

## BRIEFING NOTE FOR DIRECTOR OF GREEN ECONOMY

**Meetings:** Meeting with [REDACTED]  
Meeting with NFU and Liam McArthur

**Date:** 23 May 2025

<b>What</b>	<p>Continued pressure surrounding raven licenses on farms in Orkney particularly during lambing season. [REDACTED] has some history of raven impacts. We have issued licences to allow raven control and disturbance through scaring. Inevitably there are also other issues at play here in terms of ongoing dialogue regarding Greylag geese population management and control and also issues re involvement in the Orkney native wildlife project.</p> <p>Robbie and [REDACTED] have agreed to meet with the farmer/s affected and also local NFUS and Orkney Islands Council to discuss these issues.</p>
<b>Who</b>	[REDACTED], NFU, OIC Economic Development Officer, MSP Liam McArthur and local Vet
<b>Where</b>	Orkney
<b>When</b>	Friday 23 May 2025
<b>Briefing Author(s) &amp; contact number(s)</b>	[REDACTED]
<b>Annexes</b>	<p>Annex A: Meeting with [REDACTED]</p> <p>Annex B: Meeting with NFU and Liam McArthur</p> <p>Annex C: Letters from MSPs</p> <p>Annex D: Logistics</p> <p>Annex E: Orkney Raven Licence Data Summary 2020-2024</p>

## Licensing Comments

██████████ has had licences for the prevention of serious damage to livestock year on year from 2018, last year he had a bag limit of 5 which he shot within 7 days of being granted the licence.

This year his licence was renewed at 5 which he was issued on 28th March.

On 31st March he had shot his 5 birds. He spoke to ██████████ requested 5 more; which we amended his bag limit on the 31st March. So in 2025 so far, he is able to shoot 10 ravens.

His current licence number is 289561 which runs until 15th June

### **ANNEX A: Meeting with ██████████ at 11:15am.**

Will include someone from the local vet practise and SAC in attendance also. Highly likely will involve others who ██████████ (without telling us) such as neighbouring farmers, local councillor and local media.

[Ravens - Request from ██████████ to meet with Robbie - 28 March 2025 \(A5108621\)](#)

**(Local Ops comments)** ██████████ has voiced his concerns over the perceived growing number of Ravens on Orkney and the associated damage they cause to his and other businesses including the animal welfare aspects (local vet attending to raise this point and legal duty for farmers to meet certain standards likely to be raised) and the emotional/mental wellbeing impacts on the farms themselves. He has also flagged impacts to wildlife. Financial impacts will vary somewhat but can be particularly high when breeding stock are being lost to Ravens.

Protected status and licensing process - He has requested that Ravens be removed from a protected species list. Local Ops staff have discussed this in person and made clear to him that that would be highly unlikely but that we do acknowledge the damage being caused by Ravens to his and others businesses so we have offered to explore what could be done to streamline our current licensing process and see if it would be possible for farmers to apply for a license ahead of any damage being caused each year based on likelihood of damage occurring. This would help alleviate some of the frustration that farmers feel when having to wait for a license to be granted whilst harm is occurring to livestock.

Bag limits and Raven census - The topic of bag limits will also be raised and challenged as many farmers believe the bag limits are too small and not evidence based. This has led to an ask for an accurate number of Ravens present on Orkney. We have been gathering some initial thoughts from our Ornithology team on best way forward with a census. This is still to be decided. Current bag limits are based on 10% of total number of problem birds reported. Overall bag limits are not the issue as they are rarely ever met. (see Annex E).

Financial support and technical expertise - Another topic of growing concern is the actual resource within the farming community to apply lethal deterrence when needed. Fewer and fewer farmers have fire-arm licenses or/and don't have suitable experience to shoot ravens. This point is a valid one. The same issue applies to managing goose numbers but we do provide some funding which allows local marksmen to be employed for goose management. The ask for similar for Raven management is very likely.

In terms of having the greatest impact on Ravens using lethal and non-lethal deterrent, the uptake of joint licenses which is more effective for displacing Ravens are still few and far between. Barriers to this should be discussed and likely include extra paperwork, **liability for licence holder** and financial support to employ marksmen who can work across neighbouring farms.

## **ANNEX B: Meeting with NFU, OIC and Liam MacArthur at 2:00pm at naturescot Office**

[\[REDACTED\] response to \[REDACTED\] - Orkney Ravens - First Minister's Questions - 17 April 2025 \(A5108599\)](#)

**(Local Ops comments)** We have been providing advice to local NFU representatives to help them support member farmers experiencing issues with Ravens. At present where possible, we have asked that local Ops are made aware of farms experiencing damage so that we can speed up the process of providing local feedback to our licensing team. We have also offered to visit any of the farms being impacted and requiring a license. Especially those that have not applied for a license previously. Local NFU representatives have acknowledged that they don't see removing Ravens protected status as either likely or feasible in the timeframes required to help farmers now. The financial/economic impacts of Ravens will be raised.

Licensing process – NFU highly likely to raise the potential/desire for farmers to be able to apply for a license ahead of needing one based on the current high likelihood of Ravens causing harm to livestock and businesses. Worth being aware that in some cases damage has occurred out-with lambing and calving times when young Ravens have persistently pecked wrapped silage/haylage bales which results in a loss of livestock feed as it goes off and becomes infected.

Bag limits and Raven census – same concerns as those raised by [REDACTED].

Financial support and technical expertise – same concerns as those raised by [REDACTED]. To this end we suggested NFU also engage with OIC Economic Development to make them aware of the economic impacts and explore local option for financial support.

Other political involvement – note that Edward Mountain MSP and Jamie Halcro-Johnston MSP have both written letters – Mr Mountain to Nick and Mr Halcro-Johnston to Minister Fairlie - to expedite a solution on behalf of their constituent – Mr Mountain has specifically raised the point of compensation to farmers for losses if licenses cannot be issued quickly. There is clearly political interest in this meeting; PQ/ FMQs have been raised, and it is likely that similar PQ/FMQs will be raised on the outcome of this meeting (See Annex C for political letters).

### **Suggested Priorities for Naturescot**

1. Work with Licensing Team to decide on criteria/process to allow farmers to apply for License ahead of requiring using one (preventative approach).
2. Undertake or commission a census of non-breeding and breeding Ravens on Orkney to better inform bag limits and inform other adaptive management measures (i.e. identify roosting sites where measures could be implemented to displace Ravens legally). A census would potentially provide evidence required for business cases for those seeking financial support.
3. Commission BTO to re-run 2019 population modelling once we have more data for Orkney. This model can potentially be used to underpin Licensing approach. <https://www.nature.scot/sites/default/files/2019->

[01/Publication%202019%20-%20SNH%20Research%20Report%201012%20-%20Population%20modelling%20for%20the%20Scottish%20Northern%20raven%20population.pdf](#)

4. Explore internally or/and raise to SG whether financial support can be given to farmers to enable the effective use of licenses granted (i.e. fund marksmen).

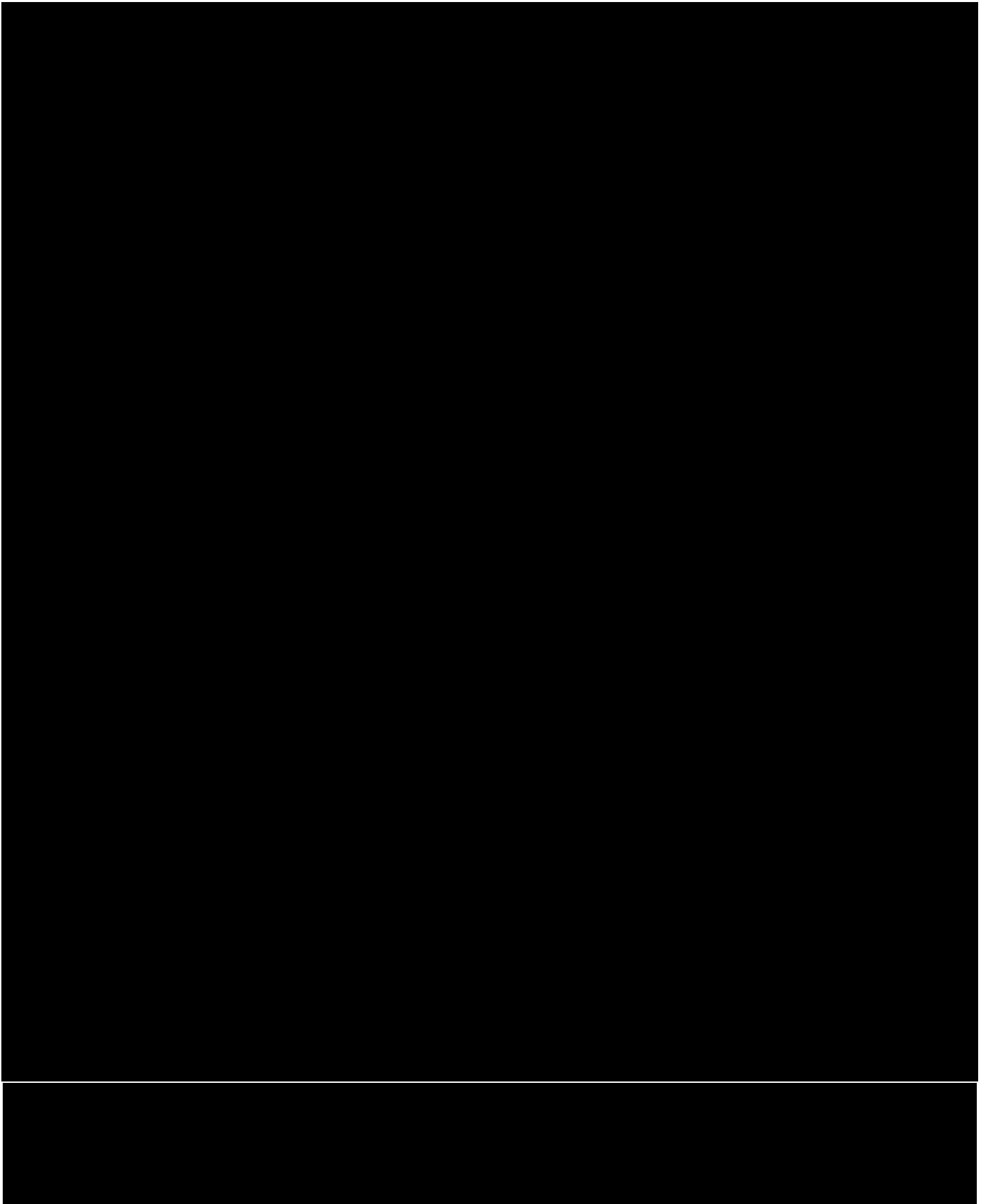
5. If we are to undertake an Orkney Area based census then it might be worth exploring the option of an Area based license to allow more flexibility in bag limits and put the focus more on setting tolerance limits on impacts to the local Raven population.

### **ANNEX C: Political letters**

[Letter from Jamie Halcro Johnston MSP to Jim Fairlie MSP re Orkney Raven Predation meeting 23 May 2025 - 15 May 2025 \(A5153742\)](#)

[Letter from Edward Mountain MSP re Raven Predation, Orkney - 20 May 2025 - received 21 May 2025 \(A5162042\)](#)

## ANNEX D: Logistics



**Annex E: Orkney Raven Licence Data Summary**

Year	Number of locations with licences	Total raven permitted	Total raven taken	Total number of Licences	Number of licences that did not use full bag limit (including outstanding returns and amendments)	Number of licences that used full bag limit (including amendments)
2016	1	3	Unknown		1 outstanding return	0
2017	2	10	3			2
2018	2	21	17			1
2019	3	33	15			2
2020	6	50	42		2 (2 outstanding)	4
2021	5	39	18		3 (2 outstanding)	5
2022	4	21	2		3 (1 outstanding)	0
2023	3	27	15			2
2024	3	12	12			0
	28	213	124	34	15	19
					44.00%	56.00%

**How many licences and how many birds (on average) do we issue for Orkney?**

We have issued between 3-8 licences a year between 2020-24 for 12-50 birds.

**What is the state of our knowledge on existing populations?**

Patchy – observations from Bird Atlas etc. Orkney census of breeding birds was 1972-76 and it identified 27 breeding pairs across Orkney mainland, Hoy and Sanday. In the last few years the [redacted] have been monitoring territories and in 2022 they recorded 29 breeding pairs. We also have some data from tagging studies that show the movement of birds. Our main knowledge gap is for non-breeding Ravens.

**We used to pre-emptively issue licences to prevent damage for known and recurring problems – I assume there is no barrier to taking this approach on Orkney?**

No barrier, other than allowing those applications to be made more than 4 weeks in advance which I believe is the current state of play. This should be an easy win and benefit all.

Between 2020-24 only 89 Ravens were killed from an overall permitted bag of 149 so bag limit isn't really the issue here though larger initial bag limits would be better as it reduces frustration at having to ask and wait for more when in the midst of damage occurring. Current initial bag limits are based on 10% of number of problem birds reported. Ability to actually use a lethal scaring

licence is a growing barrier as less and less farmers have fire-arms licences (or experience). I think the main discussion will turn to how to support farmers with local marksmen as is done for Greylags. That is why [REDACTED] suggested to NFU that they invite Economic Officer from OIC to meeting.

**From:** [REDACTED]  
**To:** [REDACTED]  
**Cc:** [MEDIA; Robbie Kernahan](#)  
**Subject:** RE: Ravens - Request from [REDACTED] to meet with Robbie  
**Date:** 28 March 2025 13:53:37

---

Thanks [REDACTED],  
I've spoke to [REDACTED] and to Robbie. Robbie is going to give [REDACTED] a phone this afternoon.

[REDACTED]  
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**From:** [REDACTED]  
**Sent:** 28 March 2025 11:35  
**To:** [REDACTED]  
**Cc:** MEDIA ; [REDACTED]  
**Subject:** Ravens - Request from [REDACTED] to meet with Robbie

[REDACTED] has requested a meeting with Robbie K. He would also intend to have someone from NFU and OIC Economic Development Team attend. I said I would pass the request onto you.

BBC Radio Orkney are potentially going to be running a piece at some point to highlight the impact of Ravens on livestock. I don't know any more information about it but suspect an invite to Naturescot to be involved in any such media release will be forthcoming.

Thanks

[REDACTED] | [REDACTED]  
[REDACTED]

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**From:** [REDACTED]  
**To:** [REDACTED]; [Scottish Government](#); [REDACTED]  
**Cc:** [REDACTED]; [Robbie Kernahan](#)  
**Subject:** RE: Orkney Ravens - First Minister's Questions  
**Date:** 17 April 2025 15:57:28

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[REDACTED]  
Robbie and [REDACTED] are both on leave this week however tentative dates in late May/ early June have been suggested but yet to be confirmed. Any plans on raven census will most likely be discussed on the back of those meetings in Orkney.

Kind regards,

[REDACTED]

.....

[REDACTED] | [REDACTED]  
[REDACTED]

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If you receive this email in the evening or early morning it means I am working flexibly but please do not feel that you have to pick this up outside of your own normal working hours.

---

**From:** [REDACTED]@gov.scot  
**Sent:** 16 April 2025 07:54  
**To:** [REDACTED]; [REDACTED]; [REDACTED]  
**Cc:** [REDACTED]; [REDACTED]  
**Subject:** RE: Orkney Ravens - First Minister's Questions

Caution! This message was sent from outside NatureScot.

[REDACTED]  
Further to your email below, have you and Robbie met with NFUS etc yet to discuss ravens, as highlighted below please?

Do you have any details as to when NatureScot might undertake a census of the raven population on Orkney?

I'm just drafting a follow up response to the question asked by Liam McArthur in which the First Minister promised to write to him and provide an update.

Thanks

[REDACTED]  
[REDACTED]  
[REDACTED]

Natural Resources Division  
Directorate for Environment and Forestry  
The Scottish Government  
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Victoria Quay  
Leith  
EH6 6QQ

[REDACTED]@gov.scot

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**From:** [REDACTED]@nature.scot>

Sent: 03 April 2025 07:42

To: [REDACTED]@gov.scot>; [REDACTED]@nature.scot>;  
[REDACTED]@nature.scot>; [REDACTED]  
[REDACTED]@nature.scot>; [REDACTED]@nature.scot>;

LICENSING <LICENSING@nature.scot>

Cc: [REDACTED]gov.scot>; [REDACTED]  
[REDACTED]@gov.scot>; [REDACTED]@nature.scot>; [REDACTED]  
[REDACTED]@nature.scot>; Robbie Kernahan  
<Robbie.Kernahan@nature.scot>

**Subject:** RE: Orkney Ravens - First Minister's Questions

[REDACTED],  
We are aware of a particular case on Orkney where the farmer [REDACTED] has some history of raven impacts. We have issued licences to allow raven control and disturbance through scaring and we are in regular contact with the farmer. Inevitably there are also other issues at play here in terms of ongoing dialogue regarding Greylag geese population management and control and also issues re involvement in the Orkney stoat project.

More widely Robbie Kernahan and I have agreed to meet with the farmer/s affected and also local NFUS and Orkney Islands Council shortly to discuss these issues.

We are looking to undertake some census work of raven populations on Orkney, but we understand the particular problem in this this case to be largely mobs of juvenile ravens causing particular problems in Spring during calving and lambing. We understand the concern and impact this can have on farmers during a very busy period time for them and we seek to ensure our licensing process allows for appropriate prevention, management and mitigation of predation impacts on livestock.

[REDACTED] and [REDACTED] are our local leads and might be able to offer more detail.

[REDACTED]  
[REDACTED] | [REDACTED]  
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---

**From:** [REDACTED]@gov.scot [REDACTED]@gov.scot>

Sent: 03 April 2025 06:53

To: [REDACTED]@nature.scot>; [REDACTED]  
[REDACTED]@nature.scot>; [REDACTED]@nature.scot>;  
[REDACTED]@nature.scot>; [REDACTED]  
[REDACTED]@nature.scot>; LICENSING <LICENSING@nature.scot>

Cc: [REDACTED]@gov.scot>;  
[REDACTED]@gov.scot

**Subject:** Orkney Ravens - First Minister's Questions

**Importance:** High

Good morning all

We have just received an email from the Minister's office that Liam McArthur is likely to ask an FMQ on issues with ravens in Orkney today - he claims there are big

problems with attacks on lambs and they currently can't be controlled effectively. I can provide the FM with our usual licensing lines re ravens but do you have any specific details of the problems Liam McArthur is referring to please?

Can someone get back to me asap please?

Many thanks

[Redacted]  
[Redacted]  
[Redacted]

Natural Resources Division  
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Thoiribh an aire airson adhbharan gnothaich, 's dòcha gun tèid sùil a chumail air puist-dealain a' tighinn a-steach agus a' dol a- mach bho NàdarAlba.

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Pàrlamaid na h-Alba

Edward Mountain MSP

Member of the Scottish Parliament for Highlands and Islands Region

Nick Halfhide Esq  
Interim Chief Executive,  
NatureScot  
Great Glen House  
Leachkin Road  
Inverness  
IV3 8NW

Tuesday, 20<sup>th</sup> May 2025

Dear Nick

I have been contacted by my constituent, [REDACTED] on Orkney. He has been in touch with me regarding raven predation on his and his fellow islanders' livestock.

[REDACTED] shared with me graphic stories of ewes' intestines being pecked at and stretched for 40 feet across a field, and ravens entering sheds to attack calves and lambs. He estimates over the past few years that he has lost around £10-15,000 worth of livestock, and in the last five years that his losses could exceed £30,000.

I am told by [REDACTED] that the licencing process is slow and only responsive to actual issues on the ground, whereas it should anticipate the potential problems and allow licences to be granted in advance of the key periods of lambing and calving.

Furthermore, as no survey has been carried out on raven numbers, the real extent of the problem is not known. The consequence is that any license to control ravens is limited to a few birds, and is often only available long after the annual problems arise, meaning that extensive damage has already been done.

As my constituent's problem recurs annually, the most sensible solution would be the granting of a pre-emptive licence, allowed for under the Wildlife and Countryside Act 1981 (as amended). This would be based on raven numbers across the whole island which could be determined by NatureScot.

M2.06 The Scottish Parliament, Edinburgh EH99 1SP and 10 Drummond Street, Inverness IV1 1QD  
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The Scottish Parliament  
Pàrlamaid na h-Alba

Edward Mountain MSP

Member of the Scottish Parliament for Highlands and Islands Region

As a farmer, I sympathise with [REDACTED] situation. I believe that NatureScot needs to be far more proactive, and, if this is not possible, offer realistic compensation to farmers for their losses.

I understand that [REDACTED] has secured a meeting at his farm with Robbie Kernahan and [REDACTED] from NatureScot this Friday, 23<sup>rd</sup> May. I would be grateful if you would give this matter a high priority, given that both his livestock and livelihood are currently constantly at risk.

I look forward to hearing from you at your earliest convenience with a solution for my constituent.

Yours sincerely,

[REDACTED]  
Edward Mountain MSP  
Highlands and Islands Region

**From:** [REDACTED]  
**To:** [REDACTED]  
**Cc:** [REDACTED]  
**Subject:** RE: Raven - non-breeding population census  
**Date:** 04 September 2025 16:37:30

---

[REDACTED],

As promised here is a methodology that was previously used for counting non-breeding ravens on roosts across Uist.

[Uist Raven Survey - Western Isles - Hebrides Ecology - Early draft - \[REDACTED\] comments - 06 April 2020](#)

This report was never published (I'm not sure why) but should be useful from a methodology perspective. Comments from [REDACTED] are also useful e.g. that territorial ravens tend to be on territory year-round and typically don't join communal roosts – so the likelihood of counting territorial breeding ravens at roosts is low. Autumn/winter counts might be appropriate given that young birds will have left family parties and joined communal roosts in autumn.

I think some key points based on the report and previous discussions we've had are:

- Gather as much information as possible to identify known roost sites from e.g. local farmers, raptor groups, birdwatchers, etc.
- Carry out cold searches of areas where flocks of ravens have been seen to identify previously unknown roosts (covering sunset hours when ravens begin to enter roosts)
  - On Uist they also conducted two island wide surveys (following goose surveys methods) to see if they could identify roosts in areas where flocks were recorded
- Identify appropriate vantage points for monitoring roosts (that provide a good view and limit disturbance of roost)
- Simultaneous counts are key to avoid double counting, as ravens can move between roost sites – which will require as many surveyors as possible
- Repeated surveys to achieve as accurate a count as possible – particularly given that birds move between roost sites, and some only enter roosts under cover of darkness which may limit the ability to survey/count

As we discussed, I think the biggest issue will be a) identifying all roost sites and b) finding enough surveyors to conduct simultaneous and repeat surveys – but I think these elements are key if we want robust estimates.

Cheers,

[REDACTED]

[REDACTED]

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**From:** [redacted]@nature.scot>  
**Sent:** 18 August 2025 12:52  
**To:** [redacted]@nature.scot>  
**Cc:** [redacted]@nature.scot>; [redacted]  
[redacted]@nature.scot>; [redacted]@nature.scot>  
**Subject:** RE: Raven - non-breeding population census

[redacted]  
Thanks for copying me in – leave it with us, and [redacted] will get back to you once we've discussed within the Bird Team.  
[redacted]

[redacted] [redacted]  
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[redacted]

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**From:** [redacted]@nature.scot>  
**Sent:** 18 August 2025 11:58  
**To:** [redacted]@nature.scot>  
**Cc:** [redacted]@nature.scot>; [redacted]@nature.scot>  
**Subject:** Raven - non-breeding population census

[redacted]  
Conscious of not wanting to put too much on you so have copied in [redacted] in case she wants to allocate this request to someone else in the team.


Based on information you provided to date it seems like the best approach to counting non-breeding juvenile Ravens is going to be by counting them coming or going to roosts from specific vantage points. Im not clear on timing though given that some Breeding Ravens are thought to roost with non-breeders out with the breeding season. Given the relatively small number of breeding Ravens would this really matter though?.

We need a methodology for non-breeding census so that I can work out the resource required and arrange such counts across the Orkney and Shetland Islands. Can you pull together a draft methodology?.

Thanks



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# COMMISSIONED REPORT

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**Commissioned Report No. - SNH use only**

## **Uist Raven Survey**

For further information on this report please contact:

Name of SNH Project Manager - SNH use only  
Scottish Natural Heritage  
Great Glen House  
INVERNESS  
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Telephone: Telephone No. - SNH use only  
E-mail: [firstname.lastname@snh.gov.uk](mailto:firstname.lastname@snh.gov.uk) - SNH use only

This report should be quoted as:

Hebrides Ecology. 2019. Uist Raven Survey  
*Scottish Natural Heritage Commissioned Report No. - SNH use only*

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## COMMISSIONED REPORT

# Summary

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### Uist Raven Survey

**Commissioned Report No. Report No. - SNH use only**

**Project no: iBids Ref - SNH use only**

**Contractor: Hebrides Ecology**

**Year of publication: 2020**

#### **Keywords**

Uist: Raven: Roost: Survey:

#### **Background**

The Northern Raven, *Corvus corax*, is a common breeding species in the Western Isles, with a distribution throughout Uist. Large flocks of non-breeding birds, including both juveniles and older paired birds, have been observed, possibly indicating a population surplus. This population surplus could be a result of plentiful food availability, reducing the mortality rate of young birds. The numbers of ravens seen in flocks in Uist far exceeds the known numbers of breeding pairs.

The large flocks of ravens in Uist often come into conflict with crofters who report damage to livestock and produce. The purpose of this survey was to obtain more accurate information on numbers of ravens in Uist, to help make informed decisions in their potential management, and to provide baseline data in order to inform future surveys. The aims of the survey were to assess the number and size of raven flocks across the Uists and to investigate arrival and dispersal patterns at roosts.

#### **Main findings**

- [Summarise recommendations here in bulleted list. Press return key to go to next bullet point.]

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*For further information on this project contact:*

Name of Project Manager - SNH use only

Tel: Telephone No. of Project Manager - SNH use only

*For further information on the SNH Research & Technical Support Programme contact:*

Knowledge & Information Unit, Scottish Natural Heritage, Great Glen House, Inverness, IV3 8NW.

Tel: 01463 725000 or [research@snh.gov.uk](mailto:research@snh.gov.uk)

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## **Acknowledgements**

We would like to thank the many volunteers who helped with this survey, namely

[REDACTED]

## 1. INTRODUCTION

The Northern Raven, *Corvus corax*, is a common breeding species in the Western Isles, with a distribution throughout Uist. Annual raven breeding records collated by the [REDACTED] show that there are at least 39 known territories, 20 in North Uist, 5 in Benbecula and 14 on South Uist (Raven annual monitoring data 2015 and 2016). However, this is likely to be a significant underestimate, as ravens nesting on the sea cliffs of the east coast and on the offshore islands are not included in these numbers.

Commented [REDACTED]: Should be updated to reflect most recent published data SRMS 2017 & 18 reports available on their website <http://raptormonitoring.org/annual-report> or check with [REDACTED] to see if any new pairs found since 2016.

Commented [REDACTED]: Population estimate for Uist & Barra given in SNH Com rep 2012 Fig 6.2 of 63 prs

### 1.1 Historical Roost Information

Information on known raven roost locations was held by the SNH South Uist office, see Table 1. Further information on raven roost and large gatherings of ravens was supplied by individuals in Uist likely to have information on raven roosts, including crofters, gamekeepers, landowners, land managers, nature conservation workers, members of [REDACTED] and knowledgeable members of the public. Published and unpublished surveys were also used as a source of data on roost locations and raven flock sizes.

Table 1. Information from SNH on known raven roost locations at the start of the survey

Roost Location	Grid Reference
North Uist	[REDACTED]
[REDACTED]	[REDACTED]
Benbecula	[REDACTED]
[REDACTED]	[REDACTED]
South Uist	[REDACTED]
[REDACTED]	[REDACTED]

Commented [REDACTED]: Old historical roost noted in first half of 20<sup>th</sup> C but no known significant use but rarely looked at since.

Commented [REDACTED]: Also in dunes previously [REDACTED] will be able to confirm but records I'm aware of are that it was a spring/summer roost only.

Commented [AS5]: Relatively new roost site as trees have matured

Commented [REDACTED]: Again historical site but a key roost in 1996 Uist raven roost survey [REDACTED]. This roost seemed to shift to [REDACTED] shortly after that but not used after storm damage to trees by the big 2005 storm

Commented [REDACTED]: Has been used all months but often seems more used spring/summer. Bird have also used [REDACTED] but known to have moved out when it has been in use by people.

Commented [REDACTED]: Again a historical one not noted since the 1980s but rarely checked.

Commented [REDACTED]: Was other main roost in 1996-97 survey.

Sheaval has apparently also been used before by South Uist birds.

## 2. METHODS

The methodology for the surveys was drawn up in discussion with SNH South Uist staff, taking into account the methods used in previous raven surveys in Uist and following published guidelines.

### 2.1 Volunteers

Requests for information and for assistance with the survey were sent to all known contacts in Uist who either were likely to have data on raven numbers, or would be willing to help with the surveys, or both. These individuals included SNH and RSPB staff, local birdwatchers, crofters, gamekeepers and people known to have an interest in wildlife. The purpose of the survey and the proposed methods were explained, and information was exchanged by telephone, text and email. Information about roost sites and watch points was supplied to the volunteers. As the survey progressed, more volunteers became aware of the surveys and offered to help, giving a wider coverage of roost sites.

### 2.2 Roost surveys

The locations of roost sites to be surveyed was initially based on the known roost sites. As the survey progressed, information on further potential roosts was used to expand the survey. During the course of the survey, the details of roost site vantage points were refined using feedback from the surveyors.

The roost surveys aimed to carry out fortnightly counts at each known roost site on the same date, so that surveyors were counting ravens at each roost simultaneously. Previous information on raven roosts in Uist suggested that ravens frequently move between roosts, and roost sites can vary according to food availability, hence the requirement for as many surveyors as possible to survey roost sites during the same period and avoid the possibility of double counting if large numbers of ravens moved between roosts.

The survey dates were chosen to avoid heavy rain and wind speeds in excess of 25mph. Weather conditions for each survey were recorded. As ravens may enter a roost after dark, especially on moonlit nights, survey nights avoided the full moon unless the weather was overcast. Surveyors were asked to arrive at the survey location no later than two hours before sunset and to count all ravens until after dark, taking into account safety considerations. Wherever possible surveyors chose a vantage point overlooking the roost for counting.

Not all roost sites were covered on every single survey night as there were not enough surveyors to cover all sites simultaneously. As ravens are known to change roost site, it was ensured that all the historical roost sites were covered at least once every two months. Up to date information provided by volunteers and the results of the cold searches were used to direct which roost sites were covered on each survey.

Each individual or small group of ravens coming into the roost was recorded with the time, direction of flight and the area of the roost site they flew into. Any factors that might influence the arrival of ravens at the roost, for example the presence of a raptor, were also recorded.

Commented [REDACTED]: Should note somewhere that territorial ravens are on territory all year and rarely if ever join the bigger communal roosts.

I have a pet theory that the increase in eagles since the 1996 work may be a factor in raven roost choice and use. Since then both golden eagle and WTE have increased in the Uist the latter was barely established in 1996 and golden eagle territories have increased too. May well mean that [REDACTED] and [REDACTED] are probably abandoned or less used than previously.

I have seen WTE disturbing the [REDACTED] roost previously.

### **2.3 Cold searches**

A number of surveys of Berneray, North Uist, Grimsay, South Uist and Eriskay were carried out during daylight hours. Where these surveys covered potential roost sites the survey timing was extended to sunset. Large flocks of ravens tend to be associated with improved grassland or food sources, for example refuse dumps, so attention was paid to coverage of these areas. All raven sightings were recorded, and information used to help identify any previously unknown roosts.

### **2.4 Island Wide Surveys**

On two dates in 2019, a team of surveyors covered as much as possible of the coast, machair and low altitude moorland of Berneray, North Uist, Grimsay, Benbecula and South Uist, counting all ravens seen. The coverage of this survey was based on the coverage of the SNH goose surveys and was carried out by a combination of surveying from the car and covering beach/machair areas on foot. Given the large area to be covered by a relatively small number of volunteers, there was some skewing of the survey areas to those sites known to have had flocks of ravens in the past.

### 3. RESULTS

#### 3.1 Roost Surveys

The roost surveys began in May 2018, concentrating on the known roost sites. By August 2018 they had all been checked to determine occupancy on at least one occasion. Only one known roost site, [REDACTED] was occupied during this period, with an average of 155 individual birds. Other roost sites were either unoccupied or in use by family parties only.

Cold searches elsewhere had located several roosts in coastal dunes on [REDACTED] Uist and [REDACTED] in South Uist. From August 2018 onwards these sites were included in the dusk roost surveys.

The aim of the survey was to carry out roost counts at regular fortnightly intervals but owing to weather constraints and the availability of volunteers, the surveys were carried out on days of forecasted good weather and not at regular intervals.

As the surveys continued, more data on additional roost sites was amassed and more volunteers recruited, so that a much more comprehensive survey of roost sites was carried out from September 2018 to April 2019.

A summary of the counts for each roost is given below. The data includes both the organised roost watches and also incidental information on ravens in that area.

##### 3.1.1 [REDACTED]

This area was covered by the daylight hours cold search and also surveyed at dusk on five occasions. [REDACTED] had only one raven recorded. The known site at [REDACTED] had 1-2 birds on each visit, indicating that it was probably occupied by a territorial pair and was not in use as a roost for a non-breeding flock.

##### 3.1.2 [REDACTED]

No birds were recorded on 27 May and 16 July 2018. The arrival of a significant number of ravens at the roost at [REDACTED] was influenced by the availability of waste fish that were dumped there, providing a food source that almost certainly brought ravens in from other areas. The movement of birds in this area suggested that rather than individual roosts, the ravens move between these locations, and there is almost certainly some overlap with the birds that roost on [REDACTED]

Table 2. Raven numbers recorded on roost counts in the [REDACTED]

Date	Total raven numbers
23/08/2018	128
20/09/2018	125
02/10/2018	63
16/10/2018	38

Commented [REDACTED]: Should mention that young from family parties tend to disperse (chased by parents) in autumn, so families are clearly identifiable before then and only later in autumn do that years young start joining communal non-breeder roosts.

Commented [REDACTED]: These roosts appear to have been at least in part opportunist due to the presence of [REDACTED] of which an exceptional wreck occurred along Uist beaches that spring/summer.

[REDACTED] is probably complicated by the presence of the fish ensiling site at nearby [REDACTED] likely to make it more regularly used currently

Commented [REDACTED]: For all of these sections maybe inc my comments on table 1 here under each roost as context

Commented [REDACTED]: Should refer to its official title as it is a SEPA licensed disposal site.

30/10/2018	57
26/11/2018	12
20/12/2018	20
17/01/2019	1
30/01/2019	2
13/02/2019	2
27/02/2019	1
21/03/2019	45
08/04/2019	138
25/04/2019	193
29/04/2019	93

3.1.3 [REDACTED]

This roost is in a coniferous plantation, within [REDACTED], and birds are almost certainly moving between the roosts.

Table 3. Raven numbers recorded on roost counts at [REDACTED]

Date	Total raven numbers
17/05/2018	2
15/05/2018	154
27/05/2018	2
16/07/2018	1
26/11/2018	54
21/12/2018	68
08/01/2019	101
17/01/2019	75
30/01/2019	96
13/02/2019	0
27/02/2019	60
21/03/2019	25
08/04/2019	130

3.1.4 [REDACTED]

This had been identified as a historical roost site, however very few ravens were recorded here throughout the surveys, with a maximum count of 10.

Table 4. Raven numbers recorded on roost counts at the [REDACTED]

Date	Total raven numbers
27/05/2018	0
20/06/2018	6
26/11/2018	10
17/01/2019	0
30/01/2019	0
13/02/2019	0
21/03/2019	2
25/04/2019	1

3.1.5 [REDACTED]

This roost site has been associated with the Comhairle nan Siar waste disposal area. The ravens were mainly roosting on the small outcrops on the hill side.

Commented [REDACTED] The reduction in food waste at this site in the last decade or more doesn't seem to have altered the sites use as a roost. However a lot of the previous high counts for this site have been spring/summer and in some opportunistic winter visits I've not found many if any birds suggesting they were using an unknown roost elsewhere (though in discussion with [REDACTED] at the time he mentioned significant roost at the south end of SU [REDACTED] around the same time.

Table 5. Raven numbers recorded on roost counts at [REDACTED]

Date	Total raven numbers
11/05/2018	95
15/05/2018	154
24/05/2018	c.90
26/06/2018	158
03/08/2018	58
28/08/2018	8
20/09/2018	0
16/10/2018	2
12/11/2018	2
01/12/2018	0
17/01/2019	4
30/01/2019	4
13/02/2019	2
27/02/2019	0
21/03/2019	0
08/04/2019	2

3.1.6 [REDACTED]

The main roost at [REDACTED] is in the small trees on the islands in the loch, with small numbers in the plantation on the [REDACTED]. There were no counts of numbers roosting here before October 2018, and no incidental information supplied on numbers roosting here prior to that.

**Commented** [REDACTED]: Not a previously known raven roost site. Old NNR records record a large summer non-breeding hooded crow roost (150+) there in the 1970s, so if ravens were present they would have been noted.

Worth noting here that on some dates birds were noted flying further east and out to roost somewhere between [REDACTED] and [REDACTED] suggesting still some use of the big SU hills (though not the historical [REDACTED] roost)

Table 6. Raven numbers recorded on roost counts at [REDACTED]

Date	Total raven numbers
13/10/2018	90
14/10/2018	70
16/10/2018	60
30/10/2018	80
12/11/2018	96
26/11/2018	65
20/12/2018	149
08/01/2019	151
17/01/2019	138
30/01/2019	148
13/02/2019	192
27/02/2019	104
21/03/2019	117
04/04/2019	60
08/04/2019	134
25/04/2019	116
29/04/2019	120

3.1.7 [REDACTED]

Small numbers of ravens had been seen roosting here prior to the start of the roost surveys, and it was included as one of the co-ordinated roost counts from October 2018 onwards.

**Commented** [REDACTED]: Maybe [REDACTED] related, regular feeding area for non-breeding birds so occasional roosting if food availability good quite possible

Table 7. Raven numbers recorded on roost counts at [REDACTED]

Date	Total raven numbers
02/10/2018	0
26/11/2018	24
08/01/2019	0

17/01/2019	6
13/02/2019	0
27/02/2019	8

3.1.8 [REDACTED]

Information from one of the volunteers identified this as a roost site, with significant numbers in July and August 2018.

Commented [REDACTED]: No previous roost recorded here, was definitely related to whale wreck.

Table 8. Raven numbers recorded on roost counts at [REDACTED]

Date	Total raven numbers
15/07/2018	27
16/08/2018	30
20/09/2018	0
16/10/2018	0
12/11/2018	0
17/01/2019	0
30/01/2019	2
13/02/2019	0
21/03/2019	0

3.1.9 Other Roost sites with maximum counts of less than 5 birds

Several other roost sites that had much smaller numbers of birds were identified from information supplied by volunteers. These were counted sporadically during the roost survey period. The list of sites is as follows: [REDACTED] the range, [REDACTED] and [REDACTED]

3.1.10 Co-ordinated Counts of All Roost Sites

With an increase in volunteer numbers and a more complete list of roost locations, co-ordinated counts at several roosts were carried out from October 2018 until April 2019. The results of these counts gave a more accurate figure of the total number of ravens in Uist, ranging from 100 to 397. The increasing number of surveyors enabled simultaneous counts at more roost sites, leading a more accurate figure for the total number of ravens in Uist.

Commented [REDACTED]: Duplication in this para could be more concise

Table 9. Total raven numbers recorded on all roost counts on dates of co-ordinated surveys

Date	Total raven numbers
16/10/2018	100
30/10/2018	155
26/11/2018	165
20/12/2018	172
08/01/2019	253
17/01/2019	228
30/01/2019	184
13/02/2019	219
27/02/2019	164
21/03/2019	178
08/04/2019	397
25/04/2019	309
29/04/2019	213

### 3.2 Island Wide Counts

Two co-ordinated daytime counts of the islands of North Uist, Benbecula and South Uist were carried out on 28 March and 11 April 2019. In order to cover a large area, the counts were concentrated on the beach and machair areas, with some coverage of the lower hill ground that was visible from the road.

Island	28/03/2019	11/04/2019
North Uist	93	220
Benbecula	20	9
South Uist	57	92

Commented [REDACTED]: Matches quite well with 21/3 count in Table 9

Commented [REDACTED]: Matches quite well with 8/4 count in Table 9

### 3.3 Timing of Arrival at Roost Sites

Data on arrival times of ravens at the roost sites was collated for most of the roost counts. In most cases there was a steady arrival of small numbers of ravens from approximately 2 hours before sunset, with a slight increase in numbers in the 20 minutes after sunset. The weather and brightness of the moon may have affected arrival times to some extent.

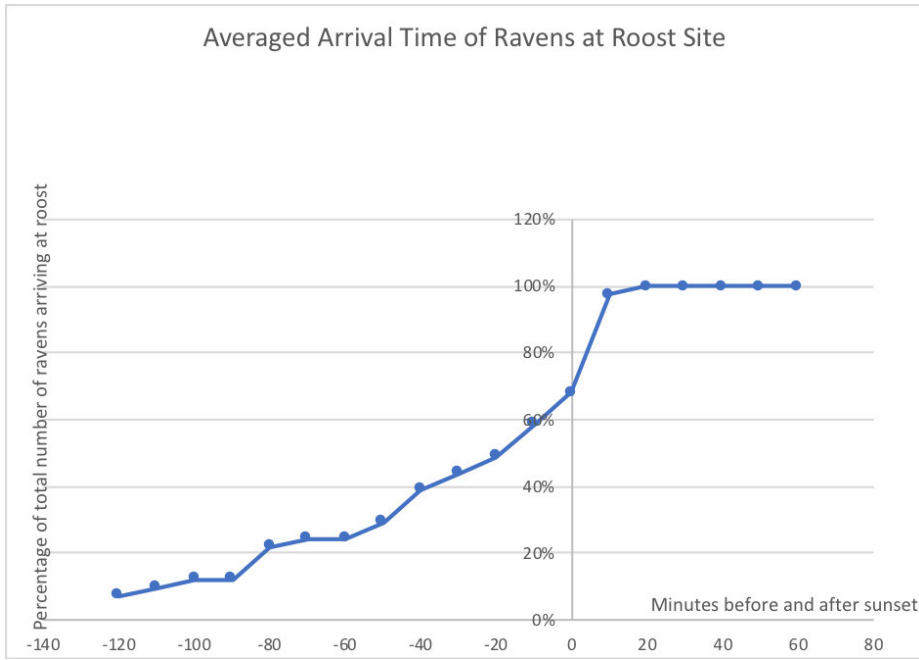


Figure 2. Graph of amalgamated raven roost arrival times

#### 4. DISCUSSION

The large flocks of ravens in Uist vastly outnumber the known breeding pairs and are assumed to be made up of mainly young birds and non-territorial pairs. Most of the roost sites in Uist are either on crags or steep slopes, in trees or on coastal dunes. The raven flocks of ravens appear to be opportunistic if there is a food source available and will roost nearby. The [redacted] [redacted] is an example where ravens are roosting to take advantage of a food source.

Commented [redacted]: Again should be official site title and its at [redacted]

Many of the roosts in Uist have been occupied for many years, but several of these were not occupied on every survey date. There appears to be movement between the roosts.

On some surveys the ravens were observed gathering in an area within 5km of a roost, and then coming into the roost in a short period of time. However, the average picture over all the roosts was smaller numbers coming into the roost relatively regularly, with slightly higher numbers arriving just after sunset.

There is a high probability of birds moving between the roosts, particularly those on North Uist. For example, on 17 January 2019 there was a count of 75 on [redacted] when at the same time the numbers in the [redacted] area was reduced to 1. However, on 8 April 2019 138 were recorded in the [redacted] area and 130 on [redacted] so the [redacted] the situation is not as simple as birds switching between roosts. [redacted] The flight lines of the ravens coming into the roost did not suggest that birds are commuting to North Uist from Benbecula, rather just moving from the coastal feeding grounds inland at dusk, but the possibility of inter-island movement cannot be discounted from these surveys alone.

Commented [redacted]: duplication

There is probably a similar situation between the main roosts in Benbecula and South Uist. Numbers of ravens coming into the roost at [redacted] on Benbecula were relatively high until August 2018, with a maximum of 158, and then numbers dropped down to between 1 and 4 birds. In October 2018 a large roost was seen at [redacted] with a maximum count of 151, which coincided with low numbers at [redacted] so it is highly probable that birds are moving between Benbecula and South Uist. A change in working practices at the refuse collection area near [redacted] may have resulted the majority of ravens changing to using the roost at [redacted]

Commented [redacted]: From previous counts at [redacted] the vast majority of birds are coming in from the southern half of the compass with very few from North Uist (never more than 15-20 birds), those that did seemed to be coming from [redacted] areas.

Birds coming in from the south clearly included a lot from the northern end of South Uist with birds seen crossing the South Ford mainly from the machair side of the main road (quite few follow the coast to [redacted] or follow the [redacted]).

Counts I had for [redacted] in this survey I picked up initially by birds coming south along the coast at the Range and following them to a gathering area at [redacted] on the machair before they headed into the [redacted] roost.

Therefore it is likely that the [redacted] and [redacted] use is linked as suggested.

Without further survey work it is difficult to be certain how the birds are moving between roosts, and there is certainly considerable variation between numbers at the different roosts, yet the total number of ravens recorded when several roosts were counted simultaneously does not vary to the same degree.

The results of the coordinated counts gave a more accurate figure of the total number of ravens in Uist, ranging from 100 to 253. The increasing number of surveyors out recording ravens at the different roost sites did increase the possibility of double counting of some ravens. The large roosts at the [redacted] area, [redacted] and [redacted] accounted for over 90% of the total number of ravens for most of these counts.

Note in the 1996 survey A2851272 (although crucially missing [redacted] mostly SU counts) shows that there was movement from Benbecula to the [redacted] and suggests many SU birds may have moved to the [redacted] 7 Feb-Mar. [redacted] had 80 at the SU roost on 22 Feb and 104 at the [redacted] on 13 Feb suggesting around 280 birds in total whilst [redacted] had 289 at the [redacted] in Mar (there are no SU counts for March to confirm this though).

Commented [redacted]: Agree use of and interchange of birds between roosts is likely more complex than we currently understand, what we also don't know is what level of immigration/emigration there is and whether there is numbers get bolstered over the winter/spring by birds moving in from elsewhere.

Given the large numbers of volunteers assisting with the roost counts, and also the supplementary information provided on incidental counts, it seems unlikely that any roosts with significant raven numbers were missed.

The island-wide daytime counts gave much lower figures for the total number of ravens on the various islands. This was to be expected given that only a small proportion of habitat was included in the counts. The information was useful to confirm that there were no large daytime gatherings of ravens that were not accounted for in the evening roost counts.

Based on Com Rep 1012 data Uist average productivity is 3.1/pr and a pop estimate of 63prs suggests c195 juveniles joining the local non-breeding pop each year (assuming they all stay here). I don't have license returns so I don't know how many are taken but if you have an average fig for that you'd be able to approx. work out whether productivity (bearing in mind natural mortality) is likely to be matching or greater than removal and so some idea of what role immigration might play.

