition, more than 400 000 pictures of high resolution were collected with the STORMM system along more than 5 000 km of effort (i.e., roughly one third of total effort). These digital data are currently being analysed to refine species identification and pod size estimation.

# 7. References

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### Appendix 1: Work packages of the SCANS-IV project

### Work package 1: Preparation for surveys of cetaceans of the European Atlantic (aerial and shipboard surveys)

- Delineate the proposed survey area. Divide the survey area into survey blocks based on species distribution, habitat characteristics, regional/population/management boundaries and logistics.
- Design survey transect lines within each block providing equal coverage probability.
- Prepare and buy survey equipment, including updates in survey methodology such as new software.
- Recruit survey cruise leaders and experienced observers. For aerial surveys this will draw from established survey teams within the survey region.
- Conduct a training workshop for aerial and shipboard cruise leaders field testing the equipment using SCANS-IV protocol.

### Work package 2: Implementation of aerial and shipboard surveys for cetaceans of the Northeast Atlantic

- Subcontract suitable platforms (aircraft and ships). Eight aircraft and two ships will be required.
- Survey the study area in June/July 2022 using multiple aircraft simultaneously on the continental shelf and ships in the furthest offshore areas.
- Conduct in-field data validation and quality checks

### Work package 3: Analysis of survey data and assessment of trends

- Validate and compile the collected data into a database.
- Estimate cetacean abundance by species, MSFD sub-region and population management units using design-based and model-based estimates.
- Map cetacean summer distribution
- Estimate trends in cetacean summer abundance

### Work package 4: Framework to deliver coordinated cetacean monitoring programme

- Develop a framework that proposes a governance structure to ensure long-term implementation of the SCANS cetacean abundance monitoring programme

### Work package 5: Dissemination of results

- Develop a "SCANS" website, bringing project information and results from SCANS-IV and previous projects into one webspace
- Targeted distribution of products to EU Member States and through relevant fora e.g. ASCOBANS, OSPAR, HELCOM, ICES

### Work package 6: Project Management and Reporting

- Plan and implement sound project management ensuring clear goals, milestones and deliverables.
- Communication and decision making are key to the project success.
- Project governance structure entails:
  - Coordinator;
  - Project Steering Group;
  - $\circ$  Work Package (co-) Leaders and Working Groups.
- Regular communication of results to project stakeholders

### Appendix 2: SCANS-IV aerial survey training workshop

DRAFT AGENDA - Monday 30th May to Thursday 3rd June 2022, La Rochelle University.

Participants: Anita, Nadya, Bianca, Signe, Line, Hélder, Toño, Steve and 5 from La Rochelle (Matthieu, Sophie, Ghislain, Ariane and Olivier), Oriol and Tiffany (ObSERVE)

Essential equipment: each cruise leader/team should come with own equipment:

• Toughbook (with preferably windows XP or 10 and Java 8 version update 171)

• GPS (serial port or USB but some material needs a converter USB-serial port to connect the GPS)

• Microphone with jack connector to connect on your toughbook (some material needs an external sound card).

If you can test your material beforehand with SAMMOA it will save time. If you could also bring along the spare equipment set even better.

Expected outcome:

1. Cruise leaders must be familiar with method, data collection protocol and the use of SAMMOA and their preparation for future surveys.

2. All sets of equipment must be tested (with SAMMOA, GPS, microphone) to be ready to fly.

3. Field organization and coordination during the survey should be established.

### Monday, 30th May

14:00 Kick-off, introduction of agenda and planned implementation of SCANS IV (organization, teams, survey design, survey coverage per team ...) by Anita

15:30 Quick review of the data collection protocol to harmonize practices (what are common issues during data collection, to collect the sighting conditions and sighting parameters, importance of search area, CB: conditions to decide, which species, ...) by Anita (backed up by Nadya, Steve, ...)

17:00 Install SAMMOA (and QGIS Plugin PelaSIG) on all computers and prepare/check of all equipment.

18:00 end of day.

### Tuesday, 1<sup>st</sup> June

09:00 SAMMOA training: start-up, allocation of computer code, set up a survey (input survey blocks and transects, observer and species list, ...) and prepare a flight plan.

09:30 SAMMOA training: data collection during flight.

12:30 lunch time (on site)

14:00 SAMMOA training: data validation (with audio), data export and storage after flight, fill a "flight list" file (compile flight characteristics for each flight and any information important to know for analysis).

15:00 SAMMOA training: practice and issue solving (outside test? need car to practice CB?)

18:00 end of the day

### Wednesday, 2<sup>nd</sup> June

09:00 QGis + Plugin PelaSIG: create a new design and import it into SAMMOA

10:00 QGis + Plugin PelaSIG: data visualization, quality check

- 11:00 QGis + Plugin PelaSIG: linearization of effort / mapping tools /segmentation for analysis
- 12:30 lunch time (on site)
- 14:00 QGis + Plugin PelaSIG: if need more time
- 16:00 General discussion
- 18:00 End of day
- 20:00 Dinner organized in the old town

Various issues (no order): coordination during survey, organization of data flow, possibility of plane/team movement, survey dates, need for observers, "official" survey document for authorities in particular military, trackline and code sheets, angle board, equipment check list, whatsapp group, weather sources, safety issues, communication (coordination, data issues, between teams, outside world, ...), pictures (illustrate and archive), t-shirt, ...

Thursday, 3rd June

9:00 Continuation of the general discussion and/or practice with SAMMOA

12:00 Closing of workshop

