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National
Biodiversity
Data Centre
A Heritage Council Programme

Biodiversity

IRELAND

ISSUE 20 | AUTUMN/WINTER 2020



Chasing down the Slow Worm

Nick Parry spent six years
seeking out this mysterious reptile

Irish Hedgehog Survey

Help us put Gráinneog on the map

Explore Your Shore!

Get to know your seaweeds

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Biodiversity Ireland Issue 20 Autumn/Winter 2020
Biodiversity Ireland is published by the National Biodiversity Data Centre. Enquiries should be sent to the editor, Juanita Browne, editor@biodiversityireland.ie

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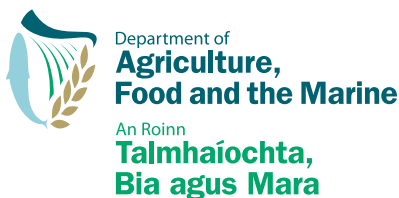
Management Board

The National Biodiversity Data Centre is overseen by a Management Board, established by the Heritage Council. The Management Board is responsible for setting the strategic direction of the work of the National Biodiversity Data Centre and for ensuring proper corporate governance.

The composition of the Management Board:

Rachel Kenny	Chair of Board & Director of Planning, An Bord Pleanála
Bernadette Guest	Heritage Officer, Waterford City and County Council
Dr Matthew Jebb	Director, National Botanic Gardens
Rachel Kenny	Director of Planning, An Bord Pleanála
Dr. Micheál Lehane	Director, Environmental Protection Agency
Dr Peter McLoughlin	Head of School of Science and Computing Department, Waterford Institute of Technology
Nigel Monaghan	Keeper, National Museum of Ireland - Natural History Division
Jack Nolan	Head of Nitrates, Biodiversity and Engineering Division, Department of Agriculture, Food and the Marine
Dr Ciaran O'Keeffe	Director, National Parks and Wildlife Service
Declan Quigley	Senior Port Office, Sea Fisheries Protection Authority
Virginia Teehan	Chief Executive, The Heritage Council

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Thanks to the Department of Agriculture, Food and the Marine for their generous support of the publication of this newsletter



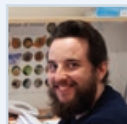
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Staff of the National Biodiversity Data Centre



Juanita Browne,
Pollinator Plan Community and Engagement Officer, is responsible for engaging with partner organisations

to assist implementation of the All-Ireland Pollinator Plan and to promote the conservation of Ireland's pollinators. She also contributes to communications activities of the Data Centre.

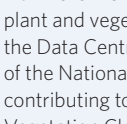


Oisín Duffy,
Surveys and Records Officer, has responsibility for the management of Ireland's Citizen Science Portal and the data validation processes with partners.

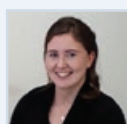
He provides active support to the recording network to improve the quality and quantity of data submitted.



Dr. Úna Fitzpatrick,
Senior Ecologist, is responsible for the development of, and oversees delivery of, the All-Ireland Pollinator Plan 2015-2020, and is responsible for the plant and vegetation work programmes of the Data Centre. This includes management of the National Vegetation Database and contributing to development of the Irish Vegetation Classification System.



Dr. Michelle Judge,
Data Manager and GBIF Node Manager, has responsibility for maintaining the National Biodiversity Database and publishing biodiversity data through Biodiversity Maps. In addition, she looks after the National Biodiversity Indicators and the data analysis for the Irish Butterfly Monitoring Scheme.



Niamh Phelan,
Administrative and Engagement Officer, is our newest staff member having joined the core staff in early August.



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Administrative and Engagement Officer, is our newest staff member having joined the core staff in early August.

Niamh is responsible for day-to-day office management at the Centre and will be spearheading the Centre's engagement and outreach programme.



Dr Saorla Kavanagh,
Farmland Pollinator Officer is the Project Manager of the Protecting Farmland Pollinators project which seeks to test evidence-based actions to make farmland more pollinator-friendly. This is a five-year project funded under the European Innovative Partnership programme.



Dr Liam Lysaght,
Centre Director, is responsible for setting the strategic direction of the Data Centre, overall management of the operations and work programme, and building of partnerships with other organisations. He is an active recorder and helps with the delivery of the Data Centre's work programme on butterflies, birds and mammals. He also serves as Head of Delegation for Ireland to the Global Biodiversity Information Facility (GBIF).



Colette O'Flynn,
Invasive Species Officer, is responsible for the Invasive Species work programmes of the Data Centre. She manages the National Invasive Species Database, provides coordination of invasive species data and information, and contributes advice and policy support at the national and European level.



Dave Wall
Citizen Science Officer is responsible for the Explore Your Shore! and Dragonfly Ireland 2019-2024 citizen science projects. He also takes the lead on developing the Data Centre's work programme on citizen science and all marine biodiversity activities.



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Director's Comment



COVID-19 remains the dominant issue of 2020, with public health of paramount importance to everyone. During the height of the lockdown, people engaged more with biodiversity in their locality, a timely reminder that biodiversity is important to mental health.

Health is a dominant theme also in relation to the state of biodiversity. In recent weeks, exceptionally important reports were published, highlighting, yet again, the poor health of the world's biodiversity. The *Living Planet Report* produced by the World Wildlife Fund for Nature (WWF) shows that the worldwide population sizes of mammals, birds, fish, amphibians and reptiles have declined by, on average, 68% since 1970. In the words of its Director General Marco Lambertini, the report underlines how 'humanity's increasing destruction of nature is having catastrophic impacts not only on wildlife populations but also on human health and all aspects of our lives.'

Swiss Re, a leading institute that deals with insurance-based risk analysis, published a *global Biodiversity and Ecosystem Service Index* to provide a data-driven foundation for understanding the economic risks of deteriorating biodiversity and ecosystems. It found that one-fifth of countries globally are at risk of their ecosystems collapsing due to a decline in biodiversity and the related beneficial ecosystem services. Ireland is not specifically mentioned in the report, but the global map shows that the Biodiversity and Ecosystem Service index for Ireland is only moderate or low.

The Global Biodiversity Outlook 5, published by the Convention on Biological Diversity, focused more on the policy response underpinning the conservation of biological diversity. The findings of the report are clear; none of the Global Biodiversity Targets set for the conservation of biological diversity by 2020 have been fully met. Not only does this have implications for biodiversity, it threatens the achievement of the Sustainable Development Goals and undermines

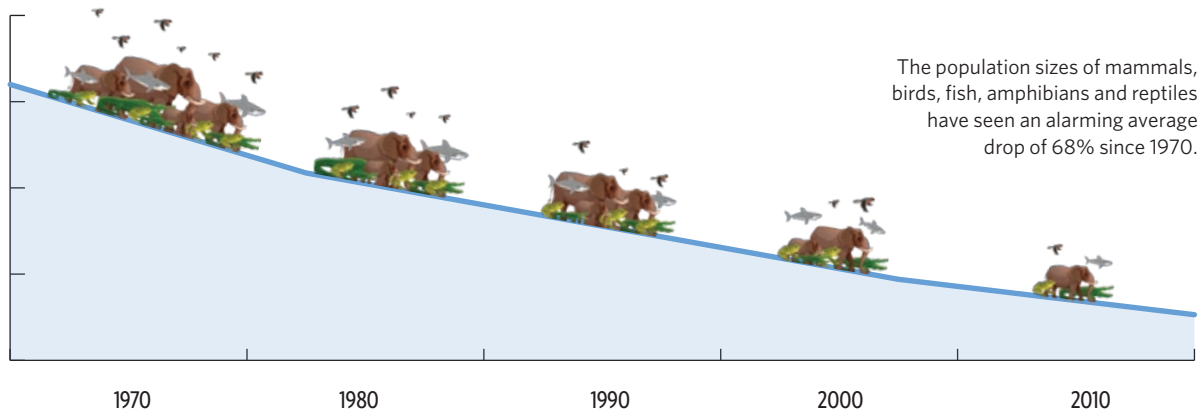
efforts to address climate change. All the evidence now confirms we are in a biodiversity and climate emergency that is impacting upon the health and wellbeing of the planet. And when you consider that common species, such as the Common Carder Bee and the Small Heath butterfly, are suffering serious population declines here, we know Ireland is not immune from these trends.

In June of this year, the newly formed Government took a decisive step to address the biodiversity crisis in Ireland by appointing a Minister of State for Biodiversity and Land Use – within the Department of Agriculture, Food and the Marine – to complement the role of Minister of State for Heritage. This is a very positive step at many levels.

First, it puts into practice the principle underpinning the conservation of biological diversity – that if biodiversity loss is to be addressed, all sectors must play a role; it cannot be left to just the conservation sector alone.

Second, it sends a strong signal that biodiversity is a priority of the newly formed Government. And perhaps most important of all, it acknowledges that the outlook for agriculture and biodiversity conservation are entwined, and if we are to get the transformative change needed to tackle biodiversity loss in the Irish countryside, it will only be done with the help of the agricultural sector. This will require more ambitious biodiversity objectives and targets to be built into the agricultural sector's activities.

Budget 2020 has delivered a very significant boost for the conservation of biodiversity, with a substantially increased budget allocation for NPWS, the Heritage Council and for strategically important biodiversity programmes within the Department of Agriculture, Food and the Marine. This, allied with the publication of Ireland's Climate Action and Low Carbon Development (Amendment) Bill and the publication by the European Commission of the *Farm to Fork Strategy and Biodiversity Strategy 2030* provides the policy and legislative framework to deliver transformative change in the Irish countryside.



Graph from the World Wildlife Fund for Nature *Living Planet Report 2020*

Irish Butterfly Monitoring Scheme

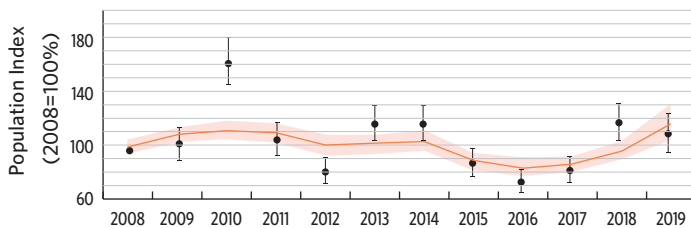


The Irish Butterfly Monitoring Scheme is a national butterfly monitoring scheme delivered by volunteer recorders who walk a fixed transect each week from April 1st to September 30th each year. It was established by the National Biodiversity Data Centre in 2008, and has tracked butterfly populations now for 12 years, providing very detailed information on, for example, how climate change is impacting on biodiversity.

The monitoring scheme generates a multi-species index, by amalgamating population trends of the 15 commonest species as a measure of how common butterflies are doing. This index showed that 2019 was another good year for butterflies overall, continuing the bounce back from the lows of 2016. Nevertheless, when viewed over the full 12-year period since 2008, butterfly populations are still declining at a rate of 1.3% per year.

At the individual species level, the monitoring scheme showed that Small Heath and Small Copper suffered a strong decline since 2008, with declines of -77% and -49% respectively.

Multi-species Index of butterfly population change 2008-2019



The multi-species index derived from the amalgamation of the population trends of 15 common species of butterflies from 2008 to 2019. The orange line is the smoothed trend line, and the circle markers represent the multi-species index per year. Error bars (on markers) and the shaded area surrounding the trend line are the 95% confidence intervals.

The huge decline of Small Heath, a butterfly of unimproved grassland, is particularly worrying. Also worth noting is the moderate decline of widespread species like Green-veined White, Large White and Meadow Brown, all of which gives cause for concern about the general prospects for Ireland's butterfly populations. In contrast, Peacock and Brimstone showed strong increases over the same period, with population increases of +250% and +191% respectively.

The Irish Butterfly Monitoring Scheme is Ireland's longest-running insect monitoring scheme. It is delivered by a network of skilled surveyors who give their time and expertise to ensure we have high quality data to track changes in Ireland's butterfly populations. A special word of thanks to everyone who participates in this scheme.

Species	Change 2008-2019	Statistical confidence, sites per year
Peacock	Strong increase (> +5% p.a.)	99%, >50 sites
Brimstone		95%, 10 - 24 sites
Silver-washed Fritillary	Moderate increase (< +5% p.a.)	95%, 25 - 50 sites
Dingy Skipper		95%, 10 - 24 sites
Holly Blue		95%, 25 - 50 sites
Orange-tip	Stable (45% p.a.)	95%, > 50 sites
Ringlet		95%, > 50 sites
Small Tortoiseshell		95%, > 50 sites
Speckled Wood		95%, > 50 sites
Small White	Moderate decline (< 5% p.a.)	95%, > 50 sites
Green-veined White		99%, >50 sites
Large White		95%, >50 sites
Meadow Brown		95%, >50 sites
Small Copper		95%, 25 - 50 sites
Small Heath	Strong Decline (> -5% p.a.)	99%, 25 - 50 sites

Garden Butterfly Monitoring Scheme

A new Garden Butterfly Monitoring Scheme was launched on a pilot basis, in May, to test if making systematic counts of butterflies in gardens could be used to detect changes in populations. Participants are asked to register their garden and count the maximum number of butterflies seen over a standard 15-minute count during fine weather. The scheme received great buy-in from recorders, with 54 gardens registered. 740 individual counts were made, counting 4,503 individual butterflies. In 2020, Small Tortoiseshell was by far the most commonly seen species,

accounting for 28% of all individuals counted. The top 10: Small Tortoiseshell, Speckled Wood, Large White, Red Admiral, Small White, Peacock, Green-veined White, Meadow Brown, Ringlet and Orange-tip accounted for almost 95% of all butterflies seen, so there seems to be a distinct garden butterfly community.



Small heath - Liam Lysaght

All-Ireland BUMBLEBEE Monitoring Scheme

The All-Ireland Bumblebee Monitoring Scheme is a monitoring scheme delivered by volunteer recorders who walk a fixed route 1-2km transect once a month from March to October. It was established by the National Biodiversity Data Centre in 2012 and is one of the first of its kind in the world. It tracks population trends, detecting the impacts of factors such as land use and climate change on bumblebee populations, and underpins the All-Ireland Pollinator Plan.

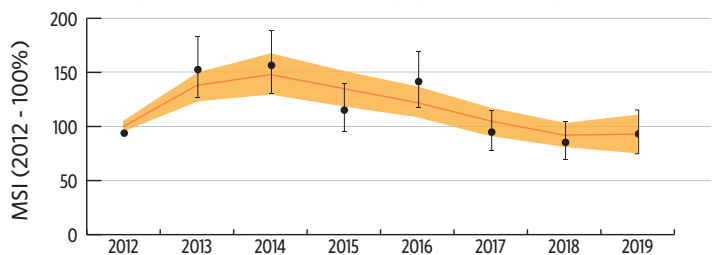
The monitoring scheme generates a multi-species index by amalgamating population trends of the eight commonest species as a measure of how our common bumblebees are doing. This index showed that in 2019, things have stabilised somewhat in comparison to previous years. However, when viewed over the full eight-year period since 2012, bumblebee populations are declining at a rate of 4.8% per year.

With only eight years of data, we have to err on the side of caution in reading too much into these trends. A longer-term dataset will be necessary to smooth out the fluctuating impacts of Irish weather. However, things remain precarious for our bumblebees and we can say that some individual species are showing worrying losses. The Common Carder bee has traditionally been one of our most common bumblebees but is now showing a strong decline. Perhaps less surprising, the Large Carder bee is showing a moderate decline. This species is listed as Vulnerable in the 2014 European Bee Red List and as Near Threatened in the 2006 Irish Bee Red List. Ireland is one of its strongholds and if we can take one immediate follow-up action from these results, it is that we need to encourage local actions where it remains to ensure its long-term survival.

The All-Ireland Bumblebee Monitoring Scheme is one of the world's longest running bumblebee monitoring schemes. It is delivered by a highly skilled network of surveyors who give their time and expertise to ensure we have high quality data to track changes. We thank all of them sincerely. Without them, we would lack the evidence base necessary to help protect our pollinators.

Species	Change 2008-2019	Statistical confidence
<i>Bombus pascuorum</i> (Common carder bee)	Strong Decline ($< +5\%$ p.a.)	95%
<i>Bombus muscorum</i> (Large carder bee)	Moderate Decline ($< +5\%$ p.a.)	
<i>Bombus hortorum</i> (Garden bumblebee)	Uncertain ($> +5\%$ p.a.)	
<i>Bombus jonellus</i> (Heath bumblebee)		
<i>Bombus lapidarius</i> (Red-tailed bumblebee)		
<i>Bombus lucorum</i> agg. (White-tailed bumblebee)		
<i>Bombus pratorum</i> (Early bumblebee)		
<i>Bombus terrestris</i> * (Buff-tailed bumblebee)		

Multi-species Index of bumblebee population change 2012-2019



The multi-species index derived from the amalgamation of the population trends of 8 common species of bumblebees from 2012 to 2019. The dark orange line is the smoothed trend line, and the circle markers represent the multi-species index per year. Error bars (on markers) and the shaded area surrounding the trend line are the 95% confidence intervals.

Flower-Insect Timed Counts (FIT Counts)

Having adequate pollinator monitoring in place is particularly important in the context of the All-Ireland Pollinator Plan. FIT Counts are an entry-level citizen science scheme that tracks changes in pollinator diversity and abundance by monitoring insect visitation rates to flowers. It runs from April to September and asks volunteers to watch a 50x50cm patch of flowers for 10 minutes and record how many insects visit. It involves identifying insects to type only (bumblebee, hoverfly, beetle, etc.), which means it does not require taxonomic knowledge and

can bring in a wide pool of potential volunteers. It also offers those involved in management changes through the Pollinator Plan, a means of tracking the impact of their actions. This survey is a collaboration between the National Biodiversity Data Centre and the Northern Ireland Environment Agency. It is also supported by the Irish Wildlife Trust, Butterfly Conservation NI, Buglife, The National Trust and the Centre for Environmental Data and Recording in NI (CEDaR). Currently, 363 FIT Counts have been submitted in 2020. A video, funded by Tipperary County Council, will be available in 2021 to help volunteers better understand what is involved and how to participate. <https://pollinators.ie/fit-count>



Hoverfly -
Liam Lysaght

The All-Ireland Pollinator Plan 2015-2020



As the first phase of the All-Ireland Pollinator Plan comes to a close, co-founder and Project Coordinator Dr Úna FitzPatrick considers what has been achieved so far, and what the future may hold.

Pollinators are in decline, with one-third of our 98 wild bee species threatened with extinction from the island of Ireland. In publishing the All-Ireland Pollinator Plan (AIPP) in September 2015, Ireland became one of the first countries in Europe to address this issue – in order to ensure the sustainability of our food, avoid additional economic impacts on agriculture, and protect the health of the environment. As a shared plan of action, it is about coming together to work strategically and cohesively, so that collectively we can reverse pollinator losses and help restore healthy populations. This voluntary Plan identified 81 actions, shared out between over 100 governmental and non-governmental organisations.

...we are at the start of the journey and as we look forward to the next five years, we need to engage more, monitor more, and manage more land for biodiversity.

Our current landscape does not provide enough food or safe nesting sites for pollinators. A large focus of the Plan is to identify actions to improve the quality and amount of flower-rich habitat. Actions range

from creating pollinator highways along our transport routes, to supporting pollinators on farmland, in gardens, businesses, and on public land. We have tried to ensure that everyone understands what pollinators need, and what simple, cost-effective and evidence-based actions they can take to help. All resources are freely available at www.pollinators.ie

We thank Bord Bia and the Heritage Council who saw the potential of the initiative and co-funded one project officer position from 2016-2019. We also thank SuperValu for funding that position in 2020. The AIPP does not have a project budget. However, we sincerely thank DAFM, who from 2016-2020, have provided €15,000 annually. This has been invaluable in allowing the design of resources and outreach material. We also thank all those partners who have independently funded activities to support the Plan over the years.

The last five years have seen the delivery of all 81 actions in the 2015-2020 Plan. Across all sectors, the number of engaged individuals and organisations

continues to increase. We are working with farmers to develop a framework by which all farms can become more pollinator-friendly; 55% of all Councils across the island have become partners; hundreds of local communities have embraced the initiative; and already 270 businesses have come on board and agreed to take actions.

The AIPP has also attracted international acclaim. Advice has been requested by over 10 countries, both within and outside Europe, interested in learning from the initiative and developing something similar. It has informed the development of pollinator strategies published in Scotland (2017), Norway (2018) and the Netherlands (2018). The All-Ireland Pollinator Plan has been recommended as a template for the development of national pollinator strategies by EU Member States. We have made a hugely positive start.

However, we are only at the start of the journey and we have developed an even more ambitious plan for 2021-2025. As we look forward to the next five years, we need to engage more, monitor more, and manage more land for biodiversity. Thanks to everyone who has helped, the island has become more pollinator friendly. We need to continue and to give the insects themselves time to respond. The AIPP will ultimately only be a success if in 10, 20 or hundreds of years from now, this island is buzzing with bees and we have diverse, healthy wild pollinator populations, providing us with the services on which we are so dependent. If we manage this, we will also create a colourful and healthy environment for ourselves.

We thank every single person who has engaged with the Plan. It has shown - in every sector and in every corner of this island - people do care, and that we can come together to make changes for the better. Lots of small actions, together, make a big difference. To those thousands of people, groups and organisations who got behind the All-Ireland Pollinator Plan with such energy and enthusiasm, we would like to express our sincere thanks.

To find out more, see www.pollinators.ie



Building evidence on how farmers can help biodiversity

The National Biodiversity Data Centre's research project 'Protecting Farmland Pollinators', has completed its first phase of fieldwork. It is a five-year, €1.2 million research project, funded under the European Innovation Partnerships (EIP) programme, co-funded by the European Union and the Department of Agriculture, Food and the Marine.

The EIP programme encourages cooperation and innovation in rural Ireland by providing an opportunity for farmers and scientists to work together to come up with practical, innovative solutions to protect biodiversity within agricultural production systems.

The Protecting Farmland Pollinators project is researching actions that will allow biodiversity to coexist within a productive farming system. It aims to help farmers to provide small habitats that will offer food, safety and shelter on their farms for pollinators (wild bees, hoverflies) and other biodiversity. The National Biodiversity Data Centre has pursued this project because it wants to build the evidence base for specific actions farmers can take on their farms to benefit biodiversity, and provide guidance on how Irish agriculture can contribute to addressing Ireland's biodiversity crisis, within productive farming systems.

The Protecting Farmland Pollinators project will develop and test a whole-farm pollinator scoring system and identify what management practices on Irish farmland benefit pollinators. The farmland pollinator score is based on the five criteria:

- 1 Flowering native hedgerows
- 2 Pollinator-friendly trees
- 3 Low to zero pesticide inputs
- 4 Flowering margin of 0.5 to 2 metres around field edge (left untilled or fenced off from livestock)
- 5 Flowers (e.g. wildflower meadow, flower-rich pasture, cover crop, herbal ley)

This scoring system will help farmers to understand how pollinator friendly their farm is, and what simple low-cost actions they can take to work towards improving their score in a way that does not negatively impact on productivity.

The scoring system will be easily calculated, easily understood and in line with the All-Ireland Pollinator Plan's *Pollinator-friendly actions for Farmland guidelines*. This scoring system will also allow farmers to see how they can easily improve on their score. The intention is that if the system is proven to work, that it would be

rolled out nationally in due course. Forty farmers across different farm types and intensity levels, in Kildare and neighbouring counties, have been recruited to this five-year project. Within the project, farmers

receive an annual payment based on their overall farm pollinator score, which is calculated based on the amount and quality of pollinator-friendly habitat on the farm. This results-based payment method aims to encourage and assist farmers to improve their overall whole-farm pollinator score.

Three ecological surveyors joined the project team in March 2020. Together with the project manager, the team carried out extensive plant and pollinator surveys between May and August 2020. Plant and pollinator transects were carried out on 80 hedgerows and 45 farm features. Over 350 pan traps were set to gather data on farm pollinator abundance and diversity and 50 Malaise traps were set to record the invertebrate diversity on each of the farms. Solitary bee nest sites were checked for occupancy on each of the 40 farms, and hedgerow structural data were recorded.

Farms will be scored annually, and each farmer will be rewarded for the actions they have taken to protect pollinators and the wider biodiversity on their farms. A guidance document will be produced to identify how the farmers can improve their farm pollinator score.

Over 300 bare soil nesting sites and 130 bee boxes have been created by the 40 participant farmers to date, some of which are already occupied. Large amounts of data on the biodiversity present on each of the 40 farms have been successfully collected and are being prepared for analysis.

The project's operational group includes Trinity College Dublin, Bord Bia, Glanbia, Teagasc, Macra na Feirme, Heineken Ireland, and four representative farmers across farm types.



Dr Saorla Kavanagh,
Farmland Pollinator Officer
is the Project Manager of the Protecting Farmland Pollinators project which seeks to test evidence-based actions to make farmland more pollinator-friendly.



The Orange-Tip Butterfly was the most recorded species between January and June 2020, with 1,404 records.
© Oisín Duffy

Finding solace in nature during pandemic

People engaged more actively with nature during the COVID-19 lockdown, according to data received from the network of volunteers who contribute records to the National Biodiversity Data Centre. During the first six months of 2020, 5,277 recorders submitted over 97,000 records through its Citizen Science Portal, which was an increase of more than 60% for the same period in 2019. Recording started slowly from January to March, but there was a huge spike in recording effort immediately following the start of lockdown in late March, and this rate remains higher than for the comparable period in 2019. It is clear that in response to the COVID-19 restrictions, people became more conscious of their surroundings and engaged more with biodiversity.

Coinciding with the COVID-19 restrictions, the Data Centre ran a very successful #SpeciesADay initiative,

which highlighted a different, relatively common species each day and encouraged people to search for it locally, and to submit the record. This proved very successful, as it provided an easy way for new people to begin recording, and to become familiar with species identification. #SpeciesADay ran for 166 days and profiled over 130 different species. On average, record levels for chosen species doubled on the day it was profiled! As a consequence, we engaged with 4,555 new recorders who submitted up to ten records during lockdown.

The data collected by these volunteers is of enormous value in better understanding Ireland's biodiversity and how it is distributed. Over this period, recorders submitted 14,844 sightings of Ireland's protected species and 10,513 records of Ireland's rarer, threatened species. This includes species that are of highest conservation value, so this up-to-date information is really important. In addition, recorders submitted 2,218 records of some of our invasive alien species, information that feeds into informing mitigation measures to tackle the worst impacts of these invaders.

The National Biodiversity Data Centre has produced a county-by-county guide to show the recording efforts over the first six months of 2020. It presents a summary of the recording activity for each county, together with a breakdown of recording activity by taxonomic group, and highlights the ten most commonly recorded species. When validated, all data will become freely available to increase our knowledge on biodiversity in each county, and to inform decision-making for conservation.

The COVID-19 pandemic has had a profound impact on Irish society. The figures show that some people have found solace in biodiversity in this time of crisis, and appreciate more the value of having a healthy, diverse environment in which to live.

- Oisín Duffy, Surveys and Records Officer

Citizen Science Biodiversity Recording Activity January to June 2020 County Reports:

County reports can be downloaded from our website and will allow you to observe the level of recording in each county in Ireland. These reports will be bi-annual and freely available in both English and Irish. See <https://www.biodiversityireland.ie/resources/biodiversity-citizen-science-recording-activity-january-to-june-2020/>

Some interesting figures:



Total records between January-June 2020



Records for Protected Species



Records for Threatened Species



Records for Invasive Species



Number of Recorders





Seeking out Ireland's fragile snakes

A chance encounter with a dead Slow Worm on a lane in the Burren led to Nick Parry's six-year quest to understand this mysterious reptile

I've had a lifelong interest in reptiles and amphibians. Coming across a dead slow worm on a lane in Derryowen, in 2012, brought to memory vague stories I had heard of a slow worm colony in the Burren. That fascinating looking reptile, a male of around 35cm (even with a squashed head) made such an impression on me that I resolved to try and find them.

In August 2015, I began by placing a 50cm square of corrugated tin at the base of a dry-stone wall. Approximately 100 metres away, also next to a wall, I placed a similar steel sheet. Then I waited...

Appearance & Lifestyle

The Slow Worm is a species of legless lizard with a snake-like appearance. Its scientific name, *Anguis fragilis*, 'fragile snake', is an apt description as it can discard the end of its tail as a form of defence if attacked. The Slow Worm differs from snakes in that it has eyelids, as do all lizards. It generally grows to a maximum length of c.46cm. Thought to be the longest lived of all lizards, Slow Worms are widely distributed throughout most

of Europe, and are common in the UK, but it was 1913 before they were first seen in Ireland.

Since then, there have been numerous reported sightings throughout Ireland, though these were mainly attributed to escaped pets.

The first reported discovery of two Slow Worms in the Burren was made in 1972 by Seamus Kelly, and published by the late Dr TK McCarthy of the Zoology Department, UCG, in 1977.

Slow worms are cold-blooded, but unlike the common lizard, which prefers to recharge its body heat by receiving direct sunlight, Slow Worms choose to take refuge under the cover of sun-warmed objects, such as stones and wood.

They will also use scrap items as refuges. Pieces of corrugated tin and hardboard are effective, as are bits of roofing felt, planks and even offcuts of carpet. In my experience, ant colonies form almost immediately after a cover is positioned and it is common to see a Slow Worm, apparently resting peacefully and unperturbed, amongst a roiling mass of ants. Being semi-fossorial (habitual burrowers), Slow Worms spend much of their time underground or deep in vegetation, especially during bad weather or when hibernating. Feeding mainly at night on slugs and insects, they can exist in gardens and populated places with their secretive and enigmatic habits going undetected.

The hunt begins

During the first week of September 2015, I returned to my two covers, not very hopeful. But imagine my surprise when I found a beautiful healthy Slow Worm under the corrugated tin, a female of about 35cm length, which I photographed. Every few days after that, I returned to check the covers and by hibernation time in October, I had encountered 13 slow worms. All were found under the tin, none under the steel.

Studying the photographs, I could see that 12 were females and one was male. It also became apparent that those 13 encounters were of just three animals. 'Female 1' was seen on nine occasions, 'female 2' three times; and the male just once.

Those initial sightings in 2015 sparked an interest that set me on a path of study that continues still. I wondered, if the cover was left in place into next spring, whether the same Slow Worms would return. I also considered why females appeared more often than males.

Over winter, I read everything I could find about Slow Worms, and by early spring 2016, I began a serious Slow Worm hunt.

Slow Worms can exist in gardens and populated places, with their secretive habits undetected.

With landowners' permission, over the following years, I placed covers - of various materials - at more sites across many townlands. All covers were checked two to three times each week and the site for each one was carefully selected. Covers were placed next to structures such as dry-stone walls or thick hedgerows or bramble patches, where they would feel safe.

Using these placed refuges, my aims were to encourage Slow Worms to reappear in the same place and also to discover the extent of the area they were inhabiting. I photographed each Slow Worm and was able to identify various individuals by their unique head and neck markings. To limit disturbance and distress, no Slow Worms were ever handled.

Annual total Slow Worm counts:
2016: 120; 2017: 56; 2018: 150;
2019: 404.

I had many repeat sightings over the years and new inhabited locations were found each year. Repeated sightings were often irregular as it might be weeks, months or even into the following

year between records of certain individuals, but the probability of a home range was further enhanced when, in 2019, a female Slow Worm was discovered under her usual cover, a tin sheet, for the fourth successive year.

Sex ratio results were interesting, too. Each year, females consistently outnumbered males and certain individuals were seen for the second and third years, and under the same covers. These discoveries were remarkable and exciting, with the probability of a home range, for females at least, seeming likely.

Most studies generally reported two females to each male, but every year, I was finding up to as many as nine females to each male. The only previous study in the

Burren was in 1999, by the NPWS, who reported 31 females to 18 males.



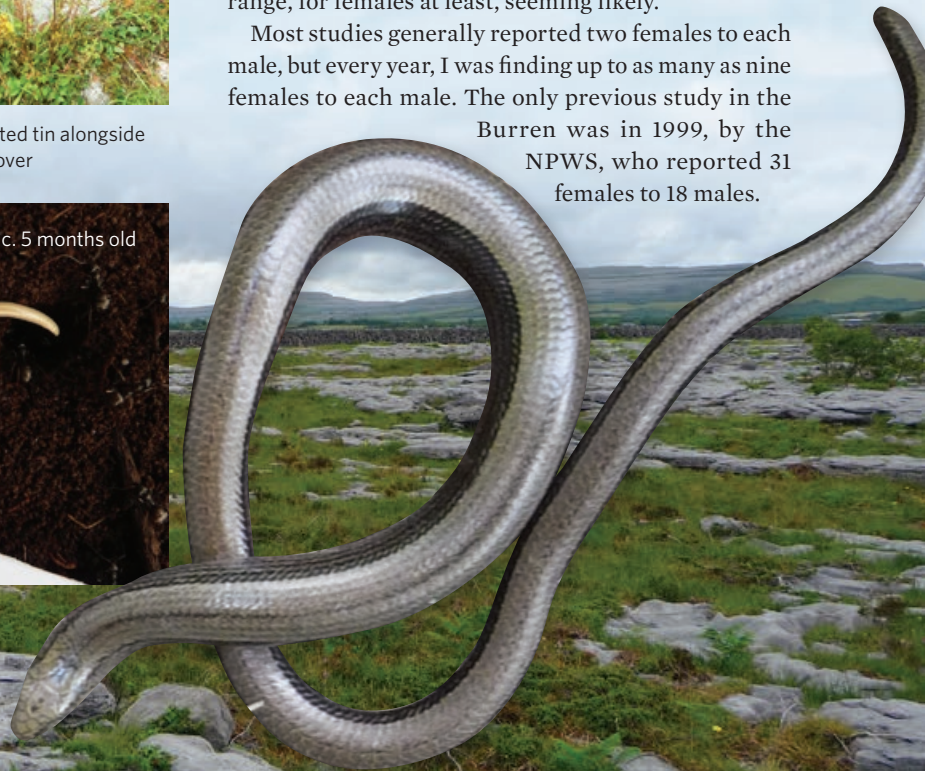
The author at one of his survey sites



Corrugated tin alongside dense cover



Juvenile, c. 5 months old



Slow Worms live on the limestone karst of the Burren region, but more heavily vegetated areas show a greater density.



About the Author

I was born in Liverpool 73 years ago and always had an interest in nature. My earliest pets included frogs, toads, snakes and lizards. Possibly due to my sporting activities, coupled with my outdoor interests, I left school with little to show for my time there. But my interests continued, with a particular fish species playing a major role. In pursuing that fish, I realised that there are so many variables and idiosyncrasies with wild creatures, that even someone considered an expert cannot know everything. Data collection became of value. I systematically recorded such details as air and water temperatures, capture times, signs of feeding activity, barometric conditions, bait and techniques used. Although the methodical recording of data was useful, determination and persistence was pivotal to any degree of success.

Discovering the Slow Worm gave me the new challenge of learning what I could about this little-known colony. My data collecting resumed, but this time with reptiles. Between February and October, I spend my days in the Burren area, seeking out these fascinating creatures. It is often the very last distant place, when I am really tired and have discovered very little, that produces the most significant result of the day, month or even year. Regardless of the slow worms I find, observing the hum of life in the Burren is a perpetual joy, of which I never tire.

I could never have imagined that a project started purely out of personal interest, and with no academic training or experience, would have resulted in a research paper published in a scientific journal.

As long as you have interest, enthusiasm and tenacity, anything is possible.

I have seen Slow Worms mated, the necks of females damaged by males during the lengthy mating process. I have watched those females swell dramatically as the baby Slow Worms develop. I have seen them slim down again, and their offspring, tiny gold and silver slivers, of a mere 80mm length, appear around the site, and doubling in length, by the following autumn.

The longest Slow Worm I discovered measured 43cm. By the end of 2019 my total Burren Slow Worm count was 743, along with a mass of relative data. I have no doubt, bearing in mind their secretive behaviour, that Slow Worms have long resided in the sparsely inhabited Burren area, even though they have gone largely unnoticed. I have spent six years now, actively seeking them out, and have found only six in the open. Of the 24 townlands sampled to date, I have discovered Slow Worms in 12. There is a flourishing colony in the Grange area of Mullingar, which has been known locally for many years. Perhaps there are others, too...



One of the author's favourite female Slow Worm photos

This is an excerpt of a blog by Nick Parry, which can be read in full here:

<https://www.biodiversityireland.ie/category/blog/>

To learn more about Nick's research, see:

A study of the present state of an Irish colony of the Slow Worm, *Anguis Fragilis* Linnaeus, 1758) in the Burren Counties Clare and Galway 2015-2019. Nicholas Parry, *Bulletin of the Irish Biogeographical Society* No 44 (2020)



The Irish Hedgehog Survey

PROGRESS TO DATE



Elaine O'Riordan, Project Manager of the Irish Hedgehog Survey, explains how you can help to track down Gráinneog

The Irish Hedgehog Survey was launched in early summer 2020, its aim to provide detailed information about the distribution of hedgehogs in Ireland.

While hedgehogs are perceived to be common and widespread, there has been very little research in Ireland to date. No census has been carried out, so there are no data on the size or status of the Irish hedgehog population or variations in hedgehog numbers in different habitats. Only one PhD has been done here, by Dr Amy Haigh (2011), which provided information on hedgehog ecology in rural habitats.

Research from Britain and Europe indicates that hedgehog numbers are in steep decline. Long-term monitoring studies in Britain show that numbers there have fallen by nearly 50% in rural areas and by 30% in

urban areas over the last two decades. These trends are due to loss of hedgerows and marginal habitats to intensive agriculture, increased road traffic, and predation or competition from the badger. In 2019, the hedgehog was listed as 'Vulnerable to Extinction' for the first time in the UK Mammal Red List.

Ireland has suffered many of the same ecological problems as Britain, and many native animals have suffered population declines due to habitat loss and degradation including several birds, invertebrates and mammals. It is possible that the hedgehog has followed a similar trend here, however, this cannot be confirmed in the absence of reliable scientific studies.

Given their nocturnal lifestyle, large home ranges and relatively low density in the landscape, counting hedgehogs presents some challenges! Citizen science has been used to monitor hedgehogs in countries such as Austria, England, and Germany, and it is hoped a similar approach will work in Ireland. The Irish Hedgehog Survey has two separate citizen science elements: a casual recording scheme and a volunteer survey.

Footprint tunnels are used by volunteers to survey for hedgehogs



Hedgehog was the second most recorded species in the first six months of 2020, with 1,268 records



© Shutterstock

Casual Recording Scheme

Launched in June, the first phase of this project is to engage citizen scientists and volunteers in mapping hedgehogs. Via press and social media, the general public have been encouraged to report sightings of hedgehogs via the National Biodiversity Data Centre website, and a dedicated project website was launched at www.irishhedgehogsurvey.com

The response to the survey has been very positive and over 2,000 hedgehog records have been submitted between January and September 2020. Hedgehog has been recorded in 31 counties, and is the second most recorded species in Ireland so far this year, and the most recorded species in County Galway for the first half of the year.

The initial breakdown of records for the first six months has shown some interesting results. The first is that 78% of sightings were of live animals, while just 12% were roadkill. The Atlas of Mammals in Ireland (2015) reported approximately 60% of records were roadkill. It has been an unusual year for humans and wildlife, and it's possible that the high numbers of live sightings may be due to the pandemic restrictions when people were at home more. Likewise, the lockdown may have led to decreased road casualties with less traffic on roads.

The most frequently cited habitat for live hedgehog records was 'garden', with approximately 20% describing hedgehogs that visit regularly or are resident. Many recorders also reported regularly feeding hedgehogs in their garden. It is hoped to follow up on these records and examine garden use by hedgehogs in more detail. Similarly, a questionnaire for farmers is also being circulated to collect data on farm type and hedgehog presence.

Volunteer survey

The second element is the Volunteer Survey, which follows the methodology developed by the Mammal Society UK, which uses footprint tunnels to examine hedgehog occupancy in various habitats. Volunteers place ten footprint tunnels within a 1km² area for five nights, and check them each morning for signs of hedgehogs.

The survey will be carried out over 2021 and 2022, with plans to organise workshops in spring/summer of 2021 to train volunteers to take part in this survey. The survey is being supported by Heritage and Biodiversity Officers from several local authorities, who have contributed funding for footprint tunnels and workshops. Confirmed project partners to date include Galway Co Council, DLR Co Council, Dublin City Council, Mayo Co Council, Kilkenny Co Council, and Roscommon Co Council.

This type of survey would be suitable for interested individuals, local wildlife groups, community and youth groups. Participants are welcome from all over Ireland.

To get involved, please see www.irishhedgehogsurvey.com or email: elaine.oriordan@nuigalway.ie.



Two-day-old hoglets © Hogsprinkle

IRISH SEAWEEDS

There are over 570 seaweed species recorded from Irish waters. In this poster we present some of our more common and readily identified intertidal seaweed species. Our **Rocky Shore Safari** survey is looking for volunteers like you to spend a fun and enjoyable 60 minutes on your local shore recording seaweeds and intertidal animals. Please visit ExploreYourShore.ie to take part.



**Dulse / Duileasc /
*Palmaria palmata***

Shore: mainly lower shore
Max length: 30cm (exceptionally 1m)



**Common Coral Weed / Feamainn
choiréalach / *Corallina officinalis***

Lower shore / Rockpools
Max Length: 7cm (exceptionally 12cm)



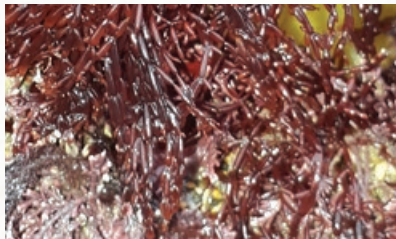
**Irish Moss / Carraigín /
*Chondrus crispus***

Middle/lower shore/rockpools
Max length: 15cm



**False Irish moss / Clúimhín cait /
*Mastocarpus stellatus***

Lower shore
Max length: 20cm



**Bunny-eared Bead-weed / Feamainn
shúilíneach choinínchluasach /
*Lomentaria articulata***

Shore: lower
Max Length: 20cm



**Wrack Siphon Weed / Ollann Dhearg
/ *Vertebrata lanosa***

Middle/lower shore
Max Length: 7.5cm



**Gut Weed / Líneáil ghorm /
*Ulva intestinalis***

Upper shore rockpools
Max Length: 15-30cm



**Punctured Ball Weed / Bolgach /
*Leathesia marina***

Lower shore/rockpools
Max width: 5cm



**Oyster Thief /
Gadaí oisrí / *Colpomenia peregrina***

Whole shore in rockpools
Max width: 7-9 cm



**Wakame / Wakame /
*Undaria pinnatifida***

Lower shore
Max Length: 3m



**Mermaid's Tresses / Ruálach /
*Chorda filum***

Lower shore
Max Length: 6-10m



**Oar Weed / Coirleach /
*Laminaria digitata***

Lower shore
Max Length: 1.5-2m





Dabberlocks / Láracha /
Alaria esculenta

Lower shore rockpools
Max Length: 1.5-4m



Cuvie / Slat mhara /
Laminaria hyperborea

Extreme lower shore
Max Length: 2-3.6m



Sugar Kelp / Rufa /
Saccharina latissima

Extreme lower shore/rockpools
Max Length: 3-4m



Furbelows / Claiomh /
Saccorhiza polyschides

Whole shore in rockpools
Max width: 7-9 cm



Sea Oak / Crúba préacháin /
Halidrys siliquosa

Middle to lower shore rockpools
Max Length: 1.3m



Egg Wrack / Feamainn bhuí /
Ascophyllum nodosum

Shore: middle
Max Length: 1.5 m



Horned Wrack / Feamainn inbhir /
Fucus ceranoides

Middle shore
Max Length: 30cm



Serrated Wrack / Míoránach /
Fucus serratus

Mainly lower shore
Max Length: 30cm



Spiralled Wrack / Casfheamainn /
Fucus spiralis

Upper shore
Max Length: 30cm



Bladder Wrack / Feamainn bhoilgíneach /
Fucus vesiculosus

Middle shore
Max Length: 1.1m



Channelled wrack / Caisíneach /
Pelvetia canaliculata

Upper shore
Max Length: 12cm



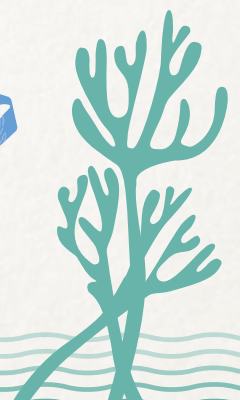
Thong Weed / Ríseach /
Himantalia elongata

Lower shore
Max Length: 1-2m



Wireweed / Feamainn ghuaireach Sheapánach /
Sargassum muticum

Whole shore
Max Length: 4m



Exploring Ireland's seaweeds



Dave Wall, Citizen Science Officer, introduces our marine macroalgae.

Seaweeds, or marine macroalgae, superficially resemble vascular plants, with root, stem, and leaf-like structures called holdfasts, stipes and blades. However, they are not true plants and lack a vascular system, mostly obtaining their nutrients directly from the water, using diffusion. The holdfasts serve only to secure the seaweed to the substrate (e.g. rocks). Both seaweeds and vascular plants rely on sunlight for photosynthesis to create food. However, seaweeds can photosynthesise in all their tissues, whereas in most plants, photosynthesis occurs in the leaves.

There are three groups of seaweeds – brown algae (Phaeophyceae), green algae (Chlorophyta), and red algae (Rhodophyta). The red and brown algae are almost exclusively marine, whereas green algae are also found in fresh water. Globally, there are about 11,000 species of seaweed, of which 7,500 are red algae, 2,000 brown, and 1,500 are green algae. There are over 570 seaweed species recorded from Irish waters.

Life Cycle and Ecology

Seaweed reproduction can be complicated, with some species displaying alteration of generations, going through a sexual phase where male and female gametes are produced, followed by an asexual phase, from which spores are produced. Other species can reproduce asexually by fragmentation.

As seaweeds require sunlight for photosynthesis, in Ireland they are generally found in waters of 30m or less. The green algae are found intertidally and in the shallowest of coastal waters. Brown algae can be found from the intertidal to depths of 30 to 40m, or even up to 50m in areas of exceptional water clarity. The red algae grow to the deepest depths and are found from the intertidal to depths of up to 250m in some areas of the world.



Thong Weed, *Himanthalia elongata*

Super-useful Seaweeds

Seaweeds offer us many incredibly useful and valuable ecosystem services. Seaweeds, and especially kelp species, are the forests of the ocean. Many seaweed species act as substrate for other seaweeds and invertebrates, which grow on them as epiphytes. The kelps, and in particular Cuvie (*Laminaria hyperborea*), support a rich community of plants and invertebrates and act as important nursery and feeding grounds for juvenile fish. Collectively, seaweeds and planktonic algae produce 50-90% of the world's oxygen and constitute up to 80% of the organic matter on earth. They also absorb and help sequester CO₂, offer protection from coastal erosion, and absorb nutrients from the water column, helping reduce coastal eutrophication.

Many people are familiar with the past use of seaweed as a fertiliser in growing potatoes in Ireland. Around the Irish coast, there is also a long tradition of eating seaweeds, in particular dried Dulse. Today, an ever-increasing range of seaweeds are being consumed in Ireland. Seaweed and seaweed extracts are widely used in beauty products and spa treatments, but are also used in pharmaceuticals, medicines, as food additives, and in agriculture.

Traditionally, seaweed was hand-harvested from the shore or farmed on rocky coastal terraces. However, today modern seaweed farms are in operation around the Irish coast, growing seaweed from suspended ropes.



Explore Your Shore! – seaweeds

By taking part in our Rocky Shore Safari citizen science survey, you can help us record seaweed biodiversity and distribution around the Irish coast. The survey focuses on a strip 10m wide to ensure you can thoroughly search a representative section of the shore and survey all the way from the high-water mark to the water's edge. The survey takes about 60 minutes and is an enjoyable way of getting to know the species on your local shore.

Visit www.ExploreYourShore.ie for survey resources. Facebook [@ExploreYourShore](https://www.facebook.com/ExploreYourShore).

Biodiversity TALES

Butterflies

Like everything else, COVID-19 impacted on recording in 2020. The travel restrictions were imposed at the beginning of the butterfly recording season, and the Data Centre advised everyone to adhere to official guidance and stay close to home. In practical terms, this meant that any efforts to encourage surveying of under-recorded areas for Butterfly Atlas 2021 had to be put on hold for 2020, and only those butterfly transects within 2km, or later 5km, of home, could be surveyed. On the positive side, the survey period for the Marsh Fritillary Monitoring Scheme in September coincided with the period of fewest travel restrictions, so survey work should remain largely unaffected. It will be closer to the end of the year before we can properly assess these impacts on the Butterfly Atlas 2021 project.

Without a full analysis of the data for 2020, it does appear that, overall, it was a poor year for butterflies. Initial results from the Irish Butterfly Monitoring Scheme and the Five-visit Monitoring Scheme returns do not show the usual peak in numbers in July, presumably because of the poor weather in June and July. The one species that may have bucked this trend is Small Tortoiseshell, as there was a particularly strong second generation, with large numbers counted in Aug-Sept.

The number of people submitting butterfly records is increasing each year, and in 2020 butterfly records were submitted by 1,572 recorders. This a very large recording network relative to the population. In terms of casual records, by the end of September, 17,523 butterfly records were submitted, which is 20% fewer than the number of records submitted in 2019. Migrant butterflies were far fewer this year than in 2019. There was no evidence of any influx of Painted

Lady, resulting in almost 90% fewer 2020 records, compared with 2019. It was a similar picture with Red Admiral, with 25% fewer records in 2020, compared with 2019. The Comma continues its remarkable range expansion and was recorded regularly in Dublin gardens during the year. It is now also well established in Co Laois and south Kildare. Holly Blue also had a good year, with 53% more records received than in 2019.

A new Garden Butterfly Monitoring Scheme was launched on a pilot basis in May. It involves participants registering their garden and counting the maximum number of butterflies seen during a 15-minute period. See page 4 to find out more.



Dr Liam Lysaght

DIRECTOR
National Biodiversity Data Centre



Comma Butterfly range distribution continues to expand. © Sabrina O'Brien

The mapping system Biodiversity Maps provides access to Ireland's biodiversity data and currently holds 4,384,946 records of 16,490 species from 154 datasets.

UPDATED DATASETS

Platygastriidae (Hymenoptera) of Ireland - Dr James O'Connor (403 records);
Caddisflies (Trichoptera) of Ireland - Dr James O'Connor (972 records);

Butterflies of Ireland - submitted to Data Centre (766 records);

Bees of Ireland - submitted to Data Centre (6,258 records);

Marine Species in Irish Coastal Waters - SeaSearch (7,075 records);

New Zealand Flatworm Database - collated by the Data Centre (60 records);

Online Atlas of Vascular Plants 2012-2020 - collated by the Data Centre (3,559 records);

Stoneflies (Plecoptera) of Ireland - Dr Hugh Feeley (1,699 records)

To view datasets and records, visit <http://maps.biodiversityireland.ie/>

There has been a very significant increase in the number of records submitted to the National Biodiversity Data Centre in 2020. At the end of September, almost 150,000 records were submitted to the citizen science portal. To submit records of any species, please visit Ireland's Citizen Science Portal:

<https://records.biodiversityireland.ie/>

66 These species don't belong in the wild in Ireland. Their presence here is most likely via the pet trade and they have either escaped or were released from confinement.



Rose-ringed parakeet
© G. Mearne

Invasive Species

2020 has so far been an interesting year for invasive species sightings. While records of Japanese knotweed, rabbit and grey squirrel continue to top the invasives records chart, 164 sightings of New Zealand flatworm were reported, with concentrations of records in counties Dublin, Cork and Galway.

This invasive flatworm can be introduced and spread as a contaminant of potted plants, plant-growing media, movement of infested soils, etc. Concentrations of Harlequin ladybird records were also seen for Dublin and Cork, where they are known to be established in the cities. As the colder months set in, watch out for Harlequin ladybirds moving indoors, where they often settle above door and window frames.

With the verified sighting of a Raccoon, in Co. Wicklow, and rose-ringed parakeets, in counties Dublin and Wicklow, we are reminded that these species don't belong in the wild in Ireland. Their presence here is most likely via the pet trade and they have either escaped or were released from confinement.

Raccoon is one of 66 invasive species now banned from import, trade, transport, and is under a number of other restrictions including breeding across all European Member states. For more information on these 66 species, see: <https://www.biodiversityireland.ie/projects/invasive-species/union-concerns/> and remember to please report all suspected sightings of invasive species with a photograph if possible. If we fail to prevent them getting here, we need to detect and report them as soon as possible to be in with any chance to contain or eradicate them before they establish and spread.



Raccoon © Shutterstock

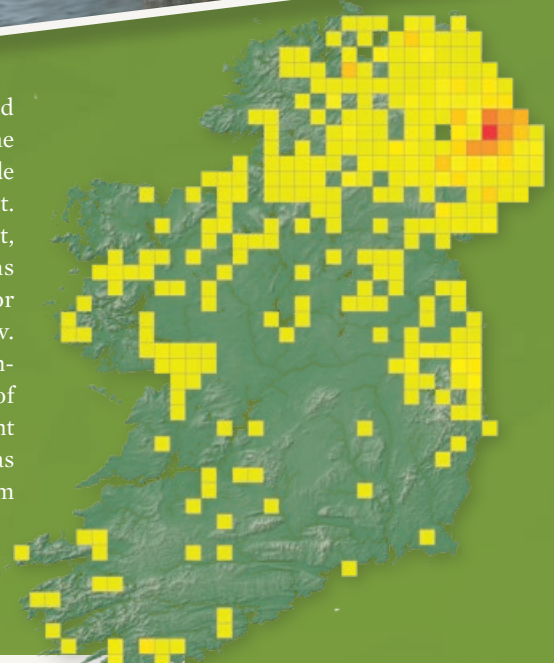


Colette O'Flynn

INVASIVE SPECIES OFFICER
National Biodiversity Data Centre



© Andrew Holmes



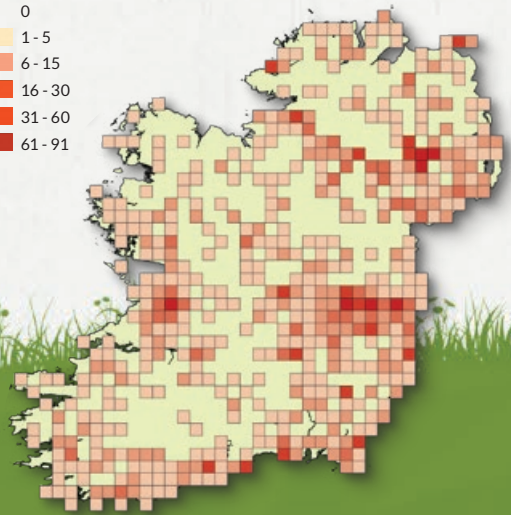
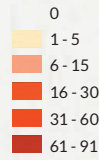
New Zealand Flatworm distribution map of records received between January 1st and and September 30th 2020

Golden-ringed Dragonfly
© Aideen Kane



All dragonfly and damselfly records received in 2019

Number of Records



Dragonflies

Dragonfly Ireland 2019-2024 is funded by the Environmental Protection Agency and has the goals of creating an updated atlas of Dragonflies and Damselflies for Ireland, exploring these species as bio-indicators of climate change and water quality, and highlighting the issues of climate change and water quality for the public. This is an all-Ireland project conducted in partnership with the Centre for Environmental Data and Recording in Northern Ireland (CEDaR).

We are delighted by the large number of records received from citizen scientists across the island of Ireland. 2019 saw a 97% increase in the number of dragonfly and damselfly records uploaded to the National Biodiversity Data Centre compared to 2018, and we are seeing a further increase in records received in 2020. Up until the end of August 2020, the Data Centre received 6,383 records of 27 different species. When combined with Northern Ireland records from CEDaR for 2019, the total is 7,315 records. A huge Thank You! to everyone who has taken the time and made the effort to submit their records so far.

2020 data are still being validated, but what did we learn from 2019 data? Well, the most frequently recorded dragonfly species was the Common Darter, with 554 records. This was followed by Four-spotted Chaser (286 records), Brown Hawker (277 records), and Emperor Dragonfly (254 records). The most frequently recorded damselfly species was the Large Red Damselfly, with 330 records, followed by Common Blue Damselfly (322 records) and Blue-tailed Damselfly (292 records). In 2019, records were received from 32 counties, with Kildare coming out on top, with a total of 494 records, followed by Armagh (287 records) and Cork (272 records). We received records from 499 out of a possible 1,000 10km² grid-squares, which was a great start to our survey. All the 2019 data have been validated and are now available to explore on Biodiversity Maps. (<https://maps.biodiversityireland.ie>)

Some of the most interesting results from our 2019 data show the impact of climate change on the distribution of some dragonfly species since the last all-Ireland atlas in 2000-2003.

Emperor Dragonflies and Migrant Hawkers were both new arrivals to Ireland in 2000, with records during the first atlas confined to the south and south-east coasts. However, in the intervening 16 years, Emperor Dragonflies have spread northward along the east coast as far as Belfast and north-westwards across Ireland to Galway, Longford and Monaghan. Migrant Hawkers, too, have spread northwards as far as Down, and north-westwards as far as Clare, Westmeath and Monaghan. We are also seeing some intriguing changes to the flight-periods of some damselfly species, which may also be linked to climate change, but more of that in a future edition!

2020 is already looking like an exciting year, with the sudden reappearance of the Golden-ringed Dragonfly in Co. Kilkenny. On July 1st, Edna MacDonald spotted a female Golden-ringed Dragonfly near the Glanbia plant at Gorteens, Co. Kilkenny, and subsequently two other records were received from the surrounding area. This strikingly beautiful dragonfly was last recorded in 2005 and 2008 and was suspected to be a vagrant, however records of both males and females on the Kilkenny/Waterford border this summer make it more likely that a small breeding population exists in that locality.

Please continue submitting your records to the National Biodiversity Data Centre and visit our project web pages on biodiversityireland.ie.



Dave Wall

CITIZEN SCIENCE OFFICER
National Biodiversity Data Centre



66 We have had lots of new sightings of the most recent solitary bee to arrive in Ireland. The Wool Carder Bee was recorded for the first time in Ireland in 2015.



Wool Carder bee, *Anthidium manicatum* © Gillian Stewart

Bees

2020 has been an excellent year so far, with more records than ever before being submitted! This was especially true for the lockdown period (April-June) when we added a huge number of 2,670 new validated bee records to the database. So far this year, records have been submitted for 54 of our 98 wild bee species (55%). This is much higher than usual, and we thank all those recorders who have made it possible.

In good news, the Tawny Mining Bee (*Andrena fulva*) has had an excellent year. That's the lovely spring-flying solitary bee that reappeared from extinction in 2012. It has been reported safe and well from sites in Dublin, Wicklow, Kilkenny, and Kildare. We have also had first ever sightings from three new counties – Tipperary, Waterford and Down!

We have had lots of new sightings of the most recent solitary bee to arrive in Ireland. The Wool Carder Bee (*Anthidium manicatum*) was recorded for the first time in Ireland from Wexford in 2015. Records this year show it now very well established across the south-east. We've also added a new county to the most recent bumblebee to arrive in Ireland. The Tree Bumblebee was first recorded in Ireland from Dublin in September 2017 and was then reported from Belfast in 2019. This year, a worker bee was recorded in Hillsborough, Co Down, in May. The Tree Bumblebee is a robust bumblebee and an excellent pollinator. It will be interesting to see its range expansion over the coming years. To help us track it, please make sure to submit any sightings if you spot it.

Two of our rarest bumblebee species have been recorded this year, with the Shrill Carder Bee and the Great Yellow Bumblebee appearing to remain in healthy numbers in the Burren and the Mullet Peninsula, respectively. We have also had new records come in of

the very rare solitary bee, *Sphecodes gibbus*, which was listed as critically endangered in the 2006 Bee Red List.

In more worrying news, the latest analyses from the All-Ireland Bumblebee Monitoring Scheme (2012-2019) show that both our carder bumblebees are in trouble. (See page 5 for more detail) It shows how easily 'new normals' can be created. It remains common in relative terms, but thanks to the efforts of volunteers, we know it is actually in decline.

Each autumn, I ask people to keep an eye out for the Ivy Bee (*Colletes hederæ*). It has never been spotted in Ireland, but it is now common in Britain, and seems likely to arrive on our shores very soon. It's a solitary bee, with a very late flight period, to match the flowering of its favourite plant, Ivy. In Britain, it can be found from early September until early November. As bees go, it should be fairly easy to recognise as it's quite large and has very distinctive bands of white on the abdomen. To make it a little easier, most of our solitary bees have already completed their life cycles for this year, but there will still be hoverflies and honeybees on the wing. If you think you've spotted this bee, please try to take a photograph and email it to us for validation. www.pollinators.ie/record-pollinators/watch-for-new-arrivals

www.pollinators.ie

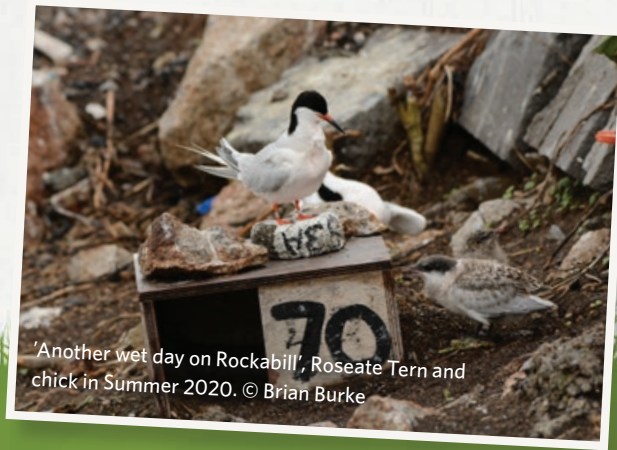


Dr Úna FitzPatrick

—
SENIOR ECOLOGIST,
National Biodiversity Data Centre



Great Spotted Woodpecker
© Anne Newton



'Another wet day on Rockabill', Roseate Tern and chick in Summer 2020. © Brian Burke

Birds

Autumn is upon us, bringing some nice sunny weather at times, but also the first (light) frosts. Swallows still around (on Sept 29th at least), but most other summer visitors are a fading memory. The only birdsong now is from Robins establishing winter territories and Wood Pigeons (still nesting).

How was your COVID-19 spring/summer? For most of us 'biodiversity recorders', lockdown was an open door to local discoveries at the busiest time of year for wildlife. I enjoyed seeing a Pine Marten running around in upland commonage in broad daylight early on... but I had better get back to birds.

Unfortunately, the Countryside Bird Survey (CBS), was one of the first casualties of the pandemic, so there will be an unfortunate gap in the record. That said, my colleagues are just about to publish a 22-year CBS trend report (up to 2019) which should be available soon. Generally, more good news than bad, in terms of species increasing, stable or decreasing, though it is always the latter that receive most discussion.

Seven species show significant long-term declines, with the most worrying, Greenfinch, continuing their downwards spiral. The other six are Swift, Kestrel, Grey Wagtail, Stonechat and, most surprisingly, Magpie and Rook. CBS will hopefully be back on April 1st 2021, but please use Birdtrack (bto.org/our-science/projects/birdtrack) to log your systematic garden or patch lists in the meantime, until the very popular Garden Bird Survey commences on Monday November 30th.

Another summer bird survey, ringing-based, the Constant Effort Scheme (CES) – which is usually conducted in scrub, woodland and reedbeds – was modified so ringers could operate in their gardens during lockdown. When you think you know how many birds use your garden, reflect on this. My colleague Brian Burke caught 119 Blue Tits in his rural Wicklow garden in a year ending August 2020; his highest daily catches were 29 in February and 26, twice, in December and March!

The highlight of my working-from-home was the regular appearance of a male Great Spotted Woodpecker on my peanut feeders. By June it was taking 'loads' off

to feed nestlings, but I failed to find the nest in my neighbourhood. A quiet spell had me worried, but then a female and juveniles (probably two) appeared!

Fortunately, BirdWatch Ireland's long-term Tern conservation projects were able to proceed, albeit with a slightly delayed start: Rockabill, Kilcoole, and Dalkey Island. May weather was perfect for setting up these projects and getting wardens used to socially-distanced working regimes. We had good numbers of Roseate (1,600 pairs) and Common Terns (1,850 pairs) on Rockabill, but the wet and windy conditions that prevailed from early June through to August resulted in our 'worst ever' productivity figures (0.39 and 0.11 young reared per pair respectively). In contrast, the Kilcoole Little Terns did extremely well: 191 pairs (a record) with a productivity of 1.35. A total of 341 Little Tern young were metal-ringed, and 167 (~49%) of these also received inscribed green Darvic rings. Two first-rate Fingal Branch-based ring readers, Jan Rod and Paul Lynch, have reported seeing 82 of these fledged juveniles, with green rings, across a suite of sites from Portrane in north Dublin up to the Boyne estuary. The small Arctic Tern colony at Dalkey continues to grow, and we even recorded a Welsh adult (with orange leg flag) amongst them. This individual had come from the Skerries (Anglesey) colony, which could not be wardened by RSPB staff and, apparently Peregrines became established and the large tern colony deserted. Stay safe and keep recording!



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—
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When you think you know how many birds use your garden, reflect on this. My colleague Brian Burke caught 119 Blue Tits in his rural Wicklow garden in a year

66 This study showed that we might expect a mix of winners and losers among our common bat species as climate change progresses.



Bats

There's no doubt that this summer was tough going for bats. A small roost of common pipistrelles takes up residence in the roof space of my house from time to time. This year I was surprised when at the end of August, for several days, bats emerged to feed in the midday sunshine. This kind of behaviour is not typical.

Successive wet and windy nights in August meant feeding was poor. These bats must have been under immense pressure to feed during daylight (to build up fat for winter), that they were willing to risk being mobbed by birds. One must have gotten mixed up when arriving back to the roost and slipped down our chimney and hid in the wood pile by the stove. When he emerged, he was so weak, he could barely crawl. Happily, after a day of beefing up with crane flies and pet food, *George* (so-named by my daughter Heather) took to the wing the following evening and disappeared into the twilight. Hopefully the sunnier September has improved his chances of surviving.

At Bat Conservation Ireland (BCI), we run the All-Ireland Daubenton's Bat Waterways Scheme, the Car-based Bat Monitoring Scheme and the Brown Long-eared Bat Roost Monitoring Scheme. With these projects, we track annual trends in certain species across the Republic and Northern Ireland. These schemes are volunteer-based and those new to bat recording typically start with the Daubenton's Bat Survey, which is very well suited to novices. We also manage the Lesser Horseshoe Bat Roost Monitoring Scheme, which is carried out for the most part by NPWS staff and the Vincent Wildlife Trust. The NPWS funds these bat surveys and additional funding is provided by the Northern Ireland Environment Agency.

Like all wildlife organisations, the usual summer activities of BCI were curtailed somewhat by COVID-19. Instead of our usual suite of bat walks and talks during Biodiversity Week in May, Tina Aughney developed a series of videos to help those learning to identify bats (see, for example: An Introduction to Bat Detectors - <https://youtu.be/ck1WPpE8nJg>). We were delighted with a huge level of online engagement, and a great response to our children's art competition. As the field season got underway, we took to Zoom for online training to help recruit volunteers.

The Car-based Survey monitors trends in common pipistrelles, soprano pipistrelles and Leisler's bats. For this survey, we supply all equipment, so the method is completely standardised. Despite poor weather in August, we still had good coverage and are very grateful to our volunteers for their dedication. Since the survey began in 2003, we have seen these three bat species increasing, although Leisler's dipped a little in the last few years. In the next few months, we should be able to determine how these species fared in 2020.

Daubenton's Bat survey recording forms are still coming in. As with the car survey, some teams were unable to complete surveys due to poor weather. Nonetheless, a very large cohort of surveyors braved the elements to survey their local rivers in August.

For Heritage Week this year, we encouraged the public to count bats at their house or a local bat roost. Over 800 bats were counted at 62 locations across the island, with records submitted to our Big Bat Map on our website: <https://www.batconservationireland.org/in-your-area/sightings/reported-bat-sightings>.

In other news, we published a paper on Climate Change and common Irish Bat Species in *Acta Chiropterologica* (Roche et al., 2019. Elucidating the consequences of a warming climate for common bat species in north-western Europe). This study showed that we might expect a mix of winners and losers among our common bat species as climate change progresses. We predicted, for example, overall Leisler's populations may increase, but within a more constricted range. If you would like a copy of the paper, contact me.

Finally, the 10th Irish Bat Conference, planned for Athlone in October 2020, has been postponed until October 2021.



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Harbour seal. © Oliver Ó Cadhla Our two seals were included in the Red List assessment for the first time.



Mammals

There have been a number of significant publications on Irish mammals since the last issue of *Biodiversity Ireland* magazine. A new *Red List of Irish Terrestrial Mammals* was published at the end of 2019. This updates and supersedes the Red List published in 2009. All 27 terrestrial species native to Ireland or naturalised in Ireland before 1500 were assessed. The two resident seals were included for the first time.

Of the 27 species, one was found to be regionally extinct (grey wolf, *Canis lupus*), one achieved a status of Vulnerable (black rat, *Rattus rattus*), and the remaining 25 were assessed as least concern. Improvements in the status of the red squirrel, Leisler's bat and otter were noted. The three of these had been considered Near Threatened in the 2009 Red List. Brandt's bat, previously considered data deficient and now considered a vagrant, has been removed from the list.

It should be remembered that the Red Listing process, governed by guidelines from the IUCN, is an assessment of the risk of extinction and as such is a fairly crude tool for identifying national conservation priorities. While the Irish mammalian fauna in general is in good status, a number of widespread threats are highlighted by the authors, including the underlying status of many of the natural habitats on which Irish mammal species rely. In addition, the absence of reliable population data for certain species is a concern.

Ireland Red List No. 12: Terrestrial Mammals was published by the National Parks & Wildlife Service and can be downloaded here: <https://www.npws.ie/publications/red-lists>

Another recent publication on Irish mammals that you might find interesting is the final report from the All-Ireland Squirrel and Pine Marten Survey. This survey

has featured previously in these pages and was extensively supported by the National Biodiversity Data Centre. The results are very encouraging for our native species, with grey squirrel seemingly retreating for a last stand on the east coast. The final report, featuring authors from NUI Galway, the Vincent Wildlife Trust and Ulster Wildlife, is published in the *Irish Wildlife Manuals* series and can be downloaded here: <https://www.npws.ie/sites/default/files/publications/pdf/IWM121.pdf>

One other recent report which might have slipped under your radar was the 'Article 17 report'. This is a national assessment of the conservation status for all 59 habitats and 60 species listed on the EU Habitats Directive. The report is required by the EU every six years and mammals covered include the otter, all our bats, the hare, pine marten, seals and all cetaceans.

The latest Article 17 report was published in 2019 in 3 volumes: An overview report (Volume 1), provides detail on the methodologies used for the assessment and an easy-to-read summary of the results. Volume 2 (Habitats) and Volume 3 (Species) contain the detailed reports and relevant scientific information, including summaries of the latest data on distribution, range, population trends, and threats and pressures. All three volumes are available to download here: <https://www.npws.ie/publications/article-17-reports/article-17-reports-2019>



Dr Ferdia Marnell

—
HEAD OF ANIMAL ECOLOGY
National Parks and Wildlife Service

“Improvements in the status of the red squirrel, Leisler's bat and otter were noted.”

66 [By September 23rd]... we have validated 242 strandings of 278 animals, the highest number ever recorded in any year



Northern bottlenose whale stranding in Rossnowlagh, Co. Donegal © Dr. Simon Berrow/IWDG

Cetaceans

Over the summer months since April 1st, the Irish Whale and Dolphin Group have validated 1,049 sighting records, comprising 12 species, including basking sharks and one leatherback turtle record. The busiest month for sightings was May, with a tally of 224 records. Although early in the season, we shouldn't be surprised by this, as we recall the glorious settled weather during the early days of the COVID-19 lockdown and the easing of restrictions in May, which heralded something of a mass movement of people towards the coast, and this, combined with the fine weather, resulted in a lot of traffic on the reporting portal on www.iwdg.ie.

Our first humpbacks were recorded off Galley Head, west Cork, on April 11th, which is consistent with the observed trend of this iconic species showing earlier each year. It has been very much non-stop humpback activity between West Cork, the Beara Peninsula and West Kerry since then, with a record number of sightings and re-sightings of known individuals. During the summer, the IWDG/Irish humpback whale catalogue reached the important milestone of 100 animals, and currently stands at 109 recognisable individuals.

We have validated 173 records of our smallest baleen whale, the minke whale, which have appeared inshore in all areas, however again you really have to look at the southwest waters for the biggest concentrations. Two sightings stand out in particular. On June 8th, a best estimate of c.50 minke whales were counted off Seven Heads in West Cork by Chris O'Sullivan, and on July 11th an IWDG photo ID trip by Nick Massett recorded c.60+ minke whales in an area north of the Skelligs into Dingle Bay. These are simply staggering numbers by any standards.

Northern Irish waters have had a long run of near daily bottlenose dolphin sightings along the East Antrim and North coast, extending across to the Inishowen Peninsula in Donegal, while a solitary adult male bottlenose dolphin has taken up a summer residency at Greenore in Carlingford Lough.

As we reach the end of the third quarter of the year, we can say that it has been yet another record year for cetacean strandings in Ireland. Already this year, we have validated 242 strandings of 278 animals, the highest number ever recorded in any year (to 23 September). The figure for this time last year was 185 and in 2018 (which currently stands at the highest ever annual total) it was 238. As has been the case for around 10 years now, the numbers of common dolphin strandings has grown alarmingly.

Prior to 2011, IWDG would have normally recorded <20 stranded common dolphins during the first nine months of any year – by 2018, this figure had risen to 102, it dropped to 72 in 2019, but so far in 2020 has risen to a whopping 114! While over 90% of strandings are of dead animals, there has been an unusual number of live strandings recently, with 10 recorded just in August and September. While seven of these involved common dolphins and two were of striped dolphins, a very unusual live stranding of seven Northern Bottlenose whales occurred at Rossnowlagh, Co. Donegal, on 19th August, six of which died that day and one died the following morning. Around the same time, other incidents involving beaked whales (including Northern Bottlenose Whales) were recorded in the UK, the Faroe Islands and Holland. It is reasonable to assume that these events are related. It is worrying that this is the third mass stranding of beaked whales in Ireland since 2018.



Pádraig Whooley

SIGHTINGS OFFICER

Irish Whale and Dolphin Group



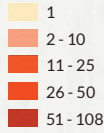
Mick O'Connell

STRANDINGS OFFICER

Irish Whale and Dolphin Group

Marine species records 2019

Records per 10km²



“Between Jan 2019 and August 2020, we received 4,273 records of over 150 different marine species”



Curled Octopus
© Liam Lysaght

Explore Your Shore!

This is another Environmental Protection Agency funded project and has the goals of creating a robust baseline dataset for intertidal plant and animal species in Ireland, exploring intertidal species as bio-indicators of climate change and water quality, and highlighting the issues of climate change and water quality for the public.

Marine biodiversity recording has always been the poor cousin to terrestrial species recording in Ireland, and we knew from the start there was a job of work to do in terms of building up a recorder network and the skills required to identify the rich diversity of species found on Irish intertidal shores. We are delighted by the response so far and are seeing a slow but steady increase in the numbers of people participating in our intertidal biodiversity recording surveys.

Between Jan 2019 and August 2020, we received 4,273 records of over 150 different marine species, so a huge ‘Thank You!’ to all those who have submitted records so far. The most recorded species are jellyfish, including Portuguese Men O’War (170 records), Lion’s Mane (149 records) and Compass Jellyfish (148 records). Of the intertidal species, bladder wrack, Common Limpet and Common Periwinkle were the most frequently recorded species. However, we have received some wonderful records of less frequently recorded species on the coast, such as Hooded Shrimp, Curled Octopus, and Black-mouthed Dogfish. In 2019, we received records from 21 counties, with Kerry leading the pack, followed by Cork and Clare.

In May, we teamed up with the Marine Institute’s Explorers Education Programme to publish an Explorers Seashore Guide Work Book for primary schools. The workbook is linked to the primary science curriculum and the Explorers Education Programme reaches over 12,000 children annually. The book provides a range of activities and encourages children to become citizen scientists and load snapshots of species they find on www.ExploreYourShore.ie

We recognise that the diversity of species encountered on intertidal shores, and general unfamiliarity with many of these species among the public presents a challenge for intertidal biodiversity recording in Ireland. We have therefore focused on producing additional resources for intertidal recording. In May 2020, we published an identification swatch on Marine Bivalve Shells, which has proved very popular, and we are currently working on a Seaweed identification swatch. We will also shortly be adding online tutorials and additional identification features to our website at www.exploreyourshore.ie so please do give marine biodiversity recording a go.

You don’t need to record everything, just those species you can identify, and you can always post photographs of any mystery species on our Facebook page (@ExploreYourShore) for assistance with identification.

Please continue submitting your marine species records to the National Biodiversity Data Centre and visit our web page: www.exploreyourshore.ie for more information on the project.



Dave Wall

CITIZEN SCIENCE OFFICER

National Biodiversity Data Centre



Anacamptis morio
© Fiona MacGowan



Neotinea maculata
© Eamon Gaughan



Stenogrammitis myosuroides
© Rory Hodd



Ophrys apifera var. *atrofusca*
© Cara Daly



Vascular Plants

It has been a year unlike any other, but despite COVID-19 restrictions, the Irish botanical community has continued to grow and thrive. Individual botanists explored their local areas, and the Botanical Society of Britain and Ireland (BSBI) moved events online to provide new opportunities for learning. For such a challenging year, we've had some amazing results!

Plant recorders have been hard at work across Ireland. There have been over 56,000 new plant records added to the BSBI Database already this year. These have included a host of new county records, re-finds of plants not recorded for decades, and other exciting discoveries.

In Co. Sligo, we had the first reports of *Neotinea maculata* (Dense-flowered Orchid) in two separate locations. It was found first by Laszlo Kenderesi in 2019, though BSBI only heard about it this spring when he found it again. Around the same time another two specimens were found by Eamon Gaughan on Knocknarea.

In Co. Clare, there have been two new species recorded. First, Micheline Sheehy Skeffington, Cillian Roden, and Nick Scott found *Eriophorum gracile* (Slender Cottongrass) in the Slieve Aughties. This rare species is listed as Near Threatened on the Irish Vascular Plants Red List. Second, Phil Grant recorded *Trifolium occidentale* (Western Clover) on Inismore. All previous Irish records of this species are from the east, between Dublin and Waterford. In Co. Fermanagh, Robert and Hannah Northridge recorded another rare, protected species: *Dryas octopetala* (Mountain Avens). While not a county first, it is the first record at Monawilkin, one of the best recorded tetrads in the North!

In Co. Antrim, David McNeill focussed on re-finding species at sites where they had not been recorded in many decades. In the Belfast Hills, *Rubus saxatilis* (Stone Bramble) and *Trisetum flavescens* (Yellow Oat) were rediscovered at Windy Gap. *T. flavescens* also turned up on Cave Hill, along with *Trifolium medium* (Zigzag Clover), updating records dating back to before 1880. On a trip to Fair Head, David found *Orobanche alba* (Thyme Broomrape), not seen there since before 1923, and *Arctostaphylos uva-ursi* (Bearberry), last recorded nearby in 1837.

Of course, not all exciting plants require dedicated searches, with some popping up close to home. Orchids seem to have fared well this summer near towns and roads as more sensitive management has been adopted.

East Cork made headlines with 363 *Ophrys apifera* (Bee Orchid) appearing on road verges in Middleton during the first year of their reduced mowing regime. Other reports of Bee Orchids include a new roadside site in Tralee, North Kerry, discovered by Gosia Horajska, and at the Waterford Institute of Technology campus, where not just any Bee Orchid, but the rare *Ophrys apifera* var. *atrofusca*, was found by Sean Keane.

In Portlaoise, *Anacamptis morio* (Green-winged Orchid) were found in a housing estate when mowing was suspended during Covid-19 restrictions. Recorded by Brian Gaynor, this rare species was last reported in the area by Praeger 120 years ago and has only been found in three other sites in the county in recent years.

Finally, if these rare plants aren't enough, how about one that's completely new to Europe? Last year, Rory Hodd discovered a tiny fern in Killarney National Park, which turned out to be *Stenogrammitis myosuroides*, a species normally found in Caribbean cloud forests, but which appears to be native to our own temperate rainforest! The find was recently published in *British and Irish Botany* (britishandirishbotany.org) and highlighted in the media.

As there are always more plants to find, there is always more to learn about! With that in mind, BSBI ran a series of webinars this summer. As part of our Irish Grasslands Project we offered webinars on Grass ID, Sedge ID, and Annex I Grasslands Habitats. For our Aquatic Plant Project we offered Aquatic Plant ID and Stonewort ID sessions. We also joined with the Ellen Hutchins Festival to offer a session on Botanical Recording for Beginners. All of these are available free on the BSBI website (bsbi.org) and the BSBI YouTube Channel. We hope they will encourage more people to get involved with Irish botany!



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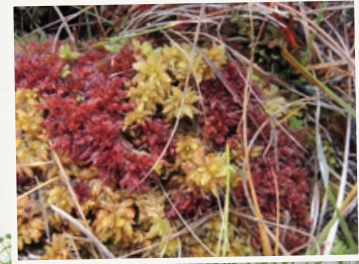
Drawdown zone of Bohernabreena reservoir, this can be a valuable bryophyte habitat.
All photos © Joanne Denyer



Sphagnum divinum recorded from a bog pool at Raffduffmore Bog, first record for Ireland



Sphagnum medium (red), new to Co. Wicklow, growing with *Sphagnum papillosum* in raised bog habitat at Raffduffmore Bog



Homalia trichomanoides on the lower trunk of a tree adjacent to Bohernabreena reservoir, new to Co. Dublin



The thallose liverworts *Riccia subbifurca* and *R. sorocarpa* growing on exposed mud at the edge of Bohernabreena reservoir, new to Co. Dublin

Bryophytes

Despite the unusual year, there have been plenty of interesting bryological finds. In October 2019, the Irish Bryophyte Group (IBG) led a British Bryological Society field meeting in County Wicklow. This was a very successful recording weekend and we were very fortunate to have a group of 20 bryologists join from England, Scotland, Wales and Ireland. With this combined expertise, over 2100 records were made for c350 taxa, so it was a great addition to the Bryophyte Flora of County Wicklow project. A wide variety of habitats were visited from mountain tops and old oak woodland, to arable fields and car parks! The records made include new sites for 19 Red Listed bryophytes, one potential new species to Ireland and many species new to the county. A full account will be published in the next 'Field Bryology' (BBS publication). If you would like to read this but aren't a BBS member, then get in touch with me (e-mail below). Staying in 2019, Rory Hodd rediscovered *Tortula wilsonii* on Howth in November. This was last recorded from Howth in 1877 and last seen in Ireland in 1934.

In 2020 our group field recording has been reduced, but we did manage a joint training meeting in February with the Dublin Naturalist Field Club near Glenree and a trip in March to Raven's Glen and Crone Woods. One of the highlights at Raven's Glen was Rory Hodd's find of *Aulacomnium androgynum* (Vulnerable), which is very rare in Ireland and not known from this site. Just before lockdown (early March 2020) I visited Bohernabreena reservoir, Co. Dublin, and noticed that

the reservoir water levels were very low. A quick look on the mud yielded two NVCRs for Dublin, the pretty thallose liverworts *Riccia subbifurca* and *R. sorocarpa*. Another NVCR was *Homalia trichomanoides* from a tree at the edge of the shore. Many nice bryophyte finds have been made here in the last few years and it is definitely a site where there is more to find.

Whilst recording has been reduced in 2020, there have been two new sites found for the EU Annex II species *Hamatocaulis vernicosus* in Co. Wicklow (one site found by Alexis Fitzgerald). As Rory Hodd pointed out, it's interesting that this species hadn't been seen in Co. Wicklow in 45 years and then it turned up twice at opposite ends of the county! I found the fen liverwort *Moerckia flotoviana*, new to Co. Leitrim, in August in a monitoring plot. This surprised me as I have been surveying the site for 10 years. It just shows that you can never consider the bryophyte list from a site as complete!

Please contact me if you would like to be put on the e-mail list of the Irish bryophyte Group and we have a Facebook page 'Irish Bryophytes'. We are not yet sure if we will be able to hold any field meetings over the winter 2020-21, but if not then we will try to provide some online training.



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We manage Ireland's citizen science portal, supporting a network of more than 8,000 recorders who help to record Ireland's biodiversity



We manage Ireland's largest national biodiversity database, containing more than 4.3 million records of over 16,000 species



We manage a national bioinformatic infrastructure to underpin many of Ireland's biodiversity data and information needs



The National Biodiversity Data Centre serves as a repository and secure backup for data and information on Ireland's biodiversity collected by partner organisations

National Biodiversity Data Centre

A Heritage Council Programme



We coordinate the implementation of the All-Ireland Pollinator Plan



We manage the online mapping system, Biodiversity Maps, to enable the publishing of national biodiversity datasets

Our achievements to date



We operate the All-Ireland Bumblebee Monitoring Scheme



We facilitate reporting on the Invasive Alien Species Regulations (No 1143/2014) to the European Commission

Since its establishment in 2007, the National Biodiversity Data Centre has become an essential component of the national heritage infrastructure, making information on Ireland's biodiversity more accessible for decision-making; assisting engagement with biodiversity by both the public and private sectors; and supporting the conservation of biodiversity in Ireland.



We report on the National Biodiversity Indicators



The National Biodiversity Data Centre is Ireland's node to the Global Biodiversity Information Facility (GBIF)



We coordinate the Irish Butterfly Monitoring Scheme



We manage national surveys on various taxonomic groups, and citizen science projects on freshwater and coastal biodiversity



We have provided training to almost 4,000 participants through recorder training and capacity-building programmes



We are delivering a five-year research project 'Protecting Farmland Pollinators' funded under the European Innovation Partnership (EIP) Programme



The National Biodiversity Data Centre is a programme of the Heritage Council and is operated under a service level agreement by Compass Informatics. The Biodiversity Data Centre is funded by the Department of Housing, Local Government and Heritage.

An Chomhairle Oidhreachta
The Heritage Council



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage