

19/9/24

Canna 2024 PPD analysis of Corncrake calls

Nights of 27-28th, 29-30th, 30-31st May, 4-5th July 2024, another one later in July
Recordings – Bob Swann and Alastair Young. Analysis – Robert Arnold

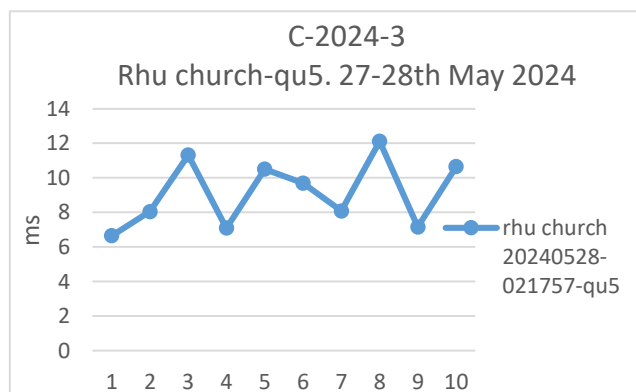
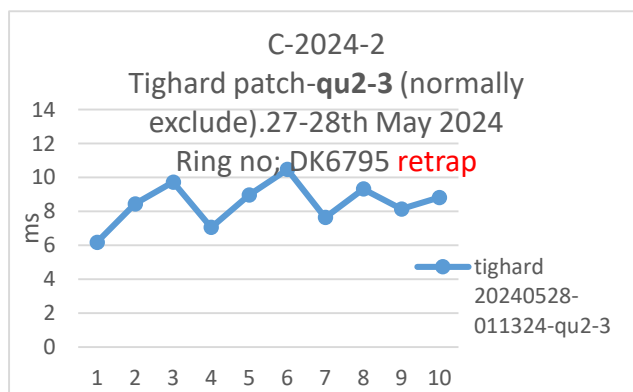
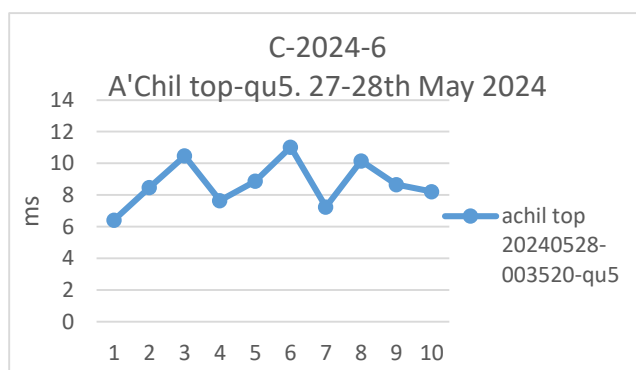
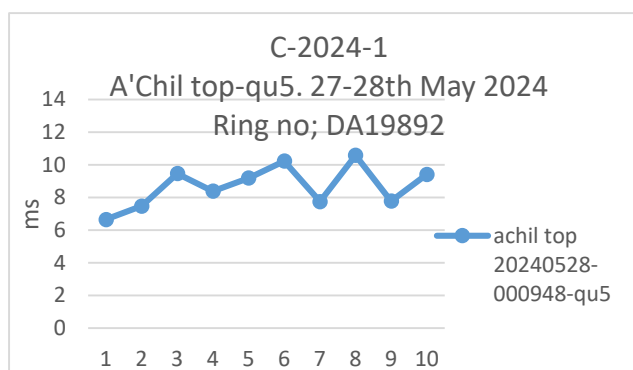
Canna is different to Skye particularly because there is a small area where birds call close together. For instance, four different birds can be detected in one of these recordings. This analysis is mainly restricted to the loudest call at each location.

A range of certainty is useful when attempting to detect movements or match PPD patterns of Corncrakes between survey nights. I suggest; Impossible. Unlikely. Possible. Probable. Definite.

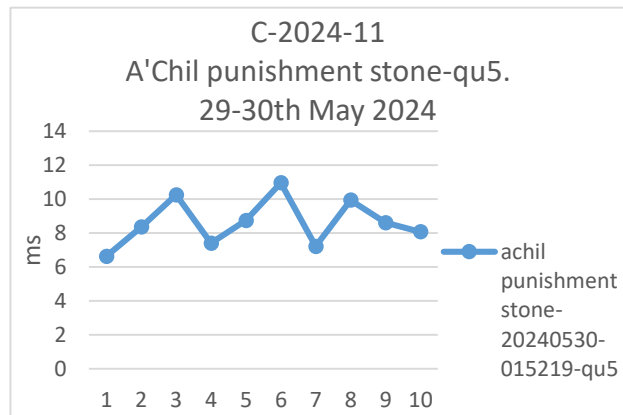
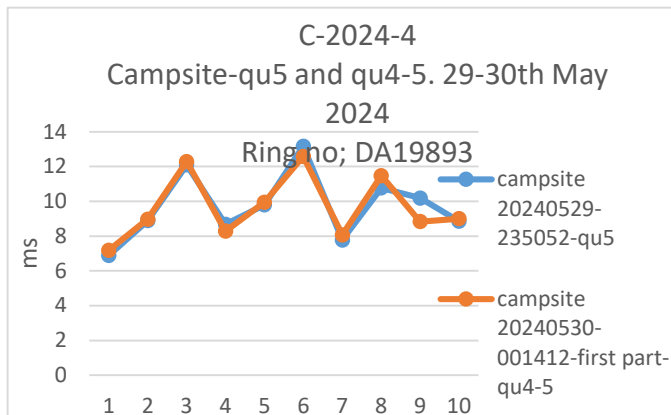
In order to track Corncrakes with some certainty recordings need to be qu4 or qu5 (my normal estimated measure of clarity of the recording and lack of ambiguity in the start of the pulses) and there must be recordings for all the calling birds heard on all the survey nights. This is impossibly difficult to achieve so the result of any PPD analysis will be uncertain to some degree. However some conclusions or speculations are still possible with different degrees of certainty.

It seems that in a few cases birds have what I have called a 'mushy' voice, with indistinct pulses which could be a sign of disease or other vocal disability. On Skye there have been very occasional birds that cannot be recorded better than qu2-3, despite many different attempts. One of these Canna recordings (C-2024-2 at Tighard place, the 2023 ringed retrap) may be a bird like this but it may be just too high an input for the recording device, I cannot say which it is from one recording.

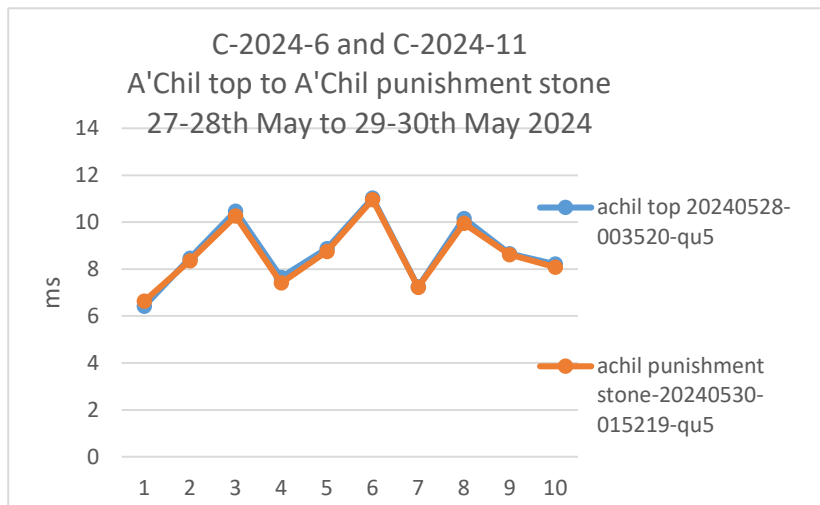
27-28th May 2024, 5 recordings (one from Gerry's is not shown here but is shown with a matching one on 4-5th July);



29-30^h May 2024, 3 recordings (two at Campsite matching)

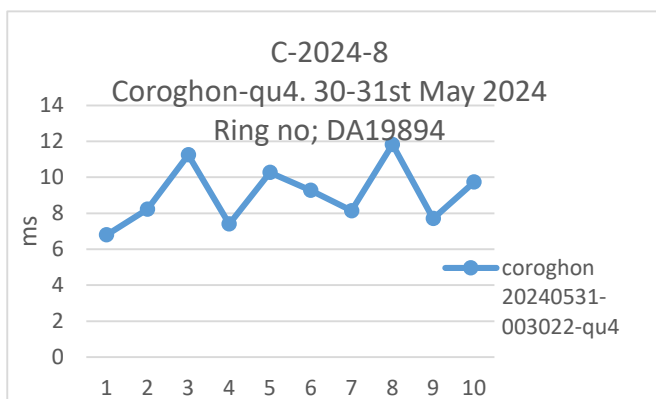
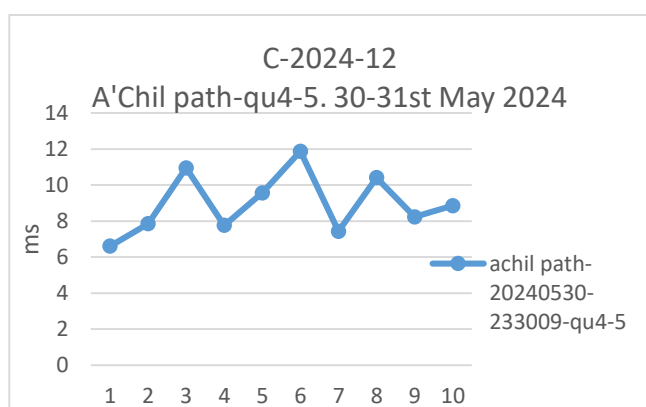
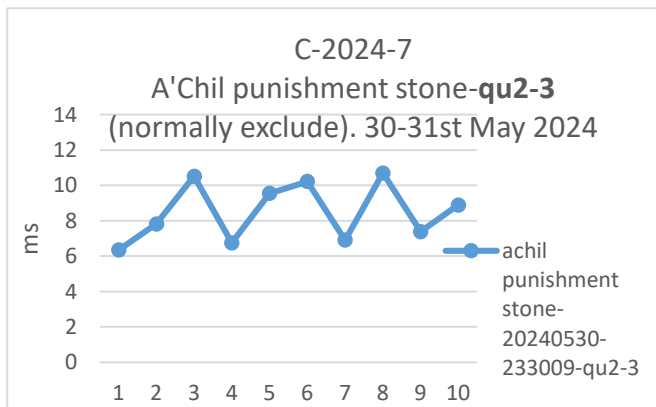


Match of PPD patterns suggesting a probable move, red arrow on the map.



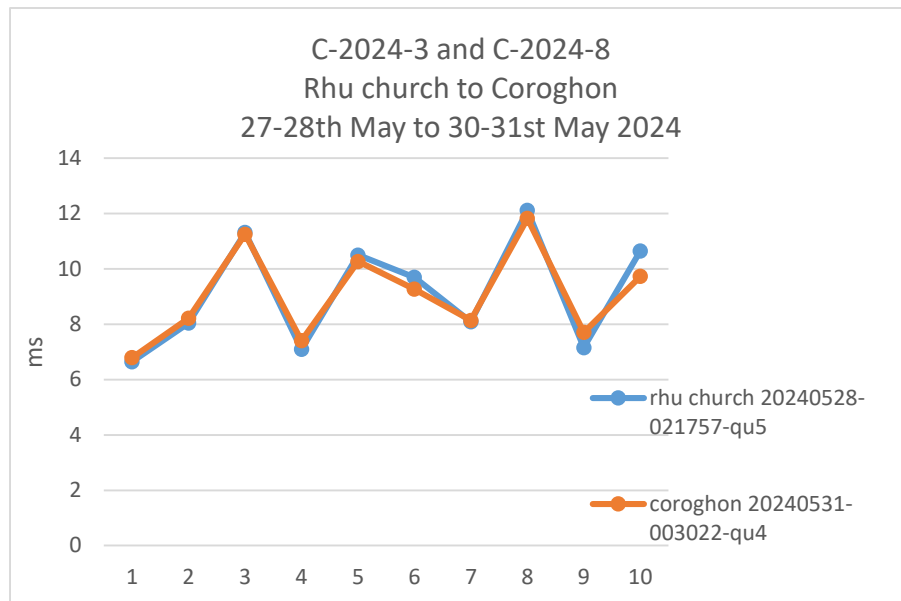
30-31st May 2024, 3 recordings.

(C2024-7 is included despite being qu2-3 because it was only detected in this recording);



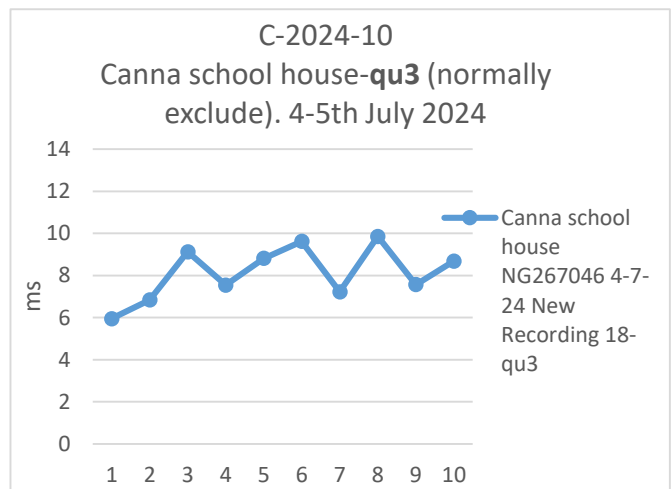
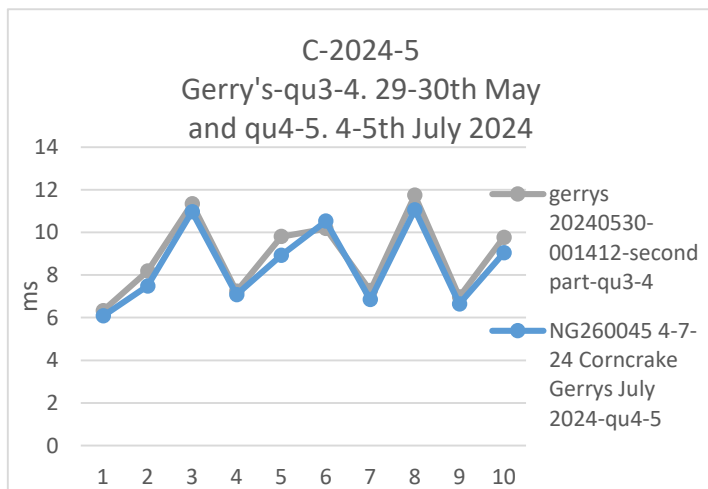
Match of PPD patterns suggesting a probable move, red arrow on the map.

The two locations are very close and so it is more likely to be a move than two birds with the same PPD pattern, unless they were recorded calling at the same time, which I don't know.



4-7th July 2024, 2 recordings

(2 shown at Gerry's, one from 29-30th May, which match well);



Map of Canna Harbour

Black text for locations and red arrows for possible moves. PPD numbers and dates in white with markers coloured coded by PPD pattern.



original file name	night of	location	PPD	qu
20240528-000948	27-28 may	A'Chil top	C-2024-1	5
20240528-003520	27-28 may	A'Chil top	C-2024-6	5
20240528-011324	27-28 may	Tighard patch	C-2024-2	2or3
20240528-021757	27-28 may	Rhu church	C-2024-3	5
20240529-235052	29-30 may	Campsite	C-2024-4	5
20240530-001412	29-30 may	Campsite	C-2024-4	4or5
20240530-001412	29-30 may	Gerrys	C-2024-5	3or4
20240530-015219	29-30 may	A'Chil punishment stone	C-2024-11	5
20240530-233009	30-31 may	A'Chil punishment stone	C-2024-7	2or3
20240530-233009 (not loudest, no ppd chart above)	30-31 may	A'Chil punishment stone	(C-2024-9)	4or5
20240530-233009	30-31 may	A'Chil path	C-2024-12	4or5
20240531-003022	30-31 may	Coroghon	C-2024-8	4
Canna school house NG267046 4-7-24 New Recording 18	4-5 july	School	C-2024-10	3
NG260045 4-7-24 Corncrake Gerry's July 2024	4-5 july	Gerrys	C-2024-5	4or5

red denotes low quality

Summary of 2024 data

The data for this analysis was from 11 recordings on 4 different nights, from which 12 PPD patterns were extracted. Three pairs of PPD patterns matched and so this reduces to 9 probable birds. Two of these pairs are probable moves and one pair included a pattern that was not the loudest at the location; C-2024-9 from 'A'Chil punishment stone' on 30-31st May which is identical to C2024-12 from A'Chil path, also on 30-31st May, and so the PPD chart for C-2024-9 is not displayed above.

The two probable moves between locations were detected, both approximately 180 metres between the locations listed. If they were not moves there could be two more birds but this is unlikely because the matching was very close. There were two or three more locations with calling birds but they were not recorded.

In the original paper about Corncrake vocalization, Peake *et al.* 1998, make a widely accepted conjecture that birds keep their vocal characteristics for life. This is on the evidence from only three individuals in 1993 and 1994. The data from Canna in this summary provides two cases of ringed retraps with recordings and PPD patterns from 2023 and 2024 to add to the evidence for the conjecture.

See the relevant text from the paper below;

IBIS 140: 120–127

Individuality in Corncrake *Crex crex* vocalizations

T. M. PEAKE^{1,2}, P. K. MCGREGOR¹, K. W. SMITH², G. TYLER², G. GILBERT² & R. E. GREEN³

¹ Behaviour and Ecology Research Group, Department of Life Science,
University of Nottingham, Nottingham NG7 2RD, UK

² Research Department, Royal Society for the Protection of Birds, The Lodge, Sandy, Bedfordshire SG19 2DL, UK

³ Royal Society for the Protection of Birds, 17 Regent Terrace, Edinburgh EH7 5BN, UK

Between-year analyses

We assessed between-year variation using the combined discriminant function analysis. Discriminant functions were

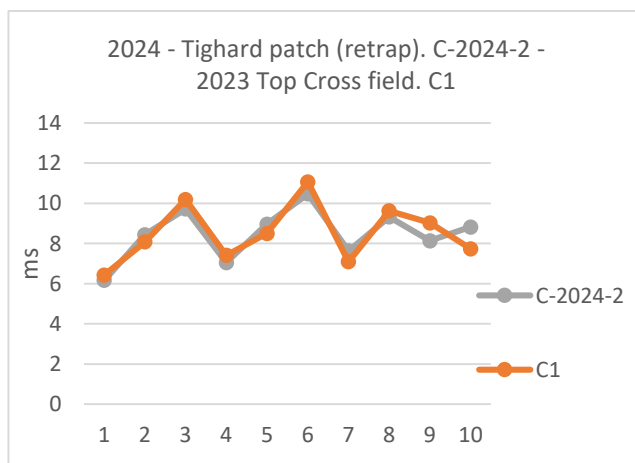
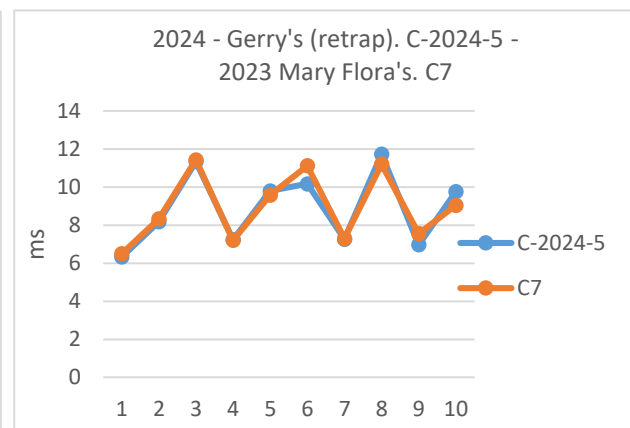
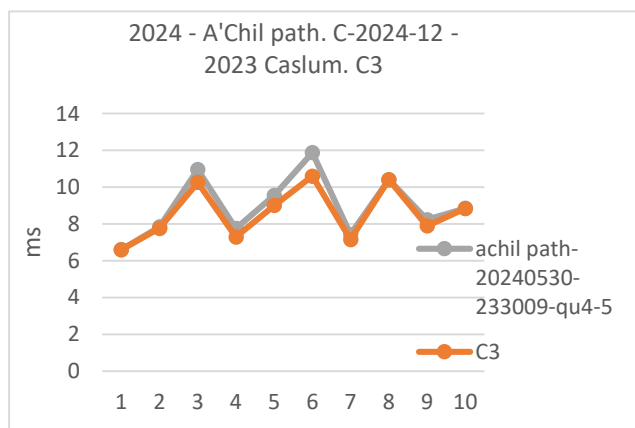
created using the entire 1993 data set and were used to classify calls from the 1994 birds. All calls were correctly classified between years for the three individuals recorded in both years.

Probable birds by PPD analysis from 2024 and 2023 compared

Comparing the patterns of 9 probable birds from 2024 with the 8 from 2023 labelled C1 to C8, there are 3 matches which are nearly identical. However these are like common patterns that appear on Skye and so are not necessarily a good indication of returning birds, except that two are ringed birds that have been retrapped and so are 'definitely' returning birds. The 5 probable birds from 2023 that are not represented in 2024 are a good indication of non-returning birds.

Proportion of 2023 males definitely not returning to Canna is 0.63.

	total probable birds	possible returns	definite non-returns
2023	8	na	na
2024	9	3	5
proportion		0.38	0.63



Canna census of calling male Corncrakes 1969-2024
from Swann 1986 Green and Gibbons 2000 and emails 2023-4

