

BOWL MS-LOT/MSS Meeting – Proposed Herring Larval Survey Methodology

Meeting Minutes/Actions
Meeting Title: BOWL MS-LOT/MSS Meeting – Proposed Herring Larval Survey Methodology
Date / Time / Venue: 8 th July / 10:30 – 12:30 Aberdeen Marine Scotland – Marine Laboratory, PO Box 101, 375 Victoria Road, Aberdeen, AB11 9D
Attendees: BOWL: Jonathan Wilson (JW), Marc Browne (MB), MS-LOT: Robert Main (RM), Ali Ford (AF), MSS: Emma Hatfield (EH). BMM: Stephen Appleby (SA), Jonathan Keer (JK), Alex Winrow-Giffin (AWG)
Apologies:
Minutes taken by: Jonathan Keer/Alex Winrow-Giffin

Item	Action	Action on	Close out date
1.0	Introductions		
2.0	<p>BOWL Herring Survey Proposal/Methodology sign off BOWL Herring Survey Proposal/Methodology sign off</p> <ul style="list-style-type: none"> • Overview of proposal <p>JW: Summarised the aim of proposed survey and what the meeting today hopes to achieve. The aim of the survey is to collect data on the spatial and temporal distribution of herring larvae in the vicinity of the proposed BOWL wind farm. Data to be robust enough to be able to inform for a piling strategy.</p> <p>MB: Added that the aim was to agree on survey methodology and data interpretation.</p> <p>EH: Queried how many years of surveys in total before construction.</p> <p>MB: Stated that the intention was to undertake 2 (two) surveys; in 2014 (Aug& Sept) and 2015 (Aug & Sept). Construction proposed to start early 2017 therefore a survey in late 2016 would be unfeasible from a programming perspective.</p> <p>EH: Time series of spawning distribution highly variable – some years the Moray Firth is important and in others it is not. IHLS surveys are in first two weeks of September and second two weeks in September, however both surveys not always undertaken each year. Data unavailable for first two weeks of September for the last 20 years. 2 years of herring surveys will not give the full picture of herring spawning in the area. Herring spawning distribution and intensity has been extremely variable over the past 10 years.</p> <p>MB: Putting survey into context and the interpretation of the data will be the difficult part.</p> <p>EH: Most important data analysis is for the newly hatched larvae (6.7mm – 7mm) however, IHLS data analysis uses <10mm. All larvae need to be counted and measured but advise that use</p>	BMM Update Methodology	9 th July 2014

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	<p><10mm instead of <8mm. Comparing data gathered with IHLS can only be done by individual IHLS station for the same time period (ie the last 2 weeks of September only for the past 20 years). The temporal aspect of survey is very interesting as no IHLS surveys have been undertaken in early September since 1990, and peak spawning can occur in August. Happy with survey duration and weekly repeat of stations. Need to survey the stations in the same order each week – consistent survey pattern required.</p> <p>SA: Proposed north to south survey order.</p> <p>EH: Happy with whichever order of stations as small spatial scale as long the order is the same each week. The grid of survey stations proposed is high intensity. No concerns on drift as dealing with small larvae. Advised that BMM refer to Isle of Man herring surveys to find the calculations for deriving birth date of herring larvae. Using length data, with hatch size for herring larvae and mortality rates it will be possible to back calculate the spawning intensity and timing. Heath & Richardson have produce some papers on this.</p> <p>SA: Draft data analysis can be undertaken by BMM and sent to MSS for review.</p> <p>EH: Key aspect of using Gulf VII is the constant speed of deployment and hauling to get a good oblique depth profile. Advised that BMM undertake some trial runs to ensure good deployment of gear and check that gear is working.</p> <p>AWG: Queried if a minimum tow time was required by MSS. Sampler is required to sample each 10m for 1min 30 secs. At depths of 30m this would only take 4 mins 30 secs. IHLS have no minimum timings of tows.</p> <p>EH: Happy for timings to vary depending on depth.</p> <p>SA: Proposed that vessel steam over each station prior to deploying gear to ensure that there are no seabed anomalies observed on vessel sounder that could pose a risk to Gulf VII.</p> <p>EH: Would like to see a station to the east of HL06 – happy for HL14 to move out of the wind farm to there so as not to increase total station number.</p> <p>RM: Suggested that station HL22 be moved west to avoid oil infrastructure. Chart should also be redrawn to show which piling locations the dBht contours refer to.</p> <p>JK: Larvae will be stored on the boat and then taken to shore at the end of the 2 week sampling period (boat switch over time) for counting</p> <p>EH: MSS would like to be supplied with the raw abundance and length data.</p>	<p>BMM Update Methodology</p> <p>BMM</p> <p>BMMDry Run</p> <p>BMM</p> <p>BMM</p> <p>BMM</p> <p>BMM</p>	<p>9th July 2014</p> <p>TBC</p> <p>9th July 2014</p> <p>9th July 2014</p> <p>9th July 2014</p> <p>9th July 2014</p>
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Whilst undertaking the survey, in order to make measuring as easy as possible, BMM advised to lay the net onto a flat surface to gently tease out any larvae before gently putting into sample pot. A serving tray, sheet of Perspex, folding chopping board etc could be used for this purpose. BMM advised to fill sample pots to only 20% total volume with the remaining 80% for buffered formalin. Happy for buffered seawater to be used instead of freshwater for the formalin.

RM: What outputs will MS LOT get / come from the survey?

SA: Likely be spreadsheets and bubble plots

MB: Main concern is the interpretation of the data.

EH: Unsure how survey data will be compared with IHLS data as IHLS data are in scale of ICES rectangle.

AWG: IHLS data can be extracted for each individual station.

EH: Can only compare the data for the specific dates of the IHLS surveys. The surveys will be able to show the pattern of spawning intensity and distribution for the 2 years of surveys. It will allow us to understand any critical periods of peak spawning activity for those 2 years.

AF: Relating back to the pre-consent meeting for herring, the purpose of the survey is to hopefully identify periods of peak spawning activity to help devise any mitigation options for noise from piling, and inform the piling strategy.

MB: The aim would be to be able to put the data collected into a wider context.

EH: Will be unable to put data into a wider context as IHLS data gathered during a fixed period in the last 2 weeks of September and herring spawning distribution and intensity shown to be highly variable.

MB: Can compare the data to the IHLS stations in close proximity for the same time period though.

EH: Data can be compared in the context of the Moray Firth in that specific time period. Would expect to see some spawning in the survey area but most appears to occur in the Orkney/Shetland area, but shown to be highly variable. The survey will inform BOWL on when the critical spawning periods are for the 2 years of survey.

SA: Asked if MSS have any recognised thresholds to define significant spawning intensity for that herring stock. Or if any existed from other surveys from other areas of the country.

EH: Unaware of any thresholds as spawning highly variable within stock and between stocks.

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	<p>MB/JW: would like to see if the herring surveys can produce results on what, if any, piling restrictions are going to be placed on BOWL.</p> <p>EH: this survey may produce information on the peak spawning time. At the moment this information has not been gathered before. The international survey only happens the second 2 weeks in September. BOWL will be better informed on the herring stock after the survey</p> <p>MB: Reviewed agenda to ensure all aspects of sampling methodology covered:</p> <ul style="list-style-type: none"> • Vessel MSS signed off on vessels proposed. • Sampling Gears <ul style="list-style-type: none"> ➢ Ensure that skippers are aware that procedures need to be followed, in particular the constant steady speed of deployment and hauling. Advised to undertake trial runs. Advised to tow into tide. Direction of tow dependant on tide and wind. ➢ Will make it clear at meetings at vessel that crew need to follow methodology. • Sampling Procedure <ul style="list-style-type: none"> ➢ Well spread, high resolution survey spread; move station 14, east of 06 and move station 22 west if required to avoid oil field. • Sample analysis and preservation <ul style="list-style-type: none"> ➢ Consistent sampling pattern; max sample volume in pots 20% of total volume. • Data analysis <ul style="list-style-type: none"> ➢ Focus on <10mm larvae; calculate spawning intensity using North Sea herring mortality rate and hatch size. ➢ Raw data to be supplied to MSS (data from samples collected during the first two week period of sampling will be provided to MSS when BMM has received the analysis from the laboratory). • Reporting <ul style="list-style-type: none"> ➢ Draft 1 of report including data interpretation will be sent to MSS for review. 	<p>BOWL</p> <p>Noted</p> <p>Noted</p> <p>Noted</p> <p>Noted</p> <p>Noted</p> <p>Noted</p> <p>BMM Update Methodology Noted</p>	<p>9th July 2014</p> <p>Date TBC</p> <p>9th July 2014</p> <p>9th July 2014</p> <p>Date TBC Date TBC</p> <p>Date TBC</p>
<p>3.0</p>	<p>Next Steps & Actions</p> <p>1. Amend methodology to include changes discussed today and send to SSE. To include: larvae <10mm analysed; survey stations undertaken in same order each week; stations 22 and 14 moved and chart updated; trials runs to be undertaken; tows to be into the tide; vessel to steam over station prior to towing; sample pots to 20% volume; buffered formalin in seawater to be used for</p>	<p>BMM</p>	<p>9th July 2014 / Date TBC</p>

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	<p>preservation; analysis to include back calculating to discover spawning intensity, comparison with IHLS data by station in the same time period only.</p> <p>2. BMM to apply for dispensation.</p> <p>3. At meetings with vessel crew and skipper, BMM and SSE to ensure the importance of following the methodology comes across</p> <p>4. MSS to be supplied with the raw data from first 2 weeks.</p> <p>5. BMM to send MSS draft initial data analysis for review.</p>	<p>BMM</p> <p>BMM & SSE</p> <p>BMM & SSE</p> <p>BMM & SSE</p>	<p>9th July 2014</p> <p>Date TBC</p> <p>Date TBC</p> <p>Date TBC</p>
4.0	<p>Q&A / AOB BMM to apply for dispensation</p>	BMM	9 th July 2014

Date of next meeting: TBC

Minutes prepared by: AWG/JK/SA, MB

Appended Documents: None

Internal Distribution: BOWL: All

External Distribution: All attendees