

2023 Skye Corncrake call pattern summary
Robert Arnold, Shelagh Parlane



Trail camera images from Ardmore, Waternish June 2023



We have found 22 PPD patterns which are probably from 18 male birds, an increase from the 13 or 14 males in 2022.

There have been 95 analysed recordings for 2023 from Skye made by 29 different people (47 recordings were made by Shelagh) and 14 recordings from Canna of 8 PPD patterns of 8 male birds from Canna made by Bob Swann of the Canna Ringing Team and Raine Clarke.

Notes

I have been using mostly 4-5 quality, and lower quality when useful, for this analysis (quality 5 is best, 1 is barely analysable. 5 calls averaged, a sharp rise at start of pulse, signal to noise moderately good, first pulse clear). I am using use first or second syllables like in the summary of 2022.

Note copied from the 2022 Summary

Over the three years (2020, 2021, 2022) of analysing Skye PPD records it has become clear that many corncrakes share similar PPD patterns. This was the unpublished opinion of Professor Rhys Green. He was co-author of the 1998 paper which originally suggested this method as suitable for identifying and discriminating corncrakes by bio-acoustic recording. (*Individuality in Corncrake *Crex crex* vocalizations. T.M.Peake et al. IBIS 1998*)

This combined with the discovery in 2021 that one bird can flip to another PPD pattern ($r=0.7$ or so), which should indicate a different bird, makes the difficulties of bird tracking greater still.

However, Skye's corncrakes are few in number and widely spaced. As the season goes on it is possible to collect recordings and allocate them by time and place to individual birds by $r>0.97$ excel correlation. The extent of the duplication of patterns in definitely different birds can be examined without just relying on the PPD pattern. This could be useful for other people studying corncrakes who may be over optimistic about tracking individuals based on the claims of the 1998 paper.

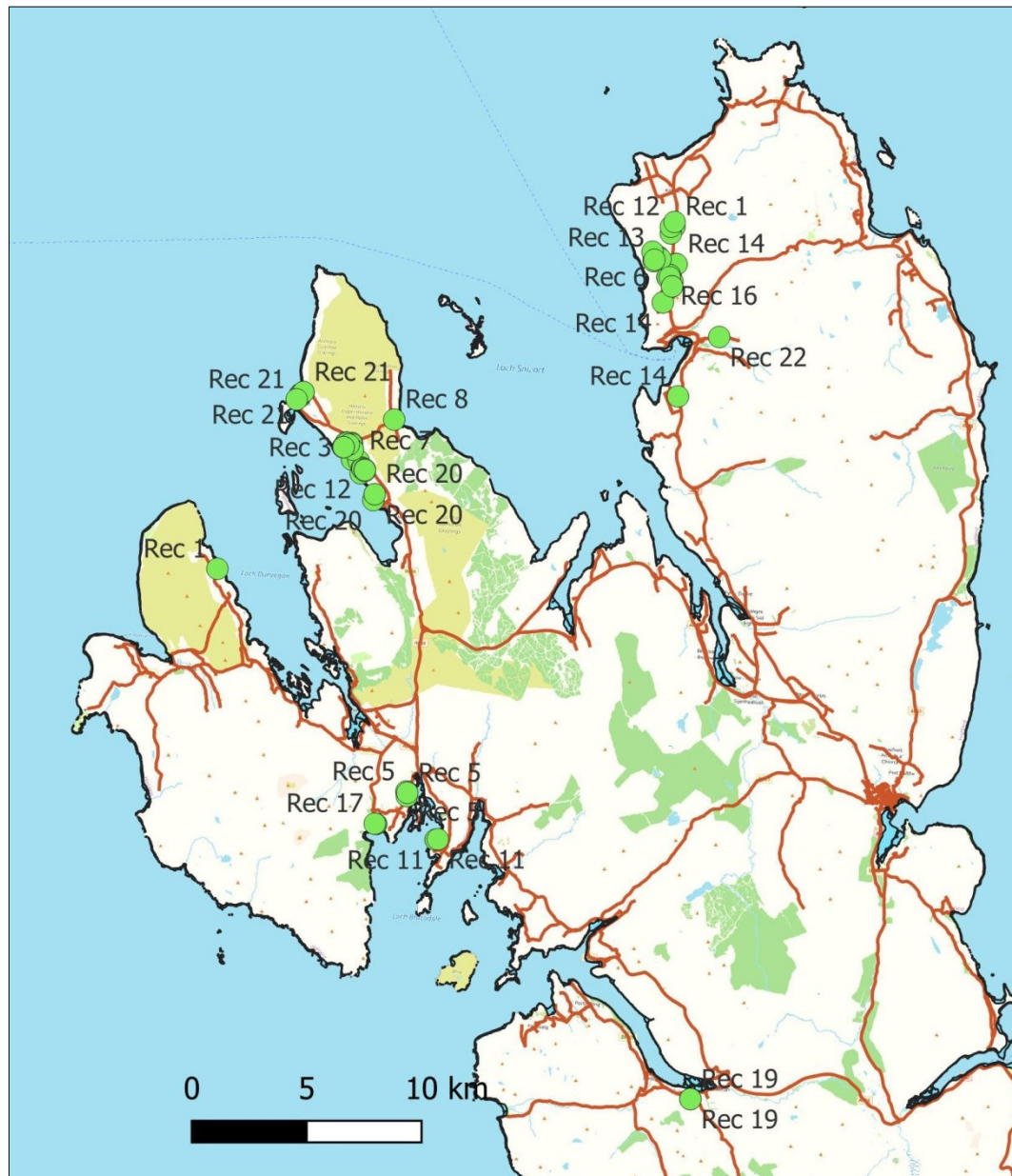
Similar PPD patterns confuse the analysis, especially when two individuals with similar patterns appear in similar locations. The patterns might be, but are not necessarily, the same individual and there is no way to confirm or deny the conjecture. There is best confidence in the interpretation of PPD patterns in recordings when patterns are clearly definitely different.

As well as difficulties discriminating birds when their PPD patterns are the same, poor recording quality (e.g. noise overlaying the calls or faint recording because of large distance) and inaccurate marking of the start of pulses in the analysis can merge patterns making discrimination very difficult.

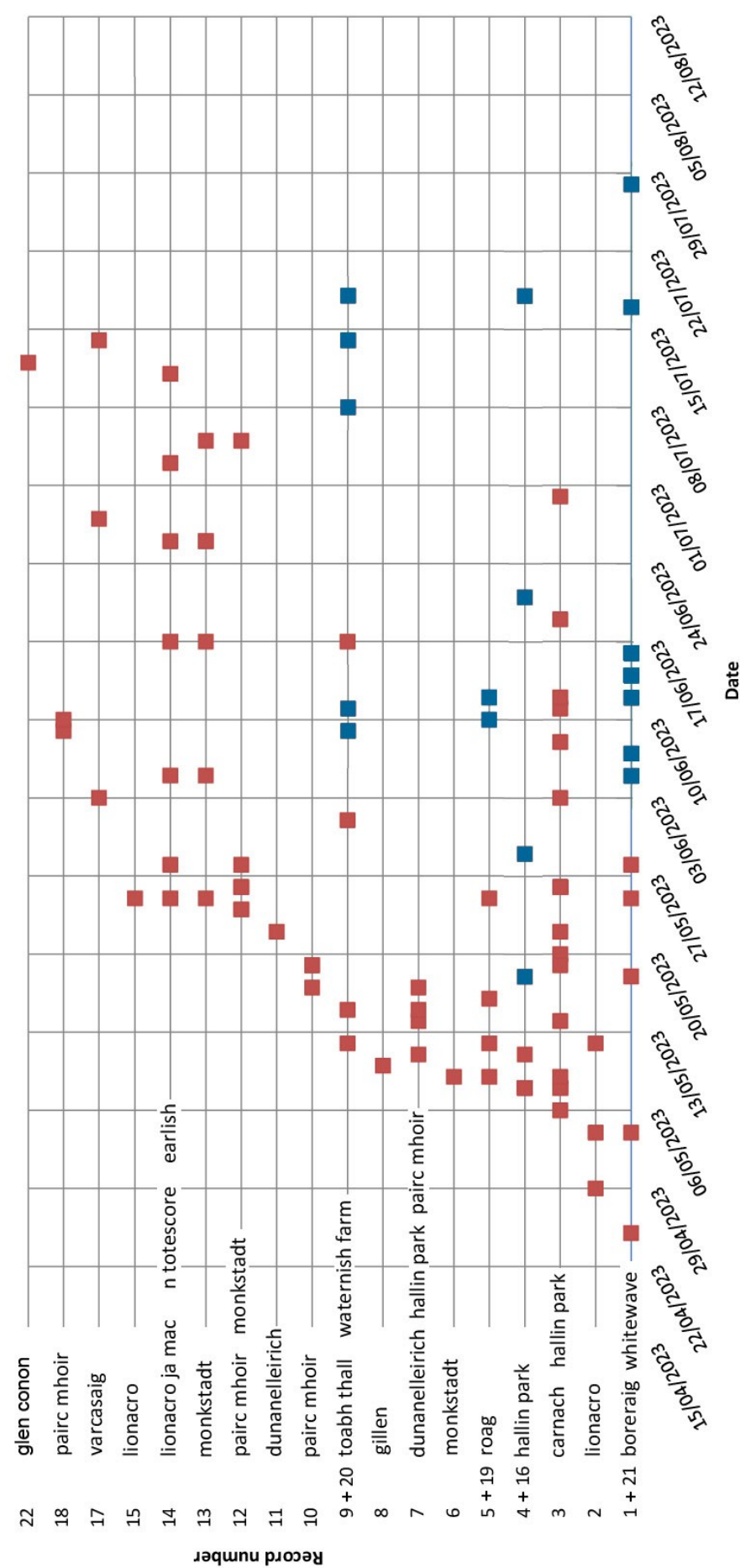
There are four instances where we have pairs of records which are so similar that they suggest a possible long move of the bird during the season, records 1 and 21, records 4 and 16, records 5 and 19 and records 9 and 20.

The record numbers have been allocated sequentially as the birds were first heard calling. In this summary records identified as possibly the same bird moving have been placed together so that the possible (but not certain) move and the similarity of the PPD patterns are clearly displayed.

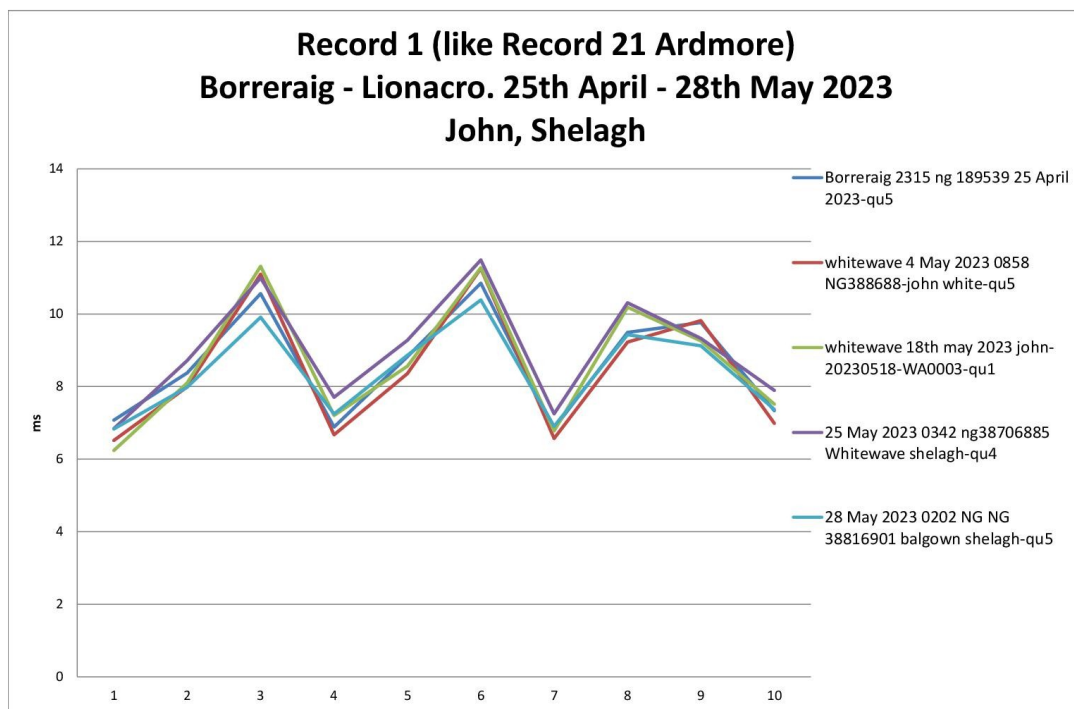
Skye map for 2023 showing all the analysed corncrake call recordings plotted with the 22 'record numbers' representing probably 18 male birds



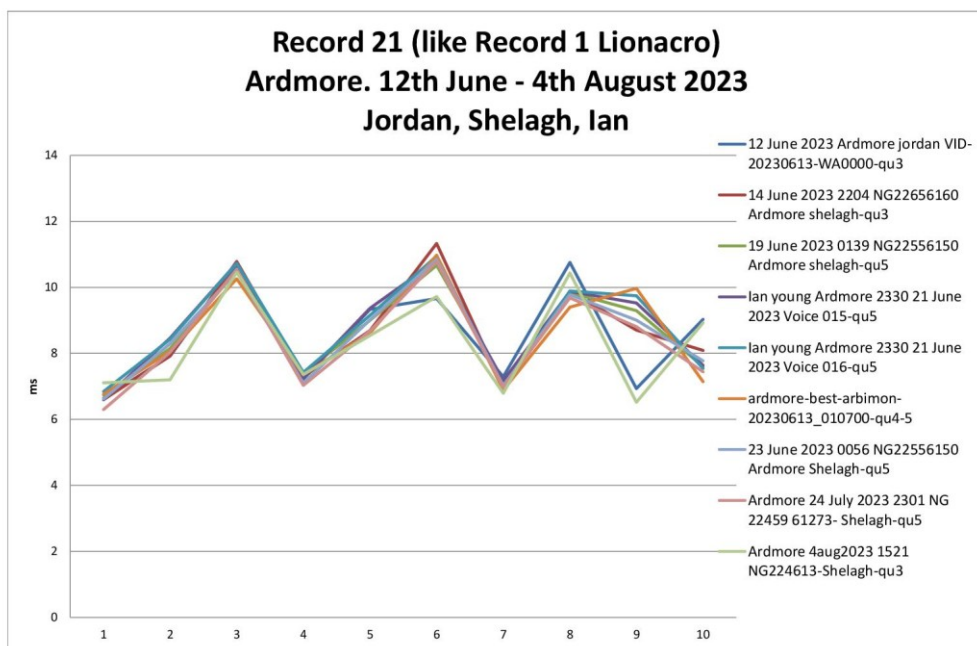
Timeline for PPD samples, Crex 2023



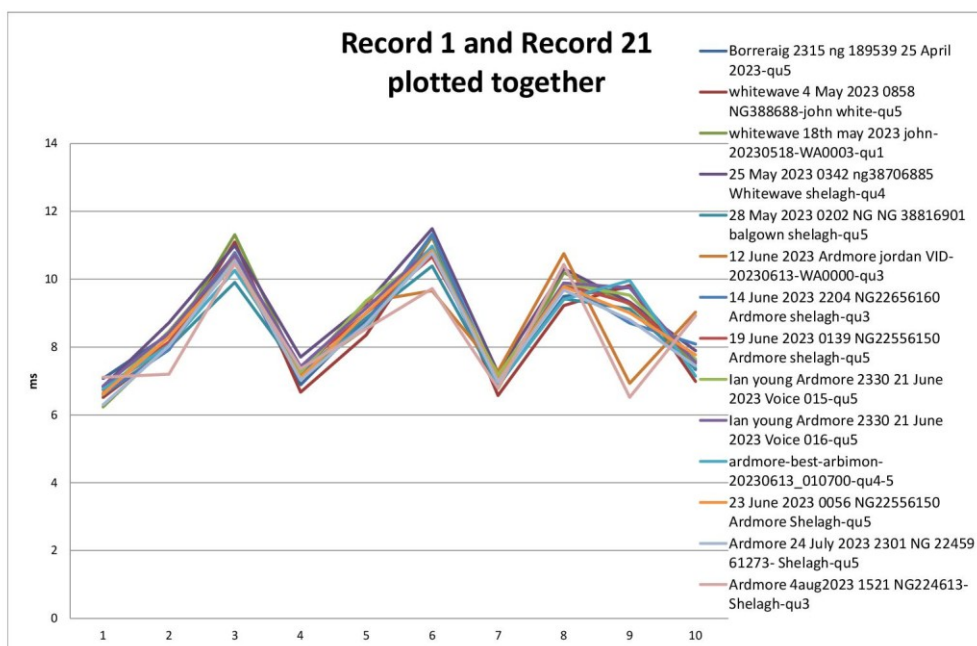
Record 1. April 25th Boreraig - May 28th Lionacro
 (Not a certain move but possible and likely)
 (Similar to Record 21 and a possible move later in the season)



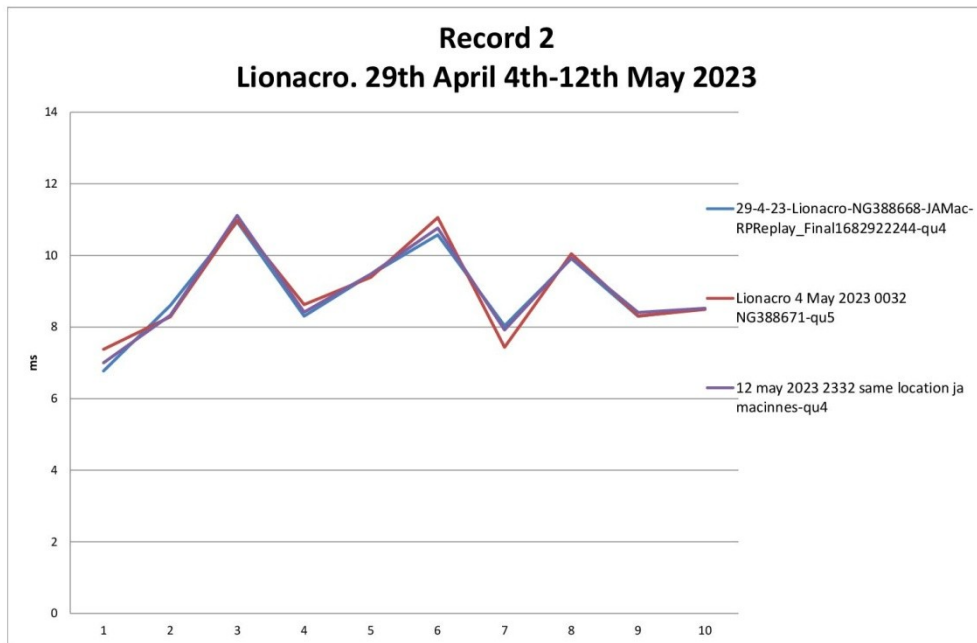
Record 21. June 12th - August 4th Ardmore
(Similar to Record 1 and a possible move later in the season)



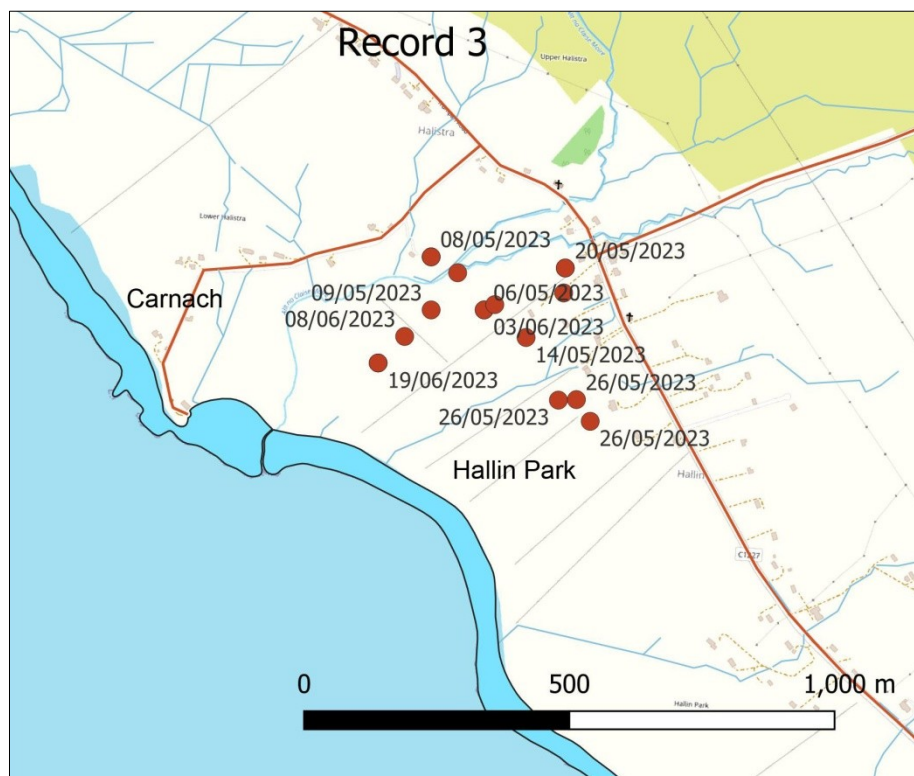
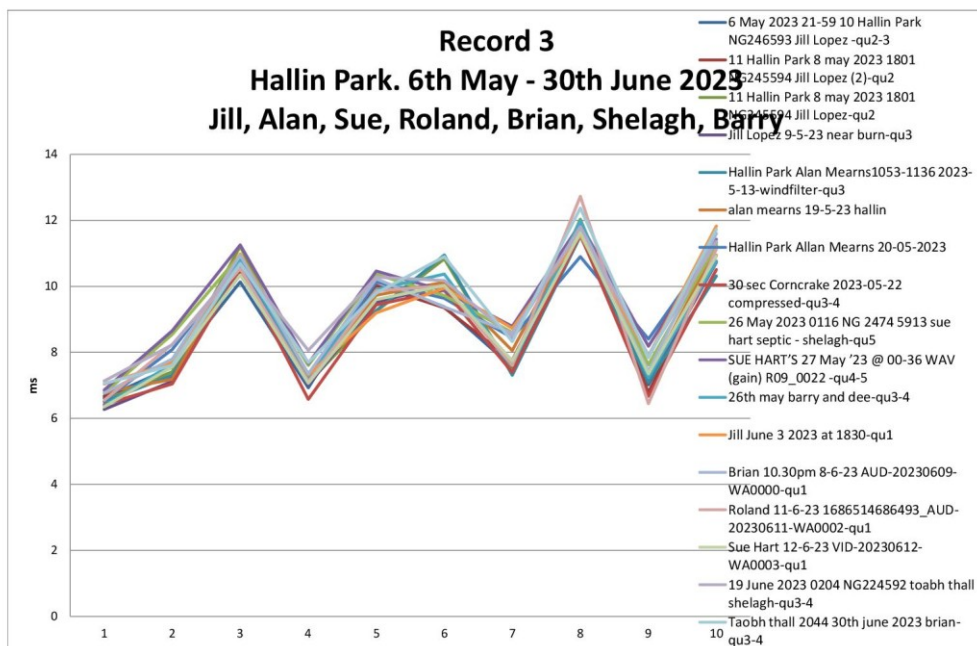
Record 1 and 21 plotted together to show possible moves of one male bird



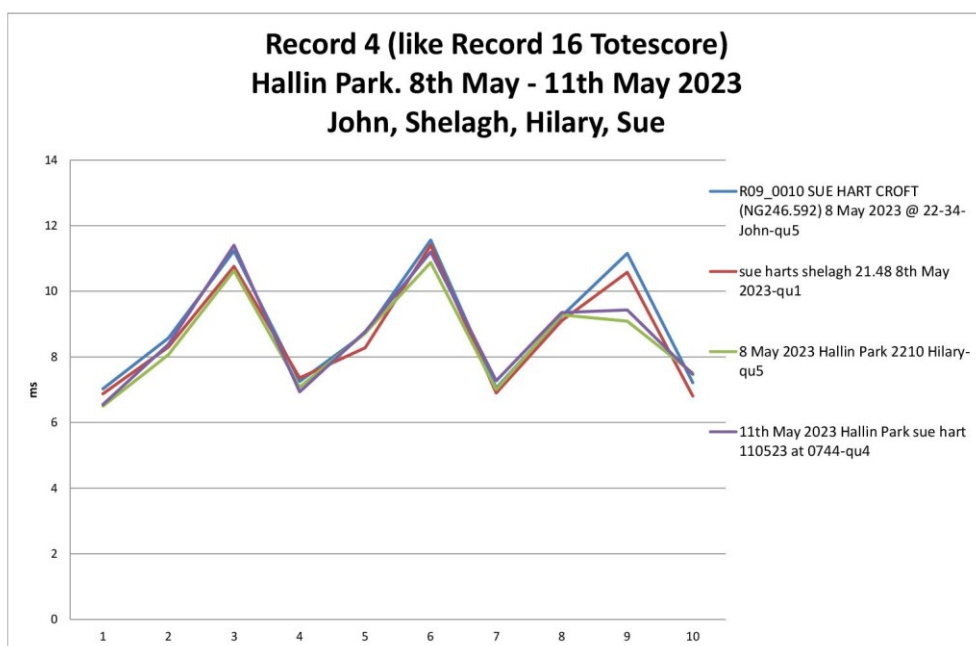
Record 2. April 29th - 12th May Lionacro



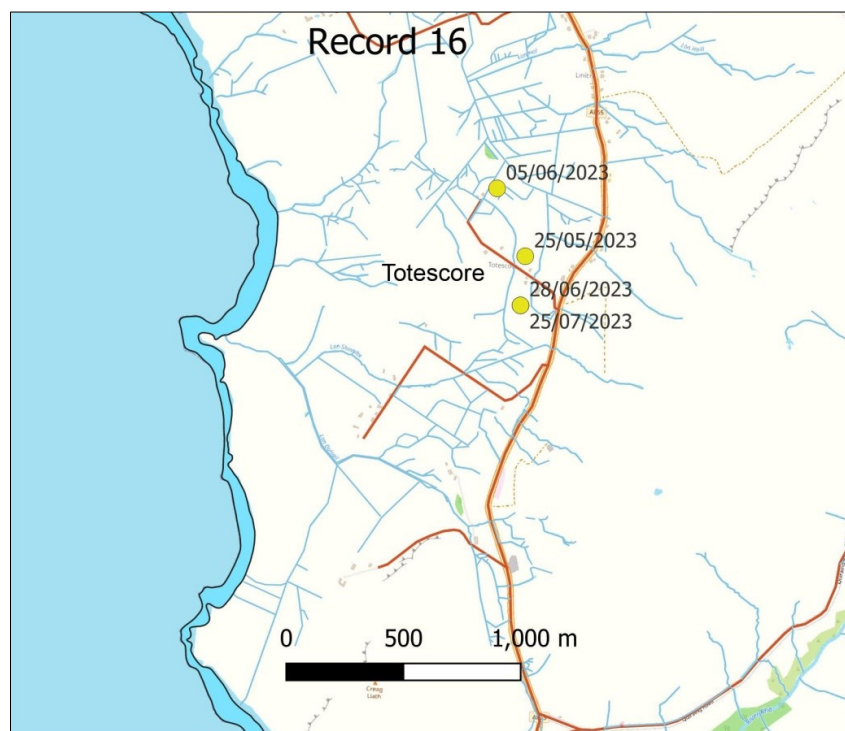
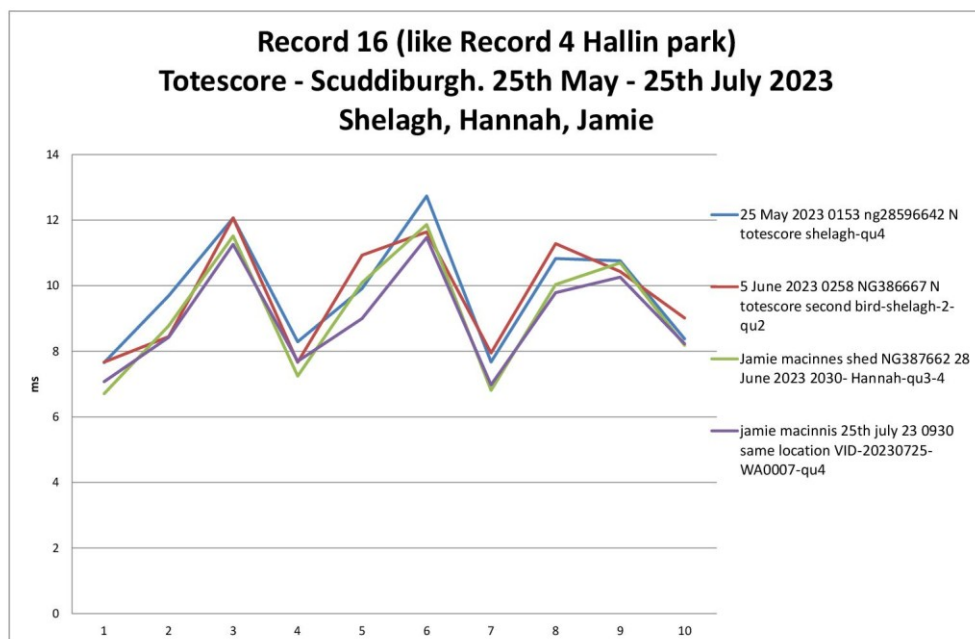
Record 3. May 6th - June 30th Hallin Park



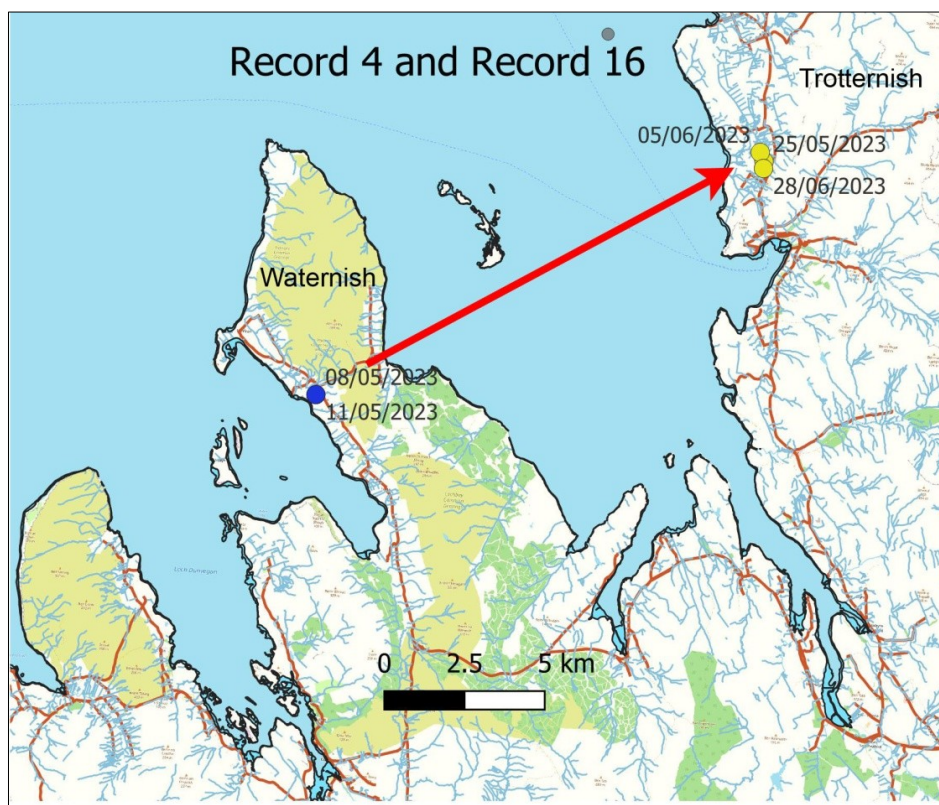
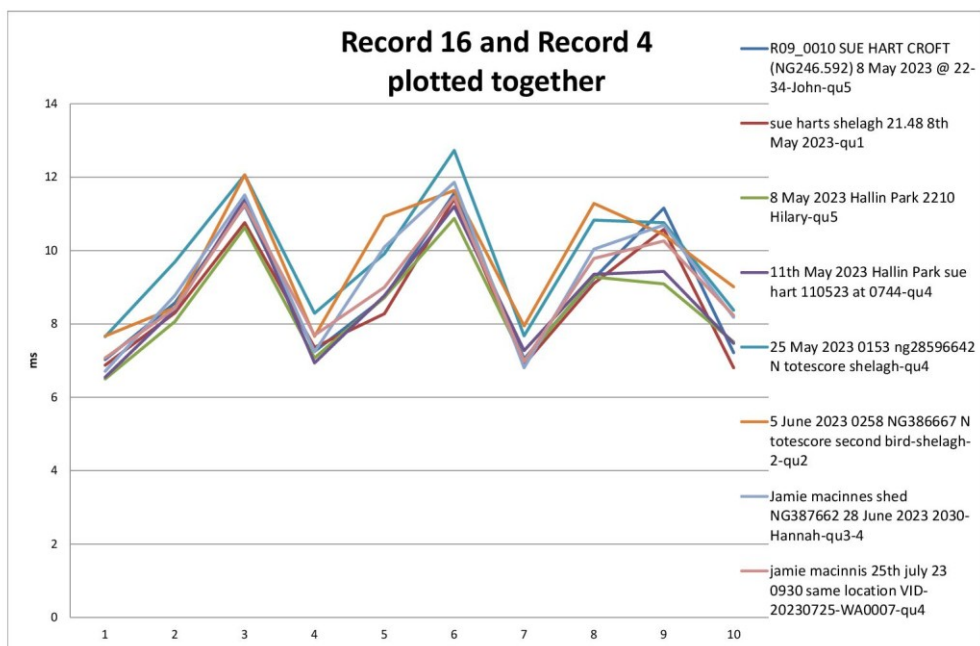
Record 4. May 8th -11th Hallin Park
(Similar to Record 16 and a possible move later in the season)



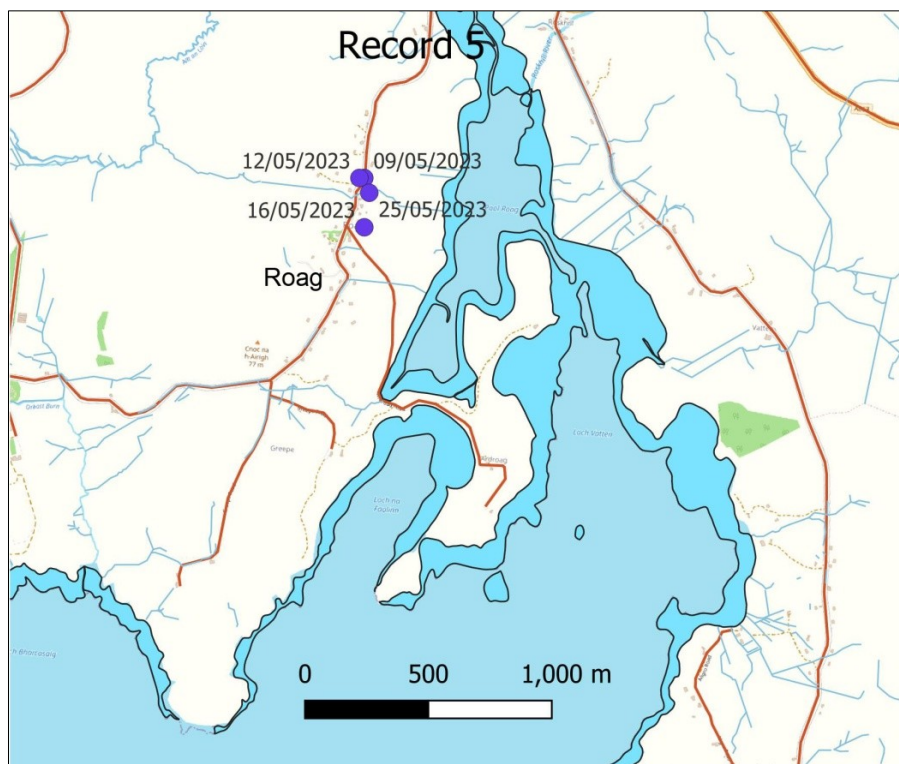
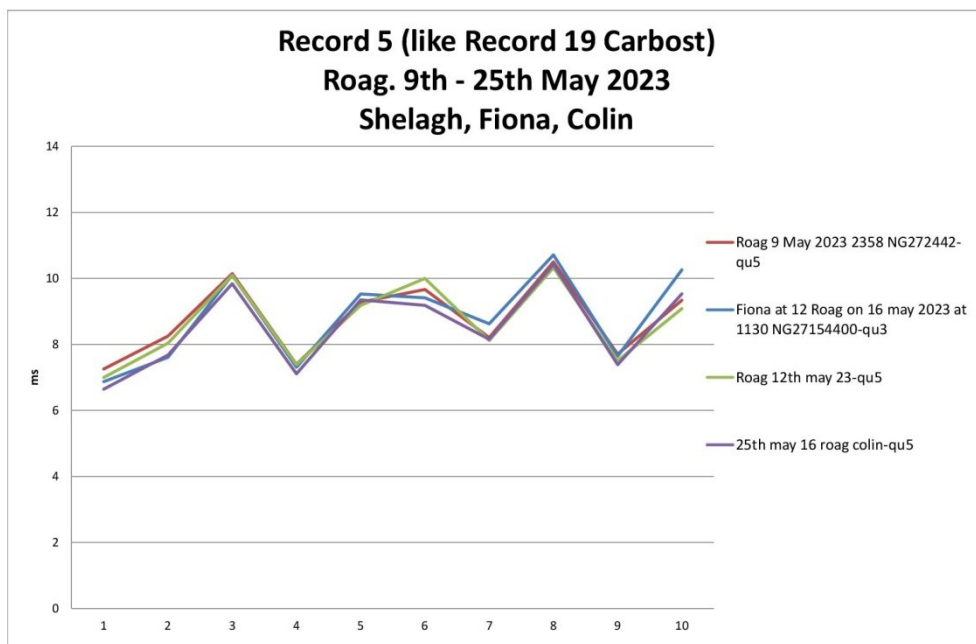
Record 16. May 25th Totescore - July 25th Scuddiburgh
(Similar to Record 4 and a possible move later in the season)



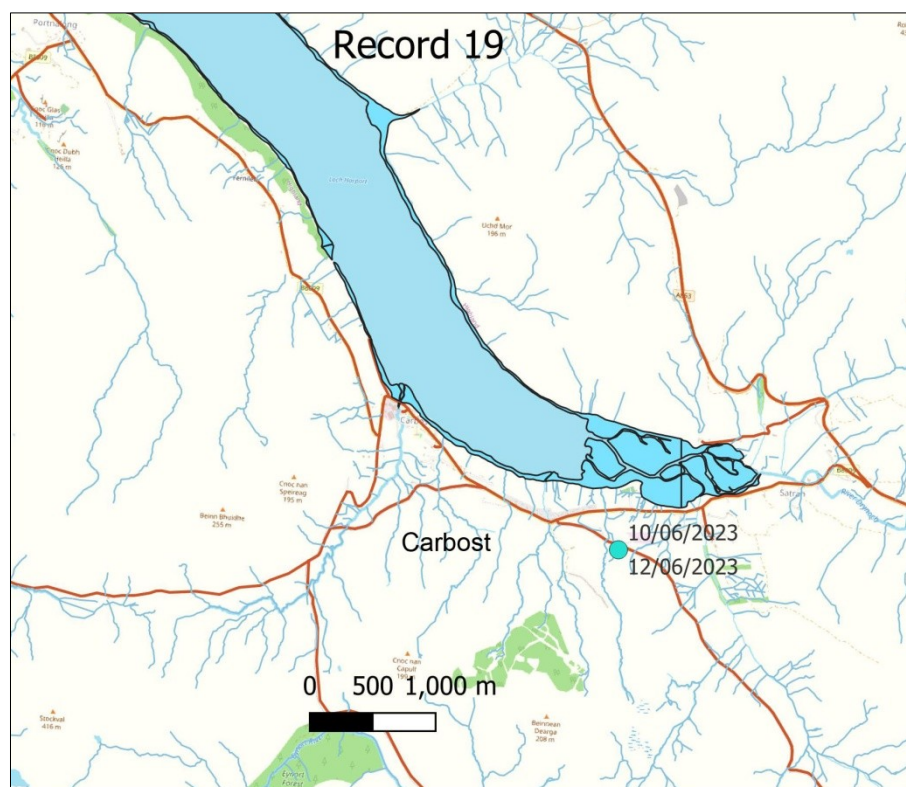
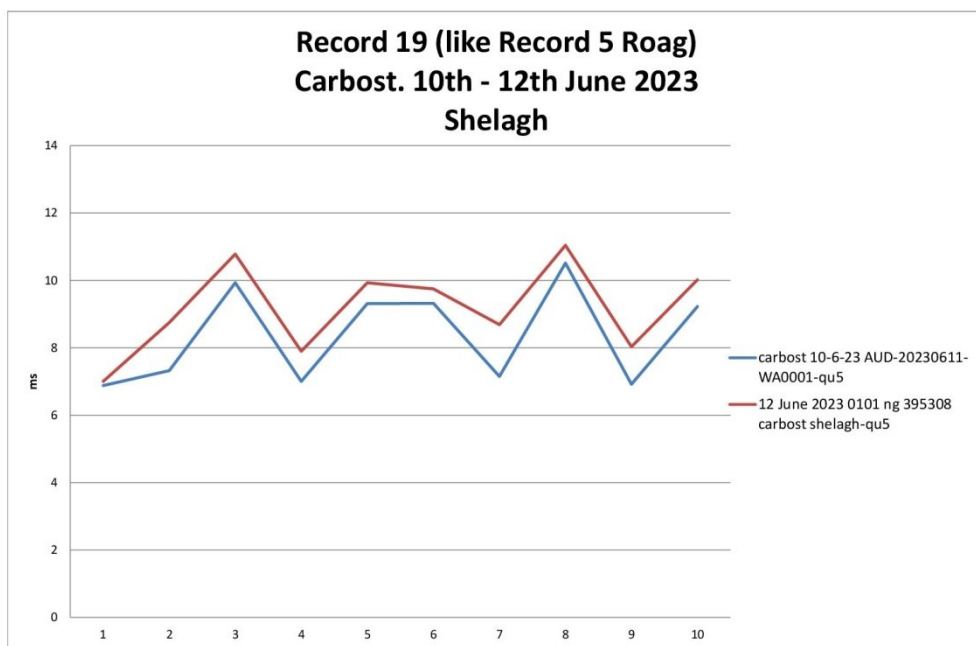
Record 4 and 16 plotted together to show possible move of one male bird



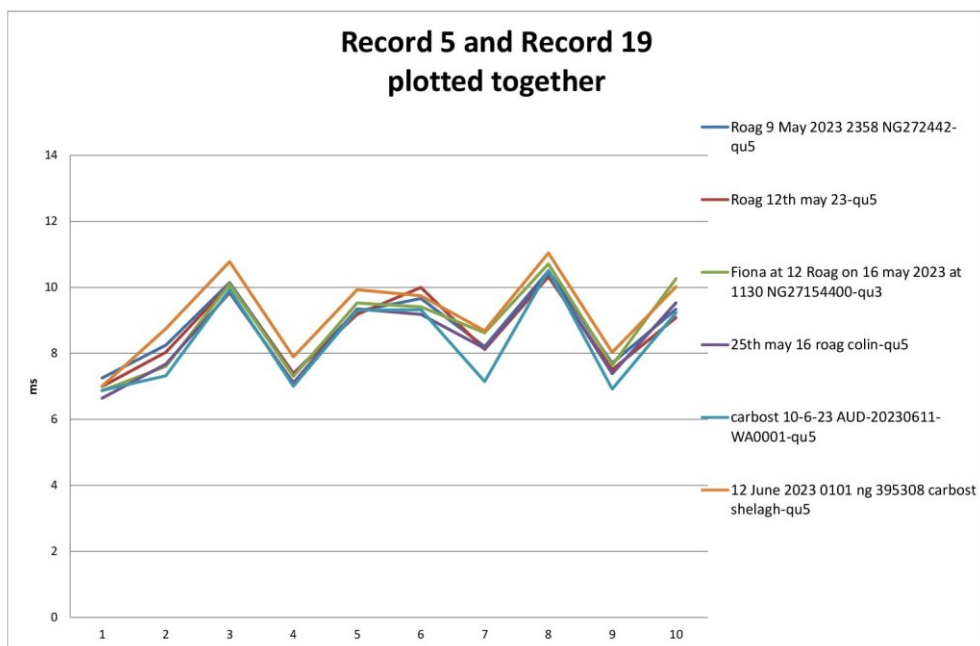
Record 5. May 9th - 25th May Roag
(Similar to Record 19 and a possible move later in the season)



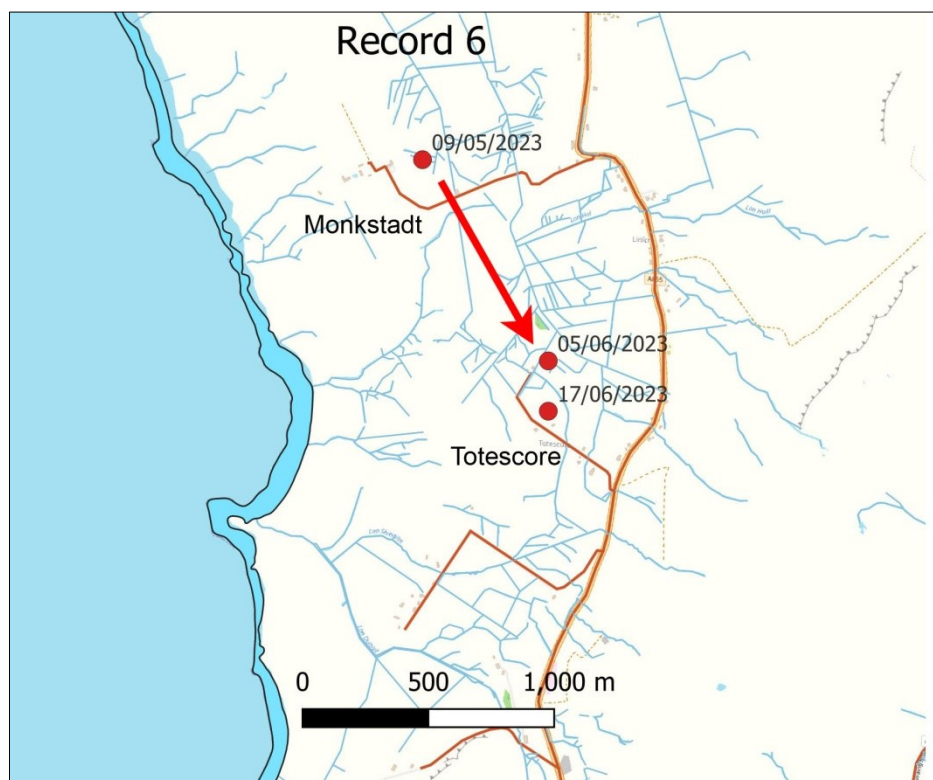
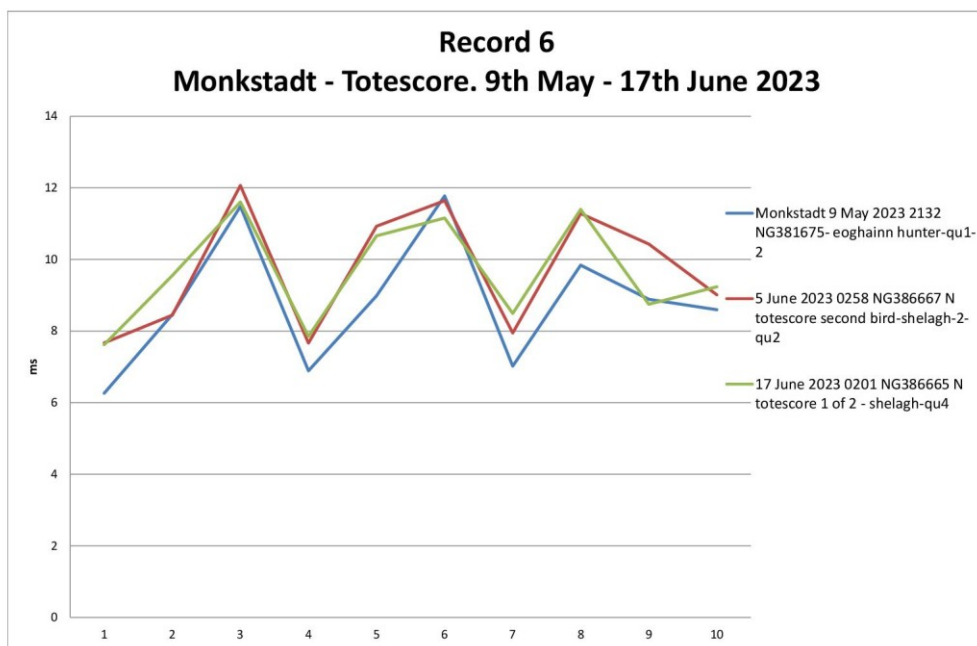
(Similar to Record 5 and a possible move later in the season)



Record 5 and 19 plotted together to show possible move of one male bird

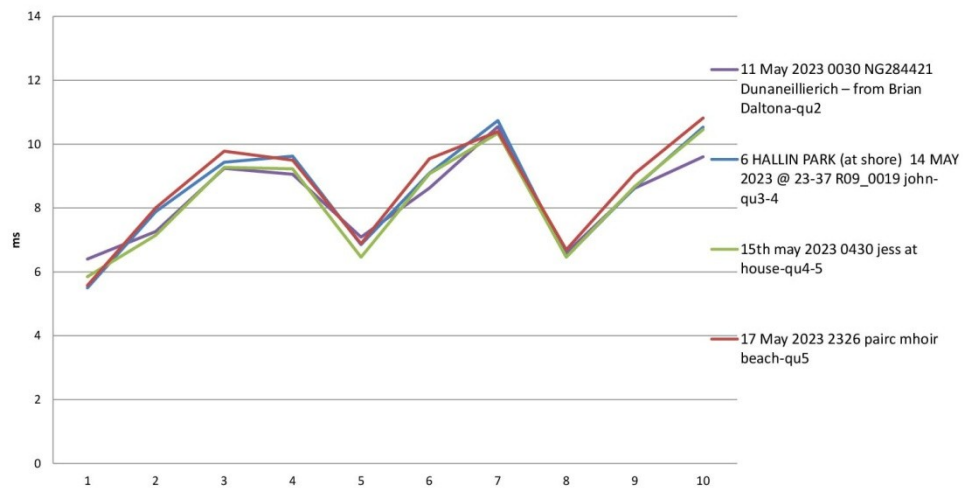


Record 6. May 9th Monkstadt - 17th June Totescore

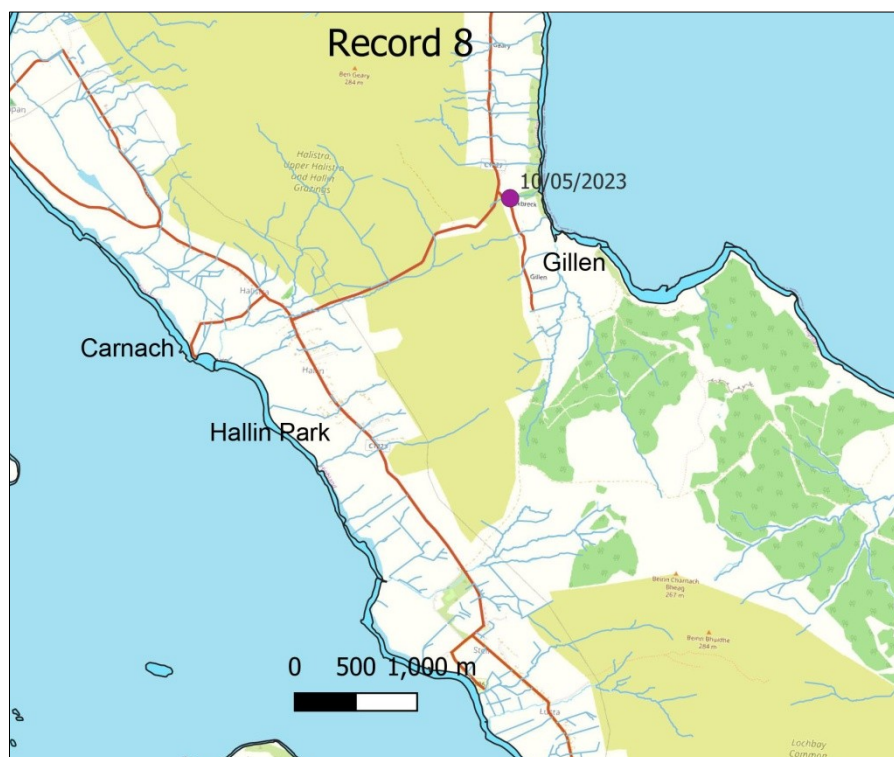
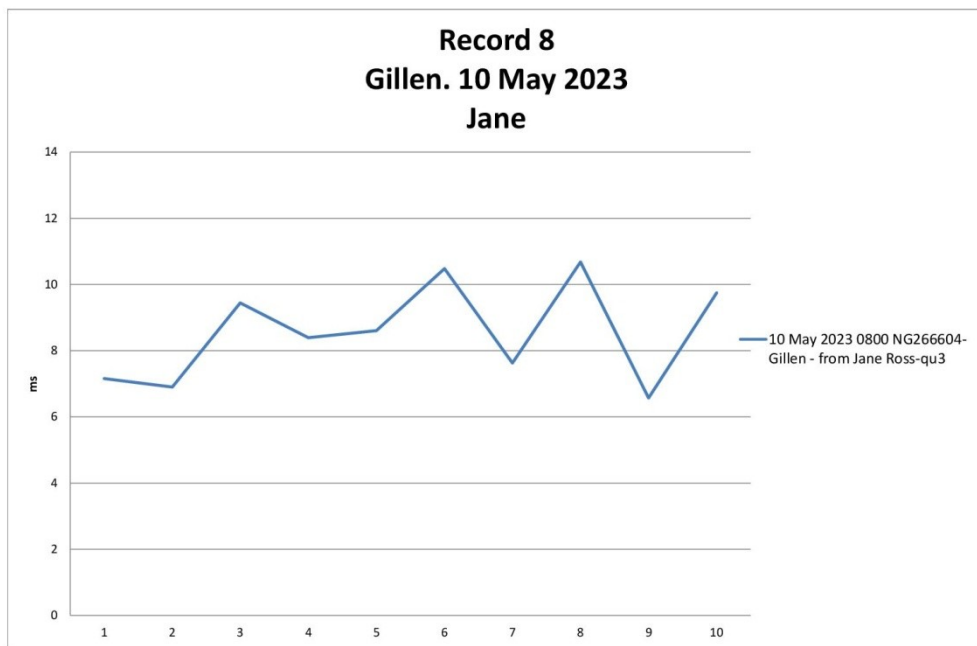


Record 7. May 11th Dunanellerich - May 17th Hallin Park

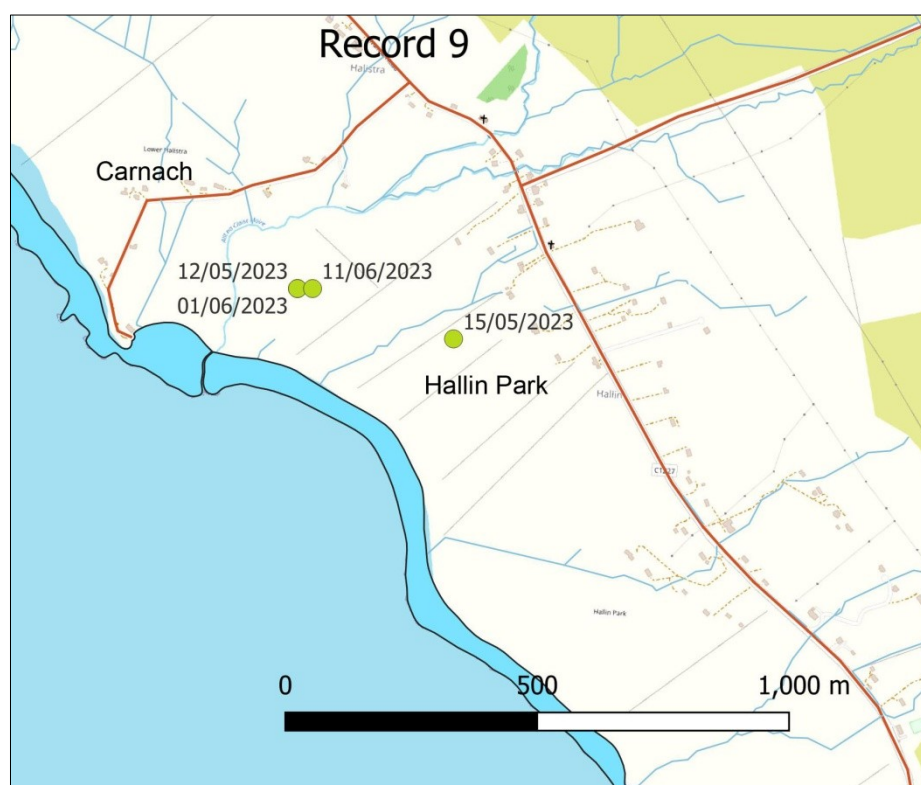
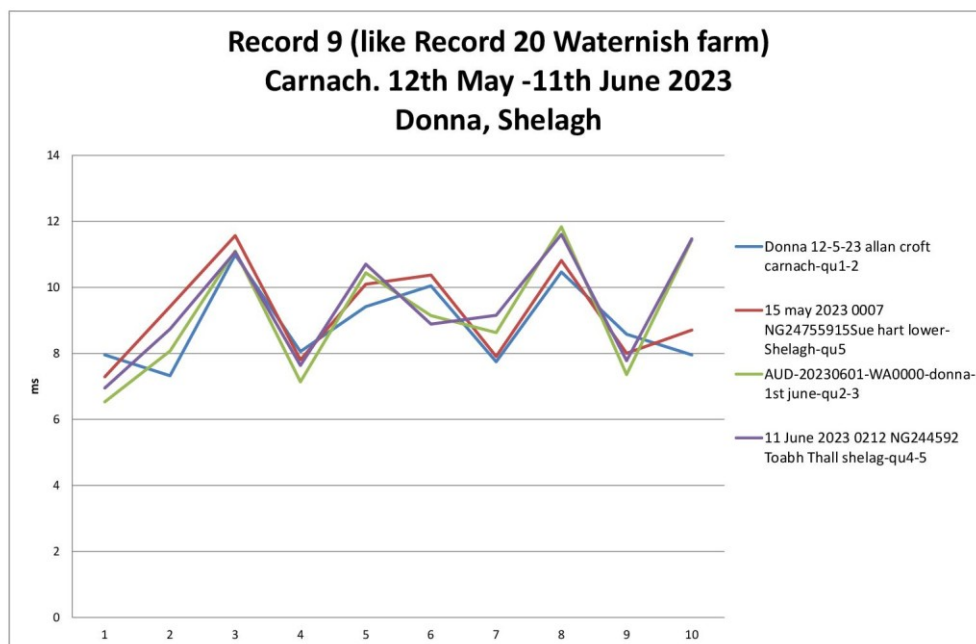
Record 7 Dunanellerich - Hallin Park. 11th - 17th May Brian, John, Jess, Shelagh



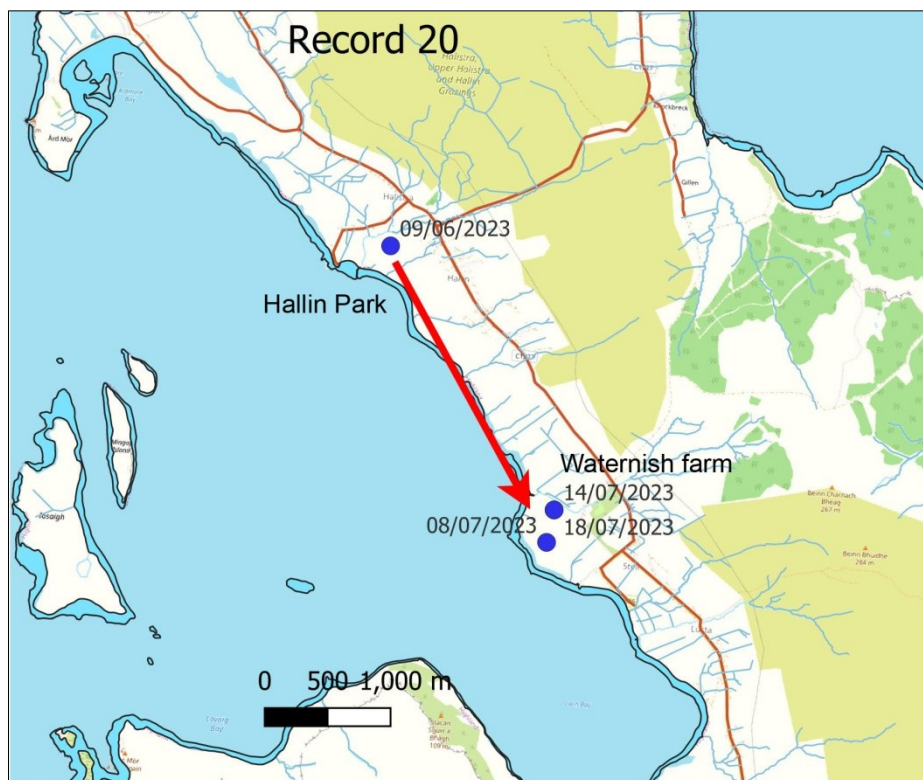
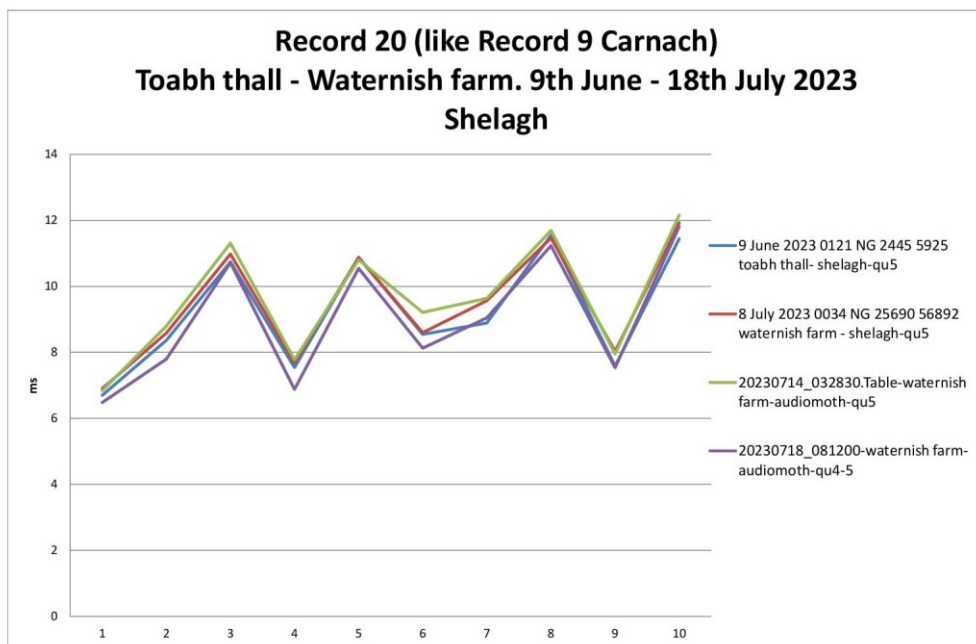
Record 8. May 10th Gillen



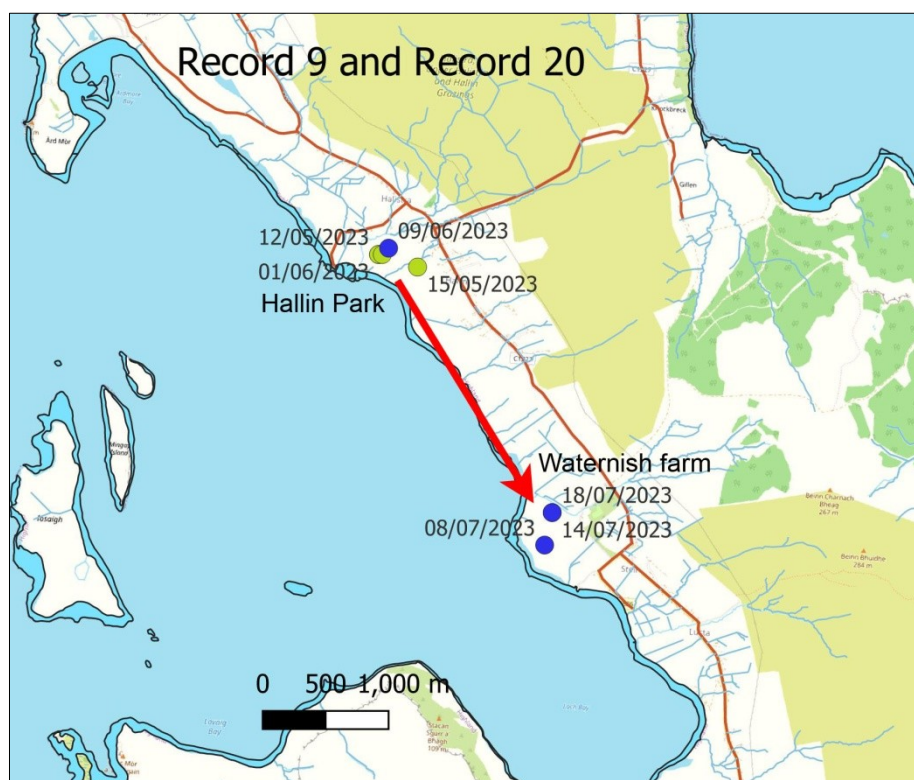
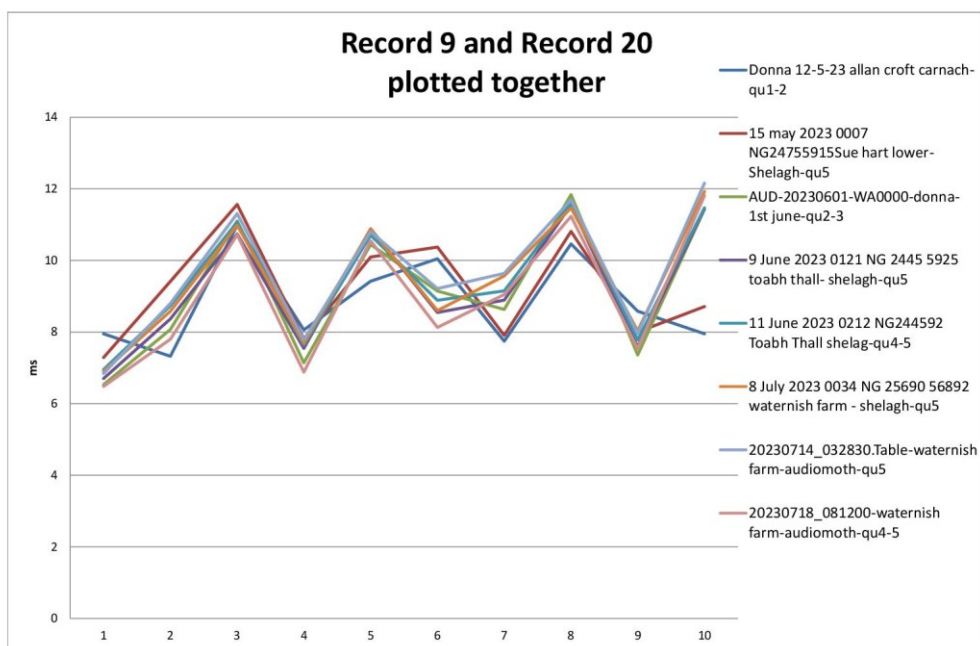
Record 9. May 12th - 11th June Carnach
(Similar to Record 20 and a possible move later in the season)



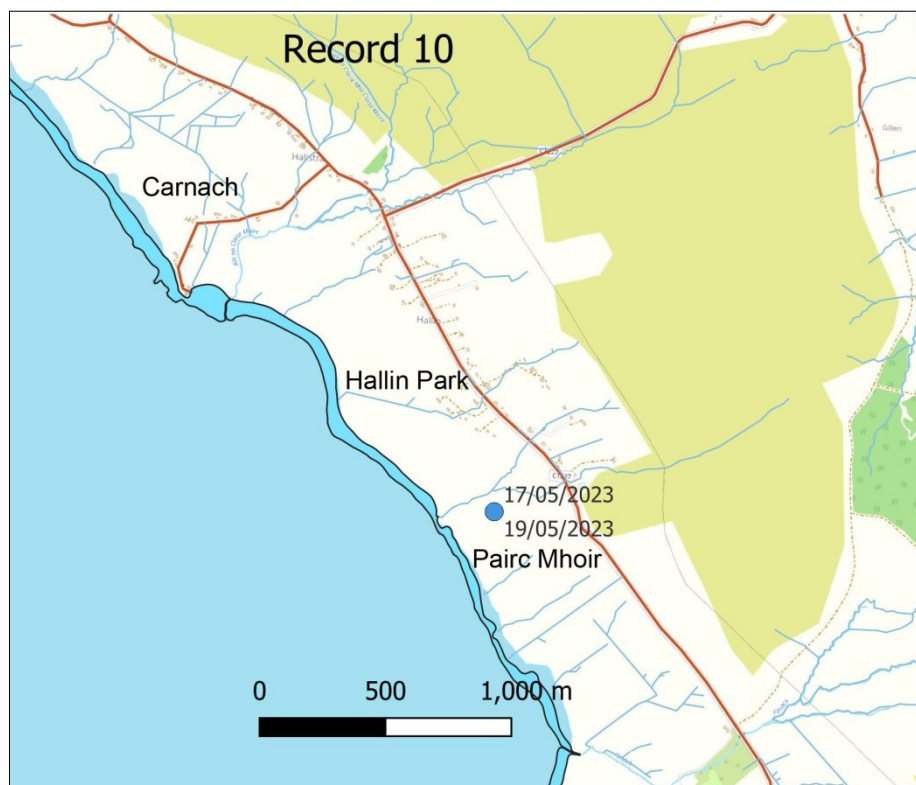
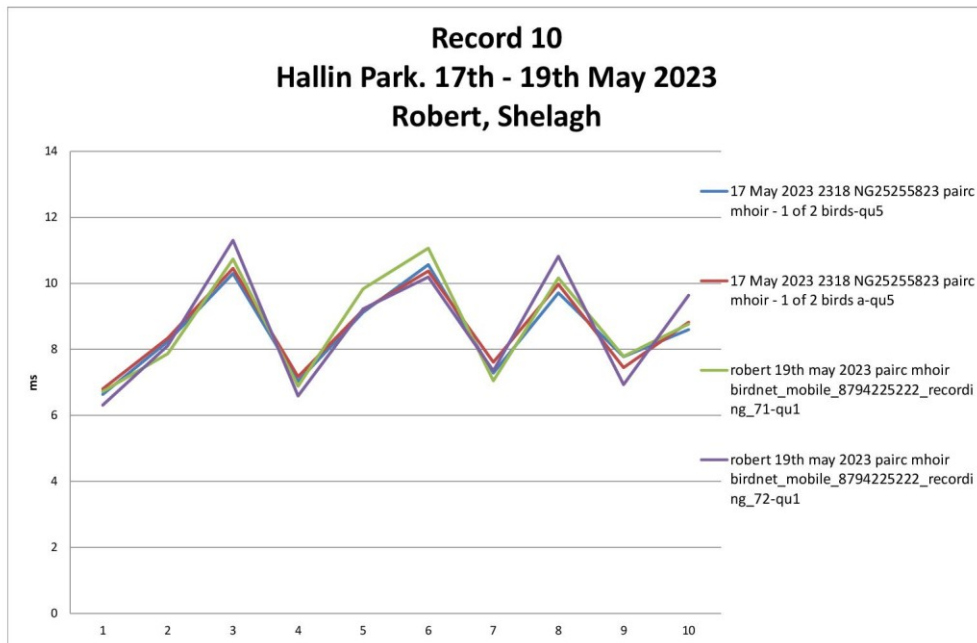
Record 20. May 12th Carnach - June 11th Waternish farm
(Similar to Record 9 and a possible move later in the season)



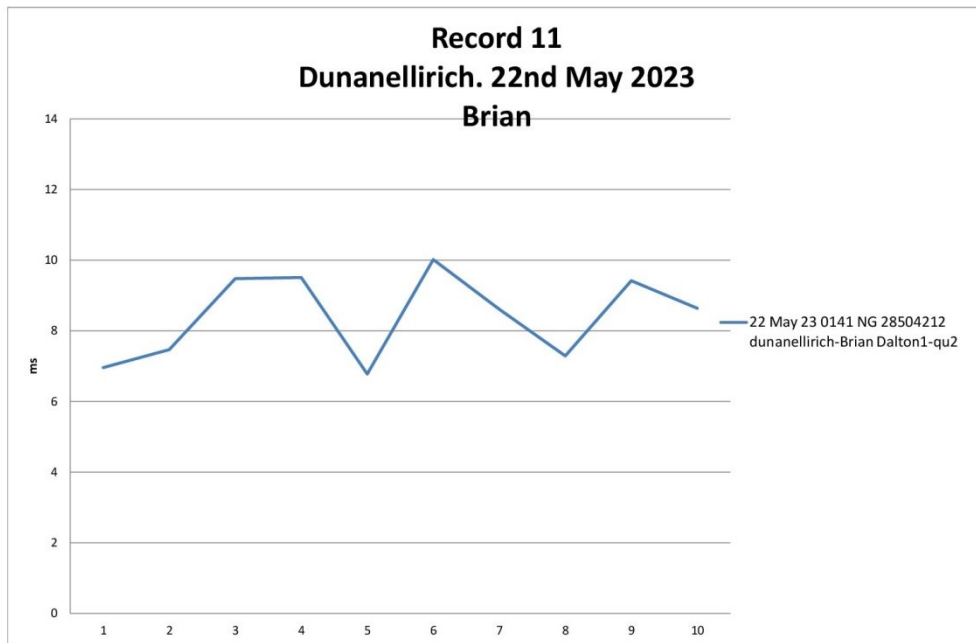
Record 9 and 20 plotted together to show possible move of one male bird



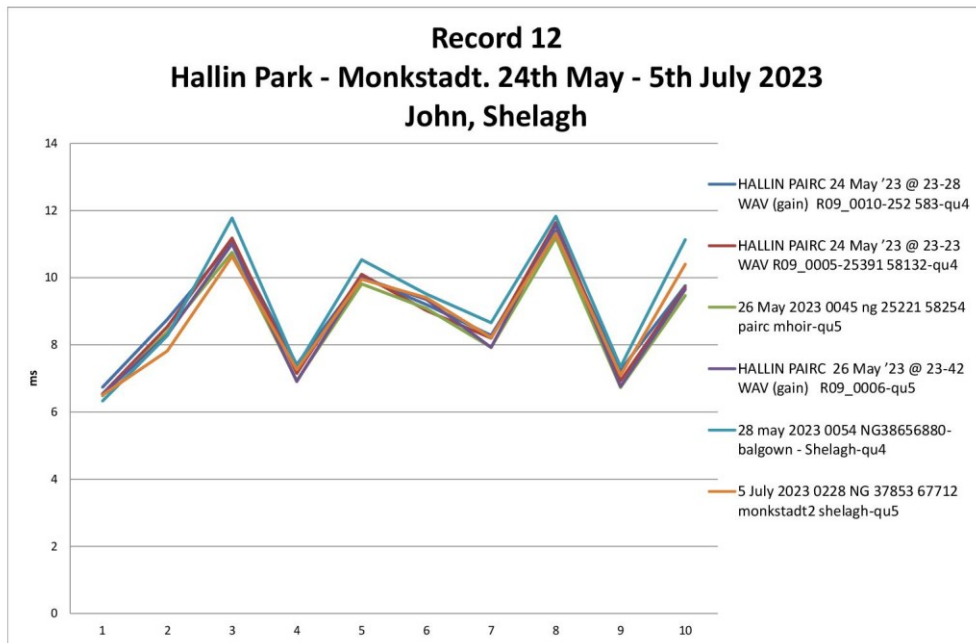
Record 10. May 17th -19th Hallin Park



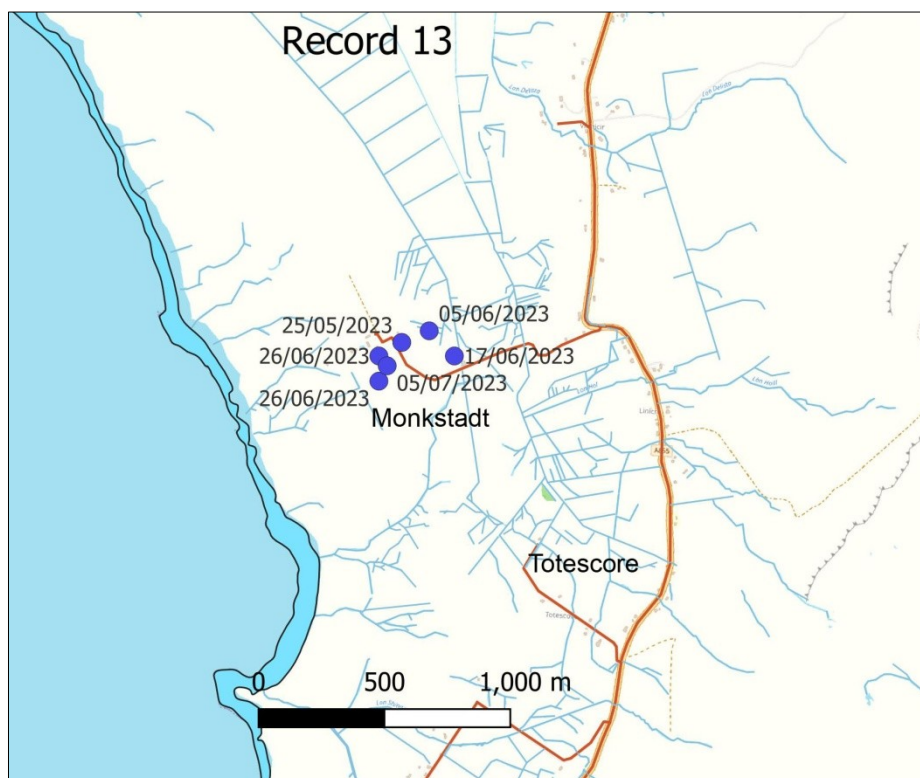
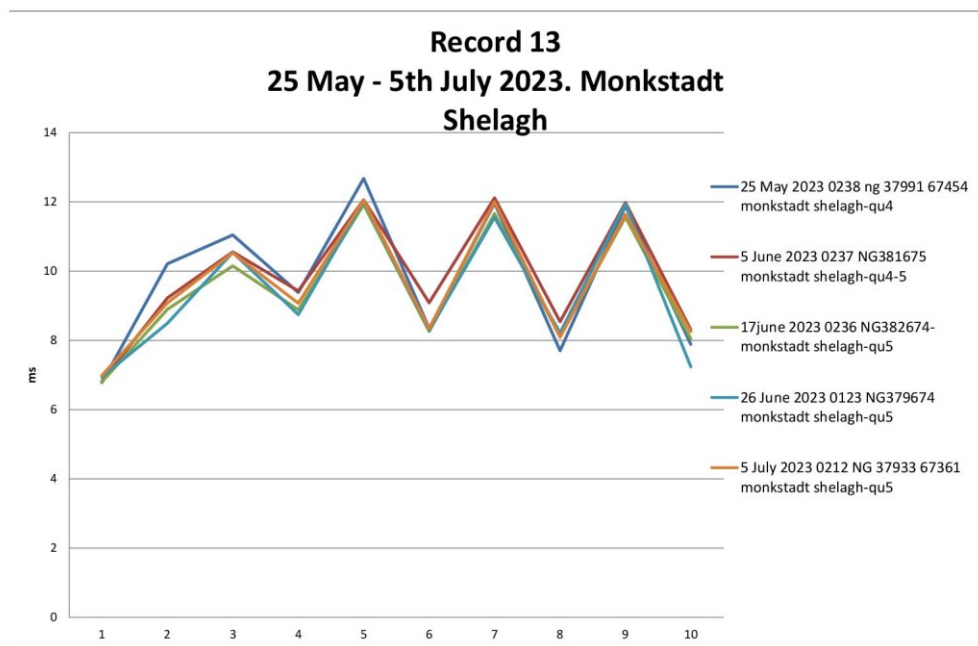
Record 11. May 22th Dunanellerich



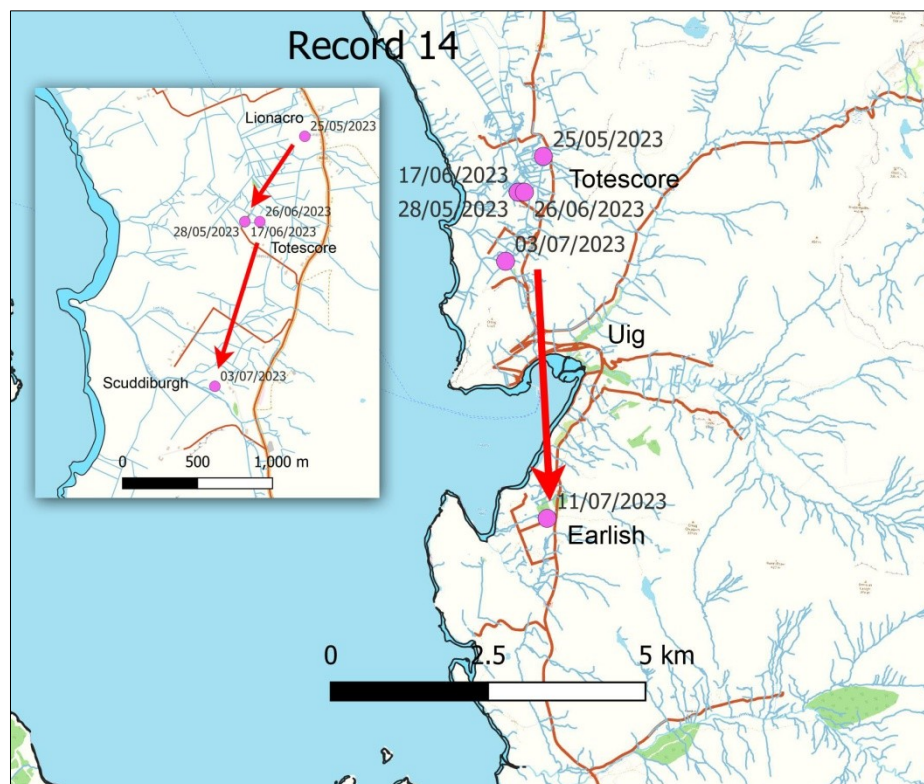
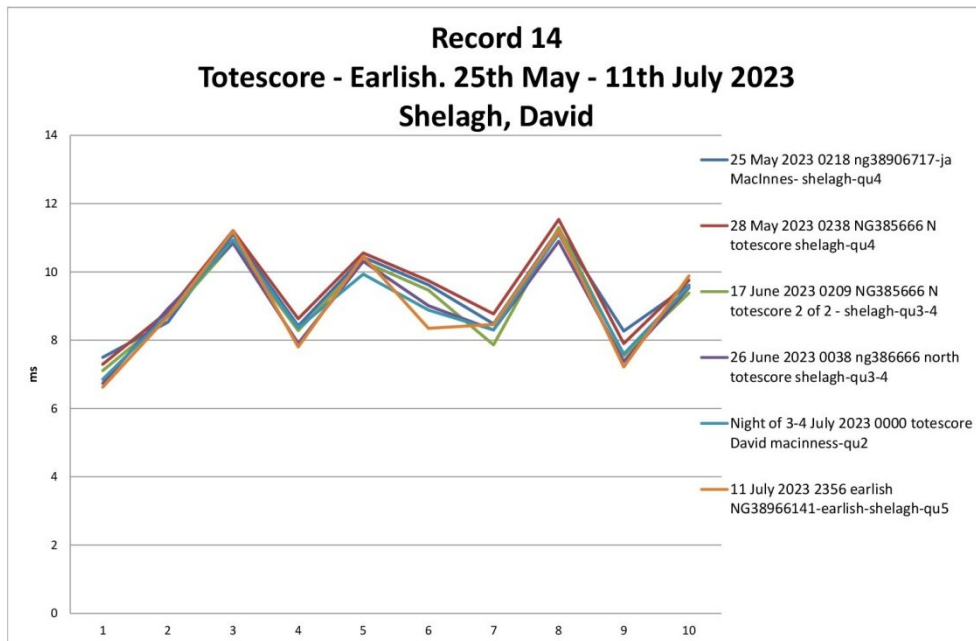
Record 12. May 24th Hallin Park - July 5th Monkstadt



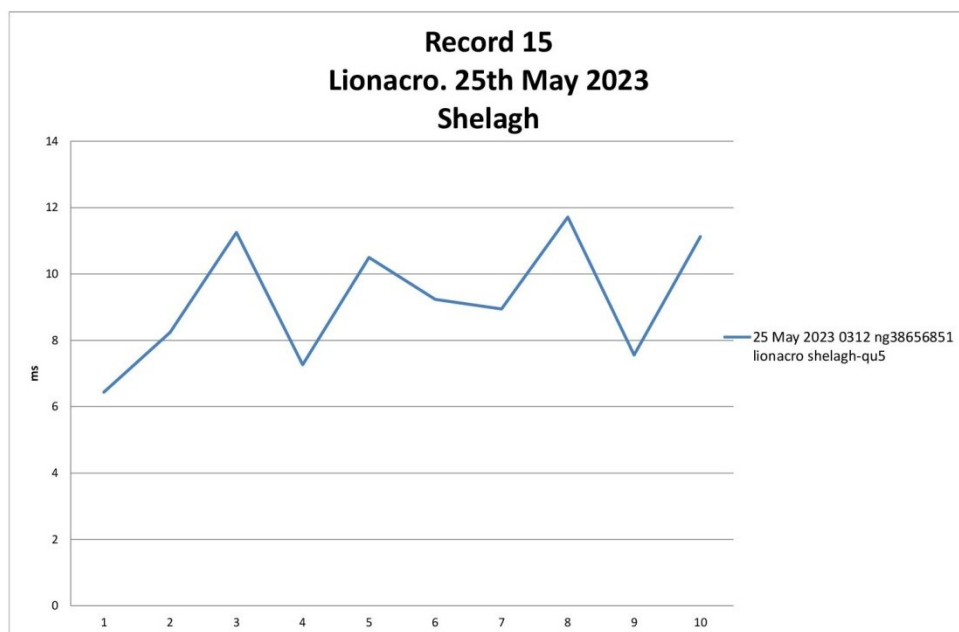
Record 13. May 25th - July 5th Monkstadt



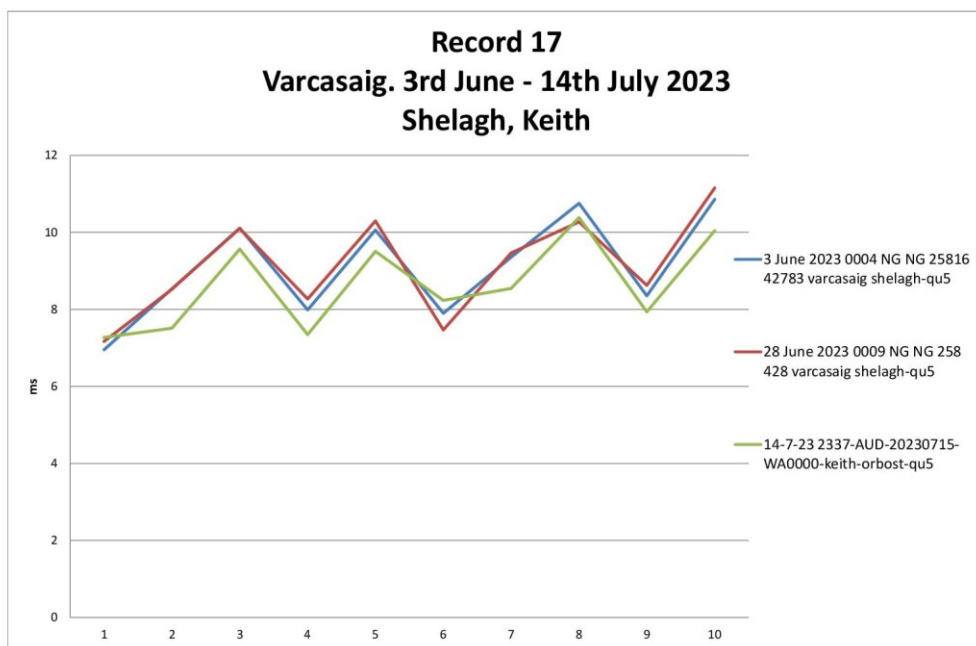
Record 14. May 25th Totescore - July 11th Earlish



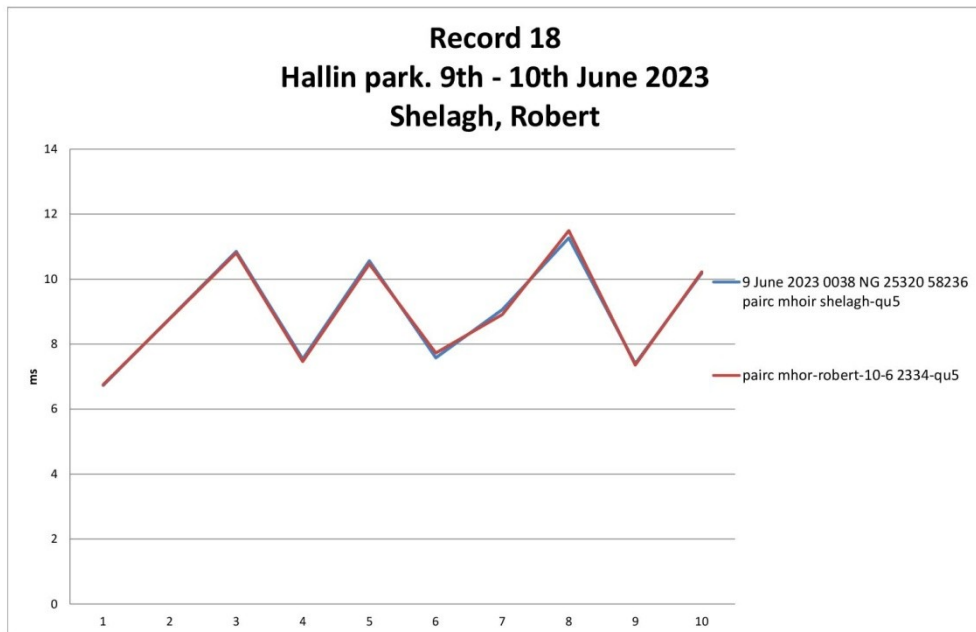
Record 15. May 25th Lionacro



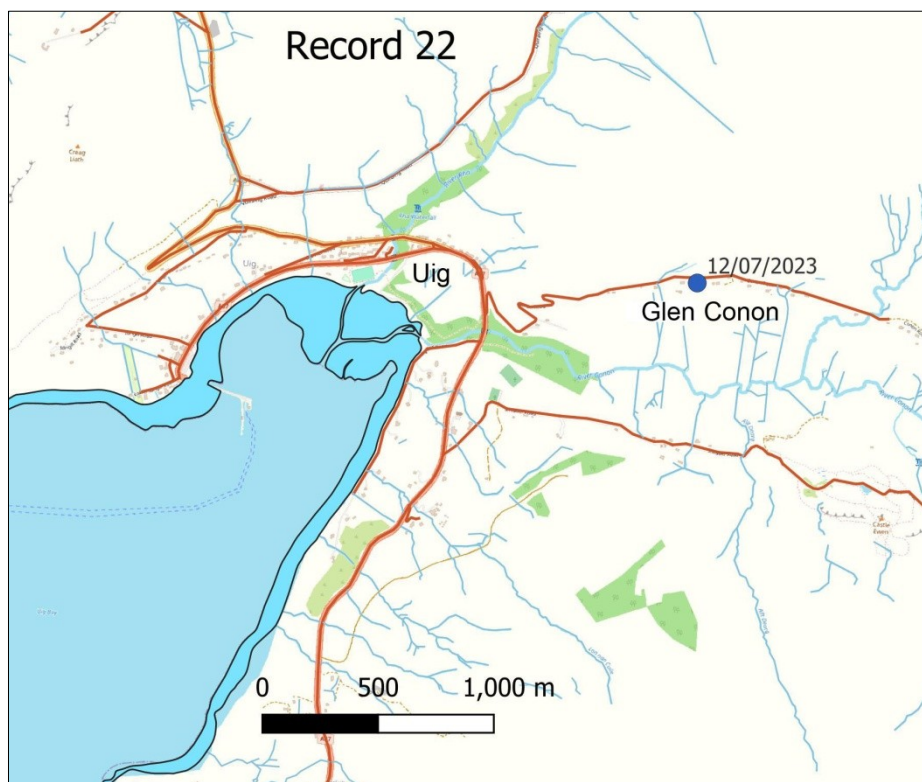
Record 17. June 3rd - July 14th Varcasaig



Record 18. June 9th - 10th Hallin Park



Record 22. July 12th Glen Conon



Summary for Skye

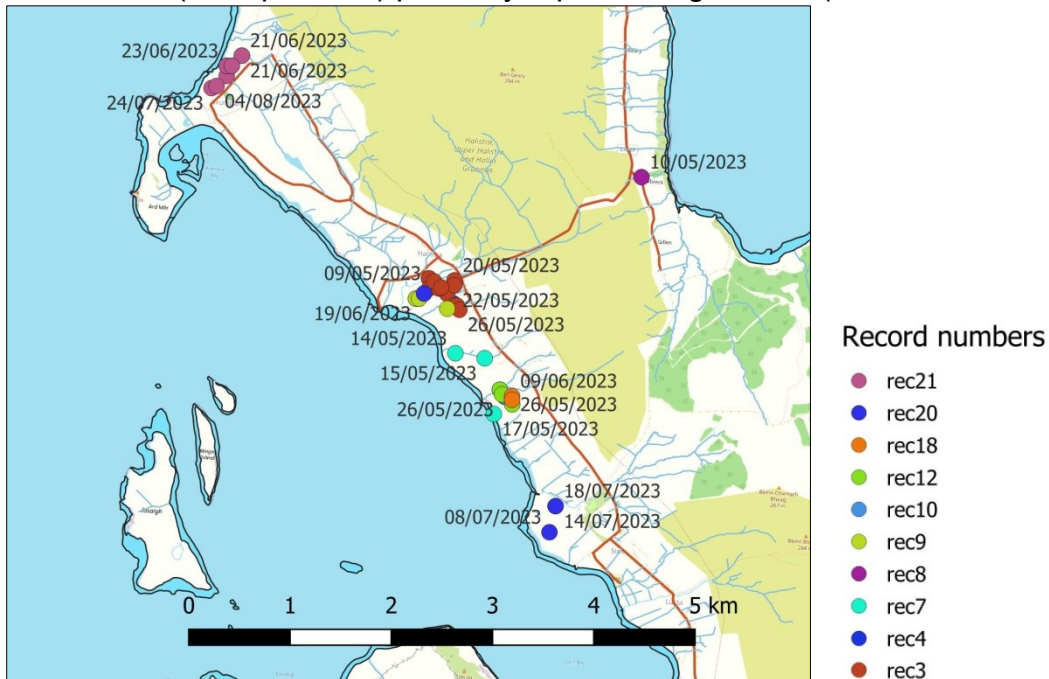
I think these 22 "records" represent probably 18 male individuals that have been recorded in 2023. The population estimate from the PPD recordings on Skye for 2022 was 13-14 calling males, so there is an increase in 2023.

There have been no female calling records. (There were two records of females in 2022, one in 2021 and two in 2020).

Maps of the three main corncrake areas on Skye in 2023

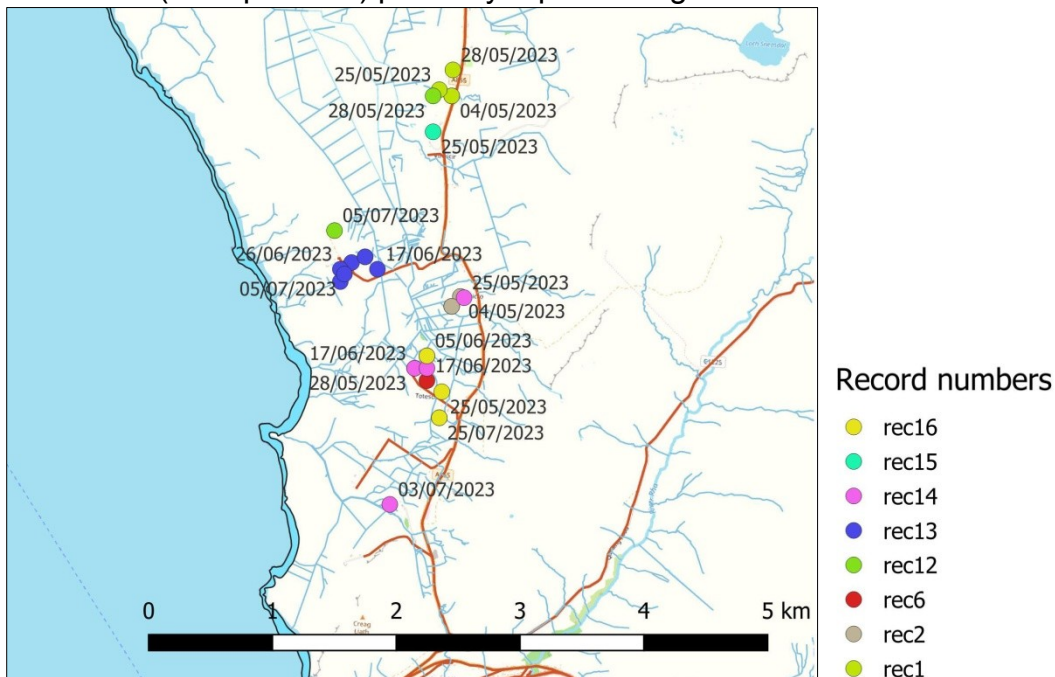
Waternish

10 Records (PPD patterns) probably representing 9 birds (rec9 and rec20 are one bird)



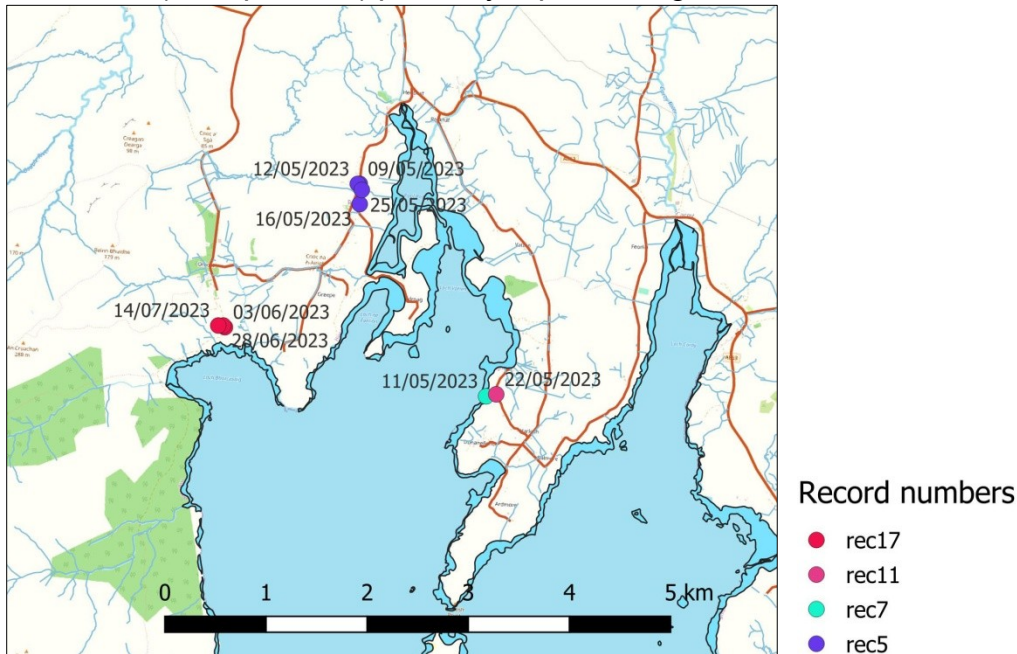
Trotternish

8 Records (PPD patterns) probably representing 8 birds



Harlosh

4 Records (PPD patterns) probably representing 4 birds



Summary for Canna

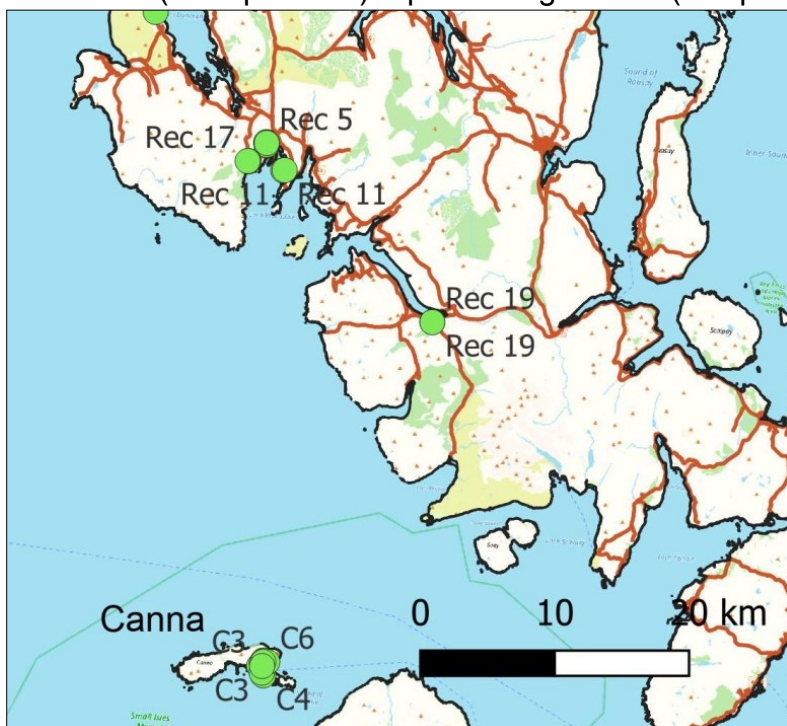
14 recordings from Canna of 8 PPD patterns of 8 male birds made by Bob Swann of the Canna Ringing Team and Raine Clarke.

Bob Swann recorded on two nights in May and ringed the birds as well. He kindly shared his recordings with us.

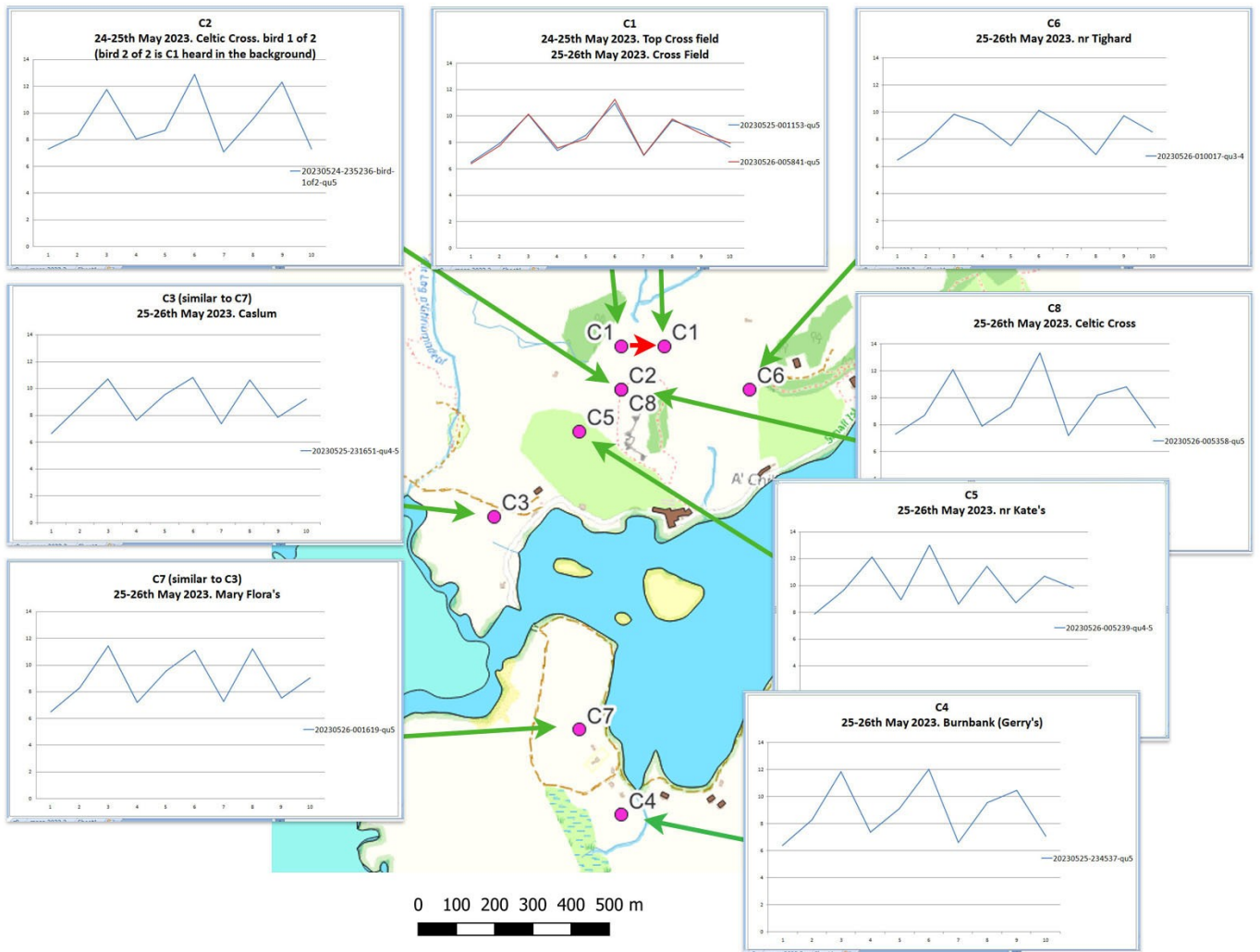
The Canna Ringing Team has counted corncrakes since 1969 and the 2023 count of 11 birds is the highest since 1982.

Canna

8 Records (PPD patterns) representing 8 birds (two pairs are very similar but separately ringed)

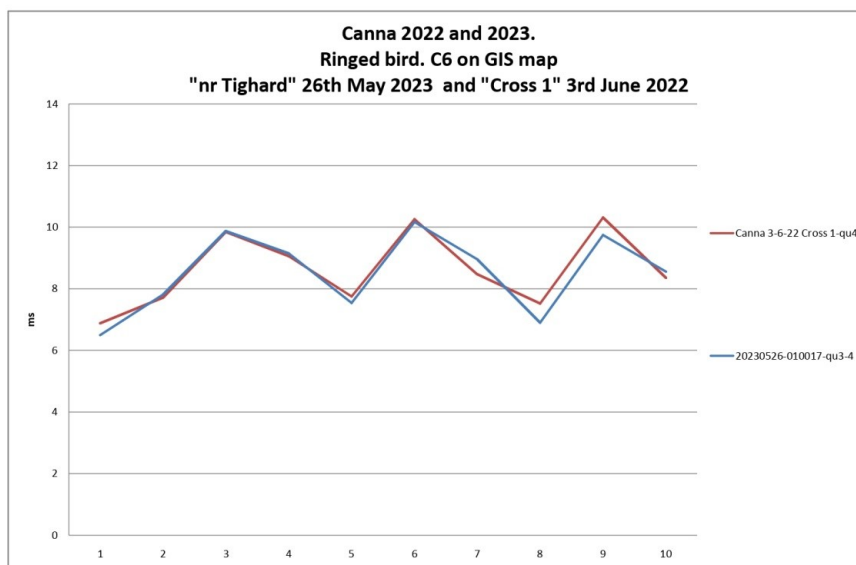


Location and PPD pattern map for Canna

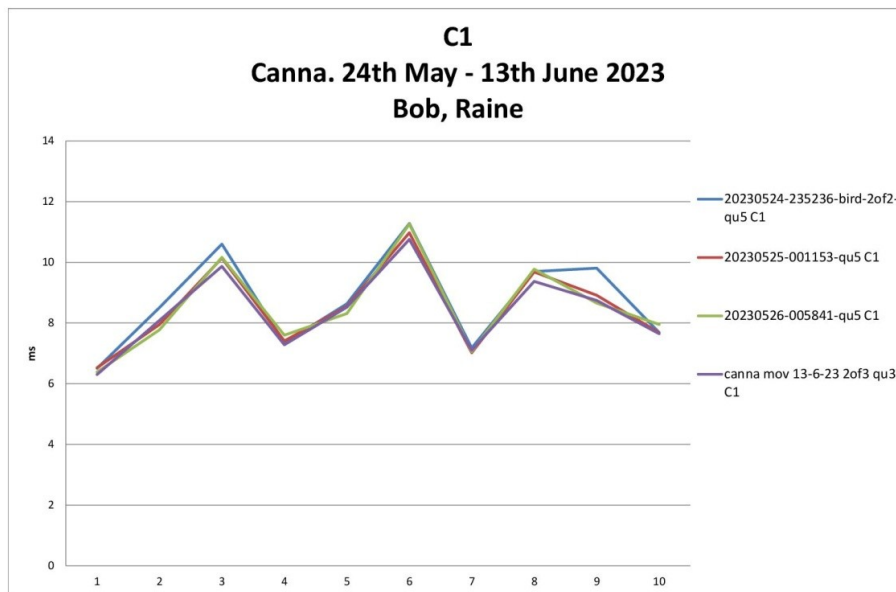


The recordings are from the nights of 24-25th May and 25-26th May.

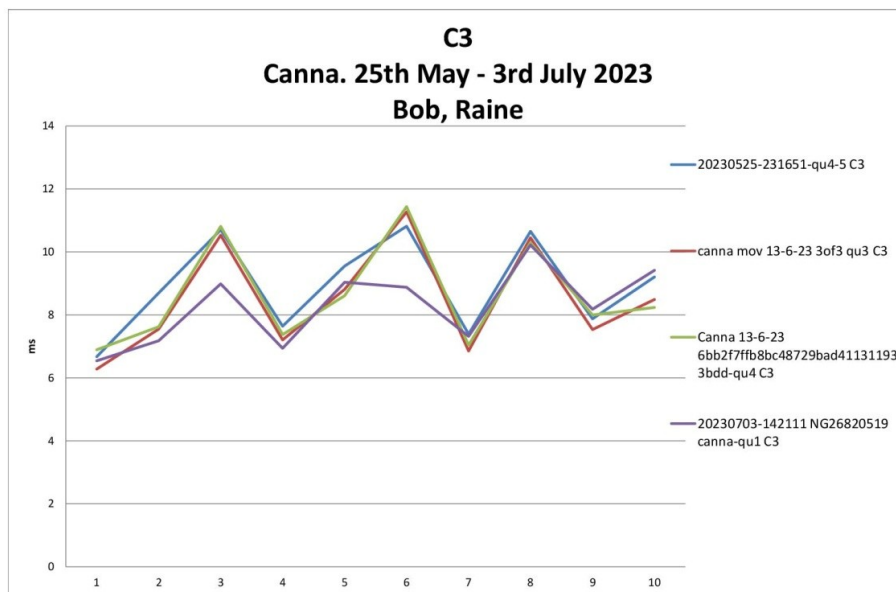
C6 was a bird which had been ringed in 2022. We have PPD patterns for three birds from 2022 from recordings sent by the ranger, Catriona. There is a very good match with C6 and one of these from 2022.



C1 was recorded again on the 13th of June



C3 was recorded twice more on the 13th of June and the 3rd of July



Comparison of PPD analyses from 2023 with 2022

Possible returning birds from 2022

The PPD measurements have been averaged for each recognisable PPD pattern for 2022 and 2023 recordings. This becomes a matrix of correlations in Excel between all the pairs. There are 22 PPD patterns for 2023 and 16 from 2022.

The pairs that match using the correlation coefficient ($r > 0.95$) have been plotted together and any very similar patterns that could be significant are printed below.

They indicate 7 possible returning birds from 2022. There were 13-14 birds estimated from PPD analysis in 2022 so a possible return rate to Skye of about 50%. It is more certain to say that of the 13-14 birds in 2022 6-7 (50%) definitely did not return because the PPD patterns are definitely not matching any in 2023.



