EAST DONEGAL GREY PARTRIDGE RE-ESTABLISHMENT PROJECT











INTERIM

Report

2018

Department of Agriculture, Food and the Marine
An Roinn Talmhaíochta, Bia agus Mara

National Association of Regional Game Councils

National Parks & Wildlife Service

Irish Grey Partridge Conservation Trust

Project Background

The project is locally led collaborative project between Inch local gun club, Donegal Game and Wildlife Association, NARGC, NPWS, DAFM and also received support from the Heritage council.

See www.inchpartridgeproject.com for details.

The project breeding hub is located on Strahack farm, Inch Island owned by Boyd Bryce a professional Farmer; Boyd has volunteered the use of his lands for the project and undertakes the breeding of the captive birds as well as assisting with habitat creation and development.

In 2016 lobbying and 2.5km of 'demonstration' Partridge measure established by Boyd Bryce led an area of 9000 acres to be included in the DAFM GLAS 3 program and subsequently 15 km of Partridge measure has been established on 10 farms, 7 of which are on Inch island.

The project started in 2014 with 5 pairs from North Dublin and received 4 coveys from Borra in 2016 to widen the gene pool and additional birds in 2017 from N. Co. Dublin and Meath – see table below.

Release of Birds

Year	No. Birds bred locally	No. birds released	Release Location	Origin
2014	10	10	Strahack farm Inch island	N. Co. Dublin
2015	80	53	Strahack farm Inch island	N. Co. Dublin
2016	58	58	Strahack farm Inch island	N. Co. Dublin
2017	34	37	Partridge measure farms on Inch island	N. Co. Dublin
2017	68	68	Partridge measure farms on Inch island	Borra
2017		36	Off Island Ballymoney, Burt	Meath
Total	**250**	**262**	**N= 6**	**N=3**

Assessment of Current Breeding Stock

Captive breeding stock

- The project currently operates 10 breeding pairs in 10 separate breeding pens and has an additional 5 larger pens for use with surrogate hens.
- Captive breeding is undertaken in a volunteer capacity by Boyd Bryce.
- Local NPWS staff and Inch gun club members maintain pens and the onsite electric predator exclusion fence enclosing 25 acres of arable ground with approx. 3km of partridge measure.

Wild breeding stock

- A 2018 spring survey/ count of calling male birds indicated a resident population of approx. **20+ pairs** holding territory in the wild on Inch island.
- One pair has been opportunistically detected off island at newtowncunningham a distance of 5km from its release site at Ballymoney, Burt. In keeping with the minimal -intervention policy for off island study sites, no survey was undertaken of wild pairs off the island.

Nest protection/ Predator control (spring 2017-spring 2018)

- Inch Gun club undertake regular fox hunting via lamping throughout the 2017/2018 winter in approx. 40% of the GLAS target area (Inch and Fahan gun club areas). The gun club also run 3-4 Larson traps and run a vermin bird shooting competition (outside of pheasant shooting period). See table below
- Boyd sets snares selectively around the release pens (due to large badger population) for fox's that cannot be controlled using rifle. See table below
- In 2018 a first year student was hosted for 5 weeks from the Thurso Game keeper college: University of Highlands and Islands, Scotland. The student was supplied with traps from NARGC, DG&WC, NPWS and Inch Gun Club. Lowland keeper training was provided by the GPT. See table below
- Rat Poison is not used on site, mink traps are run on the approaches to the island.

Controller	**Target bird vermin**	**Fox**	**Rat**	**Mink**
Inch Gun club	100	63 - shot	0	1
Boyd	42	3 via snares	10	0
UHI Student	160	0	11	0
Total	**302**	**66**	**21**	**1**

Pictures: Predated Grey Partridge equipped with radio trackers; A: Fox, B: Sparrowhawk and C: Cat

Research Summary

1. Over wintering of Farmland Birds in Partridge Measure:

Method: Overwintering finch counts – Partridge Measure v control fields

Study Site	Date	Control	Partridge Measure
Carnaghan	30 10 2017	20	96
Strahack	04 11 2017	78	341
McDaids	30 10 2017	9	63
Kennys	30 10 2017	7	27
Carnaghan	02 01 2018	19	77
Strahack	02 01 2018	82	650
McDaids	02 01 2018	11	51
Kennys	02 01 2018	10	30
Carnaghan	19 03 2018	15	41
Strahack	19 03 2018	35	87
McDaids	19 03 2018	14	17
Kennys	19 03 2018	11	75

Simple T test: Paired two sample for means (with measure and without)

t Stat	-2.23191
P(T<=t) one-tail	0.023684
t Critical one-tail	1.795885
P(T<=t) two-tail	0.047368
t Critical two-tail	2.200985

Note: control fields are similar habitat / crop type with similar husbandry managed by the same farmer to eliminate un-quantified variables.

Discussion: Over wintering of Farmland Birds in Partridge Measure

Here preliminary single season data show that there is a significant difference in the number of overwintering finch species in fields with GLAS partridge measure when compared with fields without partridge measure. This is not a finding and should not be used as such, but solely an indicator of what may be the outcome of the study. Further sampling in 2018/19 and 2019/20 seasons will verify any results and the strength of that significance (if confirmed in subsequent years) will also be investigated. Here we present data as collected, however control field results were artificially increased in later counts by the inclusion of birds counted at sheep grain feeders located in the control fields, and an adjacent farm yard (not in the partridge measure fields). Without these birds included there is a stronger difference between data sets detected. Indicating sheep and cattle feed is a valuable food source for over wintering birds in areas with little semi- natural food sources.

2. Covey Survival Rates

Method: Bi- weekly Radio Tracking and weekly Flush

Bird No1: frequency 173.859 – summary of key dates (n= 147 days)

Date	Action	Habitat	No. Birds	Note
07 10 2017	Released	Partridge Measure	11	Graduated release using pen
10 10 2017	Flushed	Grass field/ gorse hedge	8	Moved 450m
14 10 2017	Flushed	Stubble field with Partridge measure	8	Moved 150m
17 10 2017	Flushed	Stubble field	8	Moved 950m
21 10 2017	Flushed	Potato field	8	Start to use potato field
24 11 2017	Flushed	Potato field	7	One bird lost
05 12 2017	Flushed	Stubble field	6	One bird lost
27 12 2017	Sighted	Gorse bush hedge		Sheltering under edge of gorse hedge
09 01 2018	Flushed	Wild Bird cover	6	Start to use wild bird cover
13 02 2018	Flushed	Potato field	5	One bird lost – poss. adult paired early
26 02 2018	Break up of covey	Gorse hedge	4	As a Pair /detected with female- Covey dispersed
27 02 2018	Caught	Release pens field	2 pair	Moved 800m and caught in badger trap at Release pens
03 03 2018	Killed	Unknown location	1	Moved 800m back to where seen in pair and killed by domestic cat.

Bird No2: Frequency 173.979 – summary of key dates (n=24 days)

Date	Action	Habitat	No. Birds	Note
07 10 2017	Released	Partridge measure	8	Released direct into partridge measure
14 10 2017	Flushed	Under gorse Bush	1	Spotted on its own, rest of covey sighted 200m away on other side of field.
17 10 2017	Heard	Partridge measure beside feeder	?	Joined a covey – sounds like collection of birds together
31 10 2017	Recovered	Under gorse bush adjacent to Partridge measure beside feeder		Found under gorse bush/ hedge – no sign of predation – suspect tag caught in bush and came off.

Bird No 3 Frequency 173.934 – reused – summary of key dates (n=94 days)

Date	Action	Habitat	No. Birds	Note
07 10 2017	Released	Partridge measure	3	Released direct into partridge measure
31 12 2017	Sighted	Stubble field	3	In open ground / stubble field during evening (16:30)
02 01 2018	Flushed	Stubble field / Partridge measure	2	Flew into rough scrub ground – 2 birds only sighted
09 01 2018	Recovered	Stubble field		Predated; suspect fox due to nature of kill

Bird no 4; Frequency 173.979 – reused – summary of key dates (n=8 days)

Date	Action	Habitat	No. Birds	Note
04 11 2017	Released	Partridge Measure	3	Released direct into Partridge Measure
07 11 2017	Flushed	Rough Grassy lane	3	Moved to new habitat type
12 11 2017	Recovered	Edge of stubble field		Tag found – suspect Sparrow hawk

Covey Survival Rate Summary; Released bird survival rate until break up of covey is;

- Covey No.1 = 45% survival rate through to covey break up
- Covey No.2 = 12.5 – 87.5% range
- Covey No. 3 = 0-33% range
- Covey No 4= 0 – 66% range
- Tagged birds Total = 25%

Figure 1: Selected/summary locations of detection for bird No. 1 frequency 173.859; (n= 147 days/ n= 40 detections)

Discussion: Survival Rate of released captive bred partridge.

Once the tagged bird is predated it is not possible to continue to determine survival rates for other members of the surviving covey, see pictures above for predation types (fox, sparrow hawk and domestic cat).

Only one covey that was tracked provided sufficient suitable information and returned a quantifiable result of the whole period through to covey break up (see figure 1). The resultant 45% survival rate would compare very favourably with UK based projects (Average 30-40% survival rate, TGCT) however caution should be taken in reading too much into this single sample particularly in light of the predation rate of the other tagged birds. Predation rate of other birds indicates a much lower survival rate (<25%) is more likely to be prevalent. Future sample years will increase the sample size and verify these preliminary findings.

The bird in covey No 2 was possibly too young/small to accept a full tag (6 weeks old) and we suspect the tag may have come off when the bird passed through dense undergrowth. Unlike the other tag recoveries no evidence of predation was found on or near the tag.

The released group of birds on covey no 2 was a mixture from two separate family coveys and tracking showed that the birds post release (kept in pen together at release site for 1 night before release) they immediately divided into the two separate family groups and moved to different parts of the field/ partridge measure. This indicates that at 6-8 weeks old partridge will not accept birds into the family covey from outside family group. This resulted in the tagged bird being part of a smaller covey that intended and without an adult bird for guidance, potentially increasing its chances of predation.

Birds released later in the season were possibly released without sufficient support i.e. without an adult bird, no feeder at hand and or they were released in too small a group for generalised covey protection. These factors may have exposed them to a higher chance of predation. The quick movement of covey 1 out of the release area and the relatively rapid predation of birds within the electric fence release area indicates;

1: the area within the electric fence is not predator free and potentially forms a predator hotspot due to the concentration of newly released birds

2: This area of partridge measure may be already occupied by territory holding pairs or coveys i.e. pushing newly released birds out.

Lessons learnt

- In future coveys released with radio tracked birds will be from a single family group
- Minimum of 6 birds in the covey for a radio tracker to be used and covey to be released in an area without recently released coveys or wild coveys.
- Releases to be undertaken directly into partridge measure (no holding in release pen) away from existing territories.
- Only fully developed male birds to be equipped with tags
- Birds should be fed with barrel feeders for a minimum of 1 week before release and a feeder should be located at the release site for minimum of 3 post release weeks to ‘hold’ birds.
- Thought should be given to equipping two or more birds in a single covey with tags to investigate survival rates post tag recovery.

3. Winter Habitat use

Method: Bi- Radio tracking and flush/ observation

Habitat type	Bird No 1	Bird No 2	Bird No 3	Bird No 4	Mean	Aggregate
Partridge Measure	2%	43%	60%	36%	**35.25**	**35%**
Grass field	3%	20%	0	0	**5.75**	**5.5%**
Gorse/ thorn Hedge	14%	20%	0	0	**8.5**	**8.5%**
Stubble field	23%	0	36%	19%	**19.5**	**20%**
Wild Bird Cover	32%	0	0	0	**8**	**7.5%**
Wild / Rough ground	0	17%	4%	45%	**16.5**	**17%**
Potato field	26%	0	0	0	**6.5**	**6.5%**

Discussion: Habitat use by released captive bred partridge

Partridge measure on its own did not 'hold' birds in an area. Other un- quantified factors also play into the choice of preferred habitat by a covey. Predation being potentially significant, with birds preferring to spend considerable amount of time away from field boundaries. However birds did make use of linear rough areas, and or field boundaries during adverse weather conditions.

Gorse hedges and laid thorn hedges appear to offer sufficient dense cover with associated canopy and dry ground conditions which the partridge exploited. This habitat type was used in particularly bad weather conditions such as strong winds, driving sleet and snow.

A potato field (10 acres) with little to no cover was used for conservable periods of time by covey 1: the birds appeared to feed and roost during the day in an area of the potato field which was too wet to harvest. The birds were also detected on the adjacent potato field boundary under a thorn hedge.

More research should be done investigating the use of root crop, bare soil and wet / dry island type areas for roosting and feeding. Birds appeared to feed on un- harvested potatoes but may also prefer to roost in areas surrounded by wet flushes (as recorded by sightings (not radio tracked) of another covey at Strahack farm.

Future Research

Habitat use, released captive bred bird survival rate, covey break up timing and overwintering bird species research will be continued until 2020 (3 year sample period).

1. **Pair survival and habitat use – 2018**

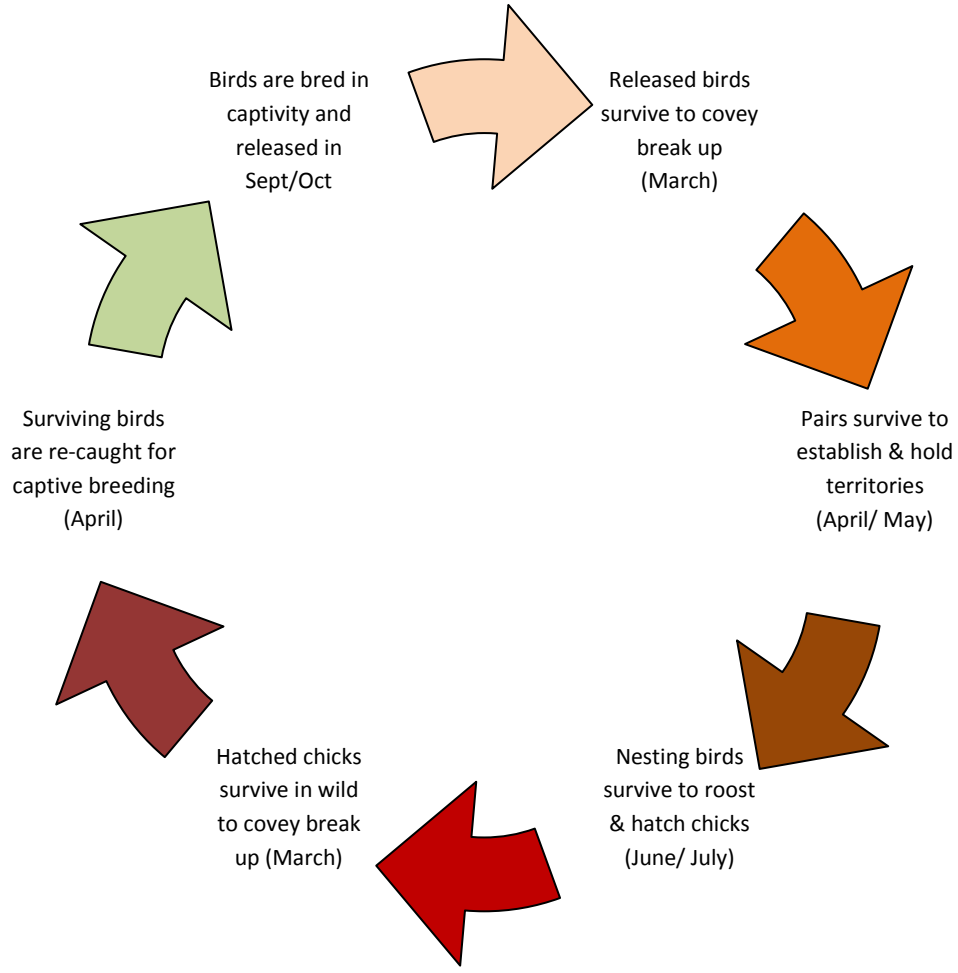
   Three male birds holding territory with a female have been caught from the wild and equipped with radio trackers before re- release. This study will investigate survival rates during the breeding season of adult males.

2. **Breeding farmland bird survey – Partridge measure / control – 2018**

   To further investigate the impact of Partridge measure on farmland bird's, surveys of calling male yellowhammer, green finch and linnet will be undertaken throughout the breeding season on the four study sites with partridge measure and the control plots.

Note: Making informed management decisions on the success or otherwise of the overall re-establishment program and or specific measures/ actions is entirely dependent on the availability of suitable data/ evidence. We plan to investigate each stage of the survival cycle using quantifiable research questions with measurable outcomes.

Figure 2: The colour coded survival cycle for establishing Grey Partridge in the wild



Recommendations – project requirements going forward

1. Increase GLAS target area to include all lands east of N14 road (Manor Cunningham roundabout – Lifford- bounded by Foyle river to east and Lough Swilly to north). This would result in an increase from current 4,000 hectares to 38,000 hectares. Current area of 4000 hectares is the minimum area identified in literature to allow for the survival of a breeding population in wild. However, according to current literature unmanaged land i.e. without a full time keeper can hold approx. 4.5 breeding pairs (population of 20 birds in total) on 100 Hec. (TGCT, 2016). Managed lands with intensive feeding and predator control can hold up to a max of 80 pairs per 100 Hec. (TGCT, 2016). Our project requires 140km of habitat 'on paper' to provide the ideal scenario for an expanding un-managed population in East Donegal and we currently have 15km. A minimum of 96km of partridge measure is targeted through future GLAS type programs in the current target area of 4000 Hec.

2. Future GLAS/ agri - environment programs; the long term development of habitat for the NE Donegal project is restricted by the average size of the farms being too large. This limits the amount of habitat put in place per 100 Hec. Block under GLAS type programs. E.g. five farms of 50 acres allows 16.5km of habitat to established but one farmer of 250 acres only produces 3.3km of habitat.

3. To ensure local ownership and avoid over dependence on a single organisation it is recommended to maintain current collaborative set up.

4. Target the development of captive breeding capacity in the neighbouring gun clubs.

5. The breeding and release program will require augmenting with approx. 30 birds each year for 10 years to ensure a widening of the gene pool by approx. 23% over time - as per species re-establishment literature recommendations.

6. Incrementally increase the number of wild caught birds used in captive breeding each year until only wild caught birds are used.

7. Workload is at its limit for the voluntary team. Engage an operative for assisting with predator control, captive breeding and research; ideally a locally based individual supported by regular (once a month at minimum) keeper training and mentor program provided by experienced/qualified operative from UHI, GPT and NARGC.

8. Develop professional mind set to game keeper skills in local community and neighbouring areas

9. Continue trials of pressure release snares to address by-catch of badgers issue

10. Snare size – discussion over reduction of snare size opening to UK size. Target species is fox and it is suggested by local operatives that foxes are slipping through the larger ROI openings – recommend use of trail cams on snares to support this.

11. Rat control – source and test new methods without use of poison

12. Assistance with research studies from third level institutions would be of great benefit

Inch Island and North East Donegal Grey Partridge Re- Establishment Project

With thanks to

- Department of Agriculture Food and Marine
- National Parks and Wildlife Service
- National Association of Regional Game Councils
- Donegal Game and Wildlife Council
- Inch Gun Club
- Irish Grey Partridge Trust
- Heritage Council

Further details and information can be requested from

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