# esri UK

## Nurturing the native wildflowers of Wales
# Denbighshire County Council

**In a highly successful conservation programme in Wales, Denbighshire County Council is using ArcGIS to improve the biodiversity of roadside verges and urban meadows. It has configured three integrated mobile apps with ArcGIS Survey123, which are helping biodiversity officers to find, propagate and plant some of the UK's rarest native species of wildflowers and trees.**

### The Challenge

Since the 1930s, wildflower meadows have declined by 97% right across the UK and, in Wales, several native wildflowers including the Spreading Bellflower are at risk of extinction. Recognising the urgent need to expand wildflower environments in Wales, Denbighshire County Council protected 1,820 km of roadside verges from over-frequent cutting, created 11 roadside nature reserves and established 140 urban meadows, covering more than 70 acres of land.

The council knew, however, that simply creating these spaces for wildflowers would not, alone, lead to a reversal in biodiversity loss. It had to proactively collect seeds from local trees and wildflowers, grow plants and plant out the seedlings in the new habitats that it had created, to enable the recovery of endangered native species.

### The Solution

To support this ambitious biodiversity enrichment programme, Denbighshire County Council created three integrated survey apps, configured using Esri's ArcGIS Survey123 solution. Together, they make up a complete end-to-end process for managing everything from surveying verges and collecting seeds, to propagating seedlings and recording where young plants are planted out in the wild again.

The first app, called the Biodiversity Verge Monitoring App, allows biodiversity officers to collect data about sites monthly, during the growing season of March to August. Using a rapid grassland assessment technique, officers capture data about species present and the general condition of the land.

Next, biodiversity officers use the Plant Tracker App to record details about donor sites where seeds are collected and record the exact location of the donor flower or tree. Team members harvest seeds from across the county, and the app generates unique batch numbers, which are then written onto the seed envelopes.

The third app, the Nursery Propagation App, is used within the council's plant nursery to label plant pots with batch numbers and monitor growing conditions, such as soil type and watering frequency. Nursery staff use the app to see details about each seed planted, including when and where it was collected and whether it is being nurtured in a polytunnel, on a raised bed or outside.

All data collected from the three apps can be viewed in ArcGIS Pro and ArcGIS Online and used to inform decisions about where to plant out seedlings. The council can also build ArcGIS Dashboards and ArcGIS StoryMaps to share data and explain the scale of the programme. "Showing people a map or dashboard so they can see how many acres have been rewilded or how many species have been transplanted, that's where the impact is," says Liam Blazey, Biodiversity Officer at Denbighshire County Council. "What ArcGIS allows you to do is phenomenal."

Learn more at: esriuk.com

> ❝ Our ArcGIS Online subscription probably pays for itself within the first three weeks of each survey season. ❞

Liam Blazey, Biodiversity Officer, Denbighshire County Council
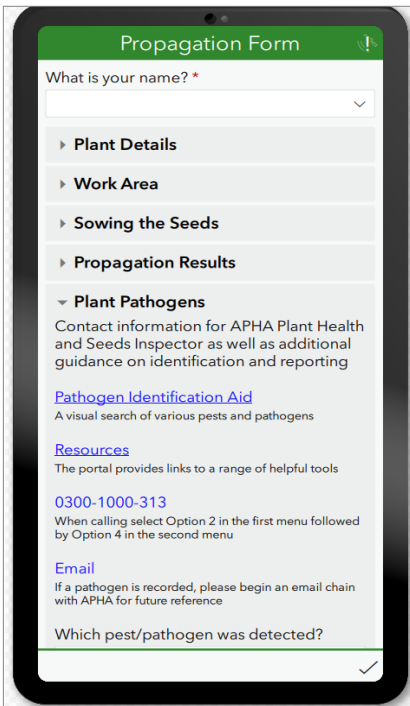


Denbighshire County Council's nursery propagation app, created with ArcGIS Survey123

## The Benefits

### A fast and cost efficient survey process

If biodiversity officers had used paper surveys, then typed up the data and made the maps in the office later, they probably would only have surveyed one area a day. Instead, using the ArcGIS Survey123 app, they can survey sites in 20 to 90 minutes, depending on the size of the site, and complete as many as twelve surveys in a day. "Our ArcGIS survey apps allow us to get so much done, so quickly and still maintain scientific rigour in our process, which is critically important," says Blazey. "Our ArcGIS Online subscription probably pays for itself within the first three weeks of each survey season."

### More successful propagation of trees and flowers

Using the data collected with ArcGIS, Denbighshire County Council can identify the best growing conditions to improve the success of its propagation processes, by seed type, and monitor the stratification of seeds. As Blazey explains, "We can look back to see which substrate and watering regime worked best in previous years and therefore improve the propagation success rate for the future. This project would not be remotely as far along the line as it is today without ArcGIS. ArcGIS is critical at every step for the success of this biodiversity project."

### The ability to trace plants and pathogens

Denbighshire County Council can trace the providence and origin of all the native plants that it has transplanted back into the environment using the data collected in ArcGIS. Consequently, if a pest or pathogen were to be detected in one plant, the council could easily find other plants originating from the same batch of seeds to help it maintain the health of the local countryside. "Our three ArcGIS apps give us complete traceability of all plant material from source to final destination, helping us to enrich our wildflower meadows with species native to northern Wales," Blazey says.

### Accurate, uniform data about native plant species

Through this programme, Denbighshire County Council is helping to increase the amount of accurate, dependable data about wildflowers and trees in North Wales. It shares its data from ArcGIS effortlessly with COFNOD, the North Wales Environmental Information Service, and works closely with other local organisations. "We have shared our ArcGIS apps with neighbouring councils, so more data on Welsh wildflowers is now being collected," Blazey says. "As the data is uniform, more people can use it and more conservation work can come out of it."

Learn more at: esriuk.com