



Scottish Invasive Species Initiative

Scottish Invasive Species Initiative – landscape scale management delivered locally

Scottish Freshwater Group

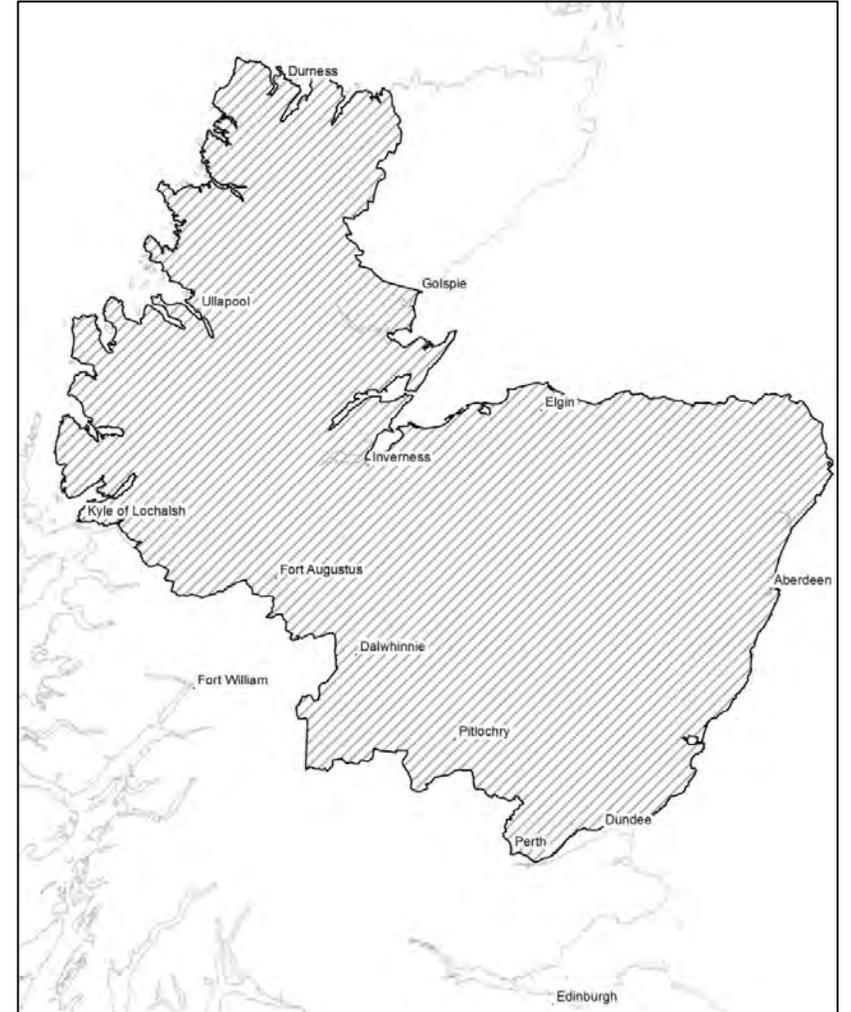
26 October 2023

Callum Sinclair (NatureScot)
Scottish Invasive Species Initiative



Scottish Invasive Species Initiative

- 5 year project (2018 - 2023)
- Working at a local level with partners and volunteers to establish community-based strategic **invasive non-native species** management across 29,500km² of mainland Scotland
- Engaging people with their local river environment
- Largest invasive species control project in British Isles



Project activities -

American mink control



Invasive plant control



Education & awareness

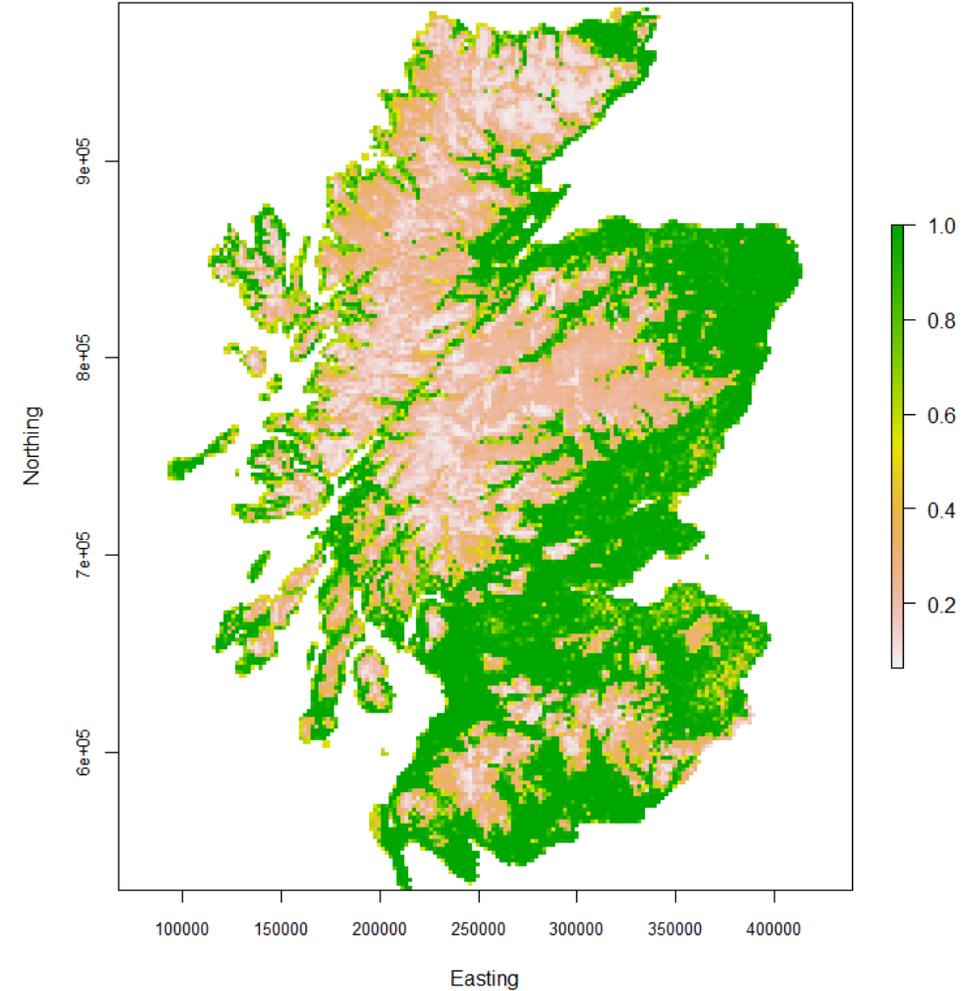


Meet the American mink

- American mink is a voracious and effective predator
- Impacts on native fauna – particularly water voles and ground nesting birds
- Widespread but often present at low population density
- Fantastic colonisers – two seasonal migration periods travelling long distances seeking breeding territories
- Resilient to control – young mink at low density have higher reproductive rates and success

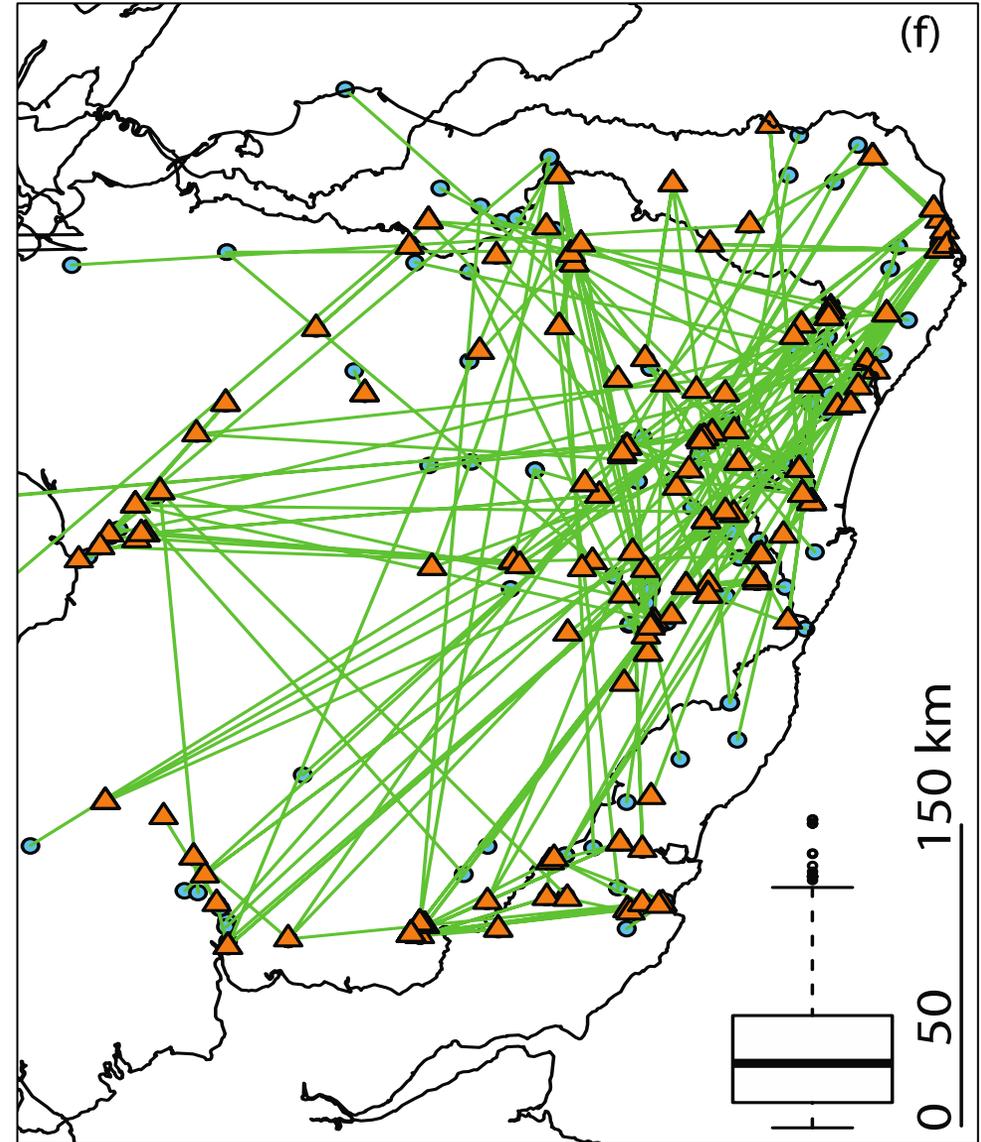
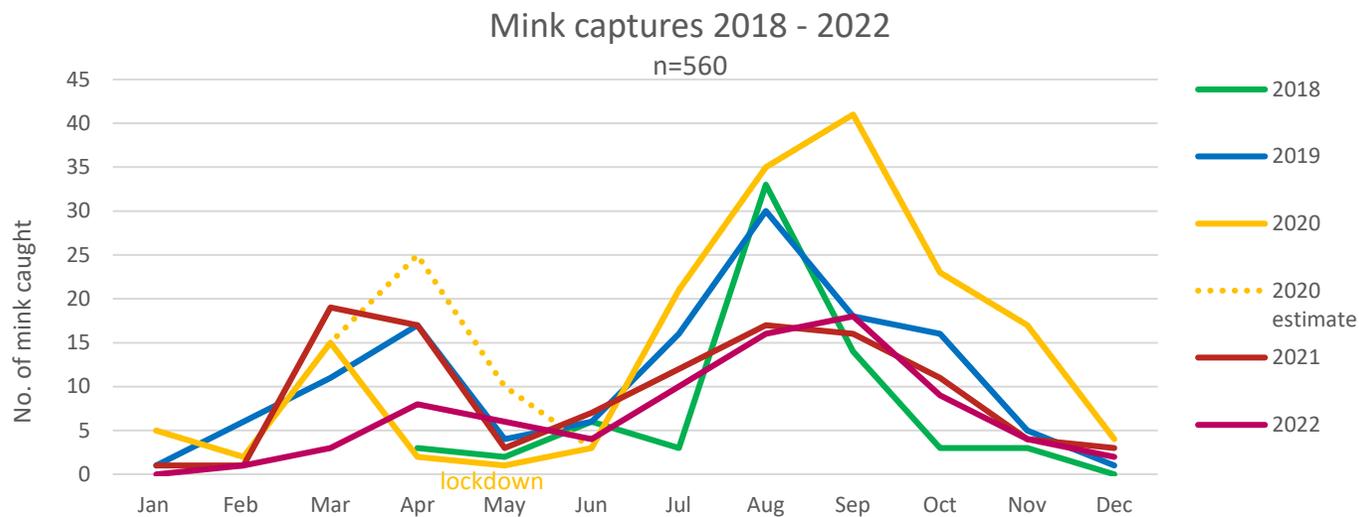


Habitat suitability varies across the landscape – so we target effort to areas most likely to produce and attract mink

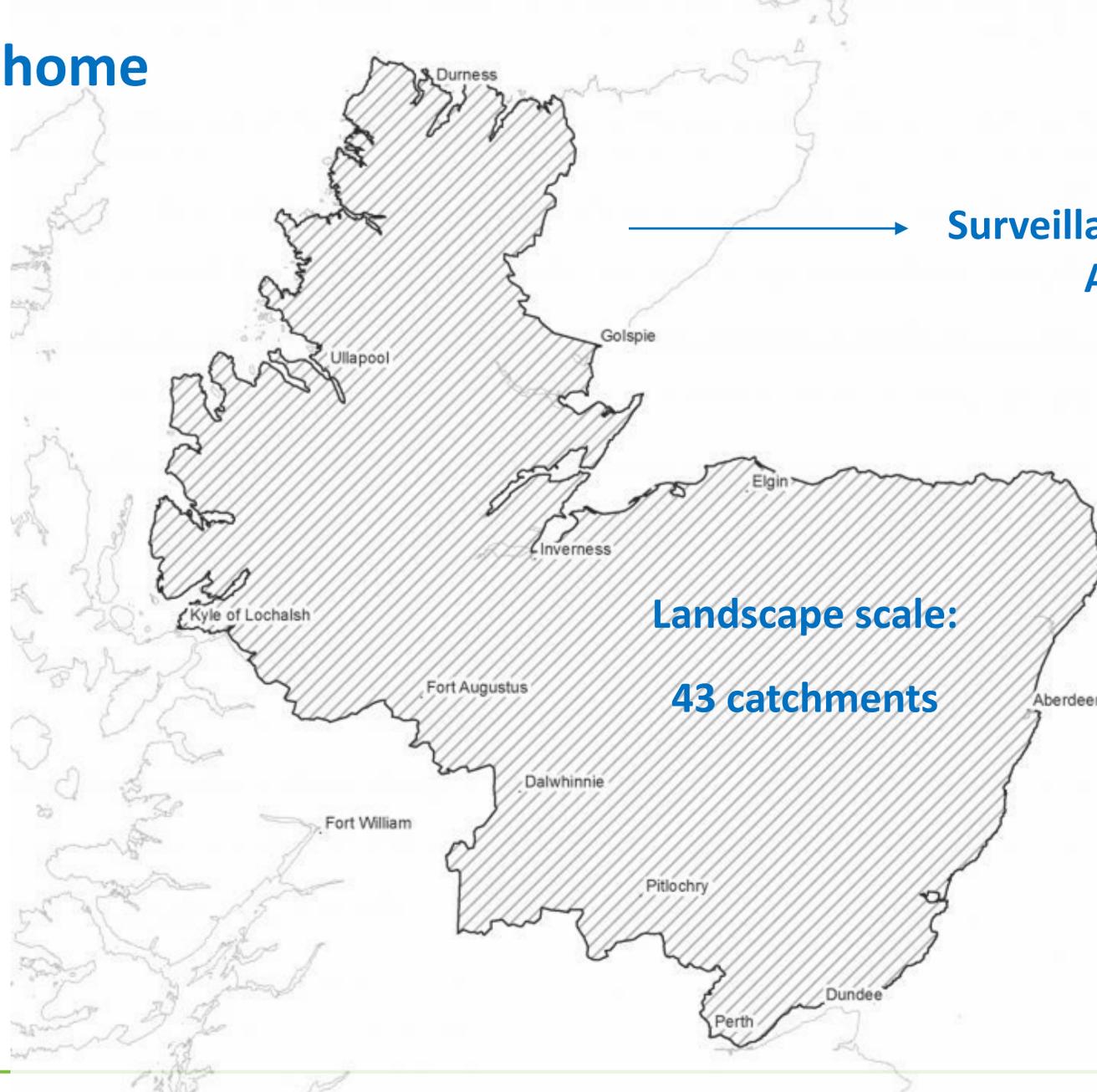


Mink on the move!

- Seasonally mobile – mean natal dispersal of 20km (20% will move >80Km to breeding territories)
- Two main periods of migration when most catchable –
 - Early spring (seeking breeding territories)
 - Late summer / early autumn (dispersal of young of year)
- Less active / less catchable in winter and when with young in summer



Go big or go home



Surveillance & Response Approach

**Landscape scale:
43 catchments**



Mink raft monitoring



Mink trap monitoring and dispatch



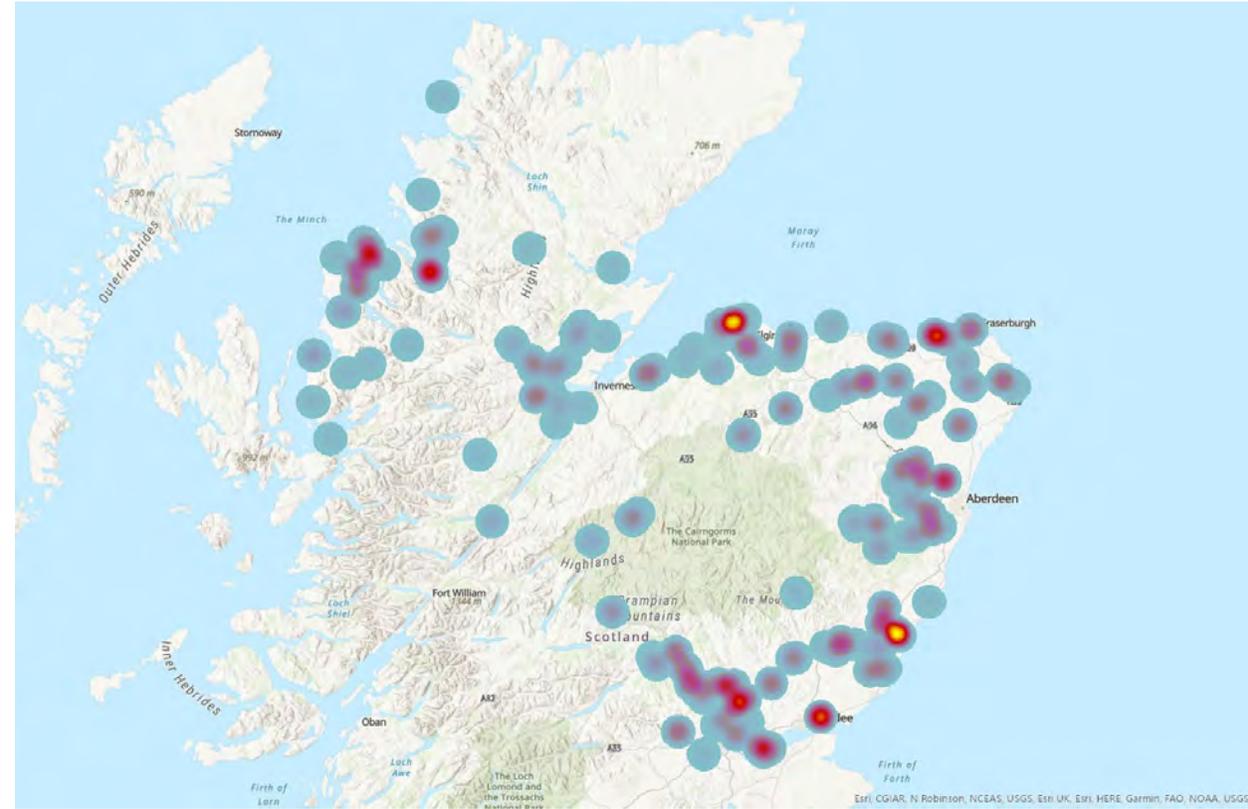
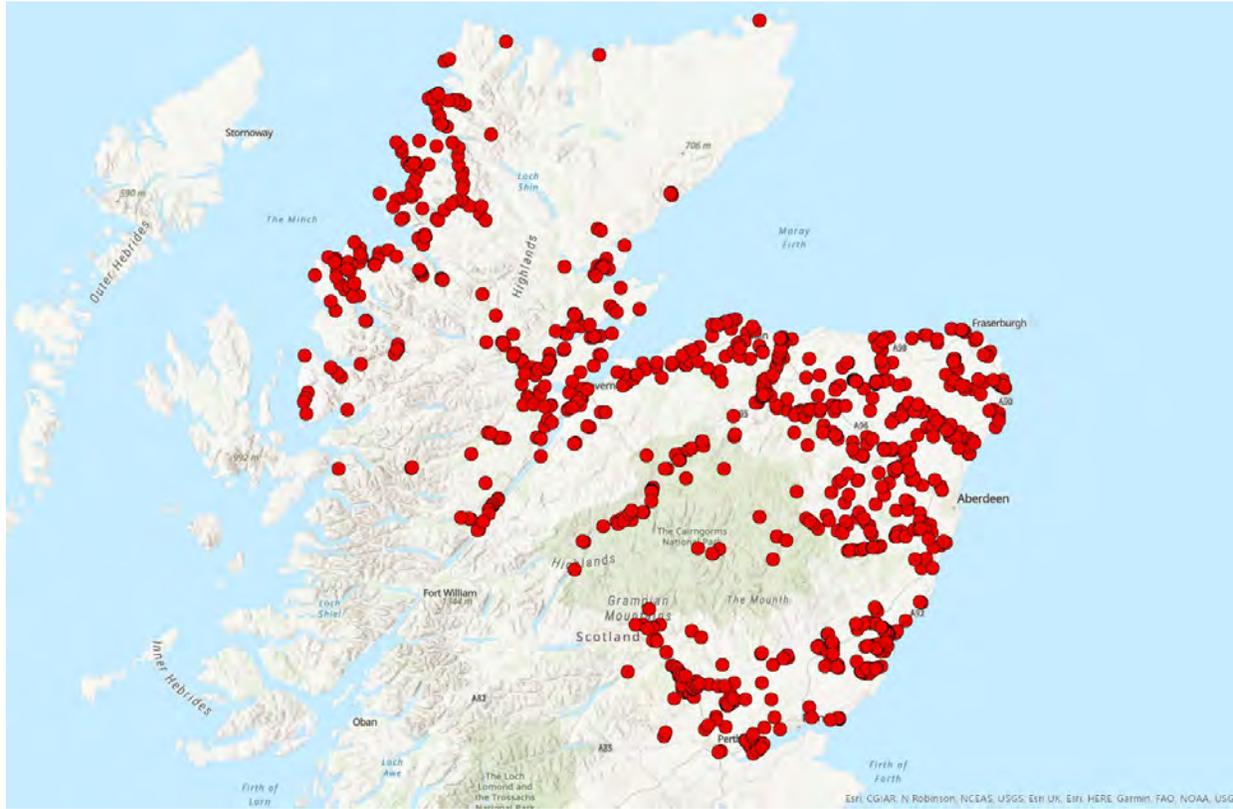
Live capture traps –
to let the good guys
get away!



The monitoring network

Maximum traps – 245
Maximum rafts – 428

Heat map
Captures 2018-2023



People Power

Mink control - 2018 - 2023



- 29,500 km² area covered
- Maximum rafts: 428
- Maximum traps: 245
- **43 catchments**

- 206 volunteers 2023
- 283 volunteers 2022
- 318 volunteers 2021
- 357 volunteers 2020
- 335 volunteers 2019
- 195 volunteers 2018
- **590 mink despatched**

- 6,665 volunteer hours 2023
- 15,052 volunteer hours 2022
- 21,289 volunteer hours 2021
- 18,396 volunteer hours 2020
- 21,788 volunteer hours 2019
- 10,136 volunteer hours 2018
- **93,325 volunteer hours total**

Invasive plant control activity (2018 – 2022)

- Control programme is extensive –
 - Circa 400 individual sites under management (many with multiple species)
 - Up to 468 volunteers per year (average 272/year)
 - 2,936km managed for giant hogweed (average 734km/year)
 - 213,898k Japanese knotweed stems injected
 - 645 volunteer days pulling Himalayan balsam



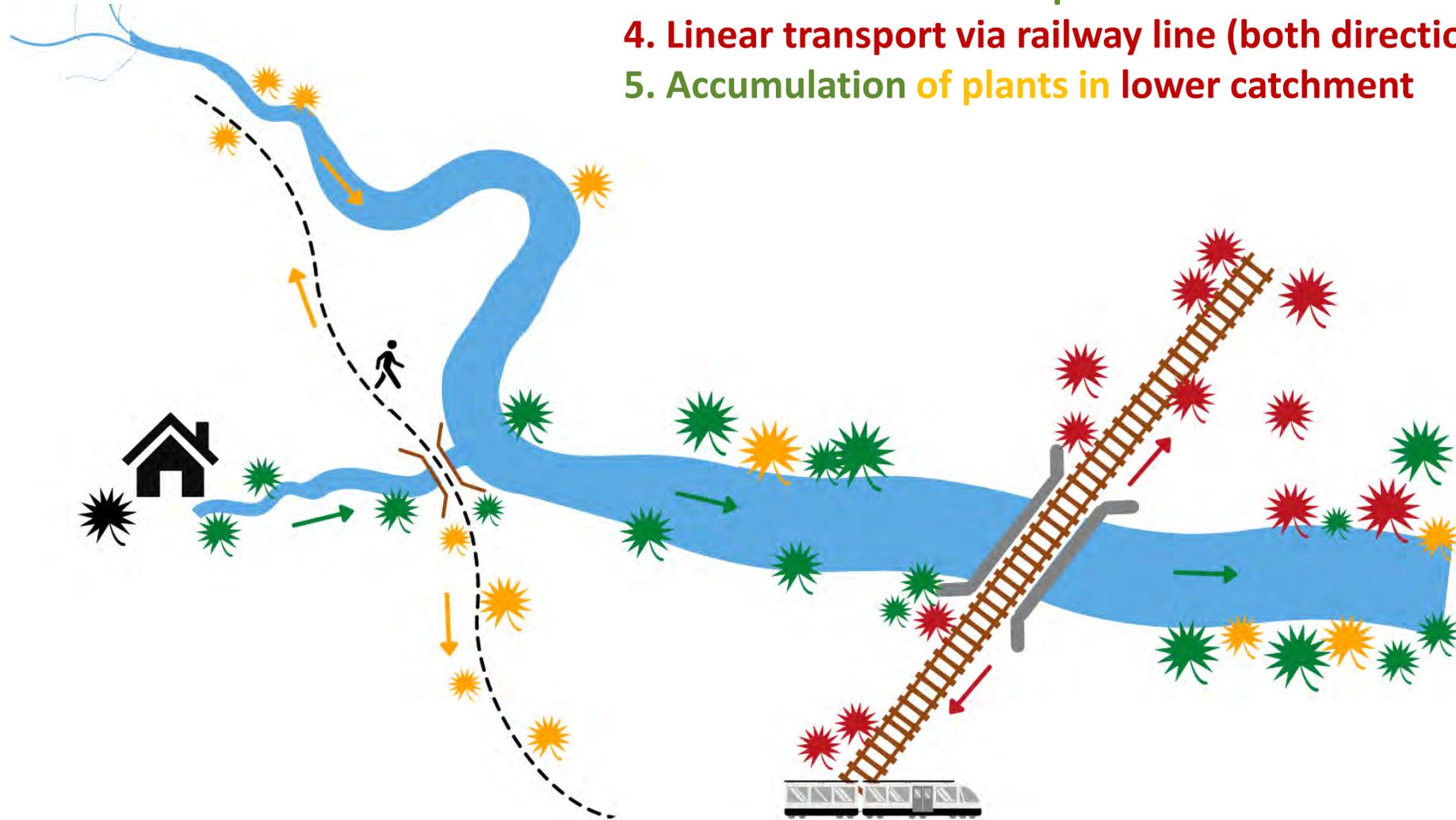
What makes invasive plants successful?

- High seed count / robust rhizomes
- Early, vigorous growth
- Large leaves / tall dense growth
- Can grow on unfavourable ground
- Unpalatable to native grazers
- Lack of native pests

Combinations of these traits mean species can outcompete native flora and establish and then dominate in new habitats and locations



Start in the right place – think about dispersal



1. Initial garden planting – seed / water dispersal (downstream)
2. Human dispersal from footpath (both directions)
3. Further downstream spread from initial and new populations
4. Linear transport via railway line (both directions)
5. Accumulation of plants in lower catchment

How do we quantify effort and record progress?

- Being able to robustly demonstrate that control sites are improving and on a pathway to eradication is vital
- All sites have records of –
 - method of control,
 - time taken to undertake control (& who by),
 - chemical volumes used.
- Monitored sites have undertaken DAFOR* assessments of plant abundance

(* DAFOR Scale of abundance – D = Dominant (50 – 100% cover), A = Abundant (30 – 50% cover), F = Frequent (15 – 30% cover), O = Occasional (5 – 15 % cover), R = Rare (<5% cover), N = not present)



Japanese knotweed at Dunkeld Bridge, River Tay



2019

2020

2021

2022

20 hours control
7.6L neat herbicide
Foliar spray
DOMINANT (50-100%)



10 hours control
1.6L neat herbicide
Foliar spray
RARE (<5%)



4 hours control
0.4L neat herbicide
Foliar spray
OCCASIONAL/RARE
(15<5%)



1.2 hours control
0.1L neat herbicide
Foliar spray
RARE (<5%)

2019 to 2022 –

- 94% reduction in control time
- 99% reduction in chemical volume



Giant Hogweed, Inglismaldie, River North Esk



2019

60 hours control
12.1L neat herbicide
Stem injection
Foliar spray
DOMINANT (50-100%)

2020

8 hours control
0.7L neat herbicide
Foliar spray
OCCASIONAL/RARE (15-<5%)

2021

1.5 hours control
0.3L neat herbicide
Foliar spray
OCCASIONAL/RARE (15-<5%)

2022

4 hours control
0.67L neat herbicide
Foliar spray
RARE (<5%)

2019 to 2022 –

- 93% reduction in control time
- 96% reduction in chemical volume



American Skunk Cabbage, Moulin Brun, Pitlochry



2019

16 hours control
3.0L neat herbicide
Foliar spray
DOMINANT (50-100%)



2020

10 hours control
0.5L neat herbicide
Foliar spray
OCCASIONAL (15-5%)



2021

1.5 hours control
0.1L neat herbicide
Foliar spray
RARE (<5%)



2022

3 hours control
0.25L neat herbicide
Foliar spray
OCCASIONAL (15-5%)

2019 to 2022 –

- 81% reduction in control time
- 92% reduction in chemical volume



What are we finding – there are no surprises here!

- Identify best control method
- Multiple treatment years – monitoring is vital
- Control works – if it is systematic and organised
- Reduce problem to manageable scale and then manage until eradication
- Implement appropriate control method and strategy – manage as a joined up catchment unit, not a series of isolated problems
- Make sure control through to eradication is sustainable by bringing landowners / managers and communities on board
- Site case studies at - <https://www.invasivespecies.scot/case-studies>



People power: volunteer contributions – 2018/2022

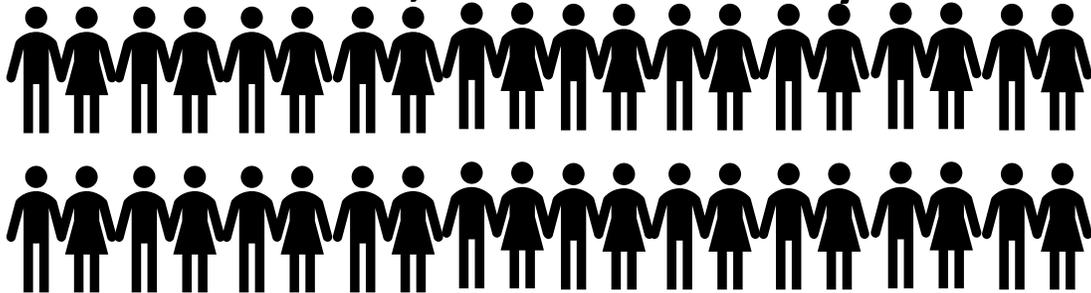
Mink Control



93,325 volunteer hours

114,283 volunteer hours

16,326 volunteer days

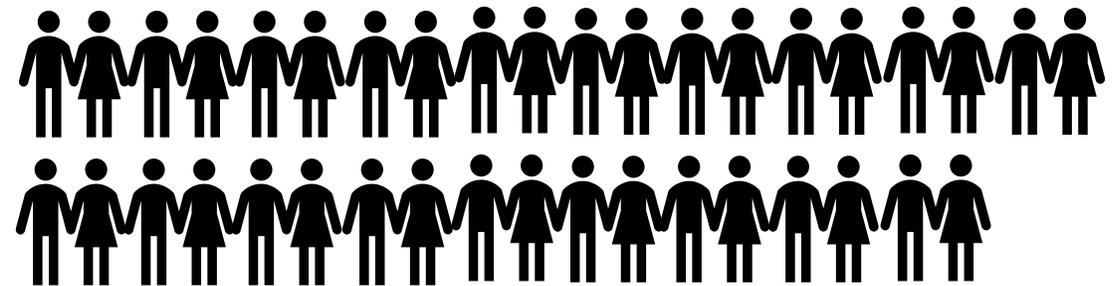


Plant Control



20,958 volunteer hours

Equivalent to ~78 staff years +



Key to success – People, communities, volunteers

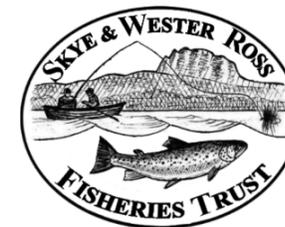
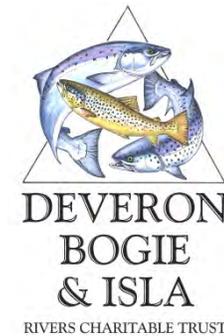


Scottish Invasive Species Initiative



Our partners & funders

- National Lottery Heritage Fund (£1.59M), NatureScot (£500k), in-kind support (£1.25M) – total value = £3.34M



So what next?

- Programme ended September 2023
- Scottish Government Nature Restoration Fund approved a £2M award to –
 - Continue programme to end March 2026 with enhanced project team
 - Maintain and protect gains and progress made to date
 - Move plant control “downstream” to new areas
 - Current plant control locations now in manageable position with land managers assuming future responsibility in many areas
 - Maintain and expand mink control programme

