SCANS II – NORTHERN NORTH SEA
WEST FREEZER
(JUNE 27 – JULY 27)

CRUISE REPORT

Captain:	Finn Venned (FV, FO)
Cruise leader:	Geneviève Desportes (GD, F-DK)
Whale Observers:	Mick Baines (MB, UK), Susannah Calderan (SC, UK), Vicki Crook (VC, S-UK), Jane Griffiths (JG, UK, also acoustic observer), Janus Hansen (JH, FO), Troels Jacobsen (TJ, DK) and Maren Reichelt (MR, D). (Figure 1)
Bird observers:	from 27/06 to 13/07, Linda Wilson (LW, UK) from 13/07 to 27/07, Andy Webb (AW, UK)
Crew:	Eydun Ellingsgaard, Harald Johansen, John A Løgmannsbø, Thomas J. Thomasen, Niels J. Thomassen - all from the Faroes.

1 BACKGROUND ON SCANS SURVEYS

The objective of the SCANS survey is to estimate small cetacean abundance in European Atlantic waters. SCANS I in 1994 focussed on the North Sea and adjacent waters, while SCANS II had a broader scope including all Europeans territorial waters. Both surveys were a combination of line transect shipboard and aerial surveys. They were financed by the EU commission LIFE programme as well as the countries involved in the project.

The information on cetacean abundance is essential to assess the impact of bycatch in fishing gear, and other anthropogenic threats, and as input to management actions to ensure the favourable conservation status of small cetacean species.

The abundance data from SCANS II will also 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.

SCANS II project is costing €3.1M and is being funded by the European Commission (EC) LIFE-Nature programme with further support from 8 European countries (Denmark, Germany, Ireland, Norway, Portugal, Spain, Sweden, UK) and a host of organisations throughout the EC. The majority of the region were surveyed by seven ships; areas difficult to survey by ship were surveyed by three planes with an additional ship surveying Polish waters in the Baltic Sea. The Sea Mammal Research Unit at the University of St Andrews, Scotland, is coordinating the project.

2 SCANS II

2.1 Methodology

Movement in response to survey vessel is a concern for several species, some being obviously attracted to vessels (e.g., common and bottlenose dolphins), while others obviously avoid them (e.g., some beaked whales). Responsive movements of minke whales and white sided and white beaked dolphins are not clearly defined yet, although white beaked dolphins tend to be attracted to the vessel while the other two species probably avoid it. Harbour porpoises are said to avoid vessels, although this might vary with area.

The survey was conducted in "BT" mode (Buckland &Turnock mode), **using two independent observer platforms.** The methodology was developed for the 1994 SCANS survey, and later on used in different

surveys, e.g. NASS 1995 (Faroese vessel only) and NASS 2001. This involves adopting passing mode and using two independent observation platforms, a primary and a tracking platform. This configuration allows the estimation of abundance without the need to assume that either platform sees all cetaceans on the trackline. This method is particularly appropriate for the smaller cetacean species (like minke whales and dolphins) as some animals of these species may be missed even on the trackline. The method also accommodates responsive movements.

The tracking platform searches ahead of the primary platform, thus trying to detect the whales before they have reacted to the vessel. Duplicate sightings data enable accurate estimation of the proportion of schools detected on the transect and of the extent and direction of responsive movement and allow estimation of a g(0) value robust to any responsive movement which occurred within the observation range of the tracking platform (Hammond et al., 1995; Borchers et al. in prep). The data from the primary platform are used to estimate sighting rate and effective strip width.

BT mode survey can be thought of as a survey by the Primary, with the Tracker simply providing additional data that allows the Primary detection function to be estimated without assuming that all animals on the trackline are seen.

Hydrophones, which can detect the presence of animals by recording their clicks and or wistles, were towed during the survey. These acoustic data were like having another PP, and methods are being developed as part of SCANS-II to use visual and acoustic data in combination to enhance abundance estimation.
The trials conducted throughout the survey should also provide information on the feasibility of using acoustic data as a monitoring technique.

2.2 Target species

The priority species for data collection were harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*) and common dolphin (*Delphinus delphis*). Data, however, were collected for all species encountered so long as this did not compromise data collection for the target species.

2.3 Combined whale and bird survey

Bird surveys were carried out at the same time of cetacean surveys in order to permit an analysis to compare population estimates of the target species derived from SCANS surveys with those contained in the European Seabirds at Sea (ESAS) database.

3 PROCEDURES FOR THE WEST FREEZER

This report deals with the cruise conducted by the Faroese vessel West Freezer, conducted between June 27 and July 27, 2005.

West Freezer was responsible for a survey area in the Northern North Sea delimited by the Orkneys and Shetland and the Norwegian coast and bounded by 2°15’37 W and 6°55’23 E longitude, and 62°10’18 N and 57°37’2 N latitude.

3.1 Whale survey procedures

The primary platform (PP) contained two observers (PO) searching with naked eyes within 500m from the vessel in a standard way for line transect surveys, and were allowed to use binoculars for species identification. Distances to sightings were estimated, aided with a stick; angles from the trackline to the cues were read on mounted angleboards. PP was audibly and visually isolated from the tracking platform (TP), but could communicate with the TP by radio.

The tracking platform (TP) contained the data recorder (DR), the duplicate identifier (DI) and the two trackers (TO) searching with binoculars, one 7x50 on a monopod and one pair of 20x45 big eyes mounted on a hydraulic foot.
The trackers concentrated their effort as far as possible and beyond 500m ahead of the vessel. They detected animals as far ahead of the vessel as possible, ideally before any sighted animals had reacted to the vessel’s presence, and attempted to track them via multiple sightings as they were approached by the vessel, until they

had passed abeam. The binoculars and the big eyes had reticules and an angle board with a pointer aligned with the binoculars.

The audio system, allowing the observers' comments to be recorded directly into the computer at each sighting and resighting, did not differ from the planned procedures; neither did the video or webcam system connected to the 7x50 binoculars and the big eyes nor the one way audio link between PP and TP.

The eight observers were assigned positions as primary or tracker, based on previous experience and personal wishes. Two pairs of primary observers were constituted. Trackers were not assigned to pairs, but followed a four-day schedule which allowed all combinations of tracker pairs. The observers worked three hours on and one hour off, following a four-day rotation schedule. Primary and trackers rotated between platform positions every half hour, but remained assigned to the same platform during the whole cruise. All observers worked as DR and DI.

The list of observers as well as their assignment to platform and team is given in Table 1.

Each day the research was scheduled to maximise utilisation of good weather condition and light. Working hours ranged between 4.30 and 22.00, with a total of 1 to 1.5 hrs of meal breaks.

Research was not conducted if the visibility was less than 1 km, if it was raining or if the wind exceeded 4 on the Beaufort scale (except on a few occasions). If visibility was reduced to only a few km, searching effort was carried out in single platform mode, with only the POs and DR remaining on duty.

Several informal meetings were held at the beginning and during the cruise to discuss methodology, procedures and data collection methods, evaluate progress and inform on future plans. A post cruise meeting was held on the last day for evaluating the survey and the data collection procedures, as well as commenting on the first draft of the cruise report provided by the CL.

3.2 Bird survey procedures

Standard ESAS methods were used to collect bird and cetacean data synchronously using a single observer platform. Two observers carried out the survey and swapped half-way through the cruise.

3.3 Cruise track design

The survey area should be crossed at least twice on two predetermined track lines (Figure 2). The two main tracks totalled about 3,071 km of effort, divided in two strata, west (middle North Sea) and east (Southern Norway). The greatest part of the transect was running East-West with a few lines running North-South in Southern Norway. A spare survey to be conducted if time permitted represented 1,496 km of effort.

It was planned to call in to Lerwick harbour for exchanging bird observers at about mid-survey.

3.4 Equipment

The Faroese ship West Freezer was available from June 29 to July 26. This 42 metre long long-liner was equipped with a 4-man and a 2-man platform placed directly above the navigation bridge for whale observations. A 2-man wooden box was placed on the forward store in front of the front mast, for bird observation. See Figure 3 for a view of the 3 platforms. The cruising speed was slightly more than 10 knots. The vessel was equipped with a mobile phone, a satellite phone and the internet available when GSM phone was working.

The whale platforms were respectively 9.68 m and 7.76 m above the sea surface at departure from Aberdeen, but this height change according to fuel and water loads, as indicated in Table 2.

The primary platform (PP) was the lower of the two whale observation platforms, situated on the top of the bridge. It housed the POs searching with the naked eye. It was placed directly against the ships railings on the port side to avoid the view being obstructed by the central infrastructures. It was a wooden shelter, equipped with two plastic chairs.

The tracking platform was situated highest. It was a metallic welded rectangular box, mounted in a special way to reduce as much as possible the effect of vessel vibrations at cruising speed, which makes searching through mounted binoculars difficult. A metallic frame was bolted and attached with cables to the top of the bridge. The actual platform was installed into the supporting frame, and bolted to it through blocks (Figure 4). Stairs were attached to the frame. A ladder protected by stair rails lead into the platform itself through a door.

4 CRUISE NARRATIVE AND DIARY

4.1 Narrative

The West Freezer arrived off Aberdeen harbour on June 27 at about 9am. The observers could board the ship at about 11.30, where they met the crew and the Faroese observer (JH). June 27 and 28 were used for setting up platforms, shopping and introduction to procedures and data collection, including trials at sea on June 28.

The West Freezer departed Aberdeen early in the morning 29 June, in the direction of WP 201E, the waypoint closest to Aberdeen on the southern boundary. The day was used for further introduction to the methodology and data entry, trials at sea and Angle and Distance Experiment training. WP 201E was reached in the evening.

Effort started on the morning of June 30, on leg 201. A regular progression was impaired by unacceptable sighting conditions, due mostly to fog and mist in the first days. Weather conditions improved noticeably from July 6th, allowing a more regular progression on the track. On July 7th, because of the bombing in London, the ship sailed from track 204 to track 104 to enable telephone contact (possible in the vicinity of the Norwegian oil platforms), so the British observers, all of them living in or originating from London, could be in contact with their relatives. The ship reached the most northern point of the track, WP 105W on July 8th and started its progression to the south.

On July 12th, a stable depression made the wind too strong for surveying (above Beaufort 6) and it was decided to call in to Lerwick for shelter and proceed with the planned exchange of bird observers (LW left the ship and was replaced by AW). The ship stayed in Lerwick harbour until the morning of July 14, but survey conditions were still unacceptable that day.

The survey resumed on July 15th with several days of good progression. WP 103E was reached on the evening of June 16th and the night was used for transiting to the eastern part of the survey off southwest Norway. A DAE was conducted in the evening of July 18th. This southern part of the survey was completed on July 19th, after a broken progression mostly due to temporary fog. Transit back to WP 103E/102E was done during the night.

On July 20 a stable low depression centred above southern Norway made the wind too strong for surveying and blocked the West Freezer at WP 102E. Wind was gusting at over 25m/s and no rapid changes in weather condition were expected. The ship searched for shelter in the Norwegian fjords, where it stayed July 21 and 22. A DAE was conducted on the afternoon of July 22 in the mouth of the fjord.

West Freezer resumed effort on the morning of July 23. The rest of the track line was covered in poor weather conditions, with Beaufort sea state alternating between high 4 and 5, with a strong swell. Leg 101 was completed on effort by mid-day on July 26. Transit to Aberdeen started immediately. Time was used for packing, cruise report reading and post cruise meeting.

The research cruise concluded when the vessel reached Aberdeen in the early morning of July 27. The observers left the boat at 6.30 and West Freezer departed Aberdeen for the Faroe Islands at 7.30am.

After agreement with St Andrews, the owner of the ship and the crew, the sighting platforms were left onboard. The PP was to be dismounted by the crew while on their way to the Faroes. The TP should be housed in the Faroes until the next survey. All other equipment was taken off the boat and taken to the Joint

Nature Conservation Committee office in Aberdeen (AW's office), from where it was fetched by a van from the Sea Mammal Research Unit by 10am on the same day.

On the last day, Maren Reichelt and Mick Baines took a copy of the access database while Andy Webb got a copy of the part of the database related to the effort.

4.2 Diary

Table 3 resumes the daily effort accomplished, as well as the part of the track covered, WP reached, main activities during the day and eventual problems encountered.

Days where special events occurred are further detailed below.

June 26: Travel day
Five whale observers (TJ, SC, VC, MB, MR) and the cruise leader (GD) met at the Aberdeen Youth Hostel in the evening of June 26.

June 27: Setting up
Doug Gillepsie (DG) and the sixth observer (JG) joined the team of observers at 9am, bringing along the survey equipment. The West Freezer arrived off Aberdeen harbour on June 27 at about 9am. She had to wait about 2 hours before entering the harbour. DG made a presentation of the acoustic survey and procedures while waiting for West Freezer. The group boarded the ship at about 12.00, where they met the crew and the Faroese observer (JH). The bird observer (LW) boarded the ship at the same time.

The afternoon and evening was used for setting up, starting to build a wind shield for the primary platform and shopping (incl. table and chairs for the platforms). The observers were presented with the settings of the platforms and data entry methods, when the equipment was deployed in the 2 platforms as in on effort condition.

June 28: Setting up + trials at sea
Setting up continued. The boat went out of Aberdeen for a few hours of sea trials. A safety briefing was carried out by the captain (including trying of survival suits), followed by a presentation of the crew and the observers and an explanation about the ship 'home rules'. Setting up continued and the last shopping was done.

June 29: Transit, trials at sea + DAT
DG left the boat at 6 am and the boat left Aberdeen for transiting to WP 201E.
The day was used for finishing setting up and organising things. A meeting on methodology (Power point presentation), data collection and entry procedures and life organisation onboard was held. The observers were assigned to their position.

June 30: Start effort on leg 201 from WP 201W.
Start effort on track line from WP 201W.

July 1-6: Broken effort

July 7: Effort, with changes in planned progression on track
There was in the morning the terror bomb in London. The 4 English observers either lived in London or had family living there. West Freezer was then sailing on leg 204, outside range of mobile phone communication. It was decided to traverse to leg 104 where the ship would get close to a Norwegian oil field with a phone network. The progression continued there on the 100s legs.

July 8-12: Effort, with modification in observer assignment from July 8 onwards
Because only a limited number of sightings had been made until then, it was decided on July 7 that it was acceptable to modify one of the primary observer pairs in order to get two more equally matched pairs of primary observers in terms of sighting experience. This took effect on July 8 and the configuration remained unchanged until the end of the survey.

Because of the bad weather encountered on July 12, with no chance of improvement, it was decided to transit to Lerwick harbour during the day.

July 13: In port in Lerwick
Because of persisting bad weather, the WF remained in the harbour. She restocked with food, especially vegetables, and water. The bird observer LW left the ship and was replaced by AW.

July 14-17: effort, with rather good progression

July 18
Start early morning for continuing on leg 208. Good sightability but rapidly very thick fog, coming from land. Decide to get to leg 108 which is away from the coast instead of waiting on leg 208 close to land. Two hrs transit. Sail leg 108 in good visibility eastwards. Transit then to WP 208E of leg 208 and sail westwards in good visibility.
Do DAE after dinner. Two buoys deployed plus the porpoise 'lucky' attached to a third buoy.

July 19:
Did leg 107 northwards. Transit to leg 106. Start leg westwards but bad sightability (sea state above Beaufort 4 with winds in the front and glare close to trackline), stop effort. While waiting for improvement, decide to sail off effort to end of line (WP 106W) and sail on effort eastwards to get both glare and wind in the back. Leg completed after dinner.

July 20-22: No effort!
First waiting at WP 102E then because of persisting bad weather, getting shelter in a Norwegian fjord. Doing DAE on the afternoon of June 22.

July 23-26: Broken effort in limit survey condition.
Broken effort in poor weather conditions, with Beaufort sea state alternating between high 4 and 5 and a strong swell. Leg 101 was completed off effort by mid-day on June 26. Transit to Aberdeen started immediately.

Tuesday, July 26: End of effort (in on-effort mode!) of West Freezer SCANS II 2005!

Wednesday, July 27: Disembarkation of West Freezer at 6.30am.

5 MODIFICATION TO PLANNED PROCEDURES

There was no modification to the planned procedures, except for a rotation of POs at the beginning of the survey.

5.1 Modification of primary observer pairs

In order to get two pairs of primary observers of similar experience, it was decide to modify one of the primary observer pairs. This was done at a time when relatively few sightings had been made. It took effect on July 8 and the configuration remained unchanged until the end of the survey.

5.2 Ancillary data

No ancillary data were collected.

6 RESULTS

6.1 Survey area and effort

Effort was maintained in sea state Beaufort 5 on a few occasions, especially at the end of the survey. The vessel completed 1682 nm of effective searching effort, 29% was conducted in Beaufort 0 or 1, 38% in

Beaufort 2 and 33% in Beaufort 3 or above (Table 4). These results have however to be taken only as indicative results. The effort statistics from Logger, from which these results emanate, gives a total effort of 185 hrs, when the actual effort is of 141 hrs. Included in the Logger effort statistics are, among others. training time from the beginning of the survey as well as time spent in DAE. The daily time on effort given by the Logger statistics does not correspond to the time given by the corrected (see appendix 1) Log of the effort given by the effort database. The daily discrepancy is indicated in Table 3.

The daily time available for working varied from 17 hrs at the beginning of the survey to 15.5 hrs at the end, representing 422 hrs. The time planned for surveying was 12 hrs per day or a total of 312 hrs. The time spent on effort (taken from the corrected daily effort Log from the effort database) was 141 hrs with an average of 5.3 hrs per day over 27 days, representing 45 % of the planned effort time (Table 3).

The maximum hrs on effort in a day was 13.75 hrs. There was no effort at all in 7 days, 2hrs or less in 4 days and more than 10 hrs in five days.

6.2 Whale sightings

A total of 194 groups of cetaceans were encountered. There were 26 duplicates between POs and TOs and 29 matches between big eyes and 7x50 binoculars. Eight different species were identified during the cruise. The most frequently encountered species was harbour porpoise (HP+H? = 105 sightings), followed by white sided dolphin (20 sightings) and minke whale (11 sightings). Grey seals were encountered eight times and basking sharks once.

Table 5 gives the total number of original sightings made, listed by species. It gives also the number of duplicate sightings between the tracker and the primary platform and the number of matches between the two trackers for each species.

The overall geographical distribution of the sightings is shown on Figure 5. Sightings were typically clumped along the track.

6.3 Whale duplicate and tracks

The golden number of 20 duplicates was not achieved for any species (Table 5). There were 16 duplicates (definite and probable included) of harbour porpoises.

The TOs tracked 80 of their 145 sightings. The tracks comprised between 1 and 21 resightings, with 30% having only one resighting and 38% having 4 or more resightings (Figure 6). The number of tracks for the different species is given in Table 6.

6.4 Bird sightings

A high degree of overlap was obtained between cetacean and seabird survey coverage. Typically for this area, seabird sightings were dominated by observations of fulmars *Fulmarus glacialis,* gannet, *Morus bassanus,* European storm-petrel *Hydrobates pelagicus,* great skua (bonxie) *Catharacta skua, Common* guillemot *Uria aalge* and puffin *Fratercula arctica*. The greatest number of sightings of these were in the western part of the North Sea, parts of the Norwegian Trench were devoid of birds. Many cetaceans encounters were recorded, and many of these matched those of the primary cetacean observers and greatest disparity between the platforms appeared to occur when sightability was lowest for the primary cetacean platform.
Noteworthy was the lack of guillemot chicks in the north east area of the survey.

7 SURVEY EVALUATION

7.1 Observer work.

The observers coped with their duties and were good at sharing responsibilities and common life onboard. All observers had previous experience with whale observation, and 4 of the 7 observers (MB, JH, VC, SC) had previous experience with dedicated sighting surveys. Only one observer (MB, who was assigned as primary in this cruise) and the CL had experience with tracking from binoculars or big eyes.

The time spent during the 3 first days of the survey period in explaining procedures and training observers in data recording and effort data entry was considered well spent. The observers were overall acquainted with and ready for using the equipment and the software on June 30 when effort started. No major problems were encountered later on.

7.2 Crew work and vessel suitability

The Captain and crew were very competent. They were very pleasant for sharing common life onboard and very pleasant hosts. The cook accepted with a smile the observers' ingenious 'non-potatoes' invention.

The captain and crew were dedicated to the research and very helpful. Several crew members, including the captain had previous experience of survey work (actually under the same cruise leader), which made work communication and understanding easier.

The West Freezer was a suitable platform for the work to be carried out and accommodation was good. The fact that the vessel did not vibrate much at cruising speed and/or the special mounting of the TP meant that good working conditions were offered to the trackers.

The vessel was equipped with a mobile phone and a telefax machine, as well as internet when the mobile phone was working. It was therefore possible most of the time to get weather charts.

7.3 Platform and equipment suitability

Both platforms offered satisfactory platforms for observation. The placement of PP however, was not ideal. Positioned between the TP and the roof of the bridge, it happened to be situated in a wind tunnel which made the position uncomfortable in any kind of wind and very cold at times. No major problem was encountered with any of the equipment provided, although the listening system of the PP by the TP became unstable and deteriorated by the end of the cruise, rending constant listening difficult.

- Primary platform, PP

- As mentioned, the PP was situated between the bridge and the bottom of the TP and acted as a wind tunnel. Modification of the platform with closing of the rear with wood improved conditions only slightly. The wind effect impaired observations at times and made shifts uncomfortable, especially in head wind conditions. The small central mast slightly obscured the view of the starboard observer, as did the side walls of the platform (Figure 7).

- Tracking platform, TP

- The front mast obstructed the view of both trackers, which was considered a problem, since several sighting were missed in an area of importance for the analysis.
- The angle boards of the two trackers were difficult to see for the DI.

- The special anti-vibration fixation design (coupled probably with the ship moving characteristic) proved to be very successful in minimising the effect of the vessel vibrations. It was not uncomfortable to use the big eyes at sea state Beaufort 4, if the swell was not too high.
- The mounting of the 7x50 binoculars on the monopods was judged satisfactory. Because the monopod is not fixed, the tracker needs to be supported for being able to concentrate on tracking and not on his balance. The shoulder strap of the bag of the big video camera was used as safety sling (Figure 8). This solution was considered by all users very comfortable and safe. It is obviously very easy to implement -two holes in the side of the platform for the rope maintaining the strap - and very easy to adjust to each observer. It was considered a much better solution than a seat, which would not fit everyone - and much easier to 'design'!
- The use of the two storage boxes on the TP was very convenient and made packing and unpacking very easy.
- The availability of the three tarpaulins made the covering of the equipment very easy in case of rain and temporary off effort periods.
- In case of heavy but temporary showers, a very large tarpaulin found onboard was used to cover the whole TP. This was considered very handy and its availability is recommended in future surveys.

- Bird platform

- Seabird surveys were carried out from a custom platform constructed and used by the JNCC which was positioned on the roof of the storage area of the ship. This provided a very good forward viewing platform with eye height at about 7m above sea level.
- The observer was shielded from the cetacean platforms by the forward mast, which provided complete independence between the bird and cetacean observers.

- The main disadvantage of this platform was its relatively high exposure to spray from the ship's bow.

7.4 Data collection procedure

They were in general judged satisfactorily, although a few procedures proved difficult to follow in practice.

- It was considered impossible for the DI to be able to read angles of the two trackers when both where tracking at the same time. Since they were most often tracking the same sighting, they observed the same surfacings and needed therefore an angle-reader at the same time. The problem was accentuated by the fact that the angle boards were difficult to see.
- The fact that the DI was not equipped with an angle board sometimes made difficult for the DI to 'pass' sightings to the TOs.
- Some definitions seem vague, probably leading to observations which are not comparable among vessels. This is particularly the case for the length of the swell, but also the sightability.
- The definition given for the sea state was judged easy to use.
- The creation of the stick individual scales was judged more of a trial and assay things more than a logical calculation and could possibly have been more explained.
- It was felt that it took quite a while to search from 40° to 40° for the big eyes, thus only spending a short time in the trackline area. And that it would be maybe better for the big eyes to concentrate more ahead of the vessel, especially in area where nearly only porpoises are expected.
- Dealing with large aggregations of small groups remained confusing.
- The precision of the video ranging was questioned when there was some swell.

- In the effort guidelines, it was not clearly explained what should be done to pass from DP to SP effort, which created errors during validation.

- Reticle reading did not always correspond between both trackers and it was considered of importance that the reticle reading of the trackers be calibrated during the analysis.

7.5 Distance and angle experiment and training

The Distance and angle experiment remains a heavy duty exercise, of which the precision is somewhat questioned, because of the delay which may occur between the moment the picture is taken and the moment the POs make their estimation. The distance experiments attempted to calibrate PP estimates by reference to the video ranging system used by the TP, but the TP estimates were not themselves calibrated against any objective standard. The video ranging system depends on precise measurement of observer height, but no account was taken for vessel movement in a swell, which was sometimes considerable, including the time when a distance experiment was carried out. Also, no calibration of the TP reticle estimates was carried out, although there did appear to be variation between the estimates of the two tracker binoculars.

An alternative solution would be to attach a hand-held GPS unit to the target and collect distance estimates from both platforms, including reticle and video ranging estimates. This would permit all distance estimating methods to be compared against an objective standard obtained from the GPS logs of the target and the vessel.

7.6 Data entry software

The Logger software proved easy to use and no real problems were encountered in computer data entry.
A few things caused small problems or illogical handling.

- The high density button was judged to difficult/long to reach in high density and should be of easier access, without needing to go to the effort form.
- The estimate angle box was too far down on the tracker form since it had to be given every time anyway.
- The observer box should be higher up, since it is very useful to enter when very busy to facilitate the validation in the evening.
- The platform box was judged unnecessary since the button gives actually also the platform.
- The use of the 'change to resighting' function created some confusion, since it was not clear how the software was behaving and resightings were lost - i.e. not accessible for validation – until a thorough examination of the access database allowed to locate them (see appendix 1 for details).
- It was felt that the sighting number of the tracker resighting should be filled automatically as the last sighting number as the default procedure at least for the tracker sightings - with possibility of modification - since this is the absolute most usual case for the trackers.
- If the original tracker form was closed by mistake, while the track was going on then it was not possible to indicate the duplicate and match status. It was therefore felt that the tracker form should not be able to be closed as long as resightings remained opened.
- The way of navigating between the fields was not very intuitive, and this could be improved.

7.7 Validation

Validation was considered easy to perform but took a very long time for the trackers, although we never had days with very many sightings. The validation time per 'good' tracker sightings, i.e. with several resightings, angles and videos, took much longer than the two minutes theoretically allocated!

- Relatively often, the video did not correspond to the sightings, but there was no possibility for searching manually.
- The use of the 'high/low density' functions gave problem during the validation (error announced when not existing) and in the computer calculation of the length of every session in the effort summary.

- Once validated the effort could only be checked again in the general database by starting from line 1, which was rather annoying.
- In log of the effort, there is a problem in counting time when the effort is passing from single to double platform effort, and vice versa.
- It would have been nice to have the possibility for asking for an overall table showing the effort statistics per day, without having to change dates every time and getting separate daily tables.

Sighting and effort data with validation problems are listed in Appendix 1.

7.8 Observer manuals

The observer manual was considered adequate, complete and detailed. The guidelines for observer were also considered very useful.

The observers would have found it useful to also be distributed the logger manual ahead of the cruise.

7.9 Acoustic data

The acoustic equipment performed without any problem, under the competent monitoring of the acoustic observer and the help of the crew for taking the cable in and out.

It was noted that several times there was no click or click trains recorded although there was passages of porpoise groups close to the boat. At least two harbour porpoise sightings, T188 and T194, were noteworthy. The two harbour porpoise groups were tracked from far away to more than 300 m behind the boat and passed quite close to the boat on starboard side, but no clicks or click trains could be seen on the acoustic database.
The hydrophone was constructed with three elements and a depth sensor. It had 200m of cable and was deployed to its full length whenever conditions were favourable for the visual survey and recovered when visuals were over at the end of the day. This means that the cable was deployed at times throughout the day when conditions made visual effort impossible.
The hydrophone was connected to a buffer box and attached to a computer running the IFAW Logger software with input from a GPS unit.

The Rainbow click and Whistle detector programmes were running throughout deployment. Recordings were made, to hard disk, from the sound card and the high frequency data acquisition board. Sound card recording were made whenever there was a possible detection event and for one minute in every fifteen. The high frequency recordings were set for 30sec every hour, their purpose is to assess the noise levels on individual vessels and to check for relationships between vessel noise and visual and acoustic detections.

The software operated with no problems, automatically saving data to file of all whistle peaks and click trails. At the end of each day this data was reviewed for possible detection events and times noted for comparison to the visual data and then copied to the two back up hard drives for later analysis.

7.10 Combined whale and bird survey

Few problems were encountered by the seabird surveyors; the ESAS method is relatively low-tech and can be can be set up and operated relatively easily on different research cruises in which the seabird data collection is secondary to the main objectives. The surveyors manually encoded their own data onto a laptop PC; this task was completed at the end of the survey. The whale and seabird survey platforms operated completely independently and should provide a good basis for comparison between the different methods used. The seabird surveyors operate a relatively restricted scanning area and this, combined with generally poor survey conditions, may result in insufficient number of cetacean sightings to allow a good analysis of data.

7.11 Remuneration

The observers wondered how come the wages in 2005 were the same as in 1994 SCANS survey, 11 years earlier. It seemed inappropriate for such a large project that no funding was available for the observers' travel expenses.

8 SUGGESTIONS FOR FUTURE SURVEYS

8.1 General

It was generally felt that overall the new procedures - both hardware and software developments - were a big step forward compare to previous surveys, and that the data collected were more precise, especially regarding sighting time and angle and distance estimates. The effort undertaken should definitely be pursued.

The real time computerised effort entry procedure was considered satisfactory overall and the effort undertaken should certainly be continued in any future surveys.
The effort made in reducing vibration effect on the West Freezer TP was judged very positive and should probably be generalised and strengthened in future surveys, if trackers are used, especially on big eyes.

The hardware provided was judged overall satisfactorily robust over a month survey and easy to use, although some improvement could be made in different fields.

It was recommended that the observers be sent all the manuals in advance so they could have a look at it. In this cruise the logger manual was not distributed.

The observers suggested that the guidelines for observers be developed as a more general set of guidelines for survey work, like a kind of standard, and be made widely available.

8.2 Hardware modification

Improving the communication system between the platforms,

- using a wireless system
- using throat microphones which are less sensitive to wind

Change the place of the video camera on the big eyes to achieve a better balance of the whole system.
The DI station should be equipped with an angle board.

It was suggested that as much effort was made in designing PP as TP platforms. Some considered a bit unfair that the TP was allocated a large budget, while the PP had to be built from scratch by the observers themselves.

8.3 Software modifications

It is recommended that the resightings get as default the sighting number of the previous sighting.

It should be possible to pass directly from DP to SP effort without having to come off effort, and without inducing 'errors' notice in the validation process.

The species summaries should not include species XXX, i.e., mistake.

Which sightings were including in the personal summaries was not clear. Many seem to be left out.

Other problems probably requiring attention are listed in appendix 1.

8.4 Data collection procedure modifications

It was suggested to find a system where trackers could keep using their own binoculars, since they were more comfortable with them.

It was suggested looking closely at the relative advantage of using big eyes in comparison with smaller binoculars: big eyes can detect animals further away but since their angle of view is limited, they also loose sightings at closer range.

It was felt that the role of the DR and DI could be better optimised. It seems a bit that they alternate from periods where they have not much to do – especially the DR which is not in a position where he/she can actively search – to periods where they have too much to be able to cope. It seems at time a lost of resources. A few ideas were suggested:

- Recording angle with the webcam seems to work in nearly 100% of the case, so the DI should be freed for this task.
- The 7x50 and the DI could be interchangeable actors, who ever makes a sighting first continue the track, instead of trying to pass sightings. This means the DI should be equipped as a tracker.
- For angle estimation, a single webcam above the platform could be used associated with lines on the whole platform floor and tracker and DI wearing a helmet with a line on top. In this way trackers with 'small' binoculars could freely move.
- In period of high density the DR has no chance of getting all data computerised, while the DI is pulling his hair out. The DR could greatly help duplicate identification if he/she could see the sightings/tracks displayed on the computer screen in real time together with the ship movement.

The data collection procedure for aggregation of groups needs to be revised and more precise, regarding the role of the trackers and the way of assigning duplicates.

8.5 Particular to West Freezer.

It should be possible to obtain a much more comfortable PP by using the barrel existing in the Faroese and placing it in front of the bridge - there is the possibility of attaching it to the red part of the bridge roof (existing welded metallic eyes). This would avoid the wind tunnel effect created by the 2005 configuration. Furthermore this would give a completely free view to the POs, with no infrastructure obscuring the view.

8.6 Logistics

Some observers would appreciate being able to use freely the internet during the cruise (free of charge and not limited to the GSM network).

The observers recommended that the travel be paid to the observers (based on cheapest fair prices) and that the level of the wages be revised.

AKNOWLEDGEMENTS

We would like to offer our warmly thanks to Finn Venned, captain of the West Freezer, and his crew for their full, dedicated and pleasant co-operation in conducting the research. Thank you also for their patience in the face of our invasion of their ‘home’. Also thank you for the nice non-survey time we had together. A very special thanks to Finn and John for their help, patience and humour during the distance and angles experiments. Very special thanks to the cook for all his cakes that we took with us home in a transformed way! Thanks for Thomas Jacob for organising us a very good tracking platform.

Thanks to Kelly MacLeod for her patient answer to all the pre-cruise enquiries. Thank you to Doug Gillespie for guiding us during the setting up and not flinching when asked to come and fetch the equipment back at 3.00am on the day he flew to the States! Thanks to Russell for his lengthy and patient advice during the cruise and to Phil, Dave and Louise for having been there when we needed them.

Thanks to Scottish Natural Heritage for letting us having access to their internet and the weather forecast in Lerwick.

Last but certainly not least, a big thank and bravo to Kelly MacLeod and all those involved for having providing us with nicely and logically packed equipment where nothing was missing – chapeau bas.

Table 1. SCANS II - West Freezer: Observers assignments.

Period	Primary observers	Tracker observers
June 30 - July 7	Susannah Calderan (SC) / Vicki Crook (VC) Maren Reichelt (MR) / Mick Baines (MB)	Geneviève Desportes (GD), Jane Griffiths (JG), Janus Hansen (JH) and Troels Jacobsen (TJ)
July 8 – July 26	Susannah Calderan (SC) / Troels Jacobsen (TJ) Maren Reichelt (MR) / Mick Baines (MB)	Geneviève Desportes (GD), Jane Griffiths (JG), Janus Hansen (JH) and Vicki Crook (VC).

Table 2. SCANS II - West Freezer: heights (m) from sea level to deck, according to fuel and water load. Height between main deck and PP is 2.40m and between PP to TP 1.92m.

Date	To main deck	To PP	To TP	Event
June 27	5.36	7.76	9.68	Aberdeen, full fuel and full water
July 12	5.57	7.97	9.89	Lerwick: - fuel, - water
July 13	5.43	7.83	9.75	Lerwick: 0 fuel, + water
July 27	5.48	7.88	9.80	Aberdeen: - fuel, - water

Table 3. SCANS II – West Freezer: Summary of effort and activities
See attached file

Table 4. SCANS II – West Freezer: Logger effort statistics. These results are only indicative when actual off-effort time is included in the data. See text for further detail.

Beaufort Sea State		Miles	Km	% miles	Time	% time
?	unknown	1,3	2.5	0,00	08:24	0,05
0	glassy mirror-like	50,4	93.3	0,03	04:54:40	0,03
0,5	glassy & ripple pat	137,9	255.4	0,08	14:24:15	0,08
1	scale ripples	301	557.4	0,18	31:51:38	0,17
2	small wavelets	394,4	730.4	0,23	42:53:47	0,23
2,5	rare whitecaps	246	455.5	0,15	26:54:36	0,15
3	whitecaps, 1 - 5/sec	222,2	411.5	0,13	24:46:27	0,13
4	frequent whitecaps	269,6	499.3	0,16	31:32:46	0,17
5	many whitecaps/spray	59,6	110.4	0,04	08:06:46	0,04
Total		**1682,3**	**3115.7**	**1,00**	**185:33:22**	**1,00**

Table 5. SCANS II – West Freezer: Number of sightings made on effort per species, including matches between TOs and duplicates between platforms.

Species	Tracker Big eyes	Tracker 7x50	Matches*	Original Tracker	Primary	Duplicates*	Original Sightings
BS Basking Shark	1	0	0	1	0	0	1
HG Grey seal	2	1	0	3	5	0	8
B? 'Big' cetacean	2	1	1	2	0	0	2
W? Unidentified whale	2	0	0	2	0	0	2
FW Fin whale	1	3	1	3	1	0	4
M? 'Medium' cetacean	2	2	1	3	0	0	3
MW Minke whale	1	3	0	4	10	3	11
KW Killer whale	1	2	1	2	1	1	2
H? probably porpoise	7	8	3	12	4	0	16
HP Harbour porpoise	31	34	15	50	55	16	89
WB White beaked dolphin	1	3	1	3	6	2	7
WS White sided dolphin	5	7	3	9	15	4	20
L? WB or WS	1	1	1	1	0	0	1
S? 'Small' cetacean	3	2	0	5	1	0	6
U? Unidentified dolphin	6	12	2	16	6	0	22
Total	**66**	**79**	**29**	**116**	**104**	**26**	**194**
Total cetacean	**63**	**78**	**29**	**110**	**99**	**26**	**185**
Total HP + H?	**38**	**42**	**18**	**62**	**59**	**16**	**105**

* only definite and possible match and duplicate are included.

Table 6. SCANS II – West Freezer: Number of tracks per species and tracker platform. The maximum number of resighting is also indicated.

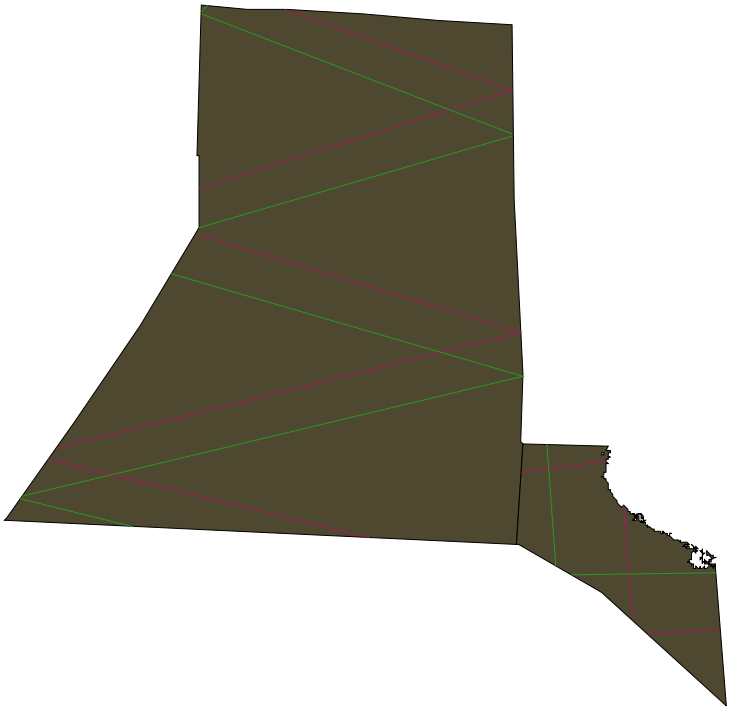
Species	Tracker Big Eyes	Tracker 7x50	Max. nbr of BE res.	Max. nbr of 7x50 res.	Total nr. of tracks
BS Basking Shark	**1**	**0**	14	0	**1**
HG Grey seal	**0**	**0**	0	0	**0**
B? 'Big' cetacean	**1**	**0**	1	0	**1**
W? Unidentified whale	**0**	**0**	0	0	**0**
FW Fin whale	**1**	**2**	1	2	**3**
M? 'Medium' cetacean	**0**	**0**	0	0	**0**
MW Minke whale	**1**	**1**	1	1	**2**
KW Killer whale	**1**	**1**	2	1	**2**
H? probably porpoise	**0**	**0**	0	0	**0**
HP Harbour porpoise	**18**	**26**	21	19	**44**
WB White beaked dolphin	**0**	**3**	0	7	**3**
WS White sided dolphin	**7**	**5**	20	5	**12**
L? WB or WS	**1**	**0**	5	0	**1**
S? 'Small' cetacean	**2**	**1**	8	1	**3**
U? Unidentified dolphin	**3**	**5**	4	8	**8**
Total	**36**	**44**	21	19	**80**
Total HP + H?	**18**	**26**	21	19	**44**

Figure 1. SCANS II – West Freezer: the whale and bird observers after Lerwick

Figure 2. SCANS II – West Freezer: Survey area and tracklines.

Area T: Total Allocated Effort = 2,707 km, Region to be crossed twice
Strata 1 – west, strata 2 – east

Survey
Spacing of 95km (Design 1 & 2) – Effort ≈ 3,071 km
Survey 1 – Red Lines, Survey 2 –Green Lines



Spare Survey
Spacing of 95km (Design 3) – Effort ≈ 1,496 km

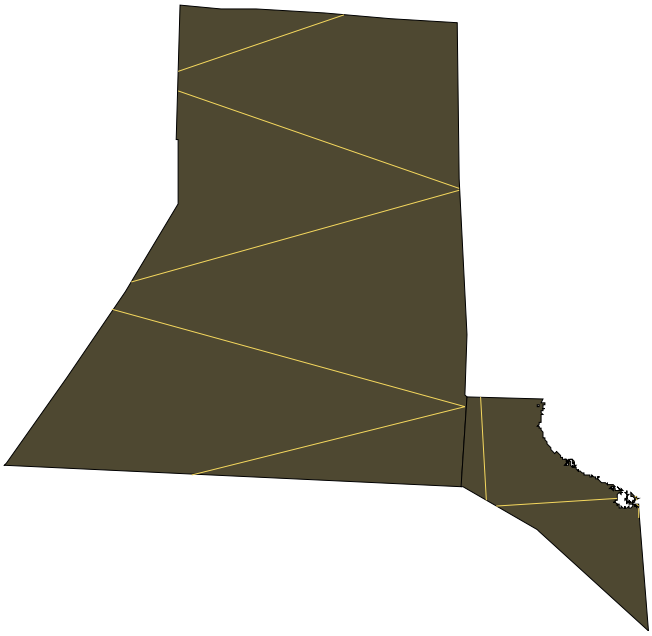
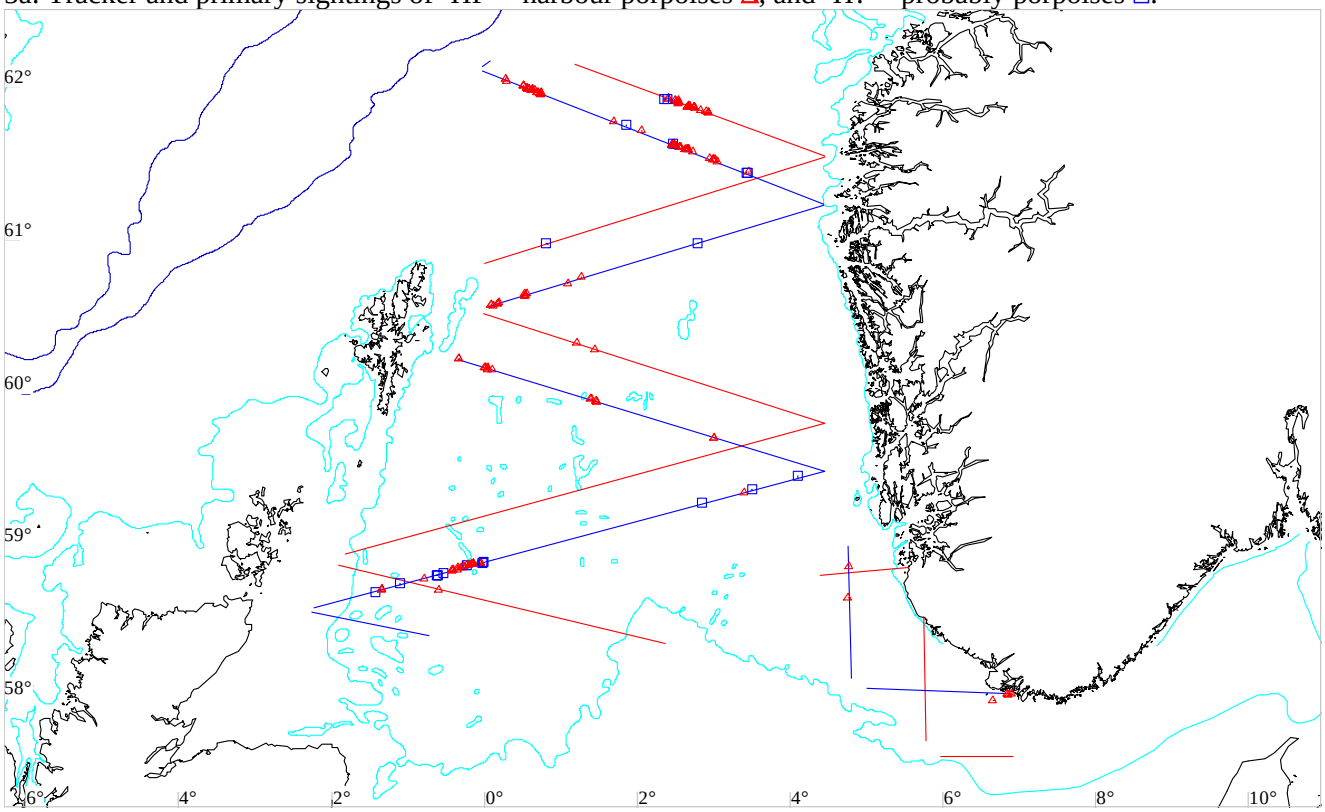


Figure 3. SCANS II – West freezer: View of the three platforms

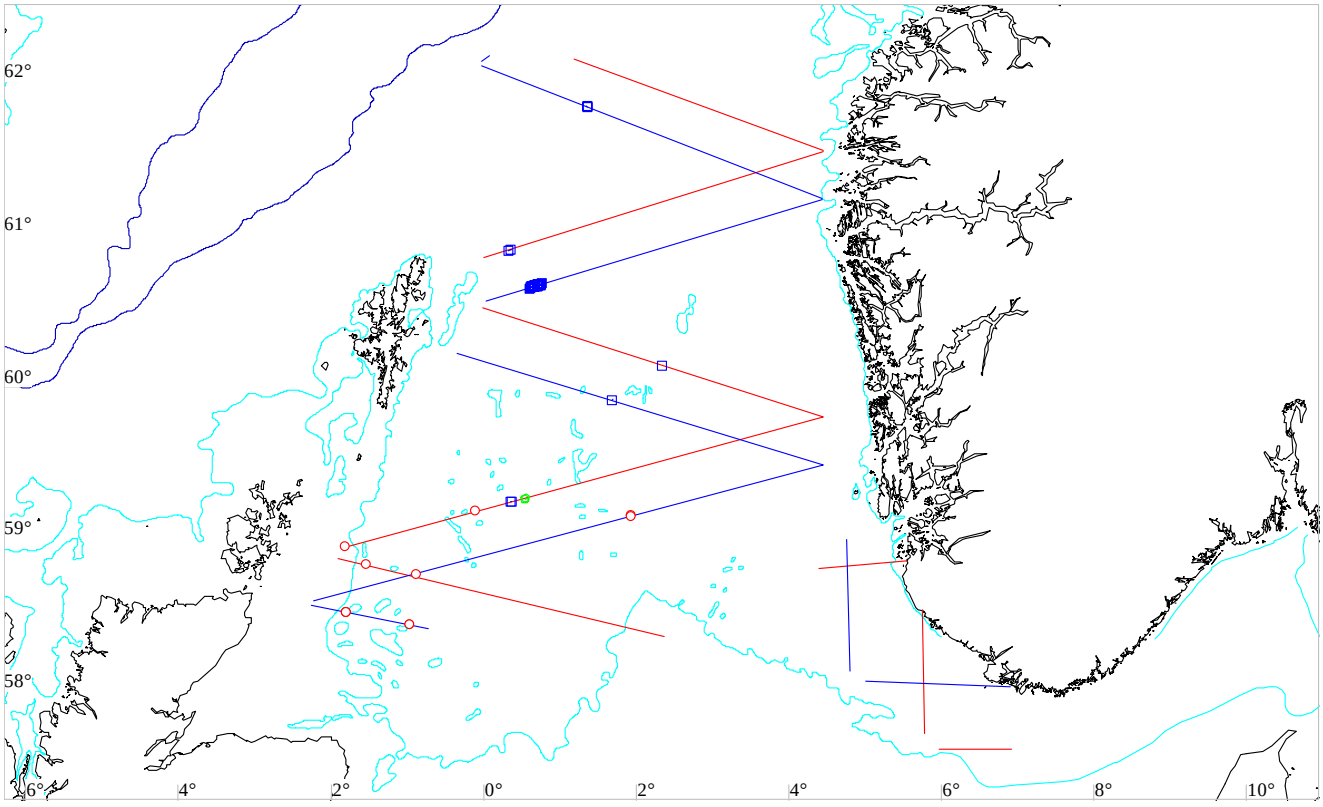
Figure 4. SCANS II – West Freezer: Special anti-vibrating mounting of the tracker platform

Figure 5. SCANS II – West Freezer: Geographical distribution of the main sightings.

5a: Tracker and primary sightings of 'HP' - harbour porpoises Δ, and 'H?' - probably porpoises □.



5b: Tracker and primary sightings of 'WB' - white beaked dolphins ○, 'WS' - white sided dolphins □, and 'WB or WS' Δ



5c: Tracker and primary sightings of ‘FW’ - fin whale □, ‘MW’ - minke whale ○, and ‘KW’- killer whales ▽

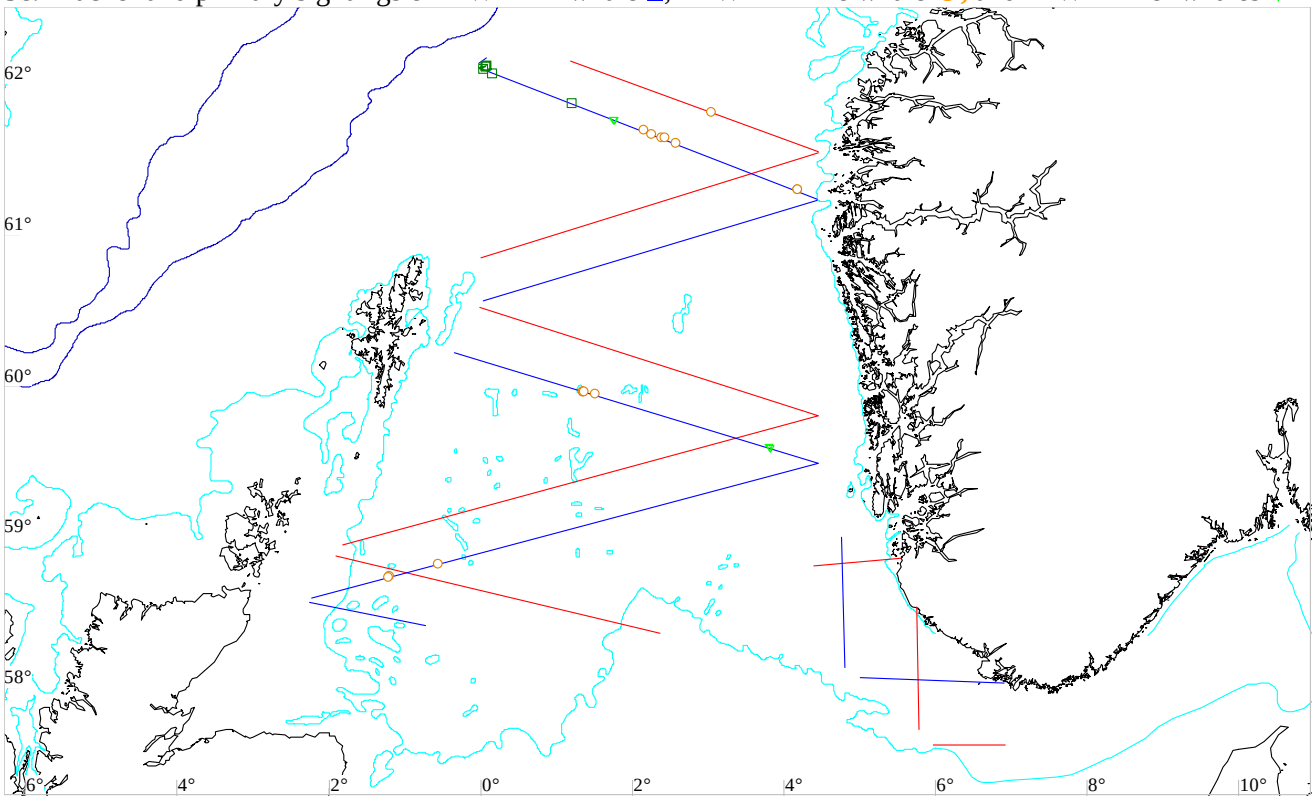


Figure 6. SCANS II – West Freezer: Frequency histogram of the number of resightings per tracks made by the trackers. Big eyes and 7x50 data are pulled together.

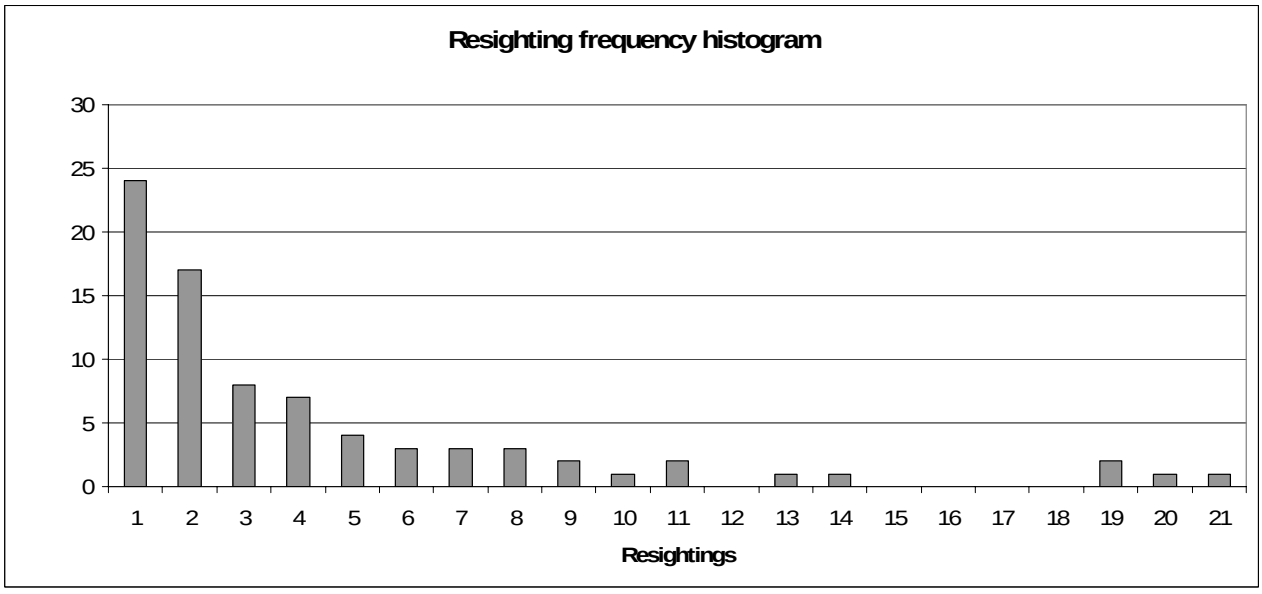


Figure 7: SCANS II – West Freezer: View from the primary platform, where sides and mast obscure the view of the observers.

Figure 8: SCANS II – West Freezer: An easily ‘designed’ and well performing safety sling for the 7x50 tracker

Table 3. SCANS II - West Freezer: Summary of effort and activities.

			Main activity	Log Effort min	Effort statisitcs hr	Leg	Transit	Way point reached	Detailed activities	Technical problems	Changes in procedure	Authorities	Data
2005	6	26	Travel, 5 observers + CL meet	0	0				Aberdeen				
	6	27	Setting up	0	01.43.42	-		Aberdeen	WF Aberdeen harbour. Acoustic presentation (DG). Setting up. Shopping.				
	6	28	Setting up, trials at sea	0	03.35.04	ND		Aberdeen	WF Aberdeen harbour. Trials at sea. Safety training. Boat introduction. Validation training. Shopping.				Sightings not usable, mixed of true and false sightings
	6	29	Transit + training + **DATraining**	0	02.51.32	P, ND	From Aberdeen to 201E	210E	Transit to 201E. Trials at sea. DATraining. PP methodology presentation. Validation training. Observer assignment.				Sightings not usable, mixed of true and false sightings
	6	30	Effort: 6.3 hrs	377	04.54.16	201c, 202	Tto 202W	201E, 201W, 202W		GPS, firestore, webcam	**PP: MB+MR/SC+VC TP: JG+TJ+JH+GD**		All sightings usable from that day
	7	1	Effort: 3.2 hrs	190	04.14.17	202				Webcam, firestore, finding database. Large discrepency between sighting nr given by counter and computer.			
	7	2	Effort: 5.9 hrs	355	07.06.47	202				Webcam inversed, 7X50<->Big eyes (correct in validation later on)			
	7	3	Effort: 1.9 hrs	114	02.14.55	202							
	7	4	Effort: 8.7 hrs	520	10.32.56	202c	Tto 203E	202E					
	7	5	**No effort**	**0**	**0**	**XXX**							
	7	6	Effort: 13.75 hrs	825	12.58.41	203		203E		7x50 webcam, GPS, button			
	7	7	Effort: 9.5 hrs	572	15.23.20	203c, 204, 104	Tto 204W, Tto 104 (to get access to mobil phone)	203W, 204W	Bomb attack in London, several observers with family in London => moving from 204 to 104 close to a Norwegian oil platform field to have access to mobile phone network	Firestore			
	7	8	Effort: 13.5 hrs	809	15.52.21	104, 105c	Tto 105E, Tto 206E	104E, 105E, 105W			**PP: MB+MR/SC+TJ TP: JG+VC+JH+GD**		
	7	9	**No effort**	**0**	**0**	**XXX**							
	7	10	Effort: 11.3 hrs	677	13.50.03	206c, 205	Tto 205W	206E, 206W, 205W					
	7	11	Effort: 11.2 hrs	670	14.05.06	205c, 204c	Tto 204E, Tto 104	205E, 204E		USB connector from 7x50 webcam broken			
	7	12	Effort: 1.2 hrs	73	1.20.19	104	Tto Lerwick		Waiting, transit to Lerwick => exchange of bird observers and shelter				
	7	13	**No effort**	**0**	**0**	**XXX**			In port at Lerwick				
	7	14	**No effort**	**0**	**0**	**XXX**	Tfrom Lerwick		From Lerwick to 104, waiting				
	7	15	Effort: 10.5 hrs	630	15.20.25	104c, 103	Tto 103W	104W, 103W		Webcam USB malfuctionning			
	7	16	Effort: 7.6 hrs	456	11.43.44	103c	Tto 207N	103E					
	7	17	Effort: 8.9 hrs	532	12.12.09	207c, 208	Tto 208W	207N, 207S, 208W				Norwegian coastguards check for activities and Norwegian permission over the phone.	
	7	18	Effort: 4.9 hrs + **DAE**	296	09.31.01	108c, 208c, ND	Tto 108W, Tto 208, Tto 107S	108W, 108E, 208E	Fog on 208 ap, move to 108 away from land. When 108 completed, move back to 208. DAE after dinner				
	7	19	Effort: 8.0 hrs	482	15.56.35	107c, 106c	Tto 106E, Tto 106W, Tto 102E	107S, 107N, 106E, 106W	First 106 westward, then front wind+glare => transit to WP106W and take 106 eastward	Microphone from primary, specially port side, from that day and on			
	7	20	**No effort**	**0**	**0**	**XXX**		102E	SS=>Waiting at WP 203E				
	7	21	**No effort**	**0**	**0**	**XXX**			SS=>waiting at 203E, but wind up tp 25m/s => move to shelter in fjord, waiting				
	7	22	**No effort + DAE**	**0**	**3.22.17**	**ND**			SS=> waiting at shelter, swimming, DAE in afternoon				
	7	23	Effort: 1.0 hrs	59	01.30.01	102		102E	Back to WP 102E,1 hr effort at SD, waiting, steaming off effort on line c. 40Nm				
	7	24	Effort: 4.9 hrs	295	05.26.26	102			Steaming off effort on line c. 80Nm				
	7	25	Effort: 7.0 hrs	419	06.17.17	102c, 101	Tto 101W, Tto 101E	102W, 101W	At the end of working day, transit to WP 101E to sail leg westward next day without glare and get a shorter transit time to Aberdeen.				
	7	26	Effort: 2.0 hrs	123	01.40.15	101c, P	Tto Aberdeen	101E					
2005	7	27	Deboarding	0	0	P	Tto Aberdeen	Aberdeen					

	realised	planned	realised/planned	possible	
Effort 30/06 - 12/07					calculated as 17 hrs effort possible / day from 4.30 to 21.30
min	**5.182**	**9360**	**0,55**	13260	
hrs	**86,4**	**156,0**	**0,55**	221,0	
hrs/day (13)	**6,6**	**12,0**	**0,55**	17,0	
					calculated as 17 hrs effort possible from 4.30 to 21.30, the 13th first days and 15.5 there on
Effort 30/06 - 26/07					
min	**8.474**	**18720**	**0,45**	25350	
hrs	**141,2**	**312,0**	**0,45**	422,5	
hrs/day (26 planned, 27 realised)	**5,2**	**12,0**	**0,44**	16,3	

Sightings with problems

Sighting nr.	Date	Species	Problem
P93	60705	MW	Uden button reference
P116	70705	RE (WS)	RESIGHTING OF P115, BUT IN SIGHTING LIST (BUTTON ERROR)
T39/T39	300605	RE (WB)	TWO LINES WITH SAME NUMBER, Button ref. 129 is resighting of button ref 127
T78	20705	RE (HP)	IS RESIGHTING OF T77, BUT IN SIGHTING LIST
T90/T91/T92	20705	RE (HP)	ARE RESIGHTINGS OF T89, BUT IN SIGHTING LIST (BUTTON ERROR)
(T105/T106)	40705	XX (WB)	was same sighting as P81, but seen later, thus got species XX and was deleted from database, same was done with 105 resighting
T109	40705	U?	no ButtonRef
(T123)	60705	XX (HP)	was same sighting as P90, but seen later, thus got species XX and was deleted from database
(T131/T132)	60705	XX (MW)	was same sighting as P98, but seen later, thus got species XX and was deleted from database
T160	70705	RE (WS)	IS RESIGHTING OF T158, BUT IN SIGHTING LIST
T181/T184	80705	BS	All resightings for 184 did not appear in validation programme, but were found in database. They were changed to resightings of 185 which was a resighting of 184 and then all resightings appeared in the validation programme and could be validated.
T184/T185	80705	RE (BS)	ARE RESIGHTINGS OF T181, BUT IN SIGHTING LIST
T188	80705	HP	impossible to get distance on video
T194	80705	HP	audio cue later than button time!
T206	100705	FW	audio cue time on pts recording impossible to get automatically on sts data
T245	100705		IS RESIGHTING OF T244, BUT IN SIGHTING LIST (BUTTON ERROR)
T244/T245	100705	HP	245 was resighting of 244 and then one resighting was made of this, but could not find until changed to resighting of 245
T257	110705	U?	Says that bearing image not available.
T267	150705	RE (WS)	ARE RESIGHTING OF T266, BUT IN SIGHTING LIST (BUTTON ERROR)
T266/267	150705	WS	USUAL PB WITH SIGHTING BECOMING RESIGHTING, THE RESIGHTING ATTRIBUTED TO THE ORIGINAL SIGHTING DO ONT APPEAR AT VALIDATION. It is necessary to go to the database and change them to resighting of the second sighting/resighting, here nr. 267. Pb with one of the video, on resighting 2 comes the previous video again, just with different start and button press time.
T268	150705	WS	get a video klip from same camera but from 10 hours before!!!
T389	240705	L?	resighting 5 (ref1205) has same video as previous resighting just with different time

Problematic assignement of duplicates

T156/T157/t158/T159	70705	WS	More groups of primary sightings should be considered duplicate when the dolphins just passed the boat as a nearly continuous aggregation of groups

Effort data with problems

Index	Date	Event	
32/33/36	300705	9	on effort DP(1) at 32, then continue on effort SP (9) at 33, and at 36 only counts session from 33, i.e. the second time on effort. This mistake occurs all along the survey when not stopped off effort when passing between DP/SP
141	60705	2	no GPS time
188	70705	6	says "beginning of high density when already high" !!!!!!
189	70705	7	says "End high density when not high", but previous code is 6
200	70705	2	log gives only 118 min for session lasting between 7.25 and 11.30!!! Like if it only counts session from end of high density
287	100705	6	says "beginning of high density when already high" !!!!!!
288	100705	7	says "End high density when not high", but previous code is 6
295	100705	2	In log gives high density warning 3 times for the same time and back to normal twice for the same time same as above, log gives only 65 min for session lasting between 7.25 and 11.30!!! Like if it only counts session from end of high density

Interesting tracks

Sighting nr.	Date	Species	Comments
188	80705	HP	Track from very far to 300 m behind, but no clicks detected
194	80705	HP	Track from very far to 300 m behind, but no clicks detected