

Other Nations

Biodiversity at the Old Cement Quarry, Drogheda, Co. Louth

Commissioned by Drogheda Tidy Towns

Tony Conaghy

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‘Nature is painting pictures for us, day after day, pictures of infinite beauty if only we have eyes to see them’.

John Ruskin

Introduction

This book was produced with the assistance of **Drogheda Tidy Towns**, without whom it would not have been possible. The aim of this study is to explore and record the biodiversity within the old cement quarry to the north of Drogheda, Co Louth. The time frame of this study was from April to October in 2023.

The study area consists of three separate quarries on the north side of Drogheda town which will be referred to as Q1, Q2 and Q3. Two of the quarries are privately owned, the third quarry, Q3, is owned by Louth County Council. Although recordings from all three quarries make up this report the main biodiversity recordings are taken from Q3.

What follows is not a definitive record of the biodiversity of the quarry – that would take years – but this book will, I hope, give the reader a good overview of the wonderful tapestry of life that exists within the different habitats of the old quarry and why in this age of habitat destruction, urban sprawl and climate change it should be celebrated and protected for the future.

For me, the true beauty of the quarry lies in its connectivity; from the smallest mosses and lichens growing on bare rock to the seemingly effortless hovering of a hunting kestrel over the wildflower meadow. The mosses and lichens have provided a foothold for the seeds of larger plants to germinate and grow, transforming the landscape over decades. A vast range of birds and insects have inhabited the newly-formed habitats.

At night countless moths flutter into the sky from their daytime hide outs to feed pollinate and if lucky find a mate. I wonder how many are Silver-Y's recorded earlier in the day. This plain little moth is only 20mm in length and weighs no more than two-tenths of a gram, yet it has crossed a continent to get here. The crackle of my Bat detector tells me that Pipistrelle's bats are also in the air looking to feed on the countless insects now occupying the night sky.

To my left, the ghostly shape of a Barn Owl floats silently into view, stops in mid flight and drops on to boulders at the base of the quarry cliff. Target missed, it flies past me, but my view is blocked by a line of willows growing along the water's edge. A break in the willows 20 meters to my right should betray the owl's flight path but it does not reappear. My human eyes and ears are pretty useless now. Luckily, I borrowed a night vision scope for the evening and I can see to my surprise that the owl is perched on a tree no more than ten meters in front of me, thankfully it doesn't seem to be too disturbed by the presence of this human intruder.

With rapid clicks and crackles the bat detector comes to life again reminding me that the age-old nocturnal battle between moths and bats is well underway all around me.

On my way out of the quarry I try to recall the last time I saw a barn owl in the wild, twenty years ago at least. I read recently that they are making a small comeback thanks to government funding and the incredible efforts of volunteers, a small but important victory. I have no doubt, before my next visit I will have read, seen and heard numerous articles on the effects of climate change on biodiversity, most will be depressing.

But for now, as I make my way in the darkness out of this special place back to my car, I do so with a happy heart.

Tony Conaghy, October 2023

Note: Several species of moths, hoverflies, grasshoppers, crickets, liverworts, mosses, lichens, grasses, rushes, fungi, and aquatic life have all been recorded, but due to time constraints regarding positive species identification (ever try to tell mosses apart), these had to be omitted from this study. The importance of their future inclusion cannot be overstated as they are vital components in understanding the overall complex ecology of the site.





Old Cement Quarry, Drogheda

The old cement quarry was a large limestone quarry used by Irish Cement from 1937 to 1978. Between 1978 and 1999 it was used as the Drogheda Corporation landfill site. Following its abandonment, due to the lack of human interference, nature has taken a foothold and it is now a haven for urban wildlife. Known as Brown Field Sites (abandoned industrial sites), these areas are often home to far more species of plants and animals than designated Nature Reserves, and play a vital role in protecting biodiversity in a time of species decline and habitat loss. The Old Cement quarry is a natural gem on our doorstep which should be managed, protected, and preserved.



The old cement quarries, Drogheda, Co. Louth.

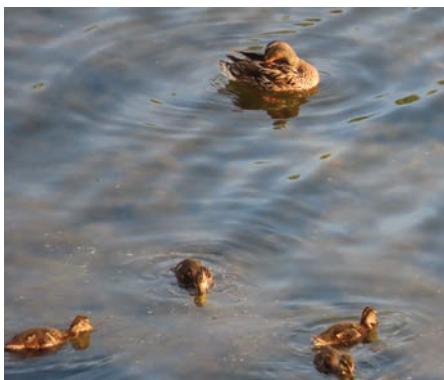
Meet the locals



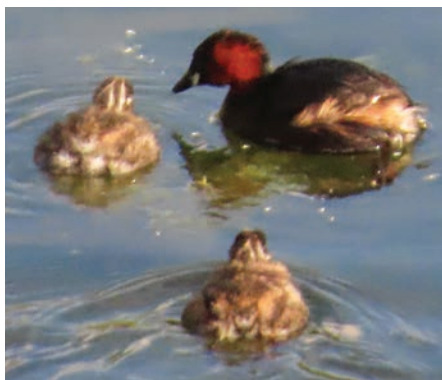
Coot and chicks, Q3.



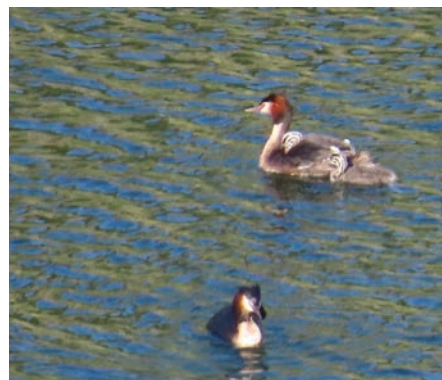
Tufted Duck, Q3.



Mallard and ducklings, Q3.



Little Grebe and chick, Q3.



Great Crested Grebe & chick, Q3.



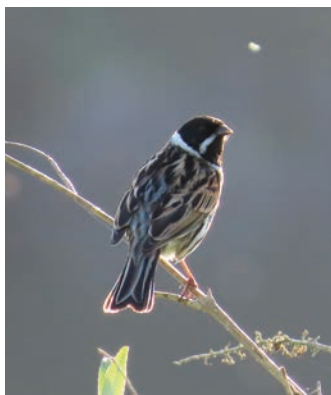
Shelduck with chicks, Q3.



Resting Mallard males, Q3.



Sky Lark, Q3.



Stock image

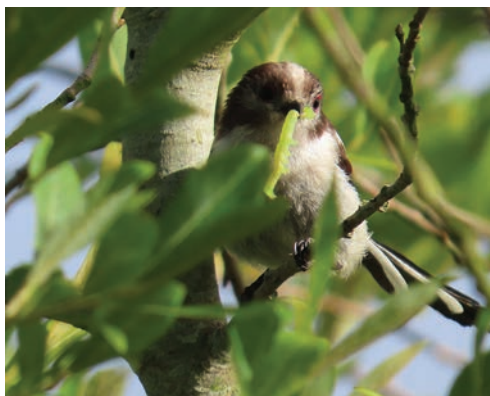
Reed Bunting, Q3.



Stone Chat, Q3.



Meadow Pipit, Q3, **Endangered**.



Long Tail Tit chick, Q2.



Swallow, Q2.



Stock image

Linnet, Q3.



Peregrine Falcon female & chicks, Q1.



Kestrel chicks, Q2, **Endangered**.

Confirmed nesting birds (23 species): Black Cap, Blue Tit, Bull Finch, Coots, Gold Finch, Great Crested Grebe, Great Tit, Jackdaw, Kestrel, Little Grebe, Long Tail Tit, Magpie, Mallard, Meadow Pipit, Moor Hen, Peregrine Falcon, Reed Bunting, Shelduck, Skylark, Swallows, Tufted Duck, Wood Pigeon, Wren.

Recorded but not confirmed as nesting (9 species): *Chiff Chaff, Green Finch, House Martin, Linnet, Pied Wagtail, Stock Dove, Water Hen, Willow Warbler, Yellow Wagtail.*

All three quarries but in particular quarry 3 (Q3) with its large meadow and water side vegetation provide excellent nesting habitats for a large variety of bird and insect species, in a time of habitat destruction, this is a welcome discovery.



Common Carder bee, Q3.



Stock image

Red Tail bee, Q1.



Stock image

Buff Tail bee, Q3.



Stock image

Clarks Mining bee, Q3.

Bees (7 species): Buff Tail, Clarks Mining bee, Common Carder, Early bumblebee, Leafcutter bee, Red Tail bumblebee, White Tail bumblebee.



Common Blue damselfly, Q.3



Red-veined Darter dragonfly, Q3.



Emperor dragonfly, Q1, Q3.



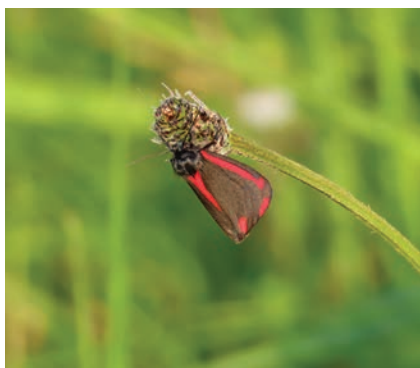
Comma butterfly, Q1, Q3.



Red Admiral butterfly, Q1, Q3.



Orange Tip butterfly, Q1.



Cinnabar moth, Q3.



Common Blue butterfly, Q3.

Butterflies (15 species): Comma, Common Blue, Cryptic White, Gatekeeper, Green-veined White, Large White, Meadow Brown, Orange Tip, Painted Lady Peacock, Red Admiral, Ringlet, Small Heath, Small tortoise shell, Speckled Wood.

Dragonflies (4 species): Black-tailed Skimmer, Blue Emperor, Brown Darter, Red-veined Darter.

Damselflys (2 species): Blue Tip, Common Blue.



Stock image

Smooth newt, Q2, Q3.



Stock image

Common frog, Q3.



Amphibians (2 species): The Smooth or Common newt is Ireland's only tailed amphibian. Although a native member of our fauna, it is rarely seen and relatively under-recorded. This is probably partly due to its elusive nature and also because it is regularly mistaken for a lizard. The permanent pond shown above, Q1, and two temporary ponds found in Q2 and Q3 both contained adult newts but dried up in June.



Fox, Q3.



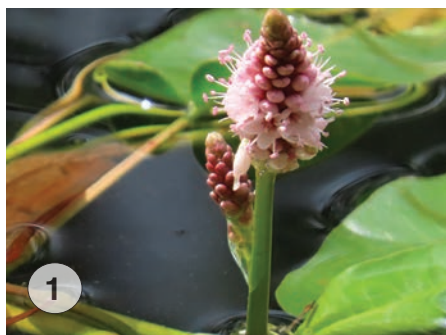
Rabbits, Q2, Q3.



Leisler bat, Brown Long-eared bat, Soprano and Common Pipistrelle bat all recorded feeding in Q2 and Q3, August 2023. Roost site yet to be located (photos: National Biodiversity website).

Mammals (6 species): Fox, Rabbit, Leisler bat, Brown Long-eared bat, Common Pipistrelle bat, Soprano Pipistrelle bat.

Wild flowers recorded to date (51 species): **1** Amphibious Bistort, **2** Bee Orchid, Birds-foot Trefoil, Biting Stonecrop, Blackberry, Bloody Crane's-bill, Brook Weed, Broom, Bush Vetch, Butterfly Bush, Cats Ear, Columbine, Common Centaury (TBC), Common Knapweed, **3** Common Spotted Orchid, Common Vetch, Cowslip, **4** Dog-rose, Field Penny Crest, **5** Field Scabious, **6** Fox and Cubs, Fushsia, Great Mullein, Great Willow, Hawthorn, Hedge Woundwort, Herb Robert, **7** Irish Saxifrage, Ladies Bed Straw, Lesser Centaury (TBC), Lesser Trefoil, Meadow Buttercup, **8** Meadow Vetchling, Ox-eye Dasiy, Pyramidal Orchid, Ragwort, Red Clover, Red Valerian, Ribworth Plantain, Rosebay Willowherb, Selfheal, **9** Square-stalked St Johns Wort, Tormetil, **10** Tufted Vetch, Water Mint, White Campion, White Clover, **11** Wild Teasel, **12** Wood Speedwell, Yarrow, Yellow Rattle ... and counting.



Habitats

One third of our wild bee species are threatened with extinction. This is mainly because we have drastically reduced the amount of food and safe nesting sites that support them.



Water and islands, Q3.



Roach, Q1, Q3.



Scrub and bramble important nesting and food source.



Wildflower meadow old cement quarry, June, Q3.



Swarms of flies, important food source for birds, bats, and fish, May, Q3.



Meadows provide nesting grounds for Skylarks and Meadow Pipits, and are a food source for bees, butterflies, moths, hoverflies and dragonflies, Q3.

Irish Meadows

Irish meadows have undergone catastrophic decline. Semi-natural grasslands are among the most threatened habitats in Ireland, with huge losses taking place almost unnoticed. In the Republic of Ireland, surveys conducted by the National Parks & Wildlife Service in the past 15 years have shown losses of approximately 30% of the best quality semi-natural grasslands over a 6-year period.

In the UK, over 97% of meadows have disappeared since the 1930s. These are staggering losses, with a huge impact on the rich biodiversity that relies on these habitats. If we want to address the biodiversity crisis, it is vital that we recognize the value of meadows and take steps to restore them where we can.

Why do meadows matter?

Meadows can be incredibly rich in native flowers. According to Plantlife in the UK, a typical meadow can be home to 570 flowers per square metre on a single day in early summer.

Data from Plantlife UK also suggests that the plants in a typical meadow can support nearly 1,400 species of invertebrates; this is a vast army of bees, bugs, beetles, flies, spiders, grasshoppers, butterflies, and moths. Many of these insects are pollinators, which we rely on for the survival of our crops and wild plants.

What we see above ground is only a fraction of the biodiversity a meadow supports – meadow soils also support an incredibly diverse range of organisms.

Natural meadows can store 500% more carbon than fields dominated by one grass species.

The deep roots of meadow plants like Knapweed and Bird's-foot Trefoil can stabilise soil, store carbon and bring up valuable minerals for livestock to eat. Due to their rooted soils and permanent cover, meadows provide good conditions for the uptake and storage of flood water. They also protect water quality by trapping sediments and nutrients and ensuring they don't leach out of the soil.

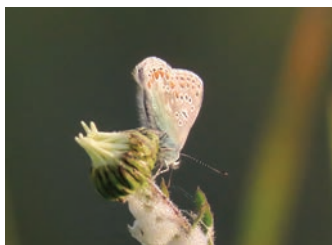
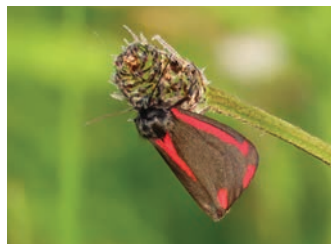
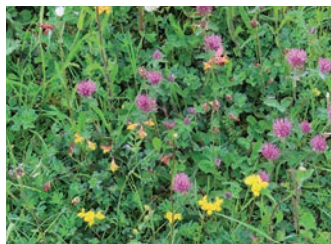
Research shows that having exposure to landscapes such as meadows improves our connection to nature and wellbeing. Studies show that the act of viewing a flower brings direct beneficial psychological effects, including a lowering of blood pressure and a reduction in stress levels.

Source: *Creating and restoring meadows in local communities and gardens*. All-Ireland Pollinator Plan, How-to Guide 11. National Biodiversity Data Centre Series No.30. November 2022.

Facing page:

Top row from left: Common Carder bee, Common Blue butterfly, Red Clover, Cinnabar moth.
Second row from left: Cinnabar moth caterpillars, Pyramidal orchid, Common spotted orchid, Six-spot Burnet moth.
Third row from left: Red-veined Darter, Ox-eye daisy, Meadow Pipit, Silvery-Y moth.
Fourth row from left: Common Blue damselfly, Common Blue butterfly, St John's Wort, Meadow Brown butterfly.
Fifth row from left: Green-veined White butterfly, Goldfinch, Field Scabious, young Kestrel.

Some of the inhabitants of the Quarry 3 wildflower meadow



The Young Ones – safe nesting and spawning site



Young Wren, June, Q2, Q3.



Black Cap, June, Q2, Q3.



Long Tail Tit with caterpillar, June, Q3.



Young Frog, June, Q3.



Young Swallow, August, Q1.



Young Kestrel hunting over meadows, July, Q3.

Nesting and Resting – the pond a safe place



Resting Ducks, Q3

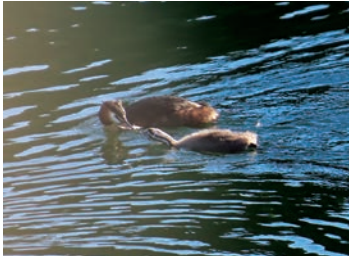
The quarry is a remarkable environment for nesting birds with 23 species recorded as nesting. Overall, 30 species with chicks are known to be using the quarry to date. It is also an important resting ground for others, such as Tufted Duck, Herring Gulls, Mute Swans, Cormorants and Grey Herons. These birds use the quarry on a regular basis all year round. The Old quarry is a sanctuary and an oasis for a large variety of wildlife in an increasing urbanised landscape. It needs to be acknowledged, protected, and developed with sensitivity for the future.



Resting Mute Swan, June, Q3. Great Crested Grebe, Q3. Grey Heron washing, Q3.

Whats not to like?

The nest of the Long Tail Tit is one of the most intricate made by any bird in Ireland, consisting of mosses and feathers bound together by spider webs and covered in lichens. This species has a co-operative breeding strategy, with younger birds often helping adults to raise chicks. There can be as many as 1,000 feathers in a nest, June, Q3.



Great Crested Grebe feed on fish and aquatic insects which have ridged exoskeletons which make them hard to digest, so these grebes along with their cousins evolved to use their feathers to slow down digestion. The feathers form dense balls in the digestive tract and appear to slow down the passage of food long enough for it to be fully liquefied. The bird then regurgitates the tough bits in a ball of feathers. In this photo, the female Grebe is feeding her feathers to a chick, May, Q3.

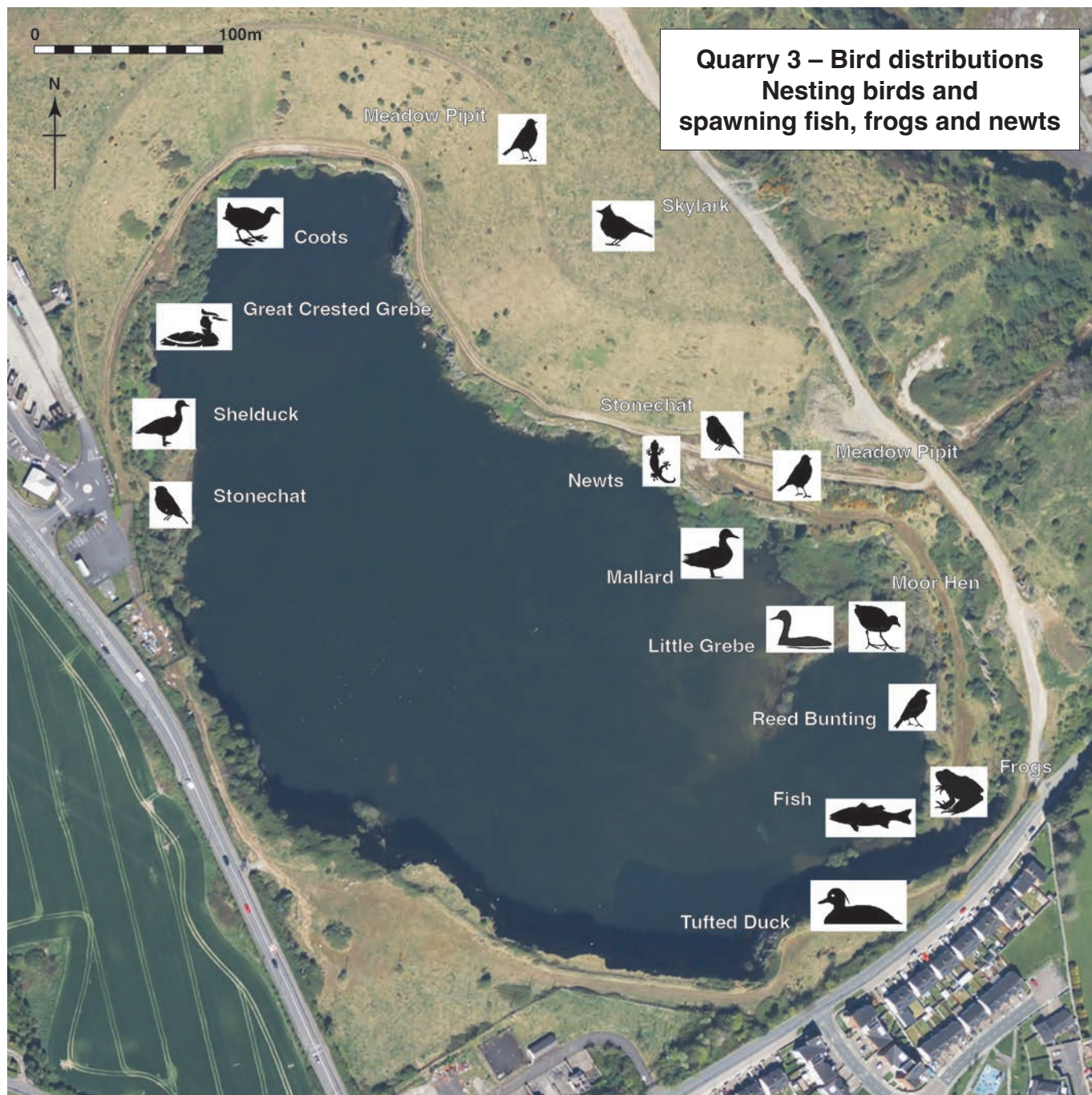
The emperor dragonfly, or blue emperor, is a large species of hawker dragonfly averaging 78mm in length it is the largest insect found in Ireland. The photo shows a female laying eggs, June, Q3.

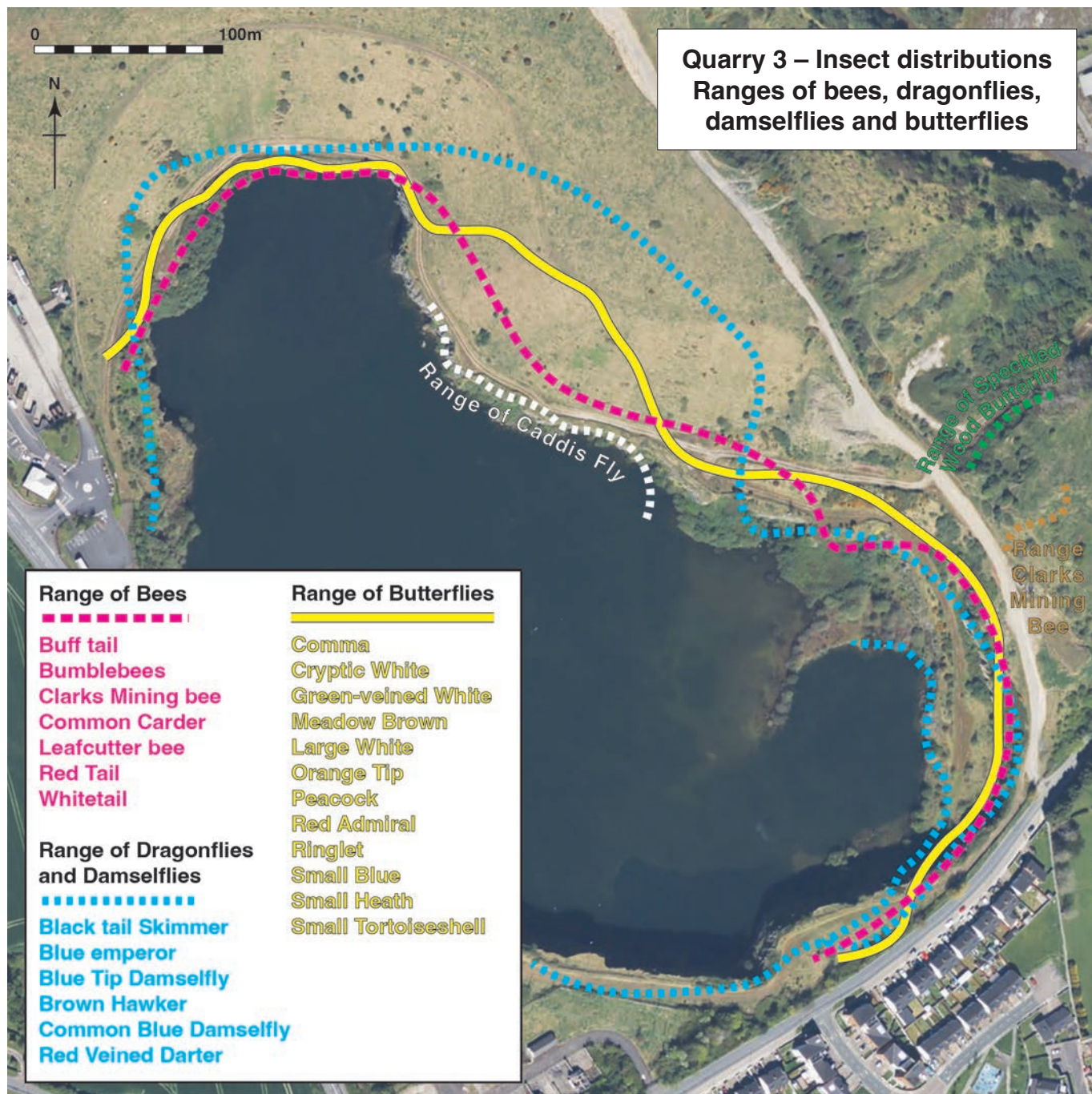


Female Peregrine falcon with chicks, May, Q1. Peregrines are the fastest birds on earth. In a dive (stoop) when hunting, they can reach speeds of 300km per hour. The quarry peregrines have produced two broods over three years, successfully fledging three chicks each time.

The Gall wasp causes a gall known as the rose bedeguar gall or Robin's pincushion. The gall develops as a chemically induced distortion of an unopened leaf axillary or terminal bud, mostly on field roses or dog roses. The female wasp lays up to 60 eggs within each leaf bud using her ovipositor. The grubs develop within the gall, and the wasps emerge in spring. The female wasp does not require a mate and fewer than one percent are male, August, Q3.







The Future ... pressures and possibilities



View of south-west quarry (Q3) in 1963.



View of south-west quarry (Q3) in 2023.



South-west Quarry, June 2023.

This section explores how the future of the Quarry could fit within Louth County Council's *Climate change adaptation strategy 2019–2024* (Louth Co. Co., 2019). The following are some goals and objectives relating to the protection of natural habitats and biodiversity within the plan.

Since 1999 when the quarry ceased accepting waste for landfill, apart from periodic restoration work over the years by the council, the quarry has more or less been left undisturbed. The results of this can be seen in the abundance of biodiversity on the site.

Species at a glance: 28 birds, 31 wild flowers, 15 butterflies, 7 bees, 4 dragonflies, 2 damselflies, 2 amphibians, 3 mammals, the vast majority of which are breeding. All are using the quarry as an important feeding ground. As mentioned above, this species list is only the tip of the biodiversity iceberg.

The quarry is located approximately 600m north of the Boyne Estuary on the north-western edge of Drogheda Town. The quarry is surrounded by urban development, quarries 1 and 2 are earmarked for future development so it is vital that Quarry 3 is protected and any future council work on the site should be done with sensitivity to the biodiversity of the site. Habitat loss is one of the main causes of the decline in biodiversity.

One way to protect biodiversity would be to include Quarry 3 as part of **Louth County Council's Climate change adaptation strategy 2019–2024**. Only then can we achieve this plan's key objectives:

'Promote protection of natural habitats and biodiversity with the organisation and within communities'.

Natural resources and cultural infrastructure, Goal 5, Objective 2, Action 5

Plan objectives and recommendations

Louth Co. Co. Goal 5, Objective 1: *To provide for enhancement of natural environment to work positively towards climate action.*

Louth Co. Co. Goal 5, Action 1: *Develop a strategy to undertake and implement an active tree planting programme in the context of climate adaptation in conjunction with an awareness campaign that informs of the benefits to communities in improving air quality, offsetting carbon emissions, promoting biodiversity, limiting flood risk, reducing urban heat, as well aesthetic value (p. 46).*

Louth Co. Co. Goal 5, Objective 2: *To promote effective bio-diversity management and enhance protection of natural habitats and landscapes (p. 46).*

Recommendation:

That a small section of the quarry (3 to 4 hectares) be planted in trees to partly achieve these objectives. Main species of trees on site are Willow, Green Alder, Hawthorn, and Ash.

Louth Co. Co. Goal 5, Action 2: *Review Bio-diversity Plans/habitat conservation strategies, plans and projects to ensure that: all risks from adverse climate change have been identified; future changes are assessed and identify measures to address issues; carbon capture within habitats is considered (p. 46).*

Recommendation:

Continued sensitive management of wildflower meadow

Note: Natural meadows can store five times more carbon than fields dominated by one grass species. The deep roots of meadow plants like Knapweed and Bird's-foot Trefoil can stabilise soil, store carbon and bring up valuable minerals for livestock to eat. Due to their rooted soils and permanent cover, meadows provide good conditions for the uptake and storage of flood water.



Wild flower meadow, Q3, cut and not lifted, July 29 2023



Banks of Quarry 3, cut 29 July 2023.



Louth Co. Co. Goal 5, Action 5: *Promote protection of natural habitats and biodiversity with the organisation and within communities, with partners NPWS, Teagasc, DKIT, LAWCO, Community, Heritage, Waste Management & Environment (p. 46).*

Recommendations:

- Delay cutting of meadow until mid August/September. Trim edges of banks.
- A local farmer be assigned to cut and lift cuttings for food for cattle at little or no cost.
- Natural grazing by horses from September to March.
- Plant sections of Yellow-rattle – the meadow maker.

Yellow-rattle is an annual plant. It has an unusual life-cycle in that it is semi-parasitic. This means that, after the seeds germinate in early spring and their roots develop, they attach to the roots of plants growing nearby, especially grasses. The Yellow-rattle then draws water and nutrients from its host plant. It is estimated that Yellow-rattle can suppress the growth of grasses by as much as 60%, and so is sometimes called the ‘meadow-maker’. Yellow-rattle itself is an important food plant for pollinators, especially bumblebees.

The quarry meadow is used by ground nesting birds, like Skylarks or Meadow Pipits. They often nest in longer grass (c.200–500mm long). Both are **Birds of Conservation Concern** in Ireland. Both species have been recorded nesting

in the quarry meadow. It is very important that the meadow is not mown until the autumn as these birds generally nest from April until early August. Mowing these meadows during their breeding season could destroy nests, eggs or chicks, or expose them to predators. A delay in cutting also allows wild flowers to set seed for the following year as well as providing a food source for insects entering hibernation.

Unfortunately, for the past 3 years, (2021–2023), the meadow has been cut at the end of July.

It is also important that cuttings are lifted to prevent the meadow becoming too fertile as this will only encourage grass growth which will eventually replace the wildflowers.

Plants such as Knapweed, Bird Foot Trefoil, Kidney Vetch and Red Clover are important food sources for overwintering bees such as Carder bees who forage close to their nests (200m). All the above flowers were cut from meadow and verges in Quarry 3 in July 31, Removing this food source so early means not only a food shortage for the bees, it also forces species into direct competition for the remaining flowers which can result in a decline in species the following year.

Note on Ragwort: Keep cutting and removing. Ragwort is only problematic in situations where it is going to be chopped into hay for livestock. It is an important plant for many insects, including Cinnabar and Burnet moths. If the Ragwort is causing issues, cut in July and again in September until its spread is halted. This will help reduce seed dispersal.

Louth Co. Co. Goal 5, Action 5: *To promote effective bio-diversity management and enhance protection of natural habitats and landscapes with the organisation and within communities (p. 46).*

Recommendation:

Education: Limited guided tours of meadow with viewing platform of quarry for schools, community groups, World Bee Day, Biodiversity Day, Heritage Week.

Research: Possible research projects for DKIT, DIFE, transition years students and schools groups.



School children on a field trip biodiversity project



Research scientist undertaking a wildflower study.



Top row from left: Silver-Y moth, Hover Fly, Grass Hopper, Lichens. **Bottom row from left:** Hard Rush, Common Reed, Moss, Common Fungus.

Further recording is needed for moths, hoverflies, grasshoppers, crickets, liverworts, mosses, lichens, grasses, rushes, fungi, and aquatic life. Recording has begun on several of the above species and await positive identification. These findings have been omitted from this study. The importance of their future inclusion cannot be overstated as they are a vital component in understanding the overall complex ecology of the site.

'We need to leave lots of areas of land alone, to not use them for economic activity and to give them back to nature. Only when we have enough nature will we achieve sustainability'.

Brendan McSherry, Heritage Officer, Louth Co. Co., December 2020

Conclusion: All life is one



Young Kestrel Q3 Sept 2023

'For the animal shall not be measured by man. In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the earth'.

Henry Beston Sheahan (1888–1968), American naturalist

The old cement quarry, and in particular quarry 3, is a wonderful example of how nature, when given a chance, can transform even the deepest of scars left by decades of human activity through quarrying and waste disposal into a gem of biodiversity. Its continued existence is not without threats: excessive human disturbance, especially around breeding time (May/June), and habitat loss being the two main threats. If we cannot see and acknowledge these issues, especially in the current context of climate change, then we are lost. This report is simply a snapshot of the infinite natural diversity and beauty that is the old quarry, how we view that diversity and beauty remain to be seen. We have a golden opportunity to build and develop on the existing work done by nature to create a special place, a beacon of biodiversity, a haven as well as a sanctuary for countless species. We must do this for the nations of nature and for ourselves.

Tony Conaghy

List of common and scientific names

Birds

Barn Owl, *Tyto alba*
Black Cap, *Sylvia atricapilla*
Blue Tit, *Cyanistes caeruleus*
Bull Finch, *Pyrrhula pyrrhula*
Chiff Chaff, *Phylloscopus collybita*
Coot, *Fulica atra*
Goldfinch, *Carduelis carduelis*
Great Crested Grebe, *Podiceps cristatus*
Great Tit, *Parus major*
Greenfinch, *Chloris chloris*
Grey Heron, *Ardea cinerea*
House Martin, *Delichon urbicum*
Jackdaw, *Corvus monedula*
Kestrel, *Falco tinnunculus*
Linnet, *Carduelis cannabina*
Little Grebe, *Tachybaptus ruficollis*
Long Tail Tit, *Aegithalus caudatus*
Magpie, *Pica pica*
Mallard, *Anas platyrhynchos*
Meadow Pipit, *Anthus pratensis*
Moor Hen/Water Hen, *Gallinula chloropus*
Mute Swan, *Cygnus olor*
Peregrine Falcon, *Falco peregrinus*
Pied Wagtail, *Motacilla alba yarrellii*
Reed Bunting/Warbler, *Emberiza schoeniclus*
Shelduck, *Tadorna*
Skylark, *Alauda arvensis*
Stock Dove, *Columba oenas*
Stonechat, *Saxicola rubicola*
Swallow, *Hirundo rustica*
Swift, *Apus apus*
Tufted Duck, *Aythya fuligula*
Willow Warbler, *Phylloscopus trochilus*
Wood Pigeon, *Columba palumbus*
Wren, *Troglodytes troglodytes*
Yellow Wagtail, *Motacilla flava*

Butterflies

Capital White, ?
Comma, *Polygonia c-album*
Common Blue, *Polyommatus icarus*
Cryptic Wood White, *Leptidea juvernica*
Gatekeeper, *Pyronia tithonus*

Green-veined White, *Pieris napi*
Large White, *Pieris brassicae*
Meadow Brown, *Maniola jurtina*
Orange Tip, *Anthocharis cardamines*
Painted Lady, *Cynthia cardui*
Peacock, *Inachis io*
Red Admiral, *Vanessa atalanta*
Ringlet, *Aphantopus hyperantus*
Small Blue, *Cupido minimus*
Small Heath, *Coenonympha pamphilus*
Small Tortoiseshell, *Aglais urticae*
Small White, *Pieris rapae*
Speckled Wood, *Pararge aegeria*

Bees

Buff-Tailed bumblebee, *Bombus terrestris*
Clarks Mining bee, *Andreana calarkella*
Common Carder bee, *Bombus pascuorum*
Early Bumblebee, *Bombus pratorum*
Leafcutter bee, *Megachilidae*
Red-Tailed Bumblebee, *Bombus lapidarius*
White-Tailed Bumblebee, *Bombus lucorum*

Damselflies

Blue Tip/Blue Tailed, *Ischnura elegans*
Common Blue, *Enallagma cyathigerum*

Dragonflies

Black-tailed Skimmer, *Orthetrum cancellatum*
Brown Hawker, *Aeshna grandis*
Emperor Dragonfly, *Anax imperator*
Red-veined Darter, *Sympetrum fonscolombii*

Moths

Cinnabar, *Tyria jacobaeae*
Silver-Y, *Autographa gamma*
Six-spot Burnet, *Zygaena filipendulae*

Other Insects

Bee Fly, *Bombyliidae villa*
Caddis Fly, *Trichoptera*
Gall Wasp, *Diplolepis rosa*
Hoverfly, *Syrphidae*

Mammals

Brown Long-eared Bat, *Plecotus auritus*
Common Pipistrelle Bat, *Pipistrellus pipistrellus*
European Rabbit, *Oryctolagus cuniculus*
Leisler's Bat, *Nyctalus leisleri*
Red Fox, *Vulpes Vulpes*
Soprano Pipistrelle Bat, *Pipistrellus pygmaeus*

Amphibians

Common Frog, *Rana temporaria*
Smooth Newt, *Lissotriton vulgaris*

Fish

Roach, *Rutilus rutilus*

Plants

Amphibious Bistort, *Persicaria amphibia*
Ash, *Fraxinus excelsior*
Bee Orchid, *Ophrys apifera*
Birds-foot Trefoil, *Lotus corniculatus*
Biting Stonecrop, *Sedum acre*
Blackberry, *Rubus fruticosus*
Bloody Cranesbill, *Geranium sanguineum*
Brookweed, *Samolus valerandi*
Broom, *Cytisus scoparius*
Bush Vetch, *Vicia sepium*
Columbine, *Aquilegia vulgaris*
Common Bird's-foot-trefoil, *Lotus corniculatus*
Common Centuary, *Centaurium erythraea*
Common Knapweed, *Centaurea nigra*
Common Ragwort, *Jacobaea vulgaris*
Common Reed, *Phragmites australis*
Common Spotted Orchid, *Dactylorhiza fuchsii*
Common Vetch, *Vicia sativa spsegetalis*
Cowslip, *Primula veris*
Dog Rose, *Rosa canina*

Field Penny Crest, *Thlaspi arvense*
Field Scabious, *Knautia arvensis*
Fox-and-cubs, *Pilosella aurantiaca*
Fuchsia, *Fuchsia magellanica*
Gorse, *Ulex europaeus*
Great Mullein, *Verbascum thapsus*
Great Willow, *Salix alba*
Green Alder, *Alnus alnobetula*
Hard Rush, *Juncus inflexus*
Hawthorn, *Crataegus monogyna*
Hedge Woundwort, *Stachys sylvatica*
Herb Robert, *Geranium robertianum*
Irish Saxifrage, *Saxifraga rosacea*
Ladies Bedstraw, *Galium verum*
Lesser Centaury, *Centaurium pulchellum*
Lesser Trefoil, *Trifolium dubium*
Meadow Buttercup, *Ranunculus acris*
Meadow Vetchling, *Lathyrus pratensis*
Ox-eye Daisy, *Leucanthemum vulgare*
Perforated St Johns Wort, *Hypericum perforatum*
Pyramidal Orchid, *Anacamptis pyramidalis*
Red Clover, *Trifolium pratense*
Red Valerian, *Centranthus ruber*
Ribwort Plantain, *Plantago lanceolata*
Rosebay Willowherb, *Chamaenerion angustifolium*
Self-heal, *Prunella vulgaris*
Square-stalked St John's Wort, *Hypericum tetrapterum*
Tormentil, *Potentilla erecta*
Tufted Vetch, *Vicia cracca*
Water Mint, *Mentha aquatica*
White Campion, *Silene latifolia*
White Clover, *Trifolium repens*
Wild Teasel, *Dipsacus fullonum*
Wood Speedwell, *Veronica montana*
Yarrow, *Achillea millefolium*
Yellow Rattle, *Rhinanthus minor*



