

Area and Species richness

Species richness correlates with the area of the island, with a linear relationship when the values are log-transformed (fig. 1; $R^2 = 0.8356$, $F_{1,9} = 45.74$, $p < 0.0001$). Residual variance is undoubtedly at least partially caused by differences in grazing, although the sample size is too small to test these effects. It would be particularly interesting to see whether Darragh is an outlier for its size, and whether sheep-grazed islands are significantly less diverse.



Fig. 1: log-log graph of island species richness and area



Plantago, Centaurea and Potentilla on Great Minnis



Fig. 2: plant communities of Roe Island. Scale bar = 100m.

Plant communities on the islands

- The islands are dominated by grassland, with MG1 and MG5 being prominent. These are interspersed with bramble and blackthorn scrub, and the ground flora in some of this is quite rich, especially on Darragh.
- On the islands where geese graze and other birds nest, the plant communities can be quite odd, possibly due to high soil nitrogen and selective grazing by geese. The sward here is open and dominated by *Heracleum sphondylium*, *Oenanthe crocata*, and *Centaurea nigra*, with *Arrhenatherum elatius* and *Holcus lanatus* also abundant.
- This grassland community appears to mostly correspond to the *Centaurea nigra* sub-community of *Arrhenatherum elatius* grassland (MG5e).
- Saltmarsh is also present on some of the islands; on Shamrock there is a very clear gradation from *Festuca arundinacea*-dominated MG12 through the upper and lower saltmarsh.
- The ponds have a wide range of plants growing in water and mud, with *Persicaria maculosa* often dominant.
- There are also iris beds and rush pasture, with *Juncus acutiflorus* commonly present.



Persicaria maculosa and *Rorippa palustris* on Drummond



Heracleum-dominated sward on Drummond

Darragh island management

- Darragh Island (fig. 3) is owned by the National Trust and has a management plan which was published in 1999, following biological surveys of Trust-owned land on the Lough (Lister & Alexander, 1999). This plan recommended the continuation of winter cattle grazing "with a few goats present all year" in order to maintain species-rich grassland and prevent succession to scrub, which was seen as a threat at the time.
- Since the management plan was published, the goats have been removed and replaced with sheep, which are present all year round. Winter cattle grazing has continued.
- With current management, brambles and bracken have continued to invade the species-rich grassland. Many grassland species are selectively grazed by sheep, impacting flowering and seed production.
- Orchis mascula* was last seen in the 1980s (Brown, pers. comm. August 2022). There has been a similar decline in *Dactylorhiza fuchsii* between 2016 and 2022, from tens of flowering individuals to none (personal observation). Selective grazing by sheep seems a likely culprit.
- With changes in management, scrub could be reduced without harming grassland plants.

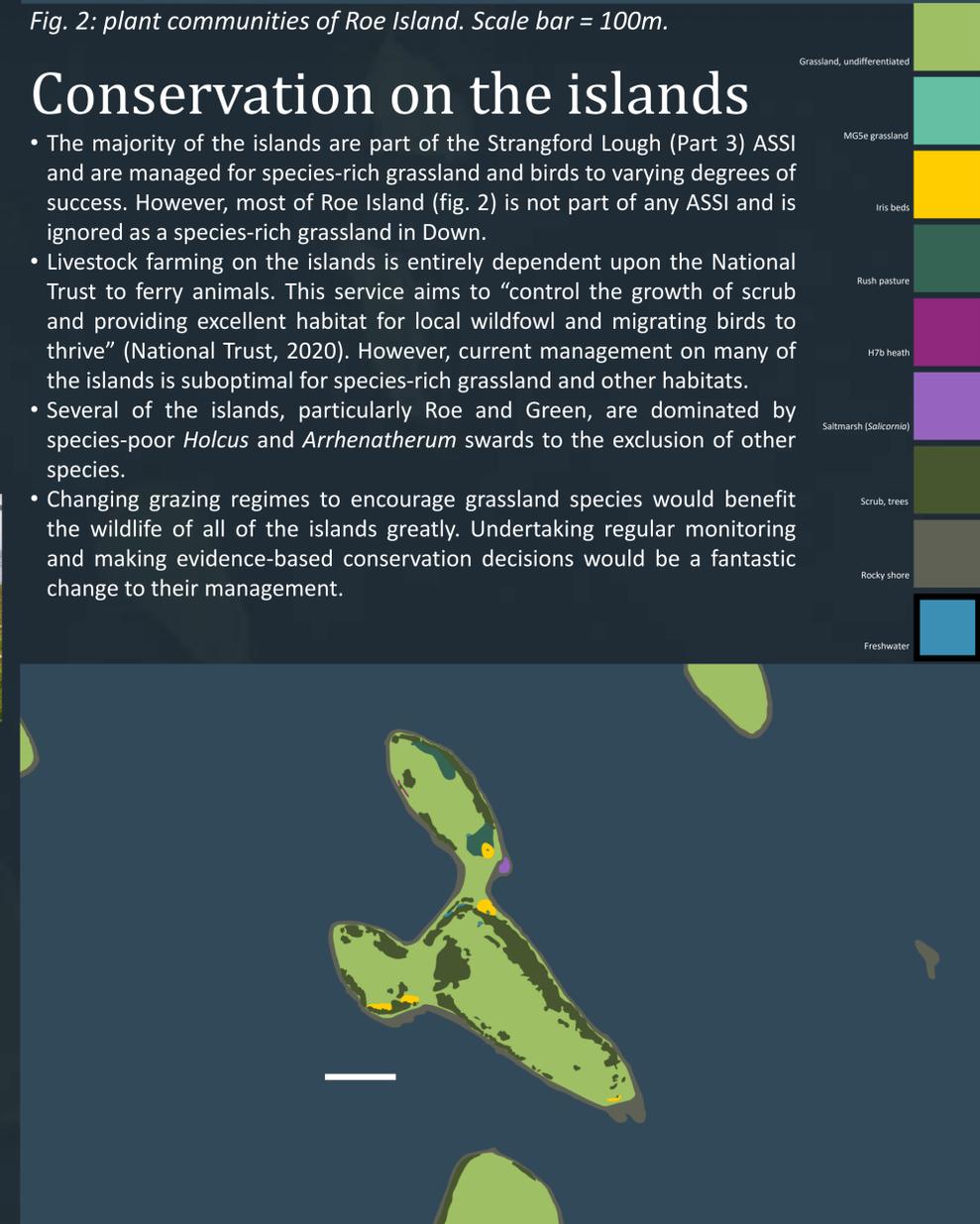


Fig. 3: plant communities of Darragh Island. Scale bar = 100m.



Tripleurospermum on Great Minnis's, Euphrasia nemorosa on Roe, MG1e grassland with Centaurea on Roe.

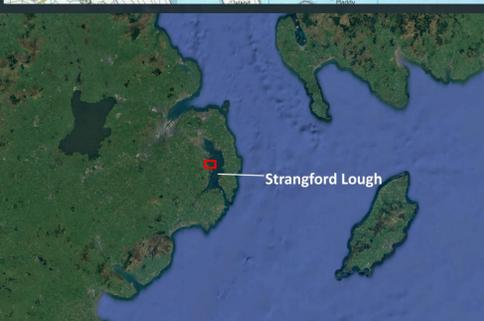
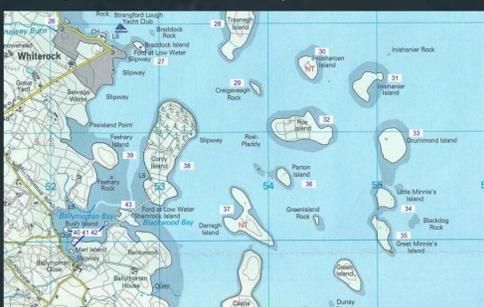


Darragh: H7b with Erica cinerea, Zygaena filipendulae nectaring on Achillea ptarmica, Macroglossum larva on Galium.

Introduction

- Strangford Lough is a large sea lough in Vice-county H38 (Down), in the North-East of Ireland. Formed by glaciation, it has many iconic drumlin islands.
- These are of conservation importance, especially for their grassland and saltmarsh, and for birds and seals. However, the flora is poorly studied, if at all.
- Agricultural improvement on the mainland has led to these islands becoming refugia for many grassland species (such as *Linum catharticum*, *Euphrasia nemorosa*).
- I recorded the plants and NVC plant communities of eleven islands around the townland of Ballymorran, which can be grouped by what grazes them:

None	Craigaveagh, Parton, Shamrock
Geese	Inisharogan
Sheep	Green
Geese, Sheep	Inishanier, Roe
Geese, Cattle	Drummond, the Minnis's
Sheep, Cattle	Darragh



Methods

Surveying

- Plants were recorded in March, July, August, and September of 2022.
- Each island was visited at least once between July and September.

Mapping

- Between July and September, the islands were surveyed with 2x2m quadrats following the NVC.
- These data and satellite imagery were used to classify and map the plant communities on each island.

Species richness and area

- The number of plant taxa (species-level and above) present on each island was calculated. Uncertain IDs were excluded.
- The area of each island was measured using Google Earth.
- Analysis was done in R and plots produced with the ggplot2 package.
- Maps were created in GIMP.



Kayaking

- Accessibility is likely one of the reasons these islands have been under-studied.
- I kayaked out to the islands, which is much cheaper, easier, and lower-impact than using any other kind of boat.
- I brought my notebooks, field guides, camera, food, and other equipment out in a drybag which fits behind the seat.
- This is a great way to do fieldwork - I'd recommend it! Many other islands could be surveyed this way without the need for a larger boat.