I attach the RSPB's submissions for Deadline 3.

Please could you confirm safe receipt?

Kind regards,
James

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Let's give nature a home

Common Guillemot, Razorbill and Black-legged Kittiwake Phenology at Bempton/Flamborough 2016-17

General note

We do not monitor arrival/departure dates in any kind of systematic way so cannot add anything meaningful to the conference call that we had on 9 July on this point.

Method

Common Guillemot (*Uria aalge*) and Razorbill (*Alca torda*)

Data from six Guillemot plots and eight Razorbill productivity monitoring plots at Bempton/Flamborough were used to calculate the hatching dates. Each plot was monitored between late April and end July. Plots are photographed in late April/early May and up to 50 to 60 apparently occupied sites (AOS) are marked on the laminated photographs over two visits. Plots are then visited every third day, although occasionally there is a larger gap due to thick fog or heavy rain. Additional sites may be added over the course of the season, especially if it has been hard to get 50 AOS early in the season. Presence of an egg or chick is recorded (if seen) each visit. Average visit time early in the season is 2 – 2.5 hours, but reduces once chicks get larger and are more visible.

Hatching dates:-

Hatching dates were taken as the dates when a chick was first seen. In practice, each such chick could have hatched at any point in the three days since the previous visit. A site was only used for calculating average hatching date if a chick was seen for the first time and either: (i) an egg had been confirmed as present on the previous visit; (ii) broken egg shell was present on the site (since broken shell does not remain on sites for long); or (iii) if the chick was seen to be hatching. The number of AOS included in the sample is, for Guillemots, 73 in 2016 and 93 in 2017, and, for Razorbills, 69 in 2016 and 85 in 2017. Eggs known to be re-lays were not included in the sample.

Laying dates:-

Estimated laying dates were calculated by subtracting the average incubation period of 32 days for Guillemots and Razorbills from the hatching dates as calculated previously.

Mean/Median/Mode:-

The mean, median and mode of the hatching dates and estimated laying dates for each year were calculated using the AVERAGE, MEDIAN, and MODE.MULT functions in Excel 2016.

Comments:-

Our productivity monitoring methodology is not intended to capture precise lay dates for each site monitored. Due to the frequency of the visits, the actual dates could have been, in most cases, at any point in the previous three days. Inclusion of second eggs would have moved the mean hatch and lay dates later in the season.

Black-legged Kittiwake (*Rissa tridactyla*)

Data from twenty-two Kittiwake plots across the colony were used to calculate the estimated laying and hatching dates. Plots are photographed in early to mid-May and up to 50 or 60 apparently occupied nests (AON) are marked on the laminated photographs. The plots are then visited every week, ideally on the same day so visits are 7 days apart. Presence and number of eggs or chicks at each AON is recorded (if seen) each visit. Volunteers are also asked to record chick age/size using standard codes, but not all do. Average visit time varies according to the volunteer, but 1 to 1.5 hours per visit is typical. The number of AON included in the sample is 713 sites in 2016, and 749 in 2017.

Hatching dates:-

Hatching dates were taken as the first day a chick was seen. In practice this means it could have been at any point in the previous 7 days. For Kittiwake we did not only include nests on which eggs were confirmed on the previous visit since in practice many birds are simply recorded as incubating and nest contents are not recorded unless the bird happens to shift position or change over while the volunteer is watching.

Laying dates:-

Estimated laying dates were calculated by subtracting the average incubation period of 35 days for Kittiwakes from the hatching dates as calculated previously.

Mean/Median/Mode:-

The mean, median and mode of the hatching dates and estimated laying dates for each year were calculated using the AVERAGE, MEDIAN, and MODE.MULT functions in Excel 2016.

Comments:-

Our productivity monitoring methodology is not intended to capture precise lay dates for each AON monitored. Due to the frequency of the visits, the actual dates could have been, in most cases, at any point in the previous seven days; it is also possible that some birds brooding young chicks were recorded as incubating on the first visit after hatching, which would move the apparent hatch date back an additional week.

RESULTS

Common Guillemot (*Uria aalge***)**

In 2016, the mean estimated laying date was on the 9th of May, the median estimated laying date on the 7th of May and the mode estimated laying date on the 5th of May. The mean hatch date was on the 10th of June, the median hatch date was on the 8th of June and the mode hatch date was on the 6th of June (Table 1).

In 2017, the mean, median and mode estimated laying dates were on the 7th of May, while the mean, median and mode hatch dates were on the 8th of June (Table 1).

Table 1: Common Guillemot hatch dates and estimated lay dates (for our sample)

	2016		2017	
	Lay (est)	Hatch	Lay (est)	Hatch
First (individual)	25-Apr	27-May	23-Apr	25-May
Mean	09-May	10-Jun	07-May	08-Jun
Median	07-May	08-Jun	07-May	08-Jun
Mode	05-May	06-Jun	07-May	08-Jun
Last (individual)	28-May	29-Jun	01-Jun	03-Jul

The earliest and latest egg hatching date for the Guillemot in our sample were 27th of May and 29th June in 2016, and 25th of May and 3rd July in 2017.

The earliest and latest estimated egg laying dates for the Guillemot in our sample were 25th of April and 28th May in 2016, and 23rd of April and 1st June in 2017.

Razorbill (*Alca torda*)

In 2016, the mean estimated laying date was on the 9th of May, the median estimated laying date was on the 8th of May and the mode estimated laying date was on the 6th of May. The mean hatch date was on the 10th of June, the median hatch date was on the 9th of June, while the mode hatch date was on the 7th of June (Table 2).

In 2017, the mean estimated laying date was on the 9th of May, while the median and mode estimated laying dates were on the 8th of May. The mean hatch date was on the 10th of June, and the median and mode hatch dates were on the 9th of June (Table 2).

Table 2: Razorbill hatch dates and estimated lay dates (for our sample)

	2016		2017	
	Lay (est)	Hatch	Lay (est)	Hatch
First (individual)	01-May	02-Jun	24-April	26-May
Mean	09-May	10-Jun	09-May	10-Jun
Median	08-May	09-Jun	08-May	09-Jun
Mode	06-May	07-Jun	08-May	09-Jun
Last (individual)	24-May	25-Jun	26-May	27-Jun

The earliest and latest egg hatching dates for the Razorbill in our sample were 2nd of June and 25th June in 2016, and 26th of May and 27th June in 2017.

The earliest and latest estimated egg laying dates for the Razorbill in our sample were 1st of May and 24th May in 2016, and 24th of April and 26th June in 2017.

Black-legged Kittiwake (*Rissa tridactyla*)

In 2016 the mean estimated laying date was on the 19th of May, the median estimated laying date was on the 18th of May and the mode estimated laying date was on the 24th of May. The mean hatching date was on the 23rd of June, the median hatching date was on the 20th of June and the mode hatching date was on the 13th of June (Table 3).

In 2017 the mean estimated laying date was on the 15th of May, the median estimated laying date was on the 16th of May and the mode estimated laying date was on the 9th of May. The mean hatching date was on the 19th of June, the median hatching date was on the 20th of June and the mode hatching date was on the 13th of June (Table 3).

Table 3: Black-legged Kittiwake hatch dates and estimated lay dates (for our sample)

	2016		2017	
	Lay (est)	Hatch	Lay (est)	Hatch
First (individual)	04-May	08-Jun	28-April	02-Jun
Mean	19-May	23-Jun	15-May	19-Jun
Median	18-May	22-Jun	16-May	20-Jun
Mode	24-May	28-Jun	09-May	13-Jun
Last (individual)	25-Jun	30-Jul	20-Jun	25-Jul

The earliest and latest estimated egg laying dates for the Black-legged Kittiwake in our sample was on the 4th of May and 25th June in 2016, and on the 28th of April and 20th June in 2017.

The earliest and latest egg hatching dates from our sample was on the 8th of June and 30th July in 2016, and on the 2nd of June and 25th July in 2017.