

# Flocking to the rescue!

**Our woolly warriors – tackling giant hogweed using sheep grazing**



# Giant hogweed – the plant

- Highly invasive non-native plant
- Phytotoxic sap poses a human health hazard



# Giant hogweed – life cycle

- Stores energy in tap root each year - from seedling to flowering
- Each plant produces 20-50,000 seeds, viable for 3+ years in the soil



# Why do we need an alternative?

- Typically treat giant hogweed with glyphosate – highly effective
- Chemical treatment can be expensive and time consuming



## Flocking to the rescue!



# Macduff sheep grazing trial – aims

**Can land managers use sheep to control giant hogweed?**

- Establish the optimal grazing regime
- Produce guidance document at end of trial (2022)



## Macduff sheep grazing trial - background

- Mature woodland strip, adjacent to river Deveron with numerous streams running through
- Popular recreational route
- Dense giant hogweed infestation
- Previous chemical control – ineffective, time consuming, expensive

...and so enter the humble sheep!



# Monitoring

- University of Aberdeen
- Grazing impact on volume of giant hogweed across site
- Grazing impact on the rest of the vegetation



## Findings: Grazing pressure adjustments

| Grazing Pressure Adjustments in the Macduff Sheep Grazing Trials |              |                   |              |                      |                          |                               |
|--|--------------|-------------------|--------------|----------------------|--------------------------|-------------------------------|
| Year   | No. of sheep | Sheep per Hectare | Grazing Days | Livestock Units (LU) | Stocking Density (LU/Ha) | Grazing Pressure (LU/ha/year) |
| 2019   | 25           | 3.6               | 5075         | 3.75                 | 0.54                     | 0.3                           |
| 2020   | 23 -> 12     | 3.3 - 1.7         | 2476         | 3.6                  | 0.51                     | 0.19                          |
| 2021   | 12           | 1.7               | 1326         | 1.8                  | 0.26                     | 0.08                          |
| 2022   | 11           | 1.6               | 1276         | 1.65                 | 0.24                     | 0.07                          |

With decreased sheep grazing pressure giant hogweed is still effectively tackled, while overgrazing impacts are reduced or can be avoided entirely



Overgrazing alters vegetation structure and composition long term - initial undergrazing is preferable to overgrazing!



# Findings: Giant hogweed abundance

| Number of plots with giant hogweed seedlings/plants |       |      |          |
|---|-------|------|----------|
| Year  | April | June | Sept/Oct |
| 2019  |       | 41   | 34       |
| 2020  |       | 37   | 22       |
| 2021  | 42    | 34   | 21       |
| 2022  |       | 35   | 12       |

15% reduction

65% reduction



| Total number of giant hogweed seedlings/plants recorded in plots across whole site |       |      |          |
|--|-------|------|----------|
| Year   | April | June | Sept/Oct |
| 2019   |       | 1371 | 501      |
| 2020   |       | 907  | 340      |
| 2021   | 2999  | 842  | 149      |
| 2022   |       | 501  | 38       |

63% reduction

92% reduction





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## Seedling emergence study

- emergence periods of giant hogweed seedlings vary between and across river catchments and geographic areas
- emergence curve for giant hogweed seedlings produced, by recording seedling emergence in a number of areas

➔ **advice on grazing pressure required**  
(informed by our giant hogweed grazing trials)

➔ **optimal timing of grazing** (informed by emergence curve)



# Seedling emergence study – findings

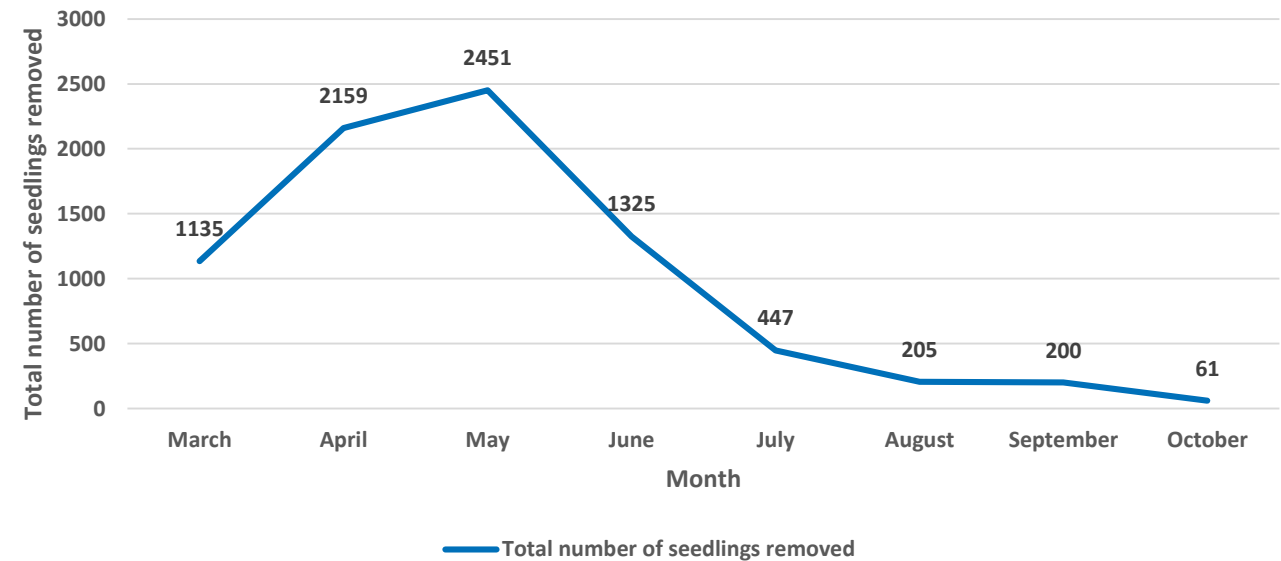
13 participants

14 sites

49 individual 1m<sup>2</sup> plots monitored in total



Total number of seedlings removed per month across all sites

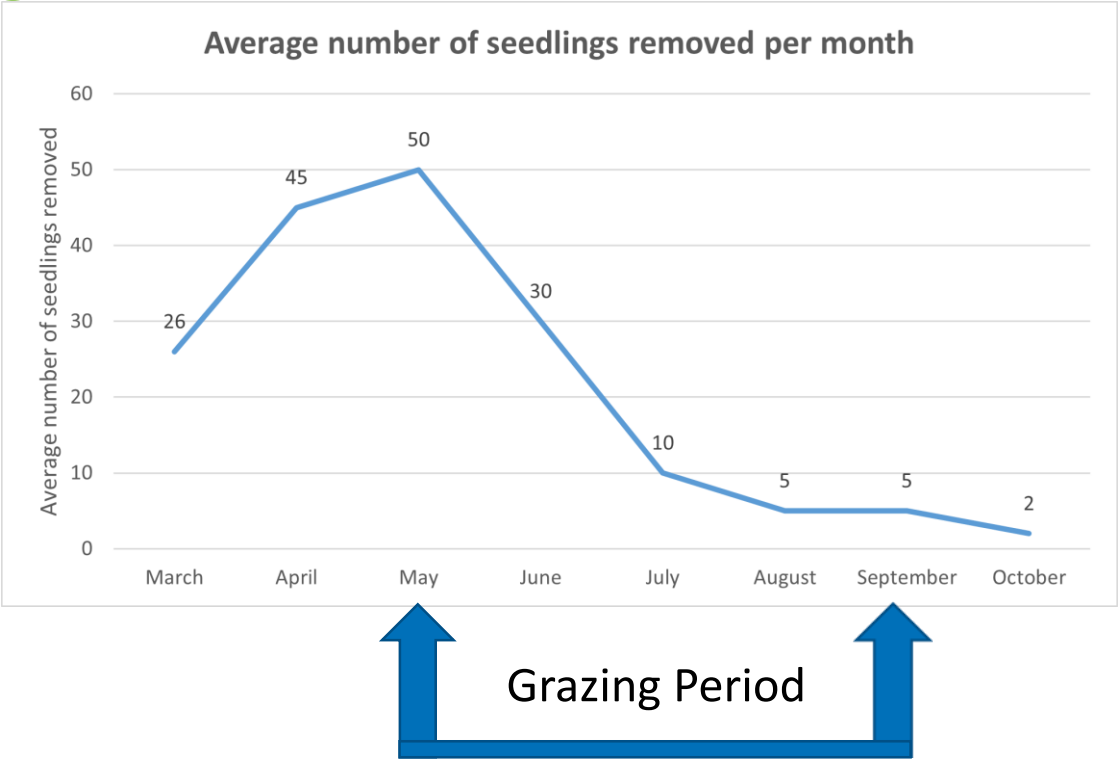


# Giant hogweed control by sheep grazing – Seedling emergence and management guidance

**Seedling emergence trial:**  
When do seedlings emerge?  
(when do we need to graze?)

**Management guidance:**

- Grazing regime / pressure which can be replicated
- Practical guidance for land managers



| Year | Start | End   | Number of sheep put on site | Annual Total Sheep days | Livestock Units per hectare per year |
|------|-------|-------|-----------------------------|-------------------------|--------------------------------------|
| 2019 | 12/04 | 01/11 | 26                          | 5075                    | 0.3 LU/ha/year                       |
| 2020 | 06/04 | 06/09 | 23 → 12                     | 2476                    | 0.19 LU/ha/year                      |
| 2021 | 02/05 | 15/09 | 11                          | 1326                    | 0.08 LU/ha/year                      |
| 2022 | 01/05 | 06/09 | 11                          | 1276                    | 0.07 LU/ha/year                      |



# Sheep grazing as a management tool to control giant hogweed

## Guidance document released in 2023

### Key tips:

- Low grazing intensity over several years – likely most effective
- Start with low grazing intensity → assess impact annually
- Avoid winter and early year grazing → reduce overgrazing
- Essential: flowering giant hogweed requires manual control to prevent adding seeds to existing seed bank
- Persistence is key – long term strategy!

**Method can be integrated into the normal running practices of a farm – low effort and sustainable control approach**



## Thank you! Some useful links...

All available on our website under '**Invasive species - Case studies**'

Management guidance: <https://www.invasivespecies.scot/sheep-grazing-management-guidance>

Seedling emergence trial: <https://www.invasivespecies.scot/when-do-giant-hogweed-plants-emerge-scotland>

Macduff Grazing Trail: <https://www.invasivespecies.scot/giant-hogweed-and-sheep-trial>

