Meeting Minutes

Meeting Title: Moray Firth Ornithology Monitoring Steering Group Meeting no. 3

Date / Time / Venue: 2nd March 2015/ 10.30 am – 1.30 pm/ SNH, Battleby, Redgorton, Perth, PH1 3EW

Attendees:
MSS: Ian Davies (ID) (Chair), Jared Wilson (JW)
SNH: Erica Knott (EK), Catriona Gall (CG), Alex Robbins (AR) , Glenn Tyler (GT) (video conference)
JNCC: Sue O'Brien (SO)
RSPB: Aly McCluskie (AM)
BOWL: Jonathan Wilson (JoW), Lis Royle (LR)
MacArthur Green: Mark Trinder (MT)
MORL: Sarah Pirie (SP), Catarina Rei (CR),
Royal Haskoning: Ben King (BK)
Natural Power: Ross McGregor (RM)

Apologies: Roger May (MS-LOT)

Minutes taken by: BOWL

Item	Agenda Item
0.0	**ACTIONS** 1. *MT to send HB Adam Cross' thesis concerning puffin photo ID monitoring.* 2. *CR is to distribute the final Innovate UK gull study report.* 3. *SO to circulate the final report from the JNCC demographic review once available – late Jan 2015 (Action 6 from meeting of the 14/11/14).* 4. *MT to confirm whether a power analysis for the Dudgeon wind farm could be shared.* 5. *MT and RM to complete the MF PCM discussion document in line with comments provided at the meeting, and circulate it to the group.* 6. *JW to establish contact with Robin Sellars.* 7. *AR to report progress on designing the 2015 colony survey at E & N CC SPA, including an assessment of suitable survey methods.* 8. *AR and SO to confirm their view on a suitable breeding survey period.* 9. *MT and RM to complete a proposal for a monitoring design validation and distribute to the Group prior to the next meeting.*
1.0	**Minutes & Actions from previous meeting** ID introduced the purpose of the meeting which was to discuss monitoring options, and agree the most suitable methods to be implemented. ID noted that good progress has been made in the Group and thanked everyone for their input to discussions. ID went through the actions from the previous Ornithology Monitoring Working Group meeting held on 16th December 2014 (note: the title of the Group may change as MFRAG is

instigated);

1. *AR to look into the feasibility of puffin colony monitoring.*

AR noted that progress is being made, further updates were given later in the meeting when discussing monitoring options for puffin.

2. *Bob Furness to send HB Adam Cross' thesis concerning puffin photo ID monitoring.*

MT acknowledged that this is yet to be distributed, and will ensure this action is completed in the near future.

3. *CR is to distribute the final Innovate UK gull study report.*

CR is waiting for final approval from key members of the gull foraging group. CR noted that the report should be finalised shortly, and the report circulated as soon as possible.

4. *SO to circulate the final report from the JNCC demographic review once available – late Jan 2015 (Action 6 from meeting of the 14/11/14).*

SO noted that this report has not yet been finalised, however it will be circulated when it has been completed.

5. *JW to re-structure the MF key ornithology discussion document.*
6. *JW to change Question 1.08 to encompass 'change that can be attributed to the wind farm'.*
7. *JW to amend Table 2 or 3 to include turnover.*
8. *ALL to send comments on the discussion document to JW.*

Action 8 has been completed, and BOWL and MORL have completed action 5. In completing these actions, actions 6 and 7 have also been considered. Discussion ensued regarding the MF PCM birds discussion document completed by JW/ MSS. ID queried whether no further actions would be required with regards to the document as it has informed the production of the Monitoring Proposal and Programme tables completed by BOWL and MORL, thus progressing discussions to the next stage. MORL noted that the document may require to be published, and that the document is key in tracking decision making on the ornithology monitoring programme in the Moray Firth. EK noted that it is unlikely the document would require to be published but ID suggested that the document should be finalised to keep track of the discussions / decisions.
DECISION: MT and RM to complete the discussion document in line with the comments provided in the latest version and distribute the document to the Group.
PURPOSE: to provide a reference for further documents and to track decision making.

9. *SPORRAN ACTION: MS-LOT to pass on strategic concerns to Scottish Ministers.*

This is an ongoing activity and should not be noted as an action specific to this Group.

10. *SNH to provide feedback on how site condition monitoring will be undertaken.*

AR informed that SNH's bid to complete colony counts at the East and North Caithness Cliffs SPAs during summer 2015 has been approved. Identifying suitable areas for puffin plot counts will form part of this monitoring survey. SNH will endeavour to replicate land and sea counts competed during previous surveys. Whether single or repeat surveys will be completed this year is yet to be determined.
MT suggested that consideration be given to the use of drones as a potentially reproducible method for future surveys.

11. *BF to discuss gull demographics with local ringers.*

	MT noted that Bob Furness has had some contact with Robin Sellars, however a meeting has not been established yet. CR suggested that the Group offer the gull foraging report (once complete) to Robin and re-establish contact that way. RM noted that Mark Oksien is the GBB Gull colour ringing co-ordinator and a member of Tay Ringing Group. He could potentially be a useful contact also. The Group acknowledged that a sensitive approach is required to avoid compromising the working relations with Robin. EK noted that it may be useful for MSS to provide support. JW noted that he has received data from Robin in the past and it was agreed that on the back of sending the gull tagging report JW would contact him in an effort to bring him on board with the proposed gull work. DECISION: JW to approach Robin to re-establish contact after gull tagging report is shared with him. *12. BOWL and MORL to develop data collection/monitoring methods for the next meeting* Action completed. *13. RM to confirm whether a power analysis for the Humber Gateway could be shared. MT to confirm similarly for Dudgeon wind farm.* RM confirmed that the Humber Gateway power analysis cannot be shared with the Group due to confidentiality issues. MT noted that he will look into Dudgeon data, however he questioned the usefulness of this information in relation to the Moray Firth.
2.0	**PCM discussion document comments-** key issues only ID confirmed that the MF PCM discussion document will be used to inform the ornithology monitoring discussions for developments in the Forth and Tay. Eventually it may become an East Coast strategic document.
3.0	**Proposed ornithology monitoring** MT provided a brief overview of the BOWL and MORL Monitoring Proposal and Programme tables. The purpose of the tables is to rationalise information in the MF PCM discussion paper. MT noted that there were two key points that required to be agreed at the meeting; the number of years of pre-construction monitoring surveys required, and the most suitable survey methods. BOWL and MORL provided a brief position update on the respective projects. JoW noted that BOWL is required to understand what the expectations to pre-construction monitoring are as BOWL are required to commence construction in 2017 to meet the conditions of the Investment Contract. SP noted that MORL did not receive the Contracts for Difference (CfD) in the latest bidding round. This does not mean that MORL will not be progressing the project. Instead it is more important for MORL to increase their understanding of the project, including monitoring requirements, to ensure the project is in a competitive position in the next bidding round for CfDs. JoW noted that BOWL has an Investment Contract with a Financial Close date of March 2016. Construction is due to commence in 2017 and as such it is key to understand monitoring requirements as early as possible. ID queried whether monitoring programmes can be combined. SP noted that it is likely that the MORL construction programme will commence later than the scheduled BOWL construction commencement date. ID noted that if BOWL and MORL will be completing monitoring surveys separately that both projects use the same methods.

	SO noted that monitoring is focussed on the breeding season only, and queried if BOWL and MORL would consider monitoring non-breeding birds also. Following discussion around the feasibility of assessing effects on non-breeding birds it was decided to park this question to focus on key issues. JW requested that BOWL and MORL include information in the Monitoring Proposal and Programme tables on what data will be collected and/ or analysed for secondary species in monitoring for primary species, as it would be useful to understand how questions relating to secondary species will be answered.
4.0	**Methods decision process** Discussion ensued to enable decision making regarding the suitable monitoring methods to answer the primary and secondary monitoring questions in the Monitoring Proposal table. **Population Impacts** Discussions ensued on detecting population changes and attributing these changes to specific causes. RM noted that if survival reduces, but the population stays the same the impact is not significant. SO agreed with this statement and noted that population size will vary naturally. BOWL and MORL should consider collecting data on covariates that could explain population changes. RM noted that BOWL and MORL are only concerned with impacts from their wind farms on the ECC populations. Therefore the key aspects are to establish connectivity and impact magnitude due to the wind farms. ID noted that MSS has fisheries data that could be useful in answering questions regarding population declines. SO queried if other data sources could be built into the monitoring programme. MT noted that the connectivity argument is not strong for GBBG as shown by the gull foraging behaviour study (they are largely coastal). BOWL and MORL require a greater understanding of connectivity before collection of covariate data is included in the monitoring programme. JW noted that monitoring requirements will be regularly reviewed as part of the regular updates of the individual project Project Environmental Monitoring Programmes (PEMPs). Collection of covariate data could be included later. MT noted that these regular reviews are also designed to potentially reduce the monitoring scope if for example connectivity with the ECC SPA cannot be established. **SNH colony counts 2015** Discussions moved on to the colony counts due to be completed by SNH in 2015. Birds on land will be counted. SNH are considering methods, however it is likely that the counts will be completed by land and from boats. As part of this monitoring SNH will seek to identify key areas for monitoring, to reduce the monitoring intensity required for future counts. Discussion followed on monitoring techniques. MT queried whether monitoring using drones has been considered. RM noted that aerial monitoring is efficient as it is possible to complete several counts in one day, however he questioned how the results would be compared with traditional land and boat counts. MT noted that there isn't a great understanding of how amenable the area is to different methods of monitoring. Questions were raised regarding the feasibility of counting puffin colonies. Agreement was made that colony counts for gull species are appropriate, however the method is yet to be established (drones, aerial or counts via land and boat). It was noted that BOWL and MORL are not required to complete colony counts in 2015. However, JW noted that should novel methods be proposed, it would be useful to test the results of these methods against the standard methods this year. An action was raised for SNH to identify suitable methods and report to the Group. JW noted that one purpose of the SNH survey is to inform future wind farm monitoring surveys, and not purely to replicate past SMP surveys. MT suggested that the most appropriate survey method for the wind farm's

monitoring would be using sample plots.

Puffin colony counts
AR noted that it would be useful if Bob Furness could circulate Adam's thesis to inform a suitable sampling strategy for puffin. ID noted that it is not possible to recommend suitable monitoring methods for puffin at this stage – the results from the SNH survey will help inform suitable methods. Discussion ensued on whether it would be more suitable to collect data in the Forth and Tay area. There was general agreement that this may be the case. JW noted that counts are completed every 5 years in the Forth and Tay area. RM/MT raised point of Forth and Tay being a more suitable site for monitoring puffin colony as Moray Firth colony difficult to access, JW said a 2015 survey would help to identify if this is the case.

Gulls - Survival of Breeding Adults
Mention was made relating to cooperating with Robin Sellars on his ringing study in the area. It was agreed in the Group that the best method of establishing survival rates is to work with Robin. JW noted that gulls are available outside Robin's ringing areas, however the populations are likely to be small and inaccessible. CR referred to the gull foraging behaviours study and noted that the patches outside of Robin's areas are unsuitable due to the very low number of birds there. CG queried whether Robin rings both GBBG and HG. RM confirmed that Robin rings both species, however a greater number of herring gulls are ringed. There could be potential to discuss different ringing options with Robin. ID concluded that as a general rule Robins work will be maintained, and expanded if possible following further discussions.

Gulls – Connectivity
MT noted that BOWL's preferred monitoring options are tagging and aerial surveys. Connectivity can be inferred by aerial and boat based surveys, however their primary role is to demonstrate distributions. RM noted that tagging would be the primary method of establishing connectivity. SO noted that tagging at sea during the breeding season would be more likely to establish connectivity. MT agreed with SO, however the logistics and practicalities associated with tagging at sea are questionable. AR noted that a colleague has been tagging shearwaters at sea and found that capturing birds was not as challenging as it was originally considered to be. RM noted that if BOWL and MORL will be required to tag at sea satellite tags would be required. These tags are much more expensive (than the GPS loggers used in 2014) which needs to be considered in relation to the high risk of these tags being shed prematurely. CG queried whether baiting from a boat would be possible. There was general agreement that this would be suitable for gulls.

ID noted that in establishing connectivity tagging would be the primary monitoring method. Considering practicalities, the tagging would probably have to take place from the colonies and not at sea.

SO queried whether boat tracking had been considered, as is being completed by Martin Perrow on terns in the Greater Wash. RM noted that the BOWL and MORL wind farms are further offshore and would have fewer weather windows. ID noted that due to the location of the wind farms the ribs used to follow birds to the colonies would require an offshore base, i.e. a mother ship. It would be challenging to avoid attraction to this ship. MT noted that he is yet to be convinced that the terns being tracked are not affected by the ribs, however boat tracking could be considered should tags prove unsuccessful.

SO queried how representative the tagging results would be relative to the SPA population. For instance, if the tagged birds do not use the wind farm sites, can it be concluded that the entire population does not use the sites? MT noted that this question would need to consider

the sample sizes relative to the population size and draw conclusions on that basis.

JW noted that another options would be to do VPs in the northern area of the ECC and record where the birds go.

Gulls – flight height and speed
ID noted that tags would likely provide the primary source of information on flight height and speed. ID queried how flight height would be assessed within the turbine arrays should the tagged birds not enter the wind farm areas. AR queried whether flight height would change when turbines are present. SO noted that if aerial surveys are completed the position of birds within the wind farm areas can be analysed. If during each survey the distance is relatively uniform, it could be possible to conclude that there is a pattern for encounter rate. This would primarily be the case for puffin. AR noted that if aerial data is collected it would be useful to understand what questions can be answered by analysing the data.

AM noted that both HiDef and Apem are progressing their abilities to accurately detect flight heights from aerial photography. ID noted that MSS met with both companies, and that both claim different capabilities in the error margins in determining flight height. JW noted that even with error margins, it would be possible to compare the flight heights between birds within and outside of the wind farms. RM noted that data analysed previously from aerial photography has not been accurate. It could not be relied on for collision modelling. MT questioned when the surveys were completed, and whether the interpretation was challenged.

JW reiterated the point that satellite tags may be unreliable in that they may shed prematurely. MT noted that tags with altimeters could be attached which do not add significant weight to the tags.

ID concluded that tagging would be the primary method to assess flight height and speeds for gulls, and that aerial surveys could be useful to back up the information collected from tags.

Gull productivity
There was general agreement that gull productivity would be best assessed by determining if Robin's data includes productivity and if so combining these with colony counts.

CONCLUSIONS – GULLS
Tagging is the primary monitoring method to assess the effects of the wind farms on gulls, supported up by aerial data. CG noted that it maybe some time before it can be established if tagging is possible, therefore BOWL and MORL should assume that aerial surveys will be required. JW confirmed that it is not anticipated that aerial surveys will be abandoned unless it is proven that there is no connectivity with the ECC SPA.

Puffin – Productivity
General agreement that Puffin productivity is better monitored in the Forth and Tay area.

Puffin – Connectivity
RM noted that it is too challenging to tag puffin, and that inferred connectivity from aerial photography may be better assessed in the Forth and Tay area. JW noted that CEH will endeavour to tag puffins again in 2015. Handling is the main challenge in terms of behavioural effects post handling and consequently survival.

Puffin – Displacement
Agreement in the Group that displacement is the key concern for puffin in the Moray Firth, and should be the primary monitoring target.

A discussion on the pros and cons of aerial and boat based surveys ensued, in line with the pros and cons set out in the Monitoring Proposal table produced by BOWL and MORL. BOWL and MORL confirmed that the companies are not aligned in their preferred option.

ID noted that there are two main methods of assessing displacement; relative abundance within the wind farm areas and buffer areas, and fine scale abundance around turbines.

JW noted that for puffin the effective detectability distance from boats is 50m. RM disagreed with this, expecting effective detectability to at least 100m. With potentially varying transects to avoid construction safety zones and wind turbines post construction, there could be variability between surveys compromising the comparability between them. In addition, the boats would not steam close to the turbines for safety reasons, and considering the 50m detectability distance there is a risk that a large number of birds would not be detected. With aerial surveys one can fly the same transects each time thus ensuring the surveys are directly comparable. MT agreed and noted that aerial surveys would therefore better assess fine scale abundance around turbines. JW noted that this would also be the case for detecting large scale abundance. AR noted that aerial survey records can be kept for a long period of time, providing the opportunity to re-check data if required. This would not be possible for boat based survey data. SO noted that it would be possible to survey the entire wind farm and buffer areas in a short space of time, and aerial surveys are potentially more suitable for monitoring gull distributions to avoid skewing the results due to attraction to survey vessels. RM noted that attraction may not be a key issue if this was consistent. ID confirmed that attraction could be an issue and could skew data.

ID queried whether BOWL and MORL has considered the size of the survey footprint, and how long it would take to complete the boat based and aerial surveys. MT noted that it took approximately 2 days to survey the entire BOWL area including the buffer by boat during the EIA stage. Based on this ID noted that it could take approximately 7 days to survey the BOWL and MORL monitoring area by boat. MT noted that it could take approximately 1 day to survey the entire BOWL and MORL monitoring area by aircraft. RM noted that this could be the case in summer months, however in spring and late summer it could take 1.5 days. MT noted that working out the area which could be surveyed in 1 day would form part of the determination of the survey area for BOWL and MORL. ID noted that there would be a significant advantage in aerial surveys as they would avoid differences in weather conditions and other factors that could affect survey data.

Species identification of razorbill and guillemot from aerial survey data was questioned. ID and JW noted that both HiDef and Apem claim a 95% species ID rate in the breeding seasons, and a slightly lower percentage in the non-breeding season. It was noted that both companies have a comprehensive QA system to correctly identify species.

Discussion ensued on how comparable the boat based survey data collected during the characterisation surveys for the wind farms would be to aerial monitoring data. AR noted that assessments completed by CREEM concluded that boat based survey data could be compared with aerial data. JW noted that it may be possible to combine the data rather than directly compare it. ID noted that it would potentially be challenging to compare absolute abundance between boat based and aerial surveys.

ID requested the Group to confirm which monitoring method would be most suitable. The Group agreed that aerial survey would be more appropriate both to assess puffin displacement and gull distribution/ inferred connectivity.

OUTLINE MONITORING PROGRAMME

Discussion moved on to the outline monitoring programme proposed by BOWL and MORL.

MT queried if the proposed April to August breeding season is appropriate. AR and SO noted that this requires further thought. They will inform the Group of what they believe is the appropriate survey season.

Discussions moved on to construction programmes and outline methods. JoW noted that BOWL are planning to commence installation of jacket foundations in 2017, however BOWL does not currently intend to commence installation of turbines until 2018. It was acknowledged that between the 2017 and 2018 construction phases the installed substructures would be visible to birds. SP noted that MORL are planning to construct their wind farms in two phases, and it is unlikely that the BOWL and MORL construction periods will coincide, at least the during the first year of construction at BOWL. Therefore pre- and during construction phases will differ between BOWL and MORL. RM noted that due to the size of the MORL area it was likely that there would be areas of the site far enough away from BOWLs construction to still be considered suitable for pre-construction surveys. SO questioned the usefulness of during-construction monitoring as effects will be captured post construction. CG noted that pre- and post construction monitoring is a higher priority.

ID queried what the thoughts were on the amount of pre-construction monitoring would be required, and discussions ensued on data collected during the EIA stages of the Developments. It was acknowledged that the monitoring survey area would be different from the site characterisation surveys completed during the EIA stage. ID noted that a large amount of data on puffin distribution was collected pre-consent. Could this be suitable to inform the pre-construction baseline? SO noted that it would not be sufficient to merely measure variance in data to detect differences and similarities. MT noted that if densities are consistent from one year to the next, then the characterisation data in combination with 1 year of pre-construction surveys could be sufficient to inform the pre-construction baseline. SO noted that even if two years of pre-construction surveys were completed, and the results varied then this tells us that the baseline is variable. AR noted that a degree of power analysis and monitoring design validation could be useful to inform the number of pre-construction surveys required. SO noted that it might be better complete power analysis to assess reasons for change post construction. JW highlighted that results from 2 years of data will always differ due to natural inter-annual variations. JW queried whether one year pre-construction survey would suffice, however that surveys were completed twice in each survey month. MT noted that this could be considered.

JW queried whether BOWL and MORL may survey one large area or completed surveys separately. MT noted that BOWL intends to survey an area which extends from the coastline to encompass the BOWL wind farm site which could be extended to include MORL when they are in a position to commence monitoring.

ID noted that one year pre-construction survey would be sufficient, commencing in 2016 (at least for the BOWL site), however in the meantime BOWL and MORL were requested to revisit the site characterisation data to assess if the data can be presented or reanalysed in such a way as to define the baseline for puffin displacement. This would support the decision to complete only one year of pre-construction surveys. SO noted that JNCC's preference would be for 2 years of pre-construction surveys to be completed. It was agreed that RM and MT will review the characterisation data for each site and also draw on other data sources and produce a proposal for how these data sources can be used to inform the pre-construction bird distributions. This proposal will be circulated for discussion at the next

	meeting. SO noted that puffin is the main species to consider in this sense, however if other species (e.g. guillemot) can be added at no additional costs then this would be useful. **CONCLUSIONS** Complete one year of pre-construction surveys, and produce a validation assessment proposal for discussion at the next meeting. SO noted that JNCC maintain their request for 2 years of pre-construction surveys.
5.0	**Next steps** AR noted that there was a monitoring meeting on Monday 23rd February with SNCBs. The notes from this meeting will be circulated. The purpose of that meeting was to assess existing colony monitoring efforts and identify further monitoring requirements for offshore wind farms. Next meeting agreed: 30th March 2015.
6.0	**AOB** N/A