

Evaluating Strategies for Invasive Alien Species Management

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IUCN guide to the EU Regulation on Invasive Alien Species

1143/2014

Regulation applies to:

All invasive alien species (IAS)*

- Introduced outside natural range
- Live specimens that may reproduce
- Adversely impact biodiversity and related ecosystem services

Listing criteria:

- Alien to the Union (exc. outer regions)
- Capable of establishing & spreading in >2 Member States (MS) or 1 marine region
- Adverse impacts to biodiversity & ecosystem services
- Risk Assessment shows concerted action at Union level required
- Inclusion on the List will effectively prevent, minimise or mitigate impacts

Prevention measures

Emergency measures

- For IAS of imminent risk of introduction not on Union List
- IAS need to likely meet criteria for inclusion on Union list
- Member States (MS) may apply temporary Restrictions
- MS must notify Commission - to decide if apply EU wide
- MS must carry out Risk Assessment and submit for inclusion on Union List

IAS of Member State/regional concern

- MS may establish a national list of IAS and apply Restrictions and other measures at national level
- For IAS that require enhanced regional co-operation MS may request Commission to require MS concerned to apply the following measures: Action plans, Surveillance, Early detection, Rapid eradication, Management, and Restoration

* Regulation 1143/2014 scope excludes:

- Species that expand range without human intervention
- Non-native species covered by other EU legislation

List of IAS of Union concern

'Union List' = 49 species

- 2016 = 37 species listed (23 animals and 14 plants)
- 2017 = +12 species listed (3 animals and 9 plants)

Early detection and rapid eradication

Surveillance

- MS establish a surveillance system for IAS of Union concern
- Needs to be able to rapidly detect new introductions

Controls

- MS have in place risk-based controls to goods imported to verify they are not on the Union List or are covered by a valid Permit

Early detection notification to EC

Rapid eradication

- MS undertake eradication (complete & permanent) within 3 months of notification
- Methods used with due regard to human health, environment and animal welfare

Derogations

- Within 2 months of detection, MS may not eradicate if one of the following apply:
 - Technically unfeasible
 - Cost-benefit analysis show costs disproportionate to benefits
 - Eradication methods not available or have serious impacts to human health or environment
- Can be rejected by Commission within 2 months

Prevention measures

Restrictions

- IAS of Union concern shall not intentionally be; brought into the Union, kept, bred, transported, sold, used or exchanged, permitted to reproduce, grown or cultivated, released into the environment

Action plans

- Pathways analysis of unintentional introduction for IAS of Union concern
- Pathway action plans implemented for priority pathways (within 3 years of adoption)

Authorisations

- In exceptional cases for reasons of compelling public interest (incl. social or economic) MS may permit activities
- Authorisation required from Commission

Permits

- Permits issued by MS allowing for research or ex-situ conservation activities

Management of widespread IAS

Management

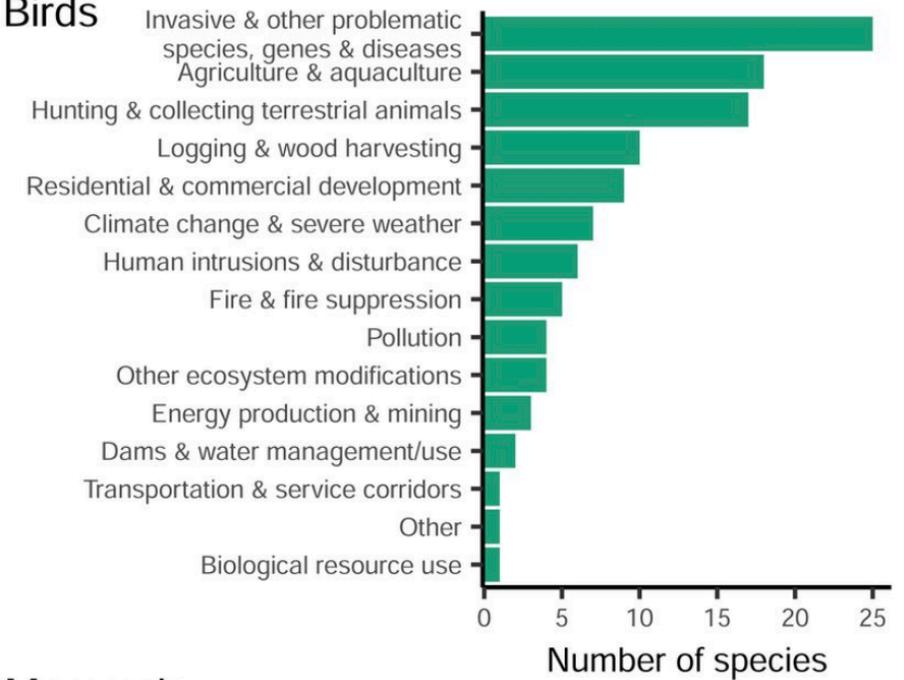
- MS have in place effective management measures for IAS of Union concern that are widespread in their territory (18 mo. of adoption)
- Based on cost-benefit analysis

Restoration

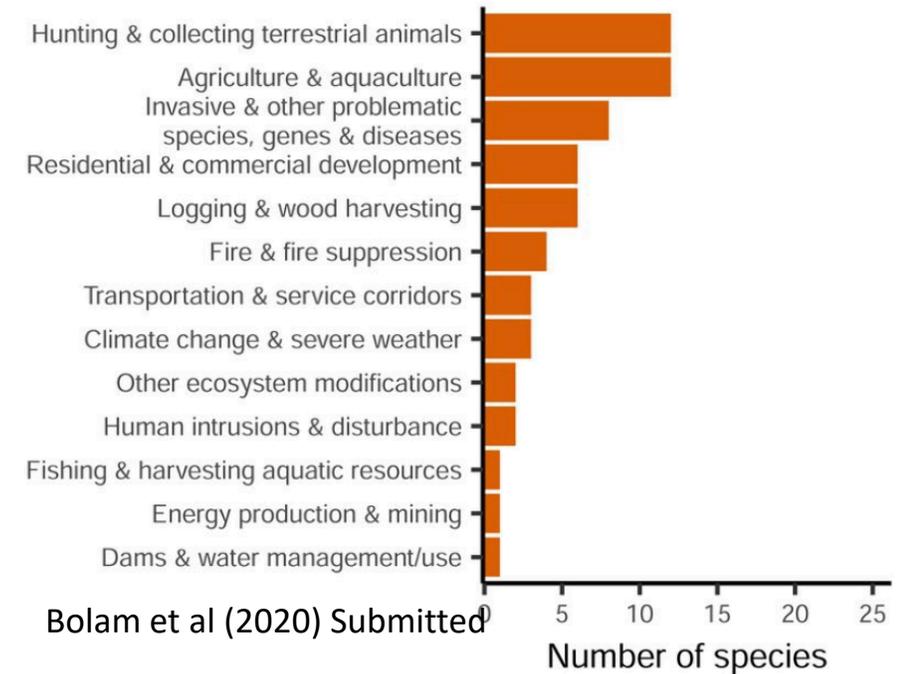
- MS carry out restoration to assist ecosystem recovery degraded by IAS of Union concern
- Based on cost-benefit analysis



a) Birds

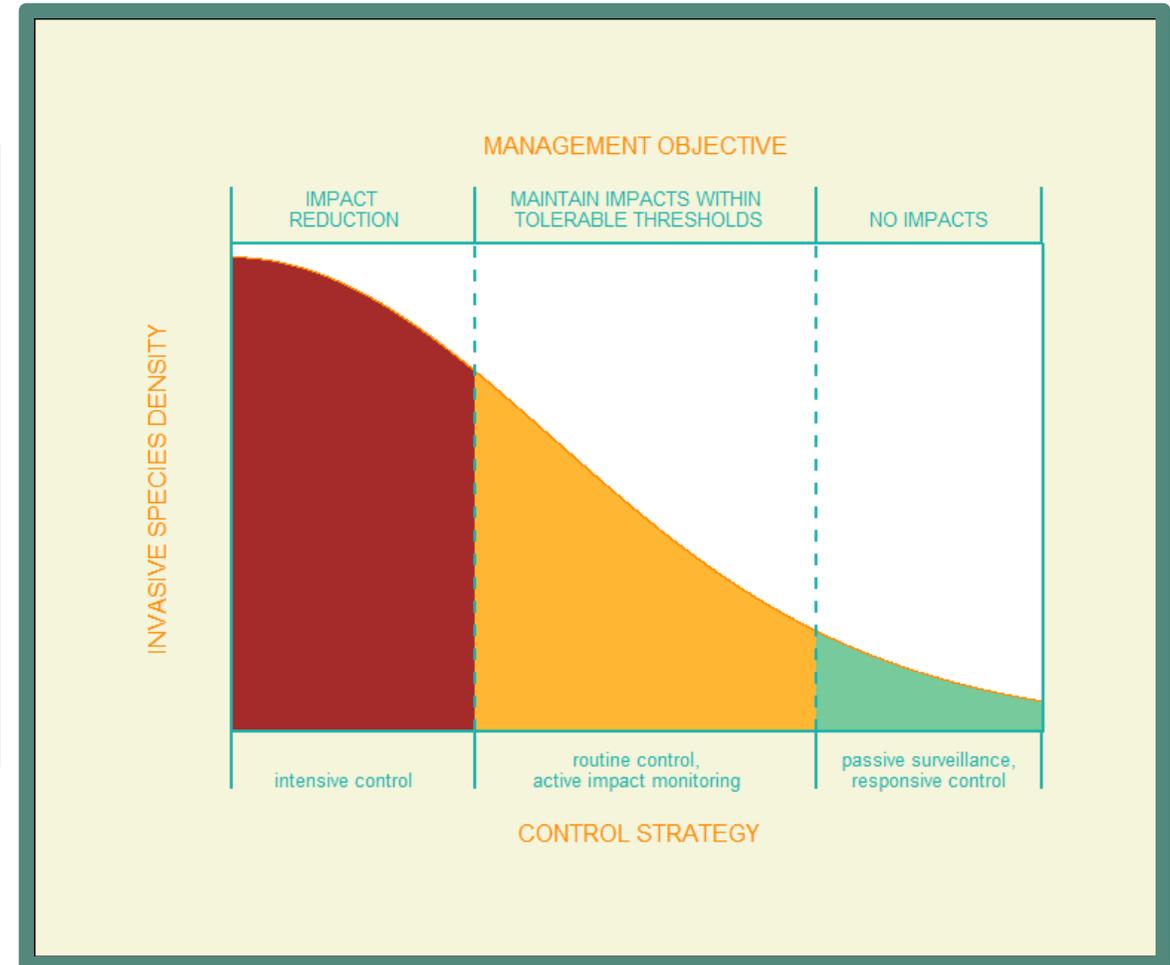
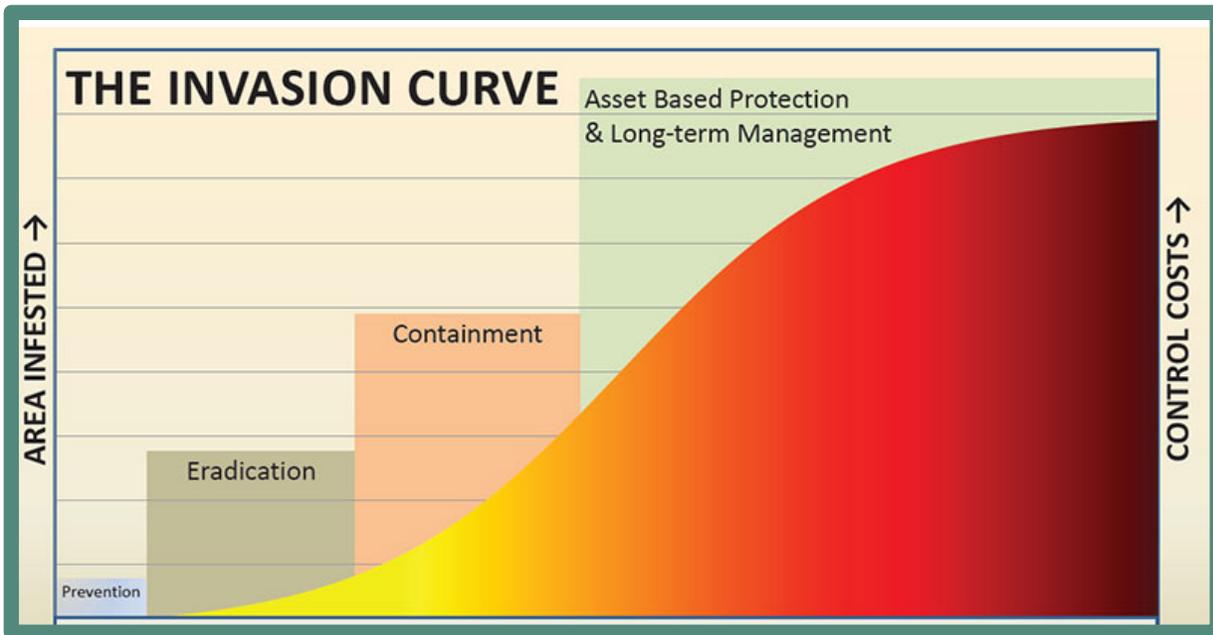


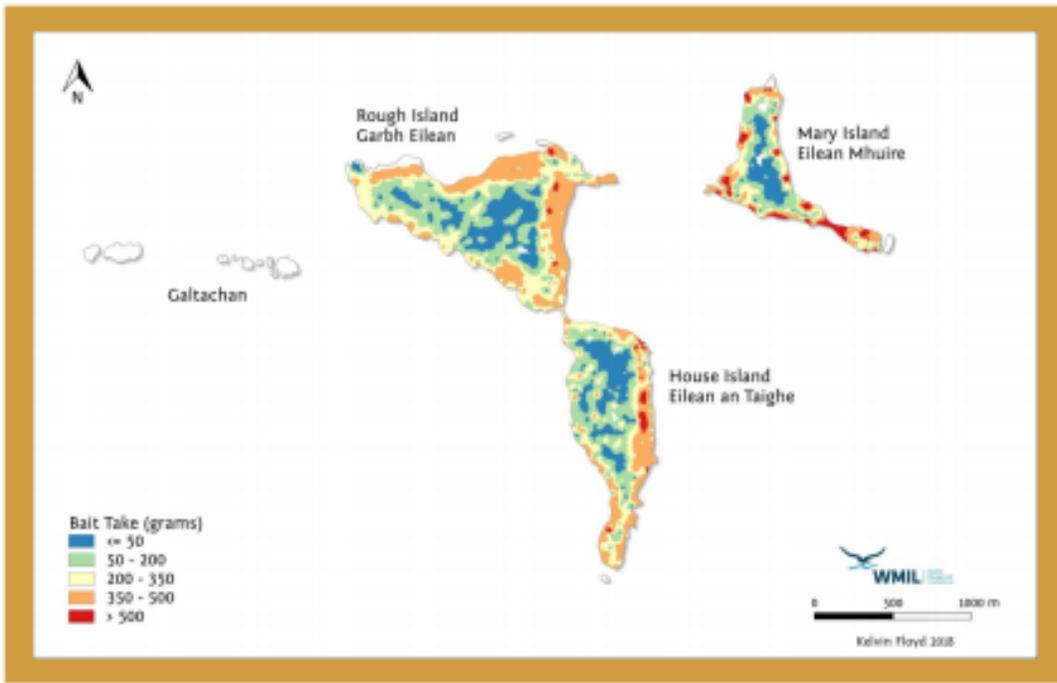
b) Mammals



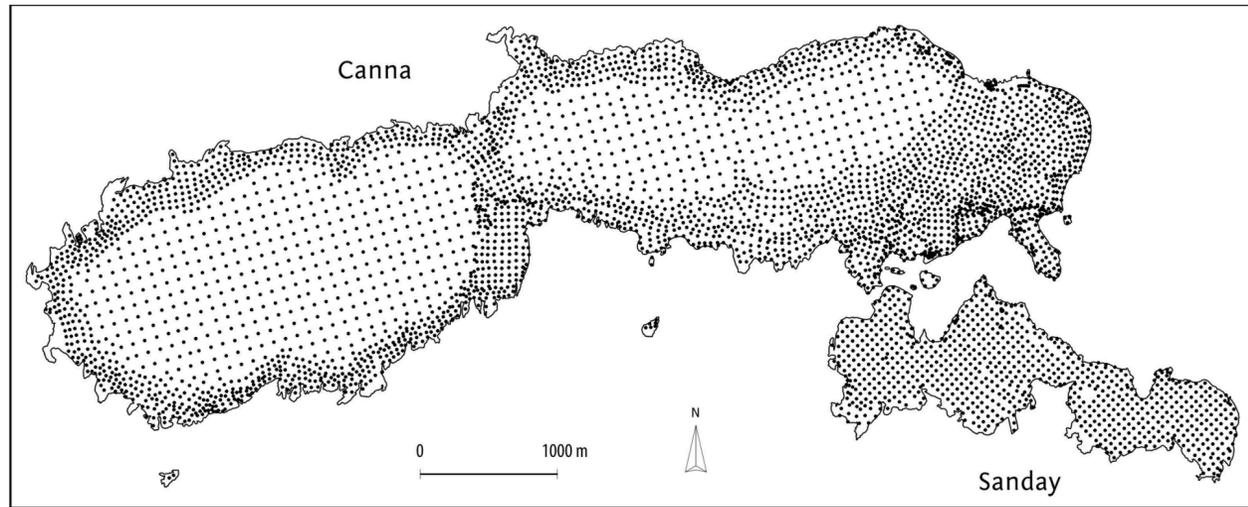
Bolam et al (2020) Submitted

Invasion Stages



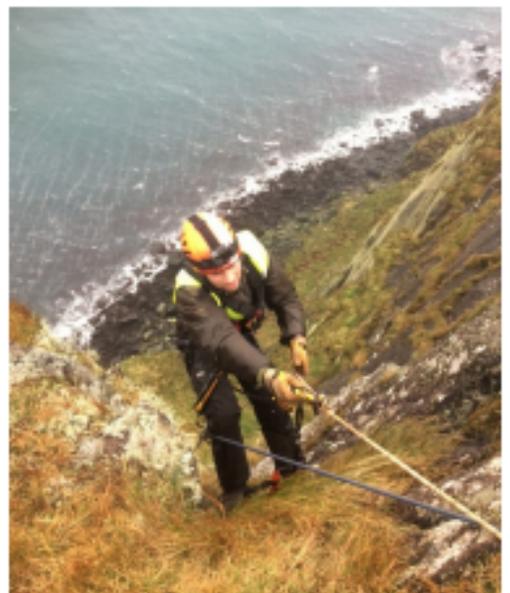


Map of bait take by rats during the rat removal operation, Kelvin Floyd, WMIL



Bait station by E. Bell, WMIL

Rats: Using grids of traps to monitor removal





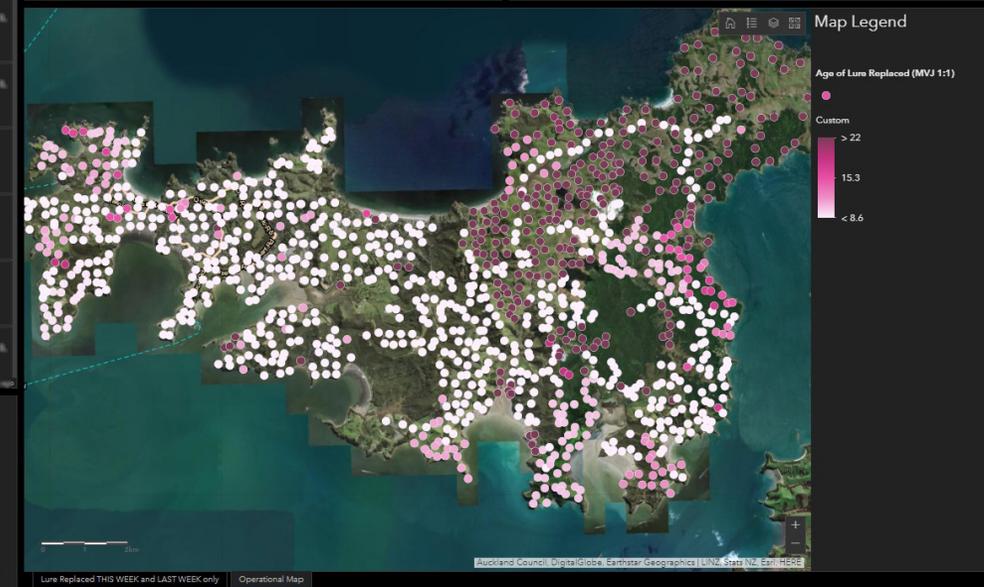
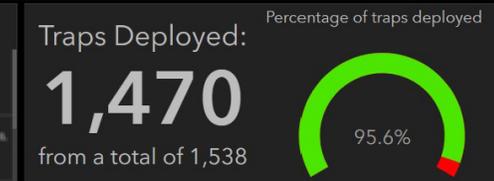
Stoats: more of a challenge but can apply the same techniques.

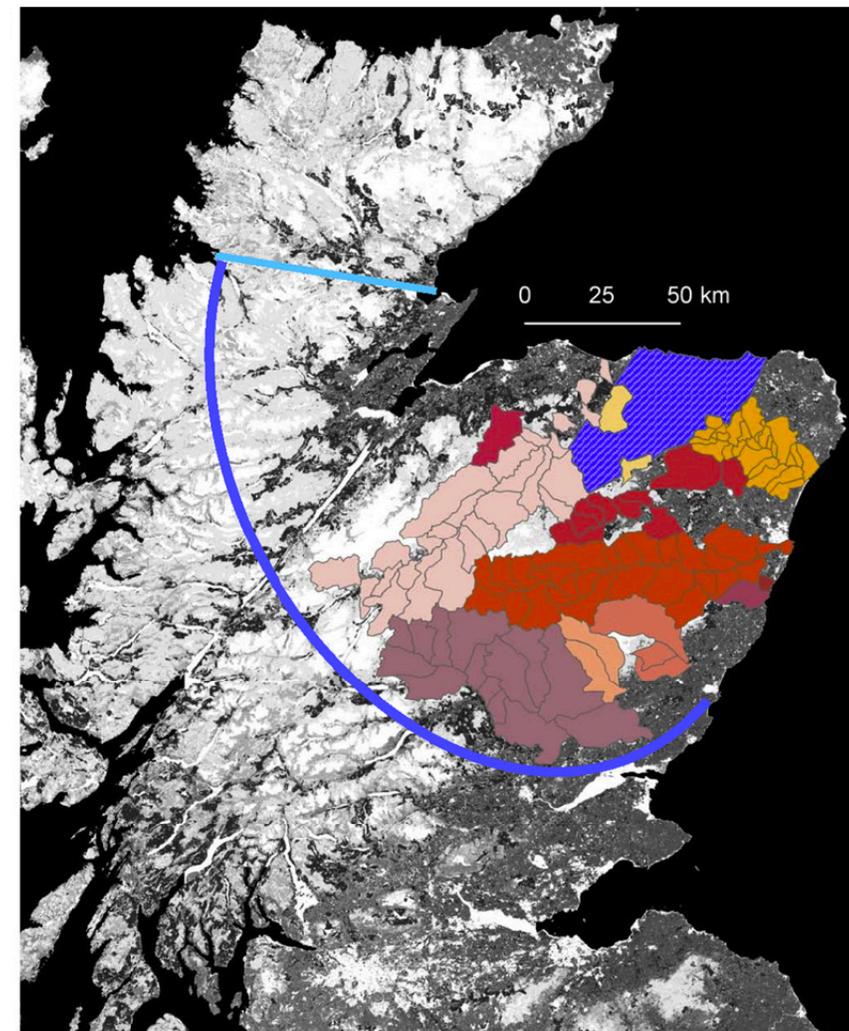
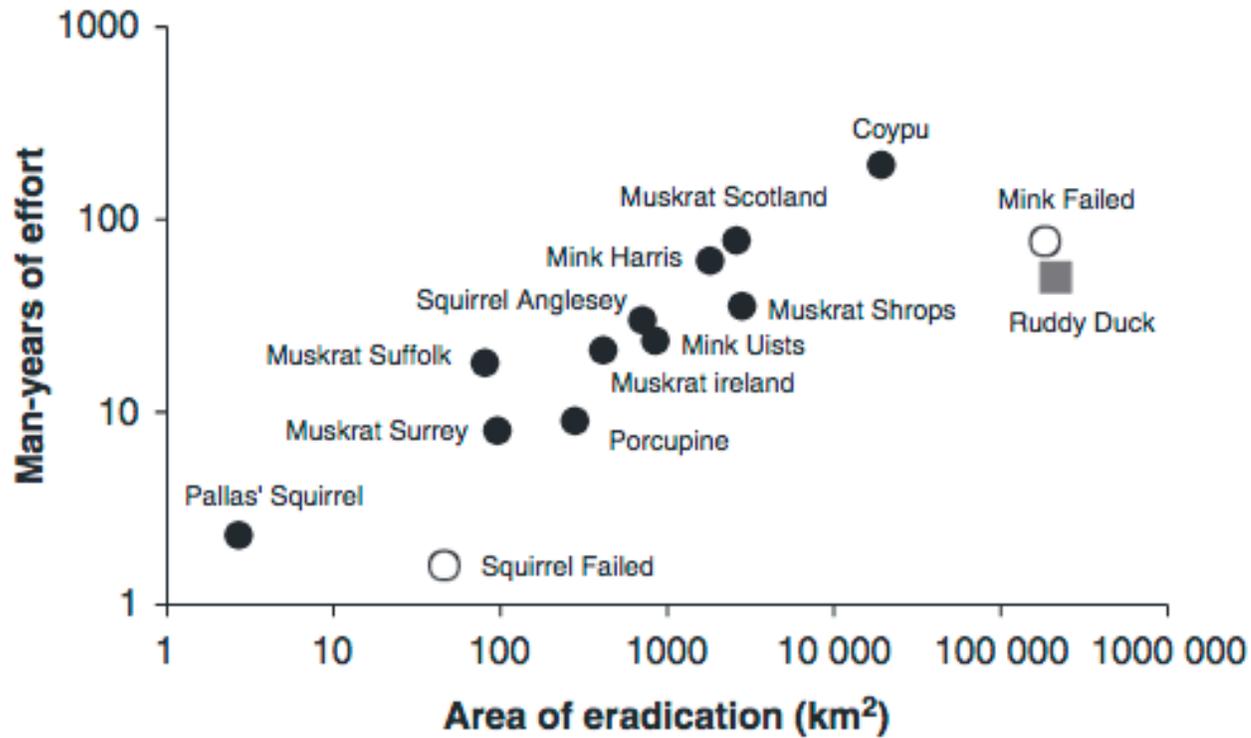


Report a stoat sighting

All stoat sightings are important to us. They give us an insight into the distribution of stoats across Orkney. If you have seen a stoat either dead or alive we would really like to hear from you. It is important that you record the date and location – if possible the six figure OS grid reference.

Contact SNH on 01856 886163 or email north@snh.gov.uk





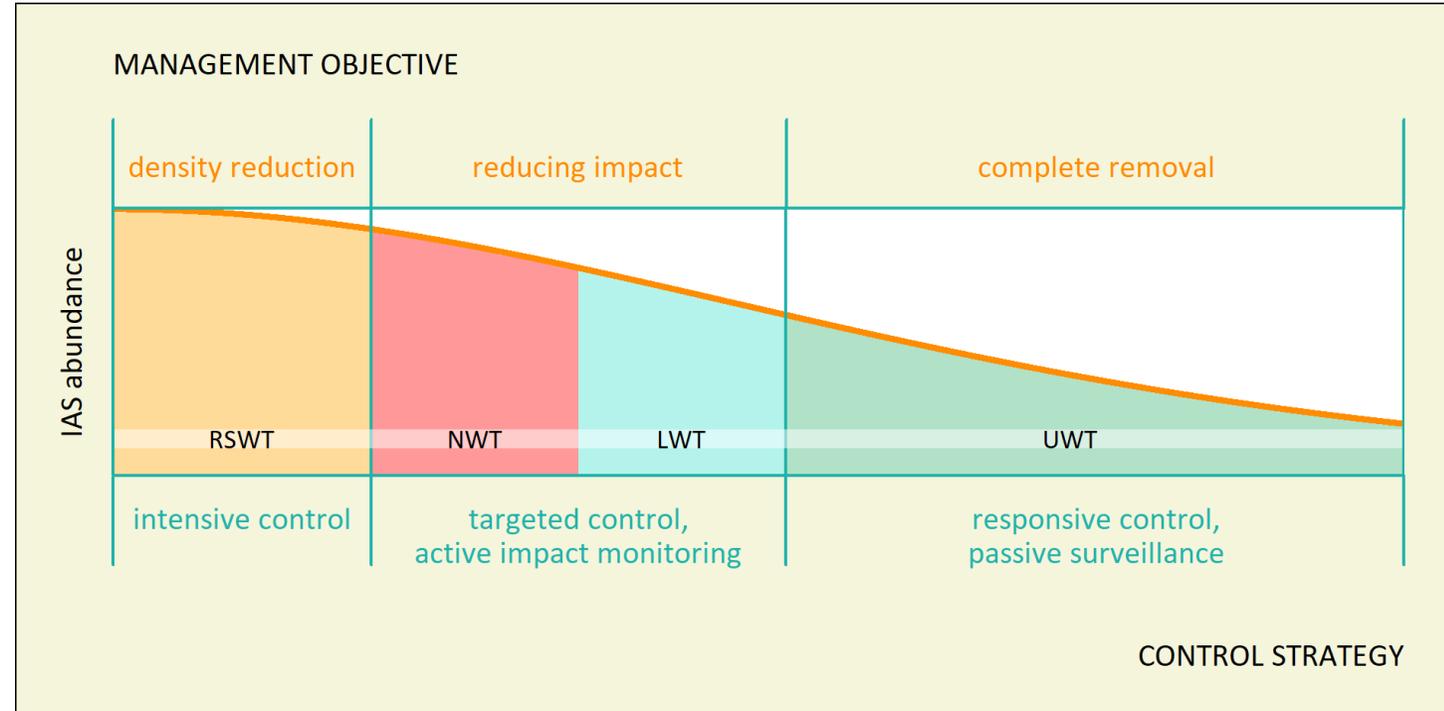
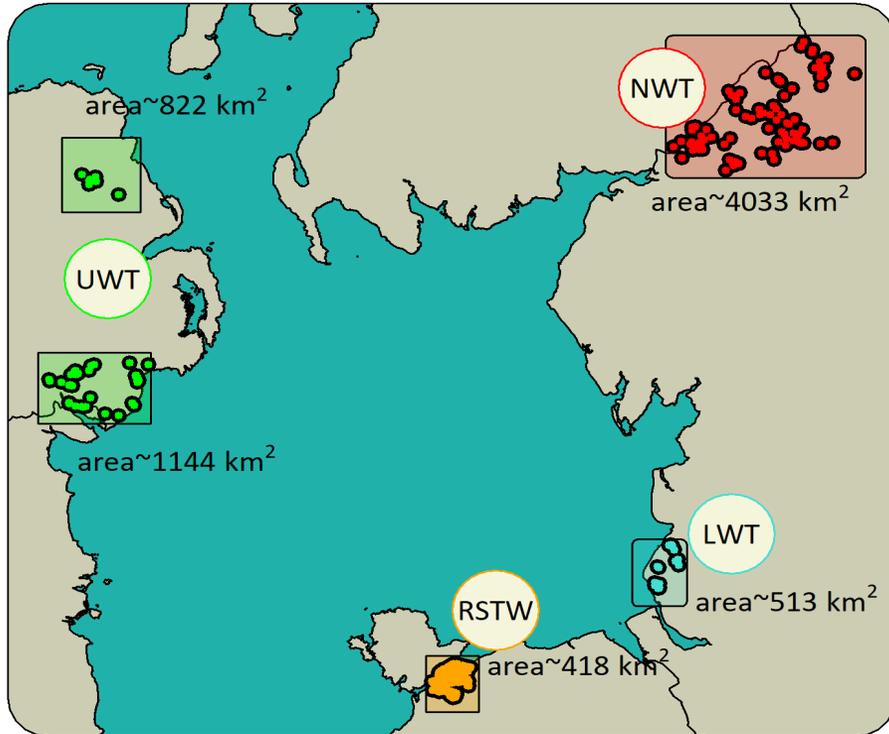
Robertson et al. 2019

- What do we know about planning control of widespread invasive species?
- What strategies should we use?



Challenges of managing widespread invasive mammals

Define Management Strategies



Density reduction

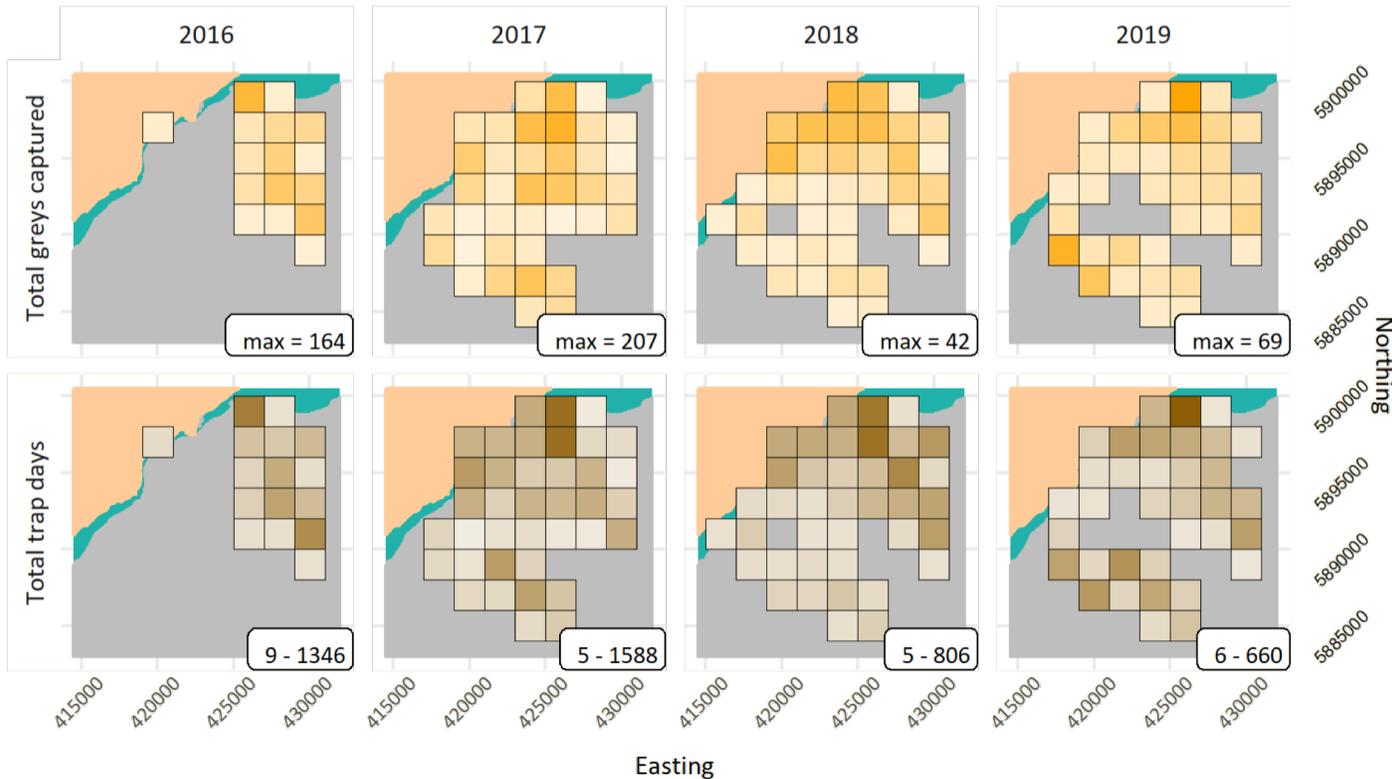


Annual distribution of captures and control effort (2km x 2km cells)

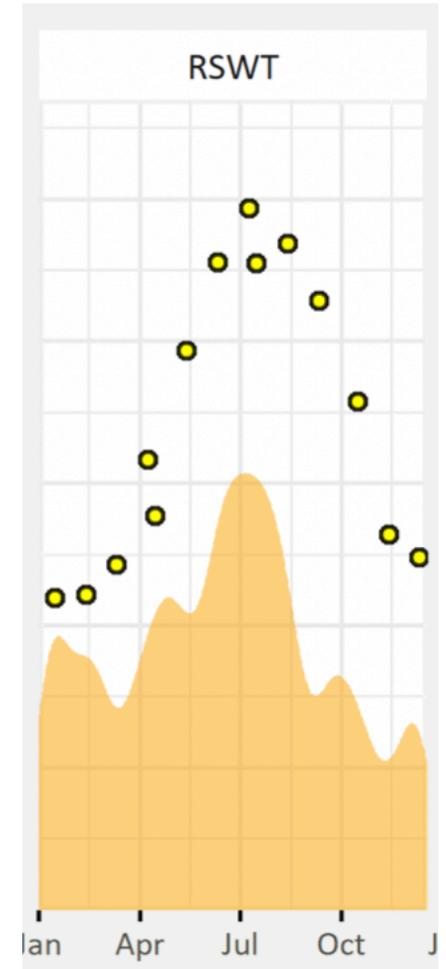
□ lowest □ highest

Conservation zones

■ Isle of Anglesey ■ North Gwynedd



IAS management
 ~ 4000 captures
 ~ 6 rangers
 ~ 1800 trapping sessions



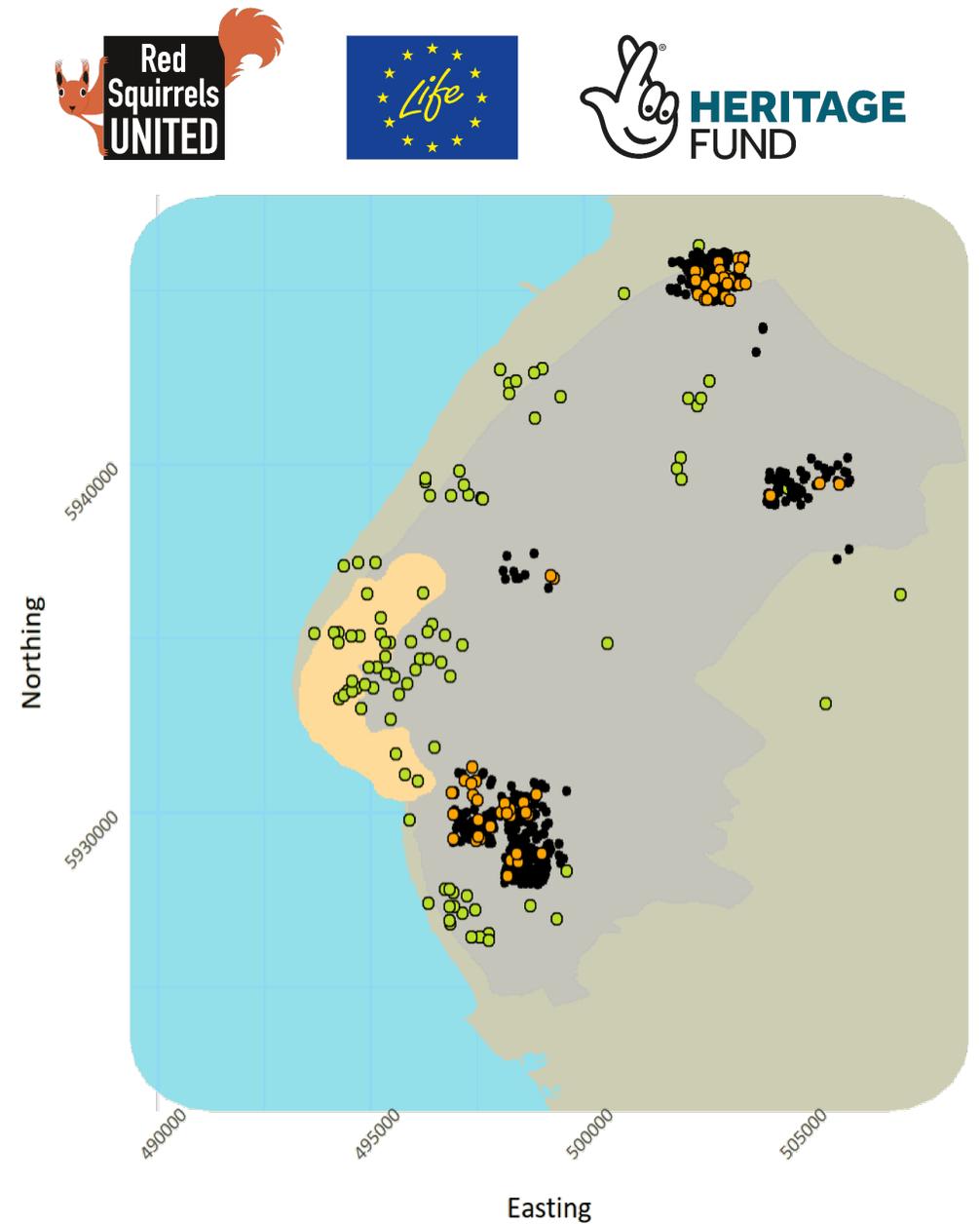
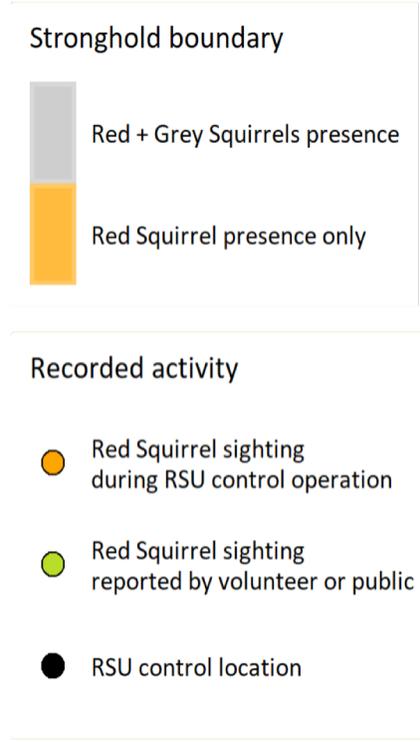
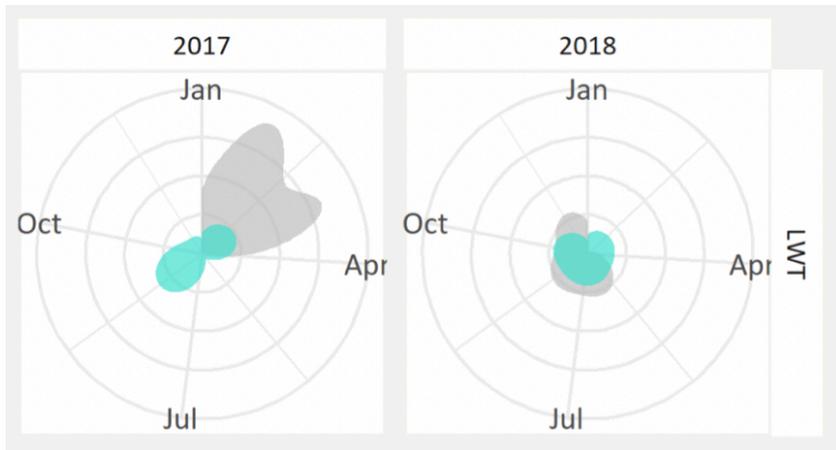
Impact mitigation

IAS management

~ 500 captures

1 ranger trapping and shooting

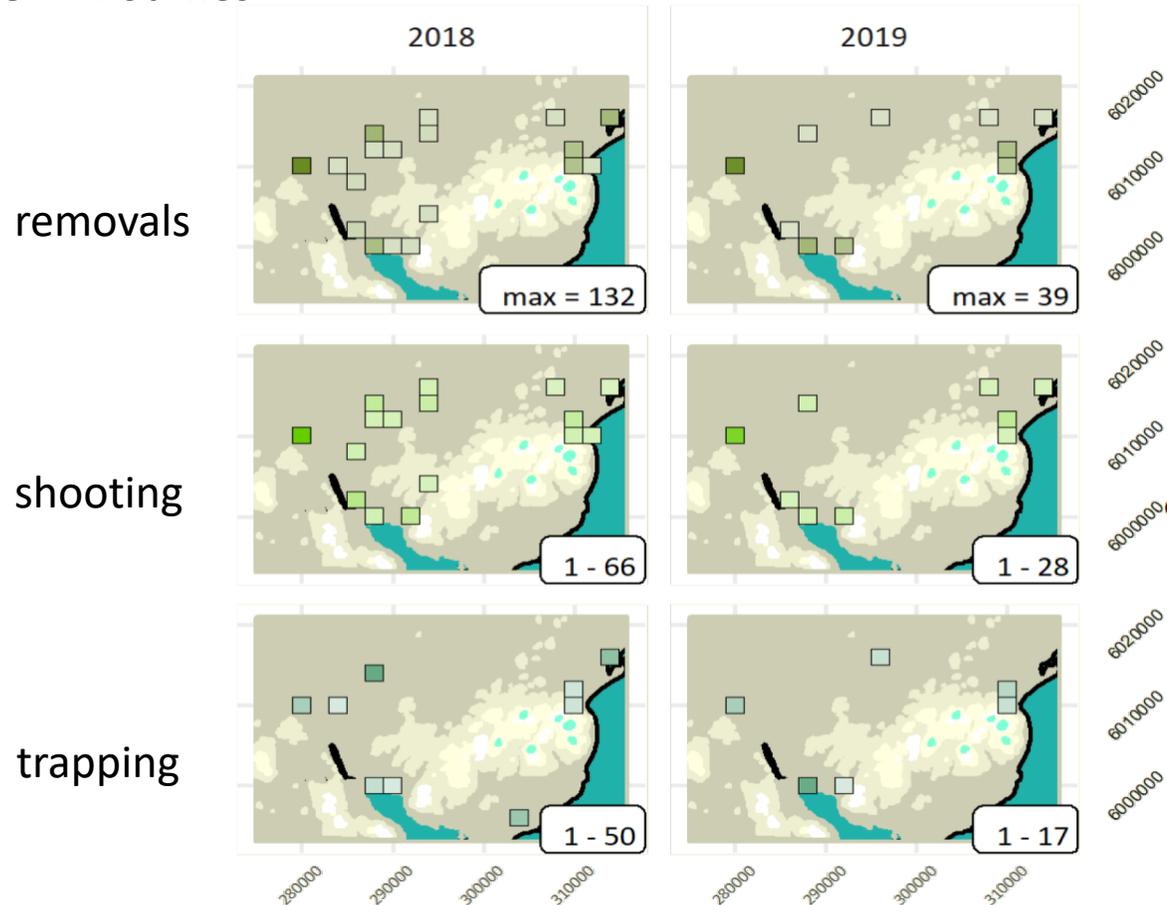
Patchy woodlands



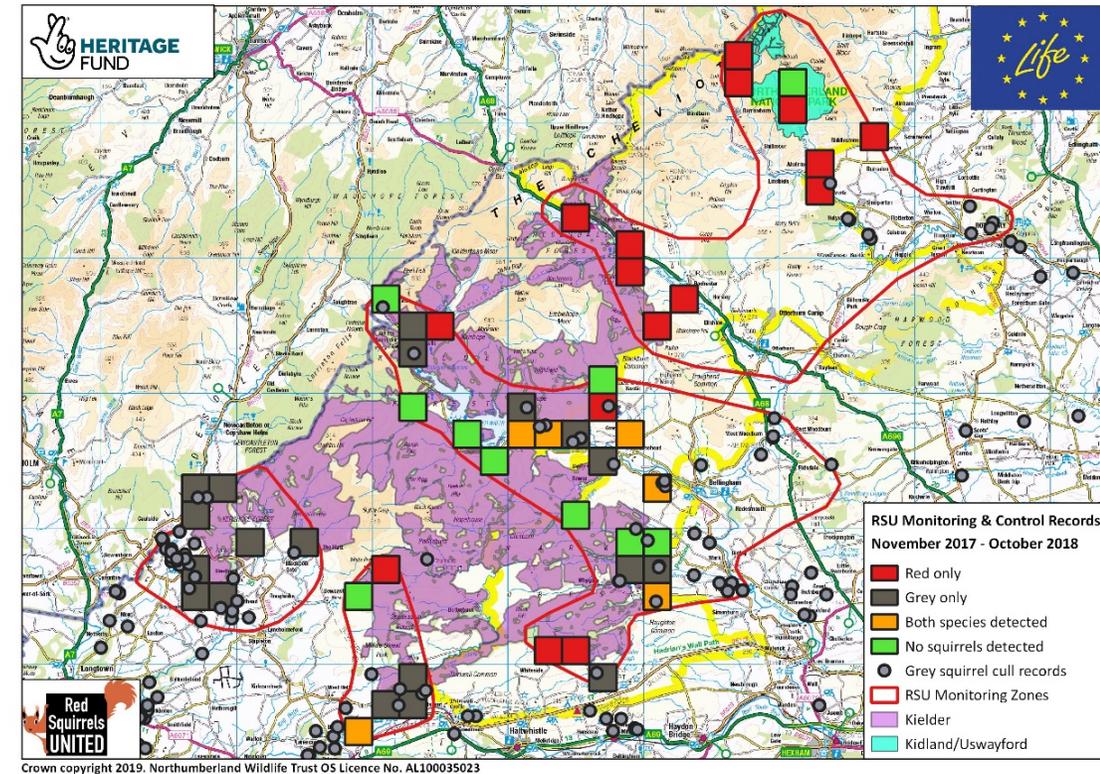
Stakeholder contributions and community engagement



Ulster - Mourne



Keilder – Early warning



CONTRIBUTION OF THE TRAP LOAN SCHEME TO RSU



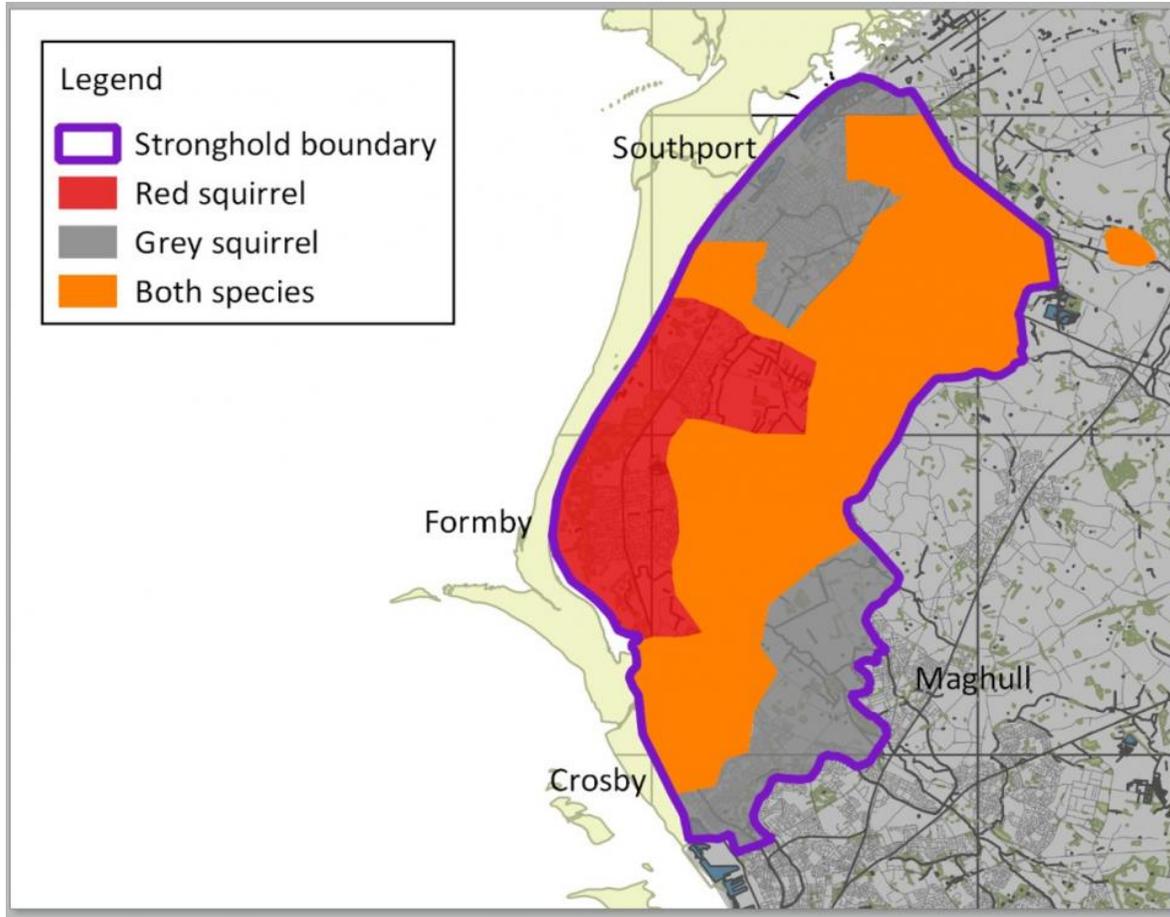
Objectives

1. To describe the volunteer contribution in controlling grey squirrels and uptake of the Trap Loan Scheme
2. To describe the motivations and experiences of volunteers for engaging with the scheme
3. To assess the TLS effectiveness in controlling the grey squirrels

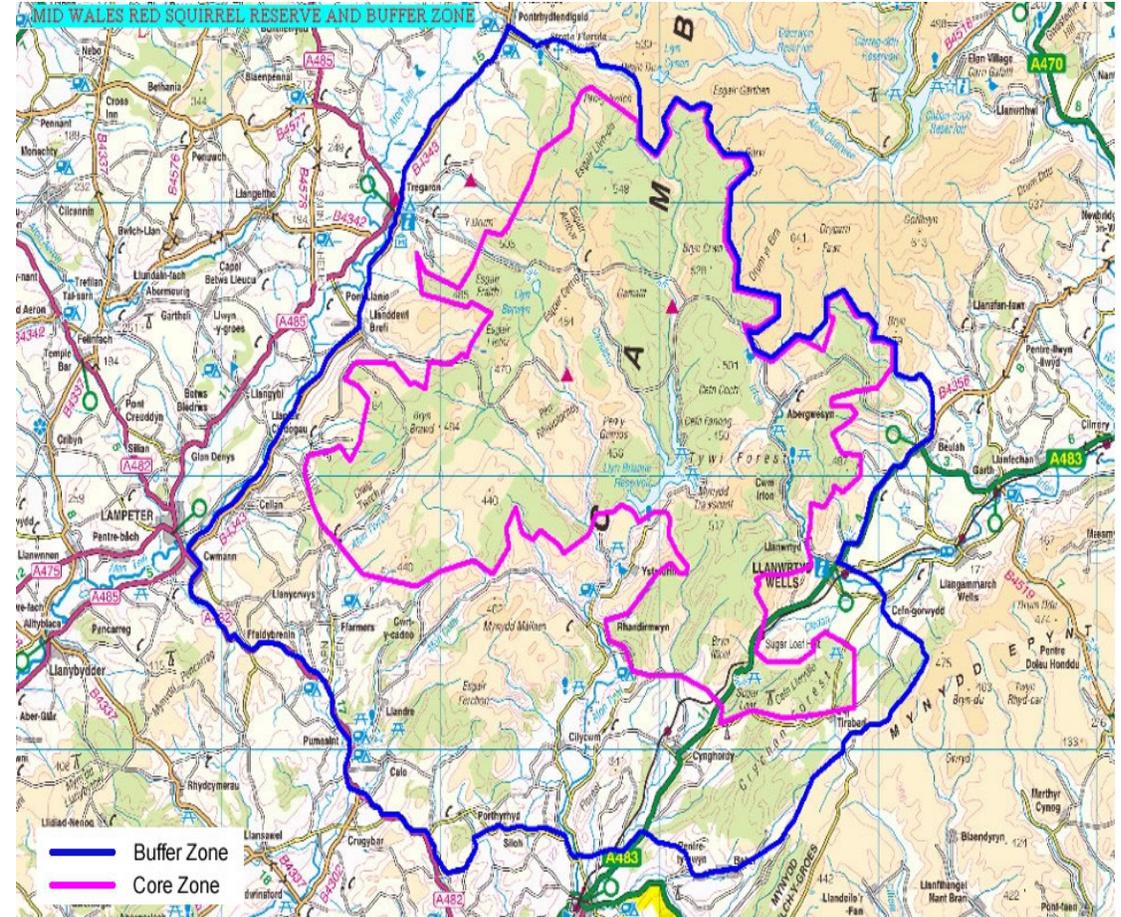
Study Area



Merseyside



Mid Wales



Trap Loan Scheme volunteers



- ❖ The volunteers work on a reactive basis (trap squirrels that people report)
- ❖ The member of the public monitors the traps and reports to Red Squirrel Officer when grey squirrels are caught
- ❖ Dispatched humanely using cranial concussion or shooting

Study participants and questionnaires



- ❖ To understand the motivations for volunteering and experiences of volunteers in TLS
- ❖ Structured questionnaires were distributed via email and post to volunteers from Mid Wales and Merseyside
- ❖ The questions covered topics such as: motivations, benefits and challenges for being a volunteer of the TLS and future improvements

Study participants and questionnaires



- ❖ Merseyside- January 2013 to December 2019
- ❖ Mid Wales-October 2016 to September 2019

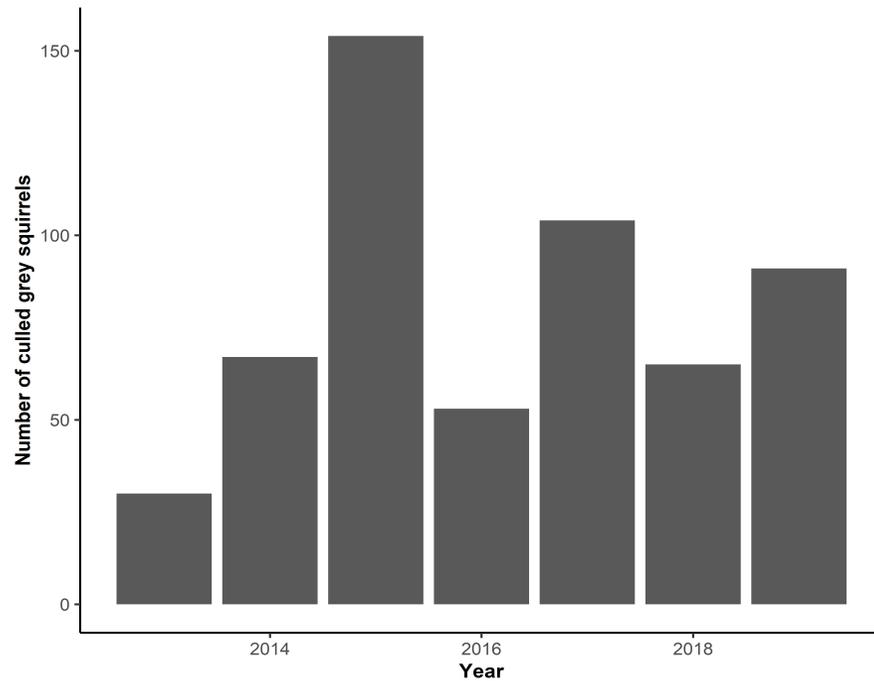


Results



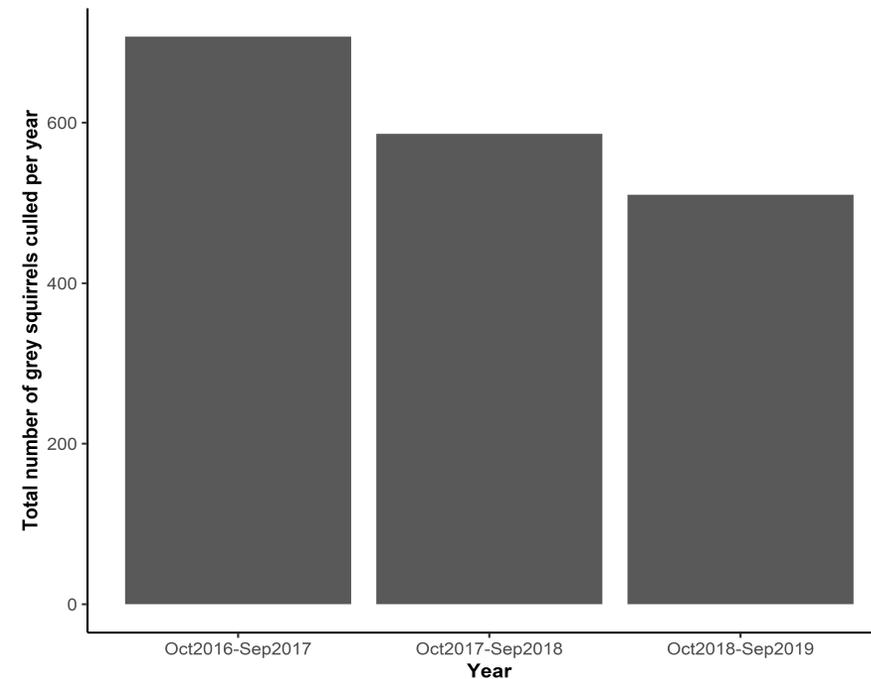
Merseyside

- ❖ 564 grey squirrels were culled
- ❖ 215 TLS volunteers
- ❖ a total of 484 volunteering events



Mid Wales

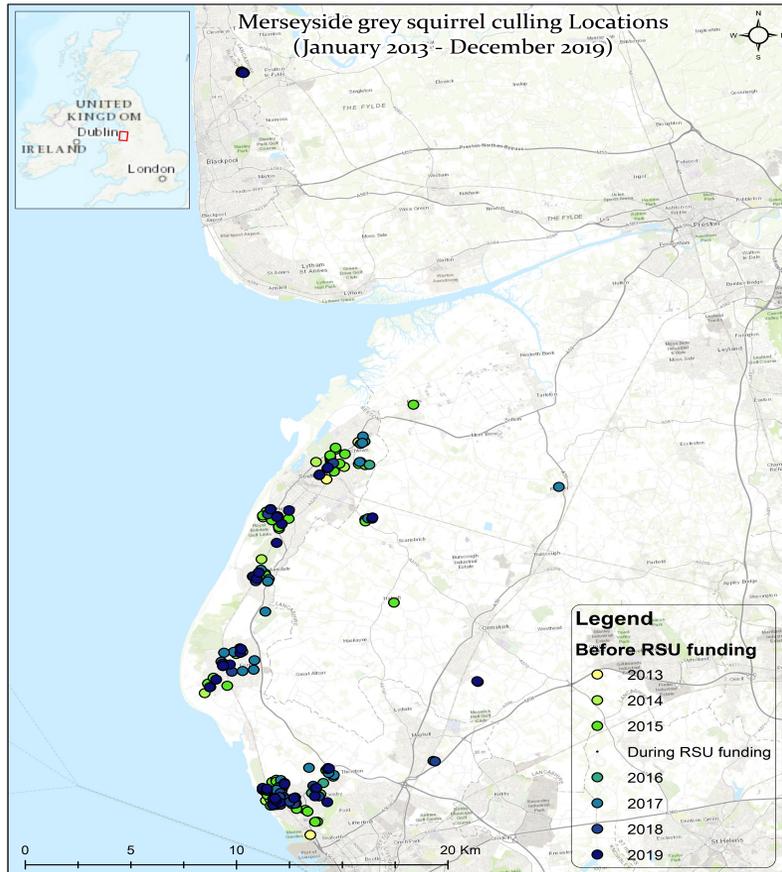
- ❖ 1803 grey squirrels were culled by
- ❖ 130 TLS volunteers
- ❖ a total of 332 volunteering events.



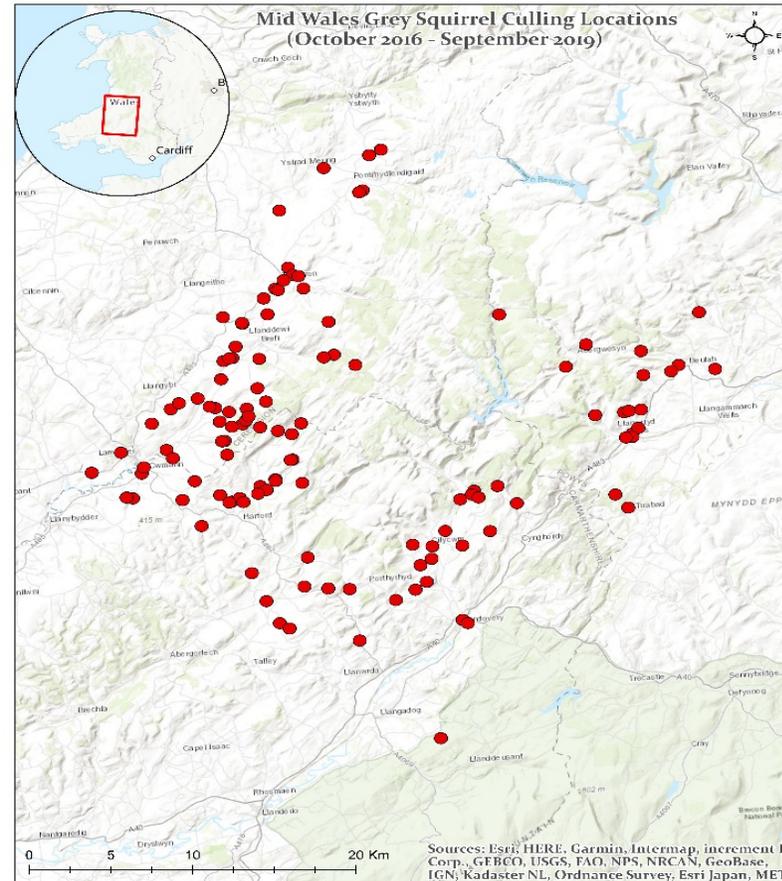
Results



Merseyside



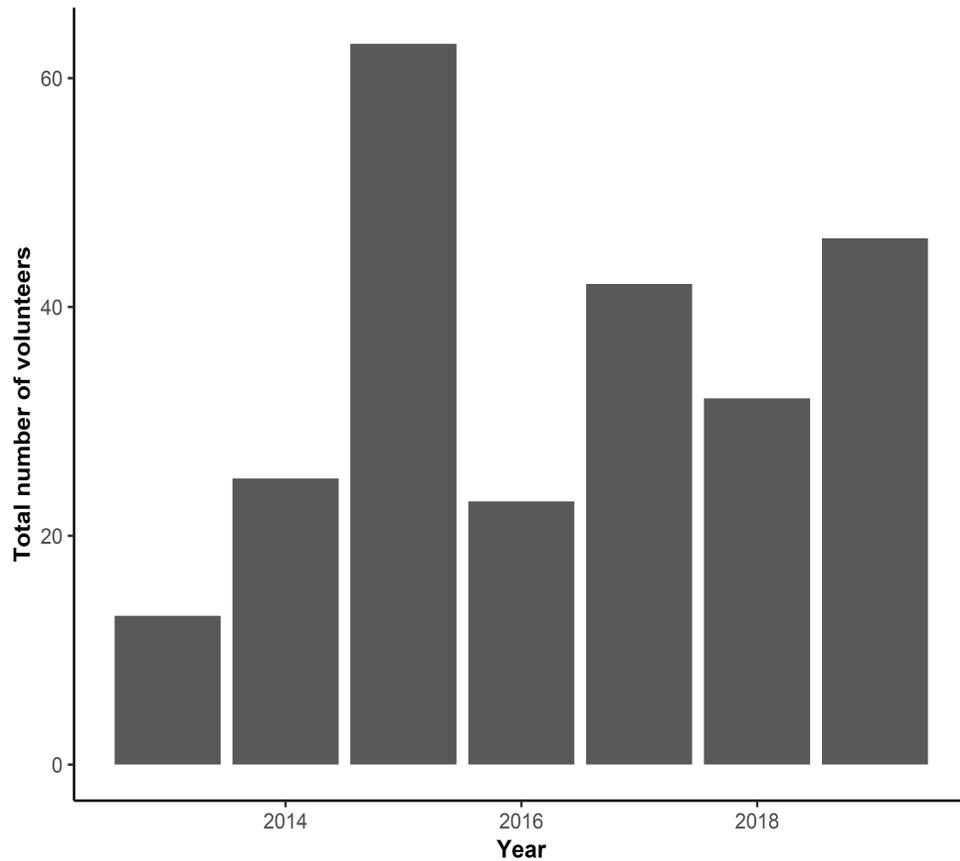
Mid Wales



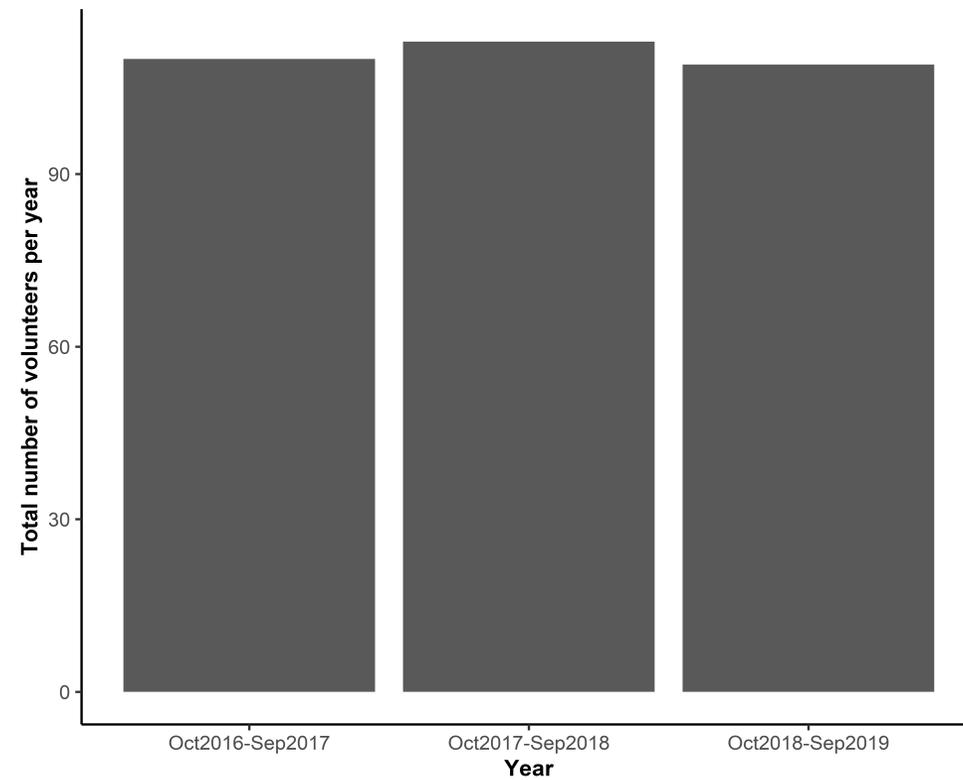
Results



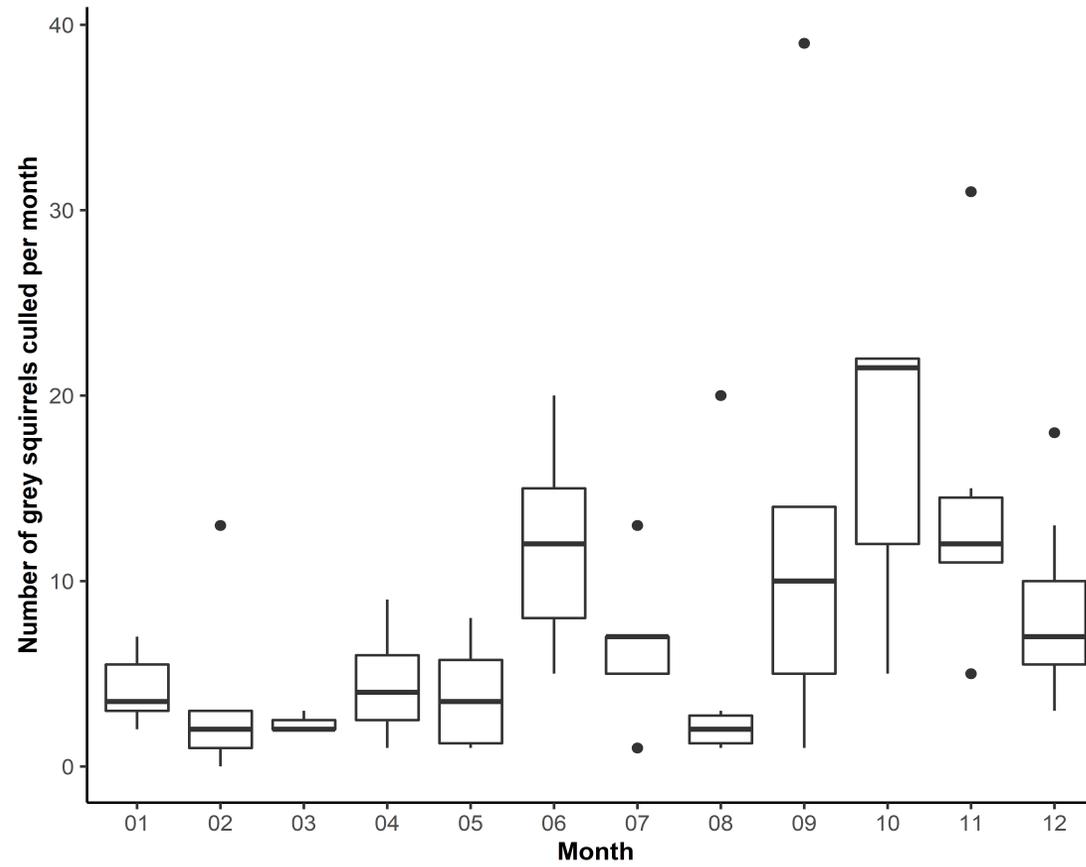
Merseyside



Mid Wales



Results



Discussion



- ❖ Merseyside (urban TLS) represented 23.83% of all trapping activity while Mid Wales (rural TLS) represented 76.17%
- ❖ Summer and Autumn- successful trapping - could be related to dispersion of the juvenile and search for food
- ❖ Autumn with the most number of volunteers
- ❖ TLS had a good level of volunteer recruitment and retention



Motivations and experiences



- ❖ Majority of the volunteers expressed their reasons for volunteering to **'saving the red squirrels'**
- ❖ These were related to different experiences such as the **crisis that the red squirrels were in and the need to help the red squirrels.**

Improvements



- ❖ “If someone is centrally putting data onto a map, of where the greys are being caught, it would be nice to be able to access it”
- ❖ “Feedback about the locations and quantities of greys control, feedback from any scientific research, real time alerts so volunteers are aware when and where grey squirrels are 'on the move’”
- ❖ “Better standards for maintaining contact with loan recipients, perhaps a 'reward' scheme for those who request traps e.g a newsletter, and feedback about the status of red squirrels.”

Conclusions

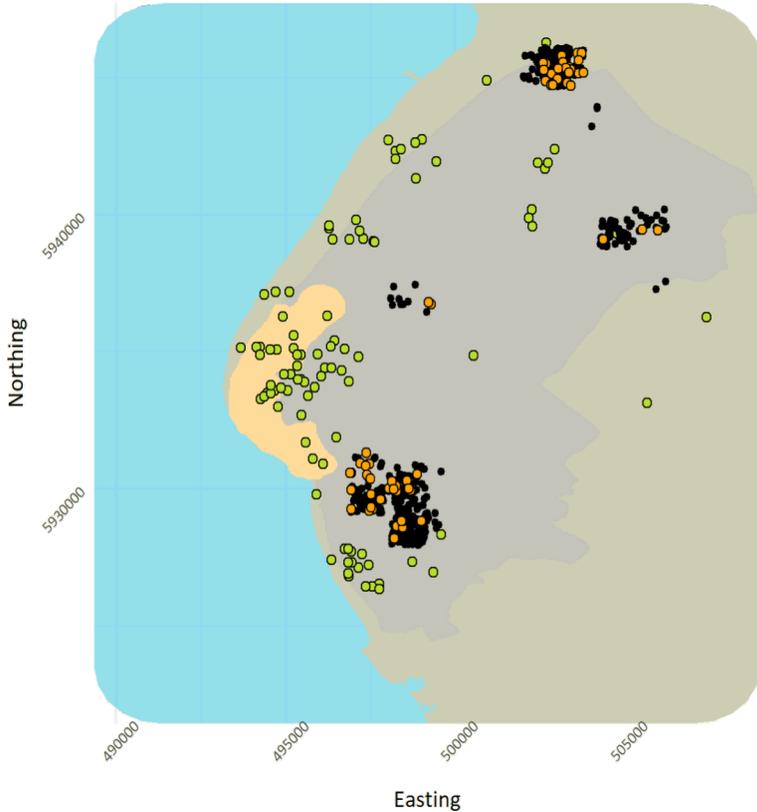


- ❖ TLS is a good initiative that is contributing positively to UK's need to control the invasive grey squirrel populations
- ❖ Engaging the volunteers in the management of the grey squirrels is of great importance as they act as the ambassadors of conservation
- ❖ TLS volunteering can be particularly useful in low population density areas (such as mid-Wales) and in urban areas (e.g. Merseyside) where access to private gardens is an issue.
- ❖ Motivation of volunteers is important (e.g. RSU knowledge fairs). More could be done to encourage younger TLS volunteers

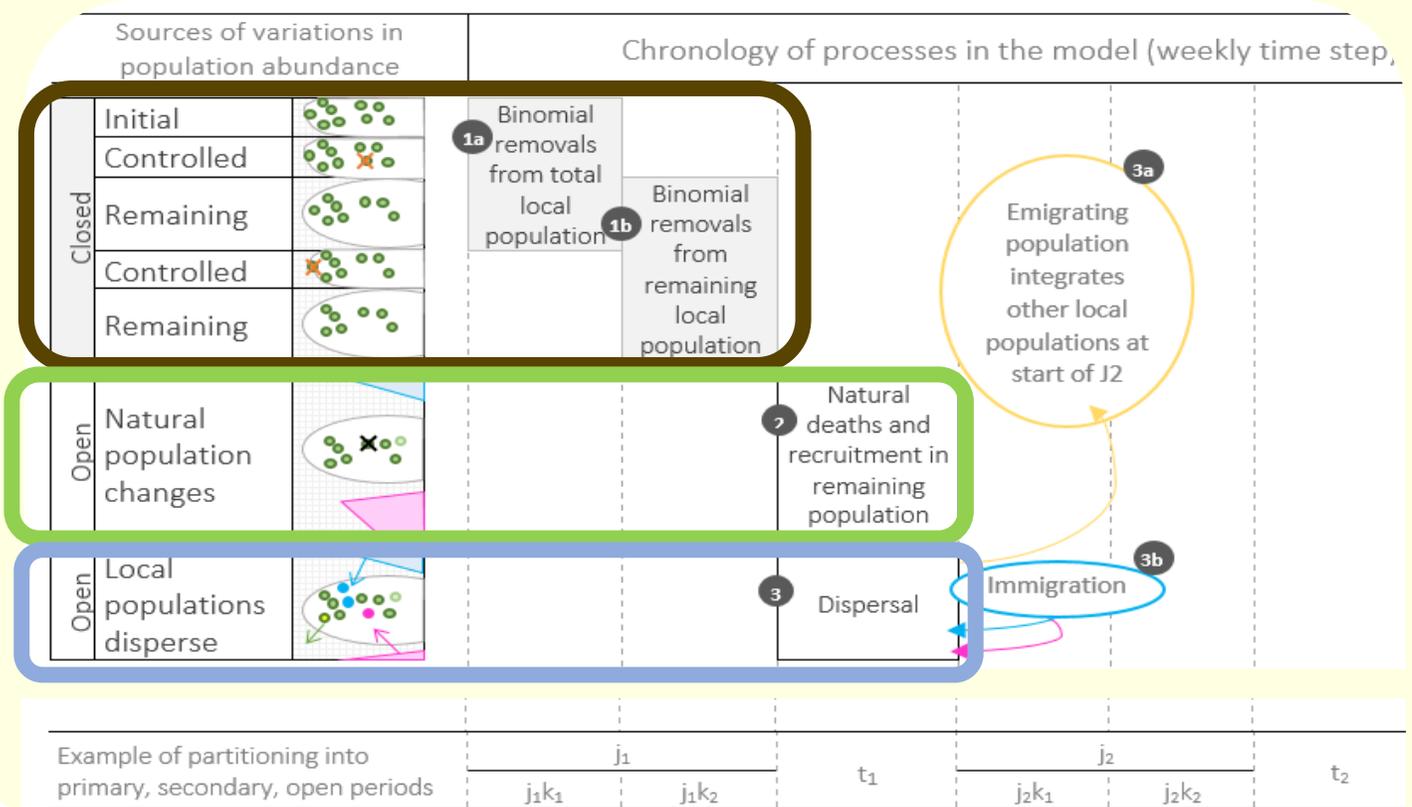


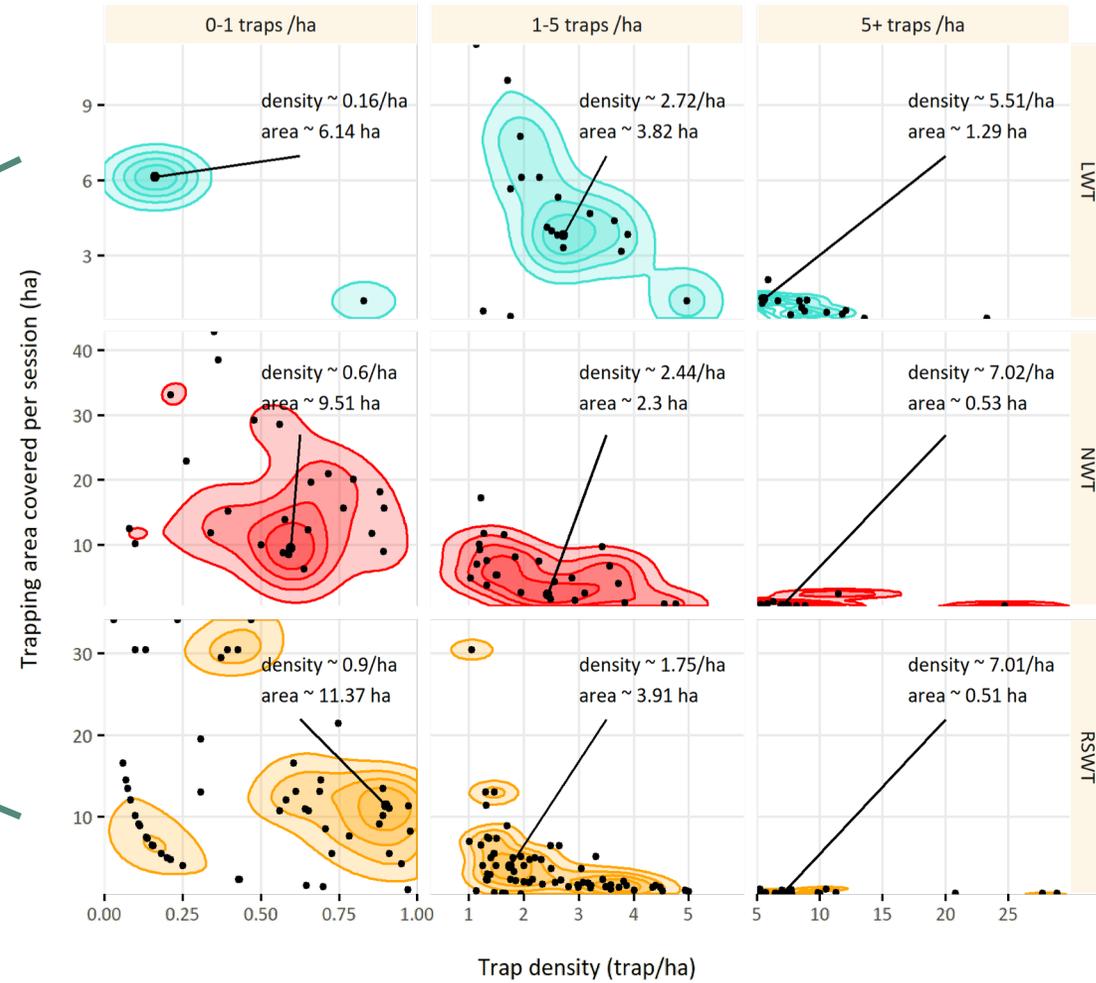
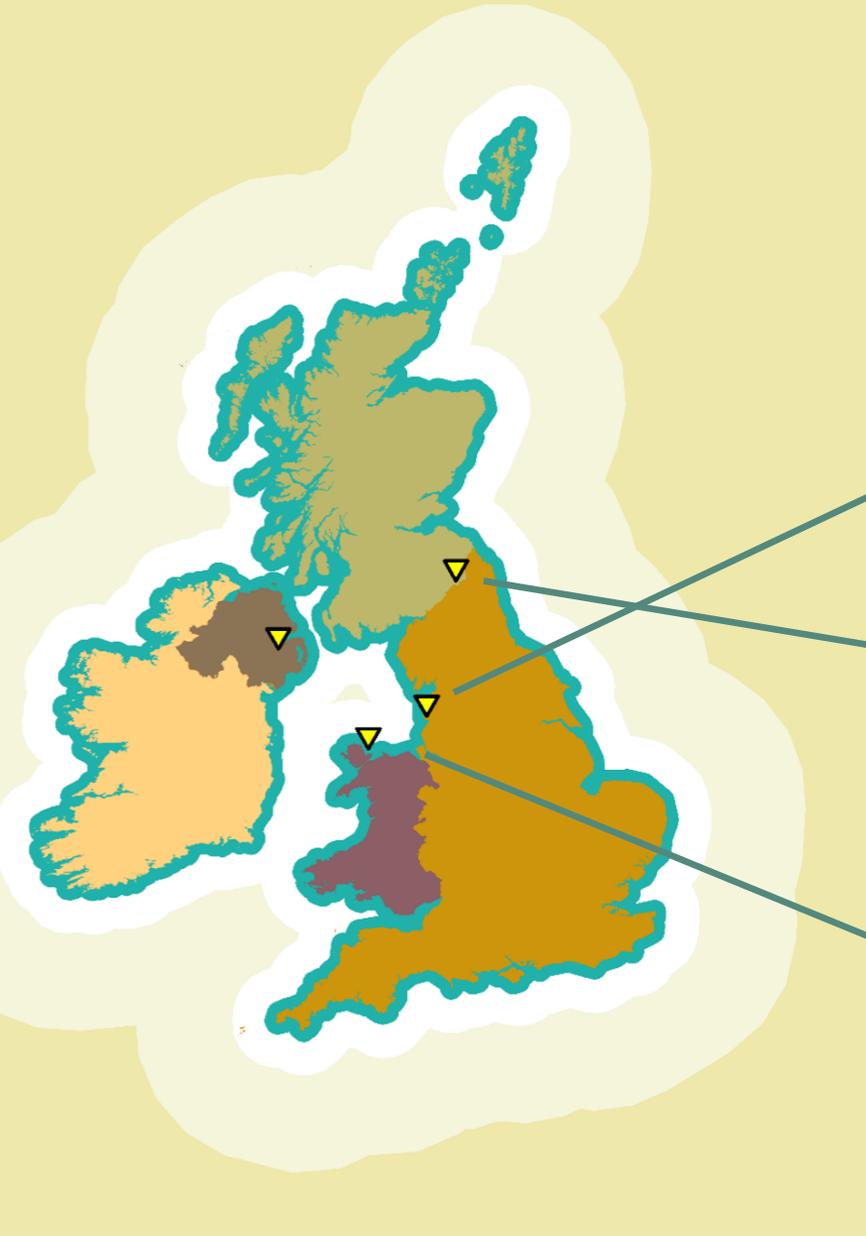
Evidencing Progress and Benefits

Adaptive management for grey squirrel control



A robust design removal data modelling framework

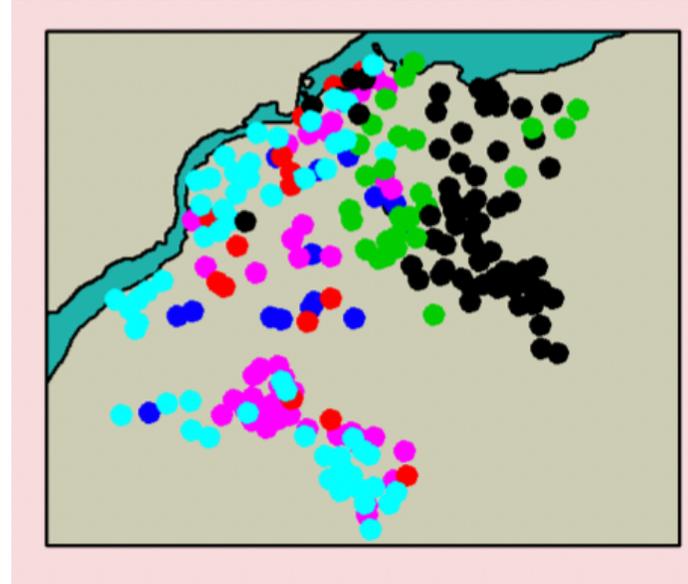




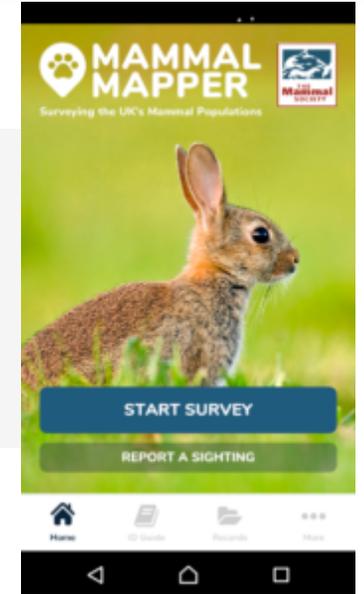
What have we learned to inform future plans?



Landscape



People/ resource



Northern Red Squirrels

Monitoring

Challenges of long-term invasive mammal management



Mill et al. (2020). The challenges of long-term invasive mammal management: lessons from the UK. Mammal Review.

Supportive infrastructure needed for effective landscape-scale management of invasive mammals to fulfil long-term conservation aims:



- 1. DEFINING LANDSCAPE-SCALE MANAGEMENT STRATEGIES**
- 2. CO-ORDINATION OF MANAGEMENT**
- 3. STAKEHOLDER CONTRIBUTIONS AND COMMUNITY ENGAGEMENT**
- 4. SUSTAINABLE FUNDING**
- 5. EVIDENCING PROGRESS AND BENEFITS**

1. Need for evidence-based Invasive Species Action Plans for long-term management
2. Consider multispecies approaches to invasive species management
3. Trusted leadership to co-ordinate action
4. Support for a centralised hub for training, data and knowledge flows will greatly improve scientific outcomes through a searchable evidence base and best practise and knowledge sharing.