

A Photo Study of the Sand Fences

Grattan Beach, Salthill

Citizen Science Observations



wetlands
for life
EAZA CONSERVATION
CAMPAIGN 2026 - 2027



Galway
Atlantaquaria®



BACKGROUND

The Grattan Beach Pilot Project

Initiated in June 2023 as a pilot project, sand fences were installed on Grattan Beach through a collaboration between Galway City Council, University of Galway, CARO, and community groups.

Why take photos?

In 2023 Dave Wall of the National Biodiversity Data Centre had offered free training in the Explore Your Shore! citizen science campaign, and proposed the EYS participants could select an area of biodiversity and take 'ownership' and record as much of the biodiversity in that area.

This means that since 2023 Galway Atlantaquaria has been taking photo observations of the development of the sand fences project on Grattan Beach, Salthill.

The Story

Photos can tell a unique story, and when you record an area of biodiversity at regular times you can start to understand how the fences trap sand, encourage pollinators, provide shelter for animals, one can observe different colours in the flora, what are builders versus opportunists, essentially these photos capture key moments and the role of sand fences and how they shape the story of sand.

This is the power of citizen science & Explore Your Shore!

The story begins on the 1st of April, 2026...



KEY LEARNINGS or Observations or Outputs

A validation of the Cultural Ecosystem Services (CES) principles.

Cultural ecosystem services refer to the intangible benefits people derive from nature—recreation, spiritual nourishment, aesthetic delight, and a deepened sense of identity. They shape our well-being, our communities, and our connection to places.

There was great excitement and joy to see how the project developed every week, this was a great project to journal.

On some early mornings it was a joy to see the beauty, shapes, and curves of the dunes, a photo could never recreate the physical observation.

1.a Output - Cues to Care

As the flora developed you could see how people began to respect the area a little

more, through 'cue to care' psychology.

This year there were more beach cleans through collaboration with Sandlarks and Aquarium Clean Coasts events; the environmental group Sandlarks took the lead role in the Beach Clean work. The City Council Parks and Roads Team were out early every morning to clean Grattan Beach too.

The goal was to create more events with the principle of the #2MinuteBeachClean campaign. Remove small amounts of litter through regular events rather than one big beach clean.

2. Nature Based Solutions NbS - solving multiple problems at once

In observing the dunes we also captured a host of birds, insects, and pollinators using the fences for shelter and foraging. Once they found it to be safe it started to attract even more biodiversity.

The dunes are self healing, when damaged they can grow back, they look really well with the greens, whites, and yellows stretching across the dunescape.

Over the last few years there has been very little sand blowing across the road.

Nature-based solutions are powerful because they solve multiple problems at once, cost less over time, and get stronger with age instead of breaking down like human-made concepts.

3. Interpretation

As we started to gather more knowledge about the dunes, fences, we started to create some interpretation and new inhouse signage. The posters created include a flora hunt, an AVES poster and bird watching game, and finally the roots poster (this only came about when we observed how strong the coastal plants need to be to thrive by the coast).

Summation

There is no doubt that this project has exceeded expectations, it is a significant and really important ecosystem service for people and biodiversity. It is a model for the validation of nature based solutions to solve other environmental problems we face.

It has been a joy to record.



A Gradual Rise, Then a Burst of Color

The fencing does more than delineate space—it provides the very structure for the dunes to expand and native flora to flourish. One of the most striking transformations to witness was the slow sculpting of the sand: smooth, sweeping faces on one side, and intricate, wind-carved ripples trailing behind.

The Psychology of Form

There is a deep-seated reason why we are drawn to curves. Evolutionary cues, neural responses, and an innate sense of comfort all steer us toward rounded forms. Sharp angles and jagged edges, by contrast, can subconsciously register as threats—signals of danger or pain. Curves, however, feel inviting, gentle, and safe. This instinctive preference is precisely what aligns with the CES framework.

Cultural Ecosystem Services (CES)

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nature—recreation, spiritual nourishment, aesthetic delight, and a deepened sense of identity. They shape our well-being, our communities, and our connection to place.

Cues to Care

Another notable observation at Grattan was the presence of cues to care—a landscape design principle introduced by Professor Joan Iverson Nassauer in 1995. The concept is simple yet powerful: visible signs of human intention—such as crisp edges, mown borders, and distinct groupings of familiar flowers—signal that a landscape is purposefully tended, not wild or abandoned.

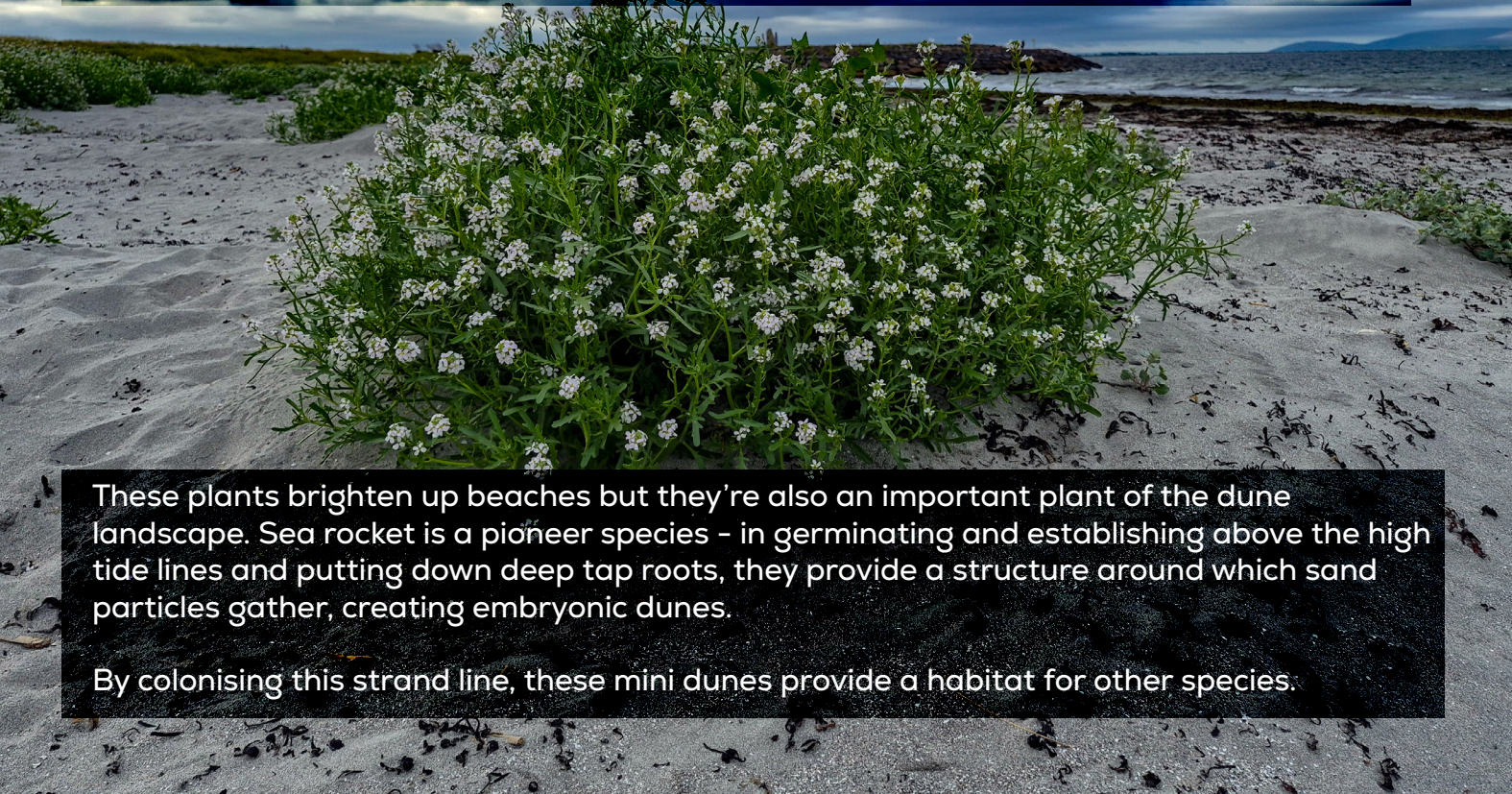
This year, Grattan looked especially well-maintained. And perhaps not coincidentally, littering behavior appeared to decline noticeably.







Sea rocket, *Cakile maritima* | Cearrbhacán mara | is the first dune species to arrive because its buoyant seed pods float on ocean tides to reach the shore, and its tough biological traits allow it to thrive in raw, salty, and shifting sand. In the spring the first few seedlings start to appear through the sand, and as the plants grow characteristic fleshy leaves develop.



These plants brighten up beaches but they're also an important plant of the dune landscape. Sea rocket is a pioneer species - in germinating and establishing above the high tide lines and putting down deep tap roots, they provide a structure around which sand particles gather, creating embryonic dunes.

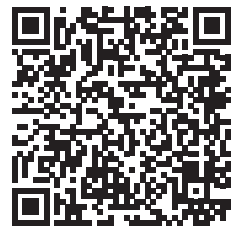
By colonising this strand line, these mini dunes provide a habitat for other species.



Sand Couch-Grass *Elymus farctus*



Have a look at the dune fences
being installed in 2023.
Scan the QR code



THE WOOL ROLLS

During our observations we saw the wool rolls project on Grattan.

What are they?

Wool rolls are rarely the primary material used for coastal sand dunes. Instead, conservationists rely heavily on coir (coconut fiber) rolls, sand fencing, and marram grass transplanting. However, wool rolls could serve identical structural purposes in dune systems.

Trapping Sand:

Just as they trap sediment in peatlands, wool tubes placed along the base of dunes help intercept wind-blown sand and encourage the dune face to build up.

Biodegradable Barriers:

Similar to coir rolls, wool cylinders can be pegged into eroded dune paths (blowouts) to prevent wind and foot traffic from sweeping the sand away while marram grass establishes.

Vegetation Support:

Wool's moisture-retention properties would theoretically help marram grass roots take hold in dry, shifting dune sand.

Source: <https://dunes.ie/runkerry-dune-restoration-project/>



How Coastal plants cope with heat stress

Coastal specialists (Marram Grass, Couch Grass, Sea Rocket, Sea Radish, Sea Beet, Sea Mayweed, Oraches)

These plants beat the heat by combining small, thick, or fleshy leaves to conserve water, with deep root systems to tap underground moisture and salt-excreting glands or leaf hairs to cope with the dehydrating effects of both sun and salt spray.

Grasses & Clovers (Creeping Bent, False Oat-Grass, Yorkshire Fog, Clovers)

They survive by curling or rolling their narrow leaves to trap humid air and reduce surface area exposed to the sun, while many (like clovers) also go dormant during peak drought, relying on deep taproots or creeping stems to resprout when conditions improve.

Drought-avoiding wildflowers (Wild Carrot, Ribwort Plantain, Rough Hawkbit, Yarrow, Dandelion, Birdsfoot Trefoil, Vetches)

Their strategy is a rosette of small, hairy, or deeply-cut leaves that stays close to the cooler ground, combined with a long taproot that mines deep water and the ability to wilt temporarily without dying, then quickly revive.

Ruderal “Weeds” (Ragwort, Thistles, Docks, Bittersweet, Ivy-leaved Toadflax, Horse-radish, Hogweed)

These cope by using large, flexible leaves that can droop to reduce sunlight absorption, along with extensive underground rhizomes or thick storage roots that act as water reserves, and many have hairs or a waxy bloom on their leaves to reflect light and reduce moisture loss.

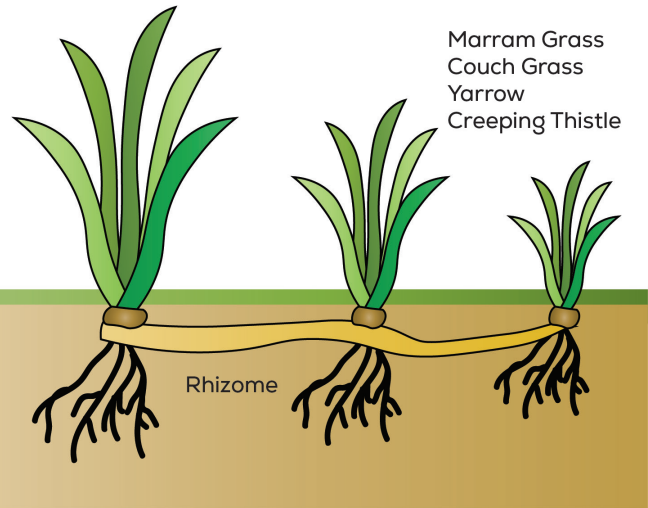
While coastal flora are pretty resilient, they are not superheroes, the strategy is survival and ‘wait it out’.



ROOT TYPES

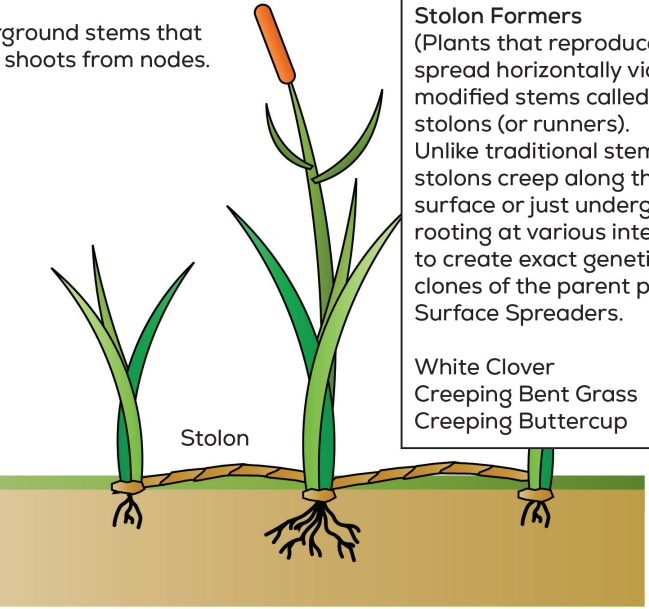
Rhizomatous
(Thick, horizontal underground stems that produce roots and new shoots from nodes. Best for Sand Binding)

Marram Grass
Couch Grass
Yarrow
Creeping Thistle



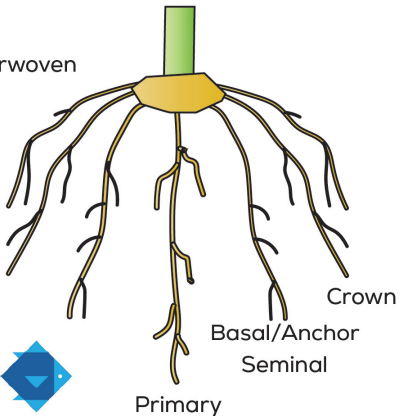
Stolon Formers
(Plants that reproduce and spread horizontally via modified stems called stolons (or runners). Unlike traditional stems, stolons creep along the soil surface or just underground, rooting at various intervals to create exact genetic clones of the parent plant i.e. Surface Spreaders.)

White Clover
Creeping Bent Grass
Creeping Buttercup



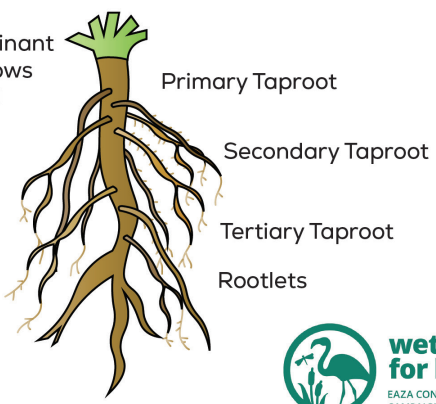
Fibrous Mat Formers
(That form dense, interwoven networks of roots or creeping stems.)

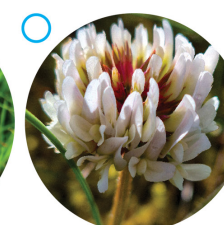
Ribwort Plantain
Yorkshire Fog
Sea Mayweed
False Oat-Grass



Deep Taproot
(a plant's thick, dominant central root that grows vertically downward into the soil.)

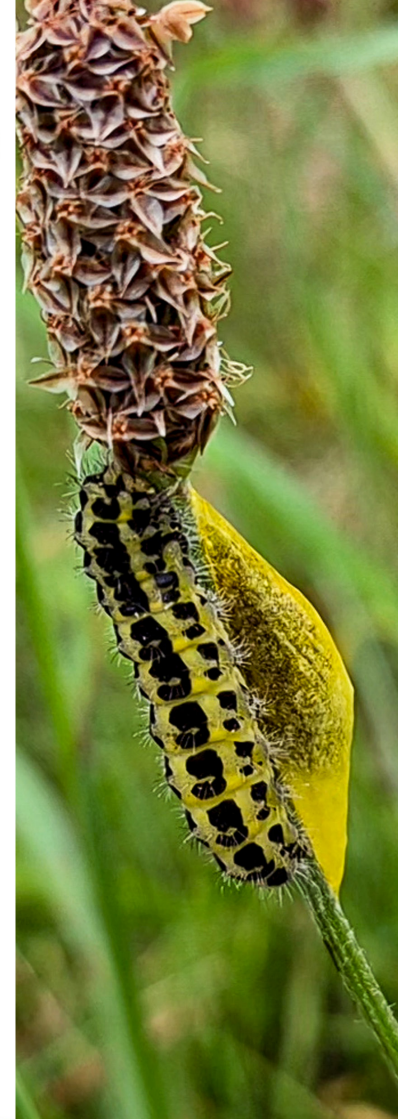
Sea Beet
Wild Carrot
Dandelion
Curled Dock
Ragwort
Red Clover
Sea Radish



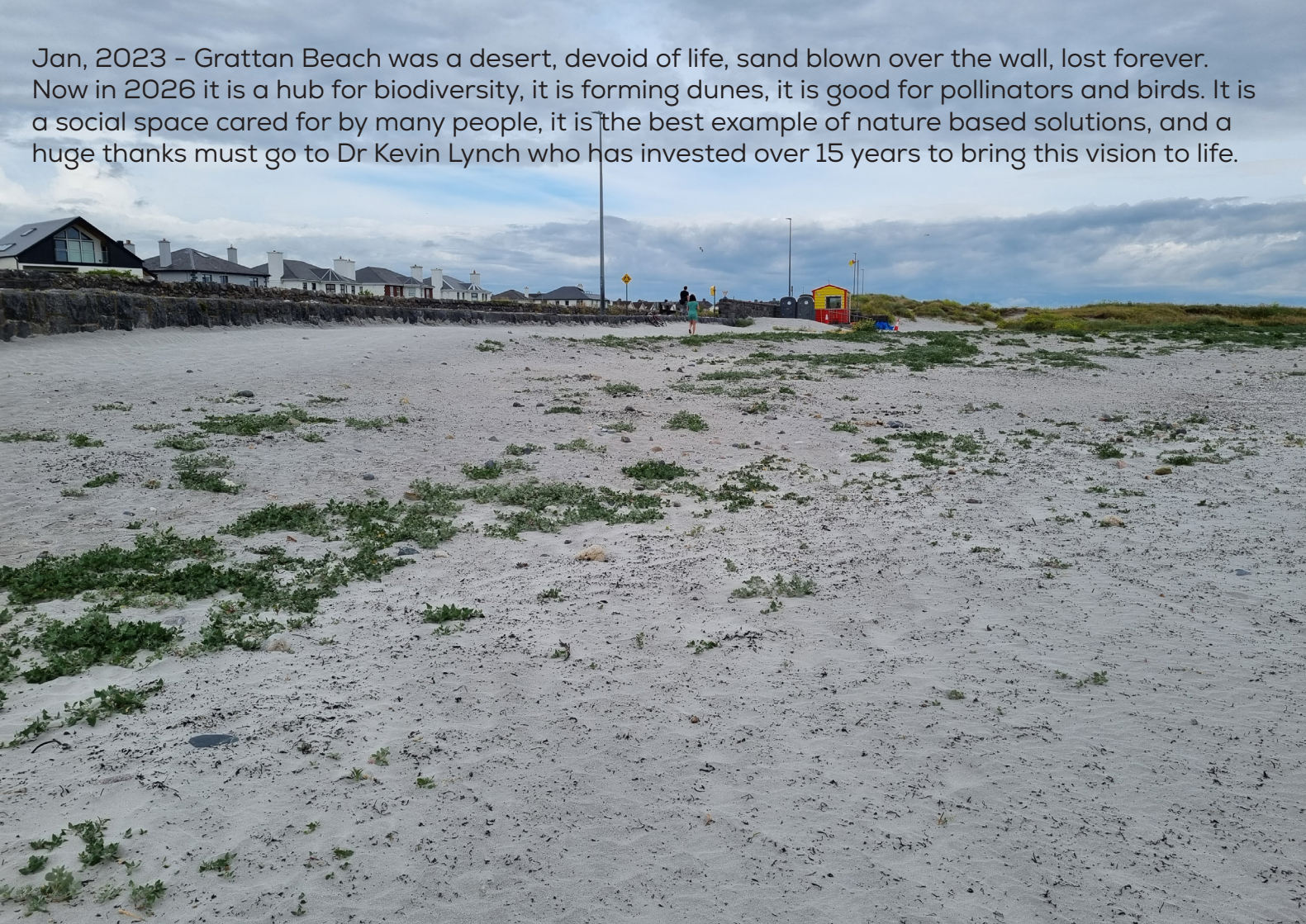
 Birdsfoot Trefoil <i>Lotus corniculatus</i> Crobh éin	 Common Dandelion <i>Taraxacum officinale</i> Caisearbhán	 Common Scurvygrass <i>Cochlearia officinalis</i> Biolar trá	 Couch Grass <i>Elytrigia juncea</i> Féar gaoil	 Meadow Buttercup <i>Ranunculus acris</i> Fearbán féir
 Daisy <i>Bellis perennis</i> Noínín	 Herb robert <i>Geranium robertianum</i> Ruithéal rí	 Sea Mayweed <i>Matricaria maritima</i> Lus Bealtaine	 Red Clover <i>Trifolium pratense</i> Seamair dhearg	 Ribwort Plantain <i>Plantago lanceolata</i> Slánlus
 Rough Hawkbit <i>Leontodon hispidus</i> Crág phortáin gharbh	 Sea Radish <i>Raphanus raphanistrum subsp. maritimus</i> Meacan mara	 Stinging Nettle <i>Urtica dioica</i> Neantóga	 White Clover <i>Trifolium repens</i> Seamair bhán	 Ivy <i>Hedera helix</i> Eidhneán

FLORA SCORE LIST
1 flower found = 1 point
15 flowers = 15 points total

5 points → Nature Beginner
10 points → Flower Explorer
15 points → Flora Champion



Jan, 2023 - Grattan Beach was a desert, devoid of life, sand blown over the wall, lost forever. Now in 2026 it is a hub for biodiversity, it is forming dunes, it is good for pollinators and birds. It is a social space cared for by many people, it is the best example of nature based solutions, and a huge thanks must go to Dr Kevin Lynch who has invested over 15 years to bring this vision to life.



Our sincere thanks go to the Galway City Council Parks & Roads Team, whose support—through funding, maintenance, and fence installation since 2023—has been essential to this projects success.

