Industry Survey: 6aN Western Herring

SAILING PLAN, ALIDA (SCH6)

Vessel	Alida (SCH6)
Area	6aN
Survey period	10 to 19 September 2018, Departing ~8 September
Survey type	Acoustic and trawl
Purpose	To acoustic and trawl survey herring during spawning period.
Skipper	Bert Plug (+31 622444954) or Bas van der Niet (+31 630987847) / Bridge (+31 650681877 or on sea +31 108080935) brug@sch6.nl
Scientific staff	Benoit Berges (+31 6 42648918) benoit.berges@wur.nl and Serdar Sakinan (+31 6 83898700) serdar.sakinan@wur.nl Optional: Jeroen van de Sande (TNO) + biological observer
Coordinator	Steven Mackinson (07450 683963) steve.mackinson@scottishpelagic.co.uk and Martin Pastoors (+31 631901027) mpastoors@pelagicfish.eu

Contents

1 Rationale, aims and objectives

(*Note that this part of the work pertains only to surveys conducted 6aN stocks.)*

1.1 Rationale

During the ICES benchmark workshop on herring west of the British Isles (ICES, 2015), the stock assessments of 6a North herring and 6a South-7b,c herring have been merged into one combined assessment. The main reason for the merging has been that the catches of mixed aggregations in the commercial fishery and in the acoustic survey, could not be separated into the different stock components. The consequence of this has been a zero TAC for herring in these areas. In 2016 an international industry / science collaborative survey was initiated and this work is part of the continuing round of surveys by this partnership.

1.2 Aim

To improve the knowledge base for the spawning components of herring in 6aN and 6aS/7bc, and submit relevant data to ICES to assist in assessing the herring stocks and contribute to establishing a rebuilding plan.

In 2018, 7 vessels will participate in the survey. 2 Scottish, 1 North Irish, 2 English, 2 Dutch.

1.3 Overall Objectives

- Collect morphometric and genetic data to distinguish whether the 6aN stocks are different from the stocks in 6aS, 7b,c.
- Collect biological information from commercial catch data in order to maintain the stock assessment time series
- Collect acoustic data and information on the size and age of herring to allow estimation of the abundance of spawning components of herring in VIa North

1.4 Overall research schedule

Task: Stock identification – morphometric and genetic sampling

Christina S: 3 to 13 September (depart Sunday 2 Sept), Staff: Steve O'Connell (S.OConnell@marlab.ac.uk), James Forbes-Birnie (J.Birnie@sff.co.uk)

Task: Relative abundance of age groups in the commercial catch for use in the stock assessment + genetics: samples from every commercial haul

Dirk Dirk and Wiron 5&6: Operating in Area 1 and possibly also to west. Not in Area 2-5.

- Flexible timing between early august to mid Sept. Martin to coordinate timing between participating vessels.

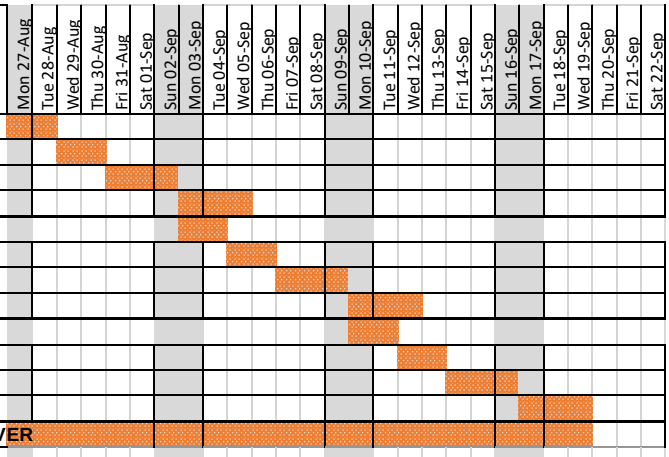
Task: Abundance and composition of spawning population – acoustics + biological samples

Kings Cross: 27 Aug to 5 Sept (depart Sunday 26 Aug), Staff: Steve Mackinson, Zander McClain

Voyager: 3 Sept to 12 Sept (depart Sunday 2 Sept), Staff: Pieter-Jan + 1

Alida: 10 Sept to 19 Sept (depart Sunday 9 Sept), Staff: Benoit Berges, Serdar Sakinan, Dirk Burggraaf (via teamviewer?) +1 biological observer (TBC)

Acoustics vessel	Start	End	Duration	Timing and area coverage
Kings Cross	27-Aug	28-Aug	2	Area 4
	29-Aug	30-Aug	2	Area 5
	31-Aug	02-Sep	3	Area 3
	03-Sep	05-Sep	3	Area 2
Voyager	03-Sep	04-Sep	2	Area 4
	05-Sep	06-Sep	2	Area 5
	07-Sep	09-Sep	3	Area 3
	10-Sep	12-Sep	3	Area 2
Alida	10-Sep	11-Sep	2	Area 4
	12-Sep	13-Sep	2	Area 5
	14-Sep	16-Sep	3	Area 3
	17-Sep	19-Sep	3	Area 2
TOTAL COVER	27-Aug	19-Sep	24	TOTAL COVER



	Start date	End date
Kings Cross	27-Aug	05-Sep
Voyager	03-Sep	12-Sep
Alida	10-Sep	19-Sep

1.5 Overall acoustic survey plan

Details of acoustic survey procedures are provided in the **Acoustic Survey Manual.**

Each vessel covers each of the survey areas in sequence west to east (4-5-3-2) so that the coverage of the survey areas is made as continuous as possible. Survey speed is 10kts or less if weather dictates. Survey line spacing as in Table 1.

Table 1. Survey areas, distances and durations

	Area 2	Area 3	Area 4	Area 5	TOTAL
Spacing (nmi)	2	2	4	4	
Duration (d)	2.3	2.2	1.9	1.4	**7.7**
Length (nmi)	320	301	260	197	**1079**

Detailed coordinates are given in Table 2. These will be the 'starting' plans and may need to be adapted during the survey depending on what is seen. With the exception of area 5, if fish are still being seen at the ends of grid lines, the survey will be extended to find the extent. Acoustic scientist on board will advise on these adaptations.

During acoustic surveys, regular trawling will take place to confirm identification of acoustic marks and take biological samples to determine the species, size and age compositions of the fish (see Biological sampling manual). These will target smaller marks than would normally be fished commercially. And, importantly, include fishing on all types of marks regardless whether they are believed to be herring or not. Without survey hauls, the acoustic information has only very limited value. Survey hauls should ideally only catch a limited amount of fish (200-500kg), enough to take a sample of up to 100 kg.

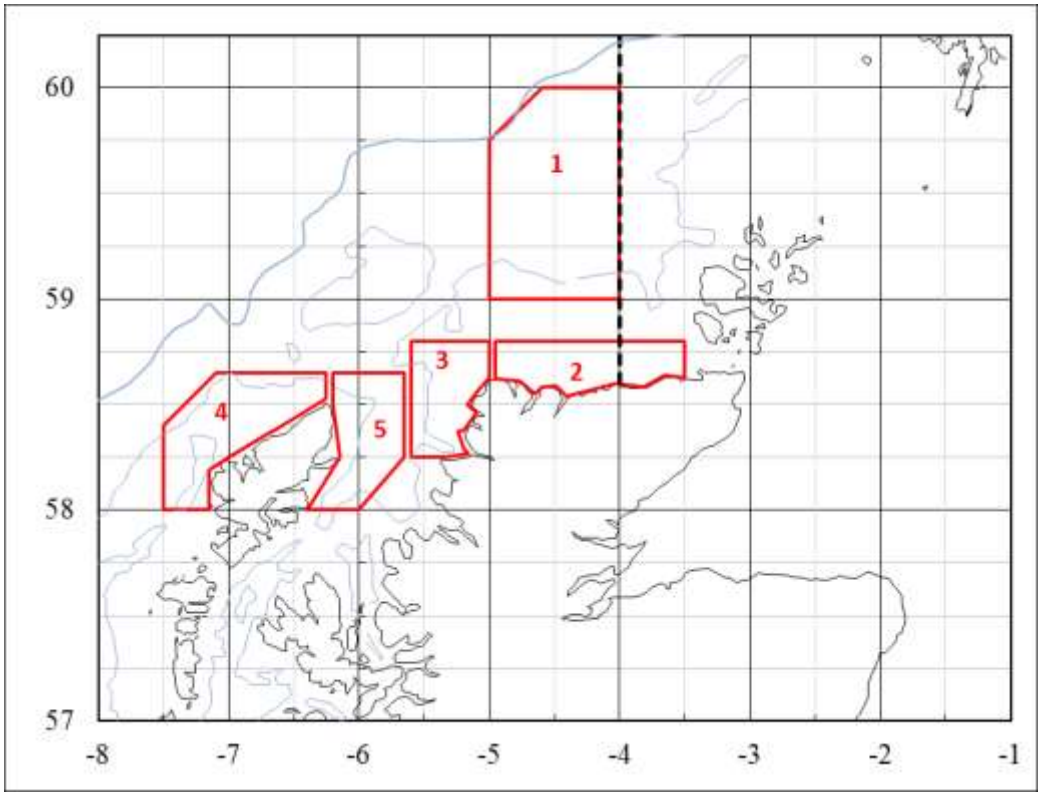


Figure 1. Survey areas 2018.

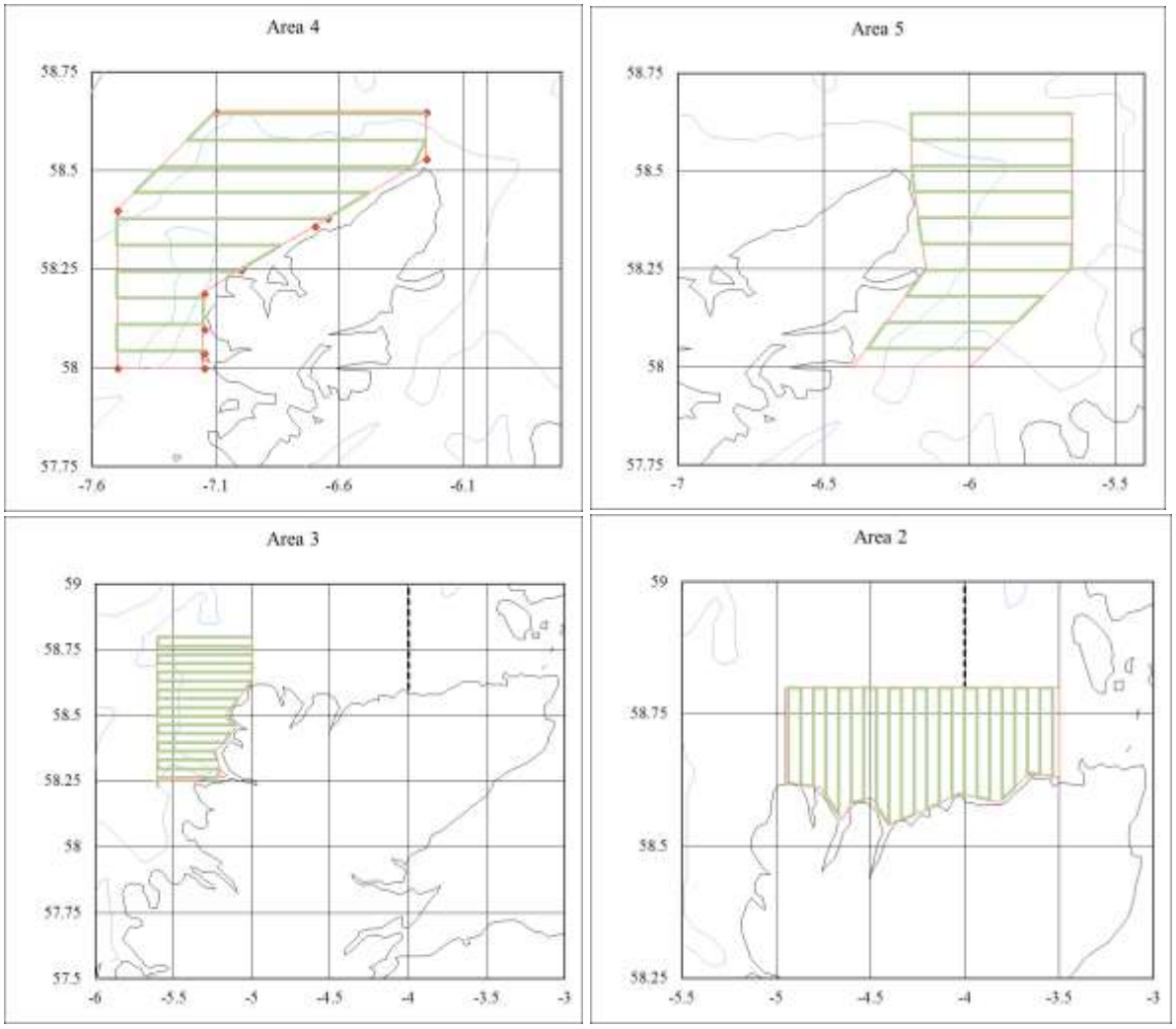


Figure 2. Generic tracks for the acoustic survey areas 4, 5, 3 and 2.

2 Alida Survey Schedule

2.1 Alida Objectives

- *Undertake acoustic surveying and biological sampling to determine the size and structure of spawning herring stock in survey areas 4-5-3-2 (Figure 1).*

2.2 Alida Transects by area

See Table 2 below for track coordinates

2.3 Documents

You will need to carry on board:

1. Your Derogation to fish in 6aN within the UK 12 NM

2.4 Gear, workspace, equipment

See Table 3, gear list below

Where possible, **fishing nets to be modified to reduce opening to reduce risk of large catches** when aiming for small samples.

A suitable covered area with a worksurface/ table and sufficient for two people to work in needs to be provided for the biological sampling work.

2.5 Fishing your scientific quota

When the vessel is not engaged in acoustic survey activities during daytime, the vessel may engage in commercial fishing activities.

All hauls taken under the monitoring TAC (whether taken as part of the survey or the commercial fishing) must be sampled. If scientists are on board during commercial fishing, they will sample the catch as normal.

For any hauls that you make when scientific staff are not onboard to do the sampling, a sampling protocol is provided at the back of this document.

Area 4	Lon	Lat
1	6 15'00 W	58 37'26 N
	7 08'77 W	58 37'26 N
2	7 15'17 W	58 33'26 N
	6 15'00 W	58 33'26 N
3	6 21'75 W	58 29'26 N
	7 21'57 W	58 29'26 N
4	7 27'97 W	58 25'26 N
	6 32'42 W	58 25'26 N
5	6 42'90 W	58 21'26 N
	7 30'00 W	58 21'26 N
6	7 30'00 W	58 17'26 N
	6 53'81 W	58 17'26 N
7	7 04'33 W	58 13'26 N
	7 30'00 W	58 13'26 N
8	7 30'00 W	58 09'26 N
	7 09'00 W	58 09'26 N
9	7 09'00 W	58 05'26 N
	7 30'00 W	58 05'26 N
10	7 30'00 W	58 01'26 N
	7 09'00 W	58 01'26 N

Area 5	Lon	Lat
1	5 39'00 W	58 38'38 N
	6 12'00 W	58 38'38 N
2	6 12'00 W	58 34'38 N
	5 39'00 W	58 34'38 N
3	5 39'00 W	58 30'38 N
	6 12'00 W	58 30'38 N
4	6 11'27 W	58 26'38 N
	5 39'00 W	58 26'38 N
5	5 39'00 W	58 22'38 N
	6 10'47 W	58 22'38 N
6	6 09'67 W	58 18'38 N
	5 39'00 W	58 18'38 N
7	5 39'86 W	58 14'38 N
	6 09'61 W	58 14'38 N
8	6 13'61 W	58 10'38 N
	5 45'46 W	58 10'38 N
9	5 51'06 W	58 06'38 N
	6 17'61 W	58 06'38 N
10	6 21'61 W	58 02'38 N
	5 56'66 W	58 02'38 N

Area 3	Lon	Lat
1	5 00'00 W	58 47'99 N
	5 36'-01 W	58 47'99 N
2	5 36'-01 W	58 45'99 N
	5 00'00 W	58 45'99 N
3	5 00'00 W	58 43'99 N
	5 36'-01 W	58 43'99 N
4	5 36'-01 W	58 41'99 N
	5 00'00 W	58 41'99 N
5	5 00'00 W	58 39'99 N
	5 36'-01 W	58 39'99 N
6	5 36'-01 W	58 37'99 N
	5 00'00 W	58 37'99 N
7	5 02'40 W	58 35'99 N
	5 36'-01 W	58 35'99 N
8	5 36'-01 W	58 33'99 N
	5 05'06 W	58 33'99 N
9	5 07'63 W	58 31'99 N
	5 36'-01 W	58 31'99 N
10	5 36'-01 W	58 29'99 N
	5 10'19 W	58 29'99 N
11	5 06'69 W	58 27'99 N
	5 36'-01 W	58 27'99 N
12	5 36'-01 W	58 25'99 N
	5 08'00 W	58 25'99 N
13	5 10'50 W	58 23'99 N
	5 36'-01 W	58 23'99 N
14	5 36'-01 W	58 21'99 N
	5 14'29 W	58 21'99 N
15	5 13'29 W	58 19'99 N
	5 36'-01 W	58 19'99 N
16	5 36'-01 W	58 17'99 N
	5 12'29 W	58 17'99 N
17	5 11'52 W	58 15'99 N
	5 36'-01 W	58 15'99 N
18	5 36'-01 W	58 13'99 N

Area 2	Lon	Lat
1	3 35'77 W	58 37'80 N
	3 35'77 W	58 47'99 N
2	3 39'77 W	58 47'99 N
	3 39'77 W	58 38'13 N
3	3 43'77 W	58 36'79 N
	3 43'77 W	58 47'99 N
4	3 47'77 W	58 47'99 N
	3 47'77 W	58 35'45 N
5	3 51'77 W	58 35'18 N
	3 51'77 W	58 47'99 N
6	3 55'77 W	58 47'99 N
	3 55'77 W	58 35'51 N
7	3 59'77 W	58 35'83 N
	3 59'77 W	58 47'99 N
8	4 03'77 W	58 47'99 N
	4 03'77 W	58 35'65 N
9	4 07'77 W	58 34'94 N
	4 07'77 W	58 47'99 N
10	4 11'77 W	58 47'99 N
	4 11'77 W	58 34'23 N
11	4 15'77 W	58 33'66 N
	4 15'77 W	58 47'99 N
12	4 19'77 W	58 47'99 N
	4 19'77 W	58 33'08 N
13	4 23'77 W	58 32'51 N
	4 23'77 W	58 47'99 N
14	4 27'77 W	58 47'99 N
	4 27'77 W	58 34'38 N
15	4 31'77 W	58 35'29 N
	4 31'77 W	58 47'99 N
16	4 35'77 W	58 47'99 N
	4 35'77 W	58 35'11 N
17	4 39'77 W	58 33'40 N
	4 39'77 W	58 47'99 N
18	4 43'77 W	58 47'99 N
	4 43'77 W	58 35'50 N
19	4 47'77 W	58 36'84 N
	4 47'77 W	58 47'99 N
20	4 51'77 W	58 47'99 N
	4 51'77 W	58 36'99 N
21	4 55'77 W	58 37'15 N
	4 55'77 W	58 47'99 N
22	4 59'77 W	58 47'99 N

Table 2. Acoustic survey lines for Area 4,5,3,2. Start and end positions. Please note: positions towards coast are advisory only.

Table 3. Gear list

Equipment	Number	Source/ Supplier	Got already	Loading date
Acoustics				
Simrad EK80	1	Alida	√	
Heave compensator (Motion Reference Unit)	1	Alida/Kongsberg	√	
Calibration rods, clamps, spheres etc		Alida	√	
USB Hard drives for recording	1	Alida/ WMR	√	
Laptop for live viewing/ data recording	1	Alida/ WMR	√	
Echoview software and dongles		Alida/ WMR	√	
Biological sampling				
Modified herring net for taking small catches	1	Alida		
Sorting table (approx 2m long, 90cm high and 80cm wide), Stainless steel with edges.	1	Alida	√	
Fish baskets	10	Alida	√	
Deck scales for weighing baskets (needs to be able to weigh baskets from 5-50 kg. One basket is around 30kg).	1	Alida	√	
Cable ties (assorted)		Alida		
Freezer capacity for up to 6x60 herring (per haul)		Alida	√	
Balance for weighing individual herring (50 to 300g range)	1	Alida	√	
Waterproof markers		WMR		
Otolith trays and labels		WMR		
Sample polybags (large) and labels (small,)		WMR		
Cling film and dispenser		WMR		
Roll paper towels		WMR		
½ cm measuring boards		WMR		
Masking tape		WMR		
Surgical gloves		WMR		
Pelagic knife and forceps sampling kit		WMR		
Tough gloves for sorting		WMR		
Pencils		WMR		
Envelope folder		WMR		
Tape		WMR		
Data recording				
Clipboard		WMR		
Data entry worksheet		**Martin P**		
Pelagic sampling length frequency recording forms (one per haul)		**WMR**		
Herring maturity stage guide / key		MSS/WMR		

Procedure for sampling commercial catches in 6aN monitoring fishery

⚠ Every individual commercial haul must be sampled

The data from your commercial catches is the key piece of information that will be used in the stock assessment of herring in 6a,7bc. It is imperative that a separate sample is taken from each haul that your make.

Specifically, your catch data provides the vital information on how many of each age group of fish there are in the stock, which affects the assessment estimate of future abundance.

Back at Wageningen Marine Research, data on the sex, maturity and genetics will also be recorded from the sample.

Procedure (for the situation that no scientific observer is on board)

For **each** haul:

1. **Take one random basket** of herring (app. 25 kg) from the catch. No sorting or selecting individual fish, just a random mixture of what's in the catch. Dipping the basket in the stream being pumped would be fine or taking the sample from a defined section of the halted conveyor belt (all tracks).
2. **Handle the sample as you would do for a standard biological sample for WMR and label the carton** clearly with the following information.
    a. Vessel name
    b. Date and Time
    c. Location (lat, lon)
    d. Total weight of herring caught in the haul
    e. Whether or not there was evidence of herring that were spawning at time of capture, such as milt or eggs on the deck. Just label as "Spawning" or "Not Spawning"
3. Samples should be made available **as soon as possible** after end of fishery so that they can be processed by mid-September in time for use in the assessment.
4. **Contact Jan Beintema** at Wageningen Marine Research to let him know where the samples can be collected from and when. Mobile: 06 53513357