County Offaly

THE STATE OF THE WILD 2007

Compiled by
John Feehan

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Offaly County Council
in association with
the School of Biology and Environmental Science at UCD
and the Heritage Council

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Foreword

If we are to be effective custodians of our heritage of wild nature, we need to know what plants and animals share the county with us, and where they live. This report attempts to provide an outline sketch of that diversity – or, more accurately, of what we *know* about it. It is written as an introductory overview for a general readership of Offaly people who have an interest in and concern for the wild life and wild places of the county. It is not really intended for those who would describe themselves as specialists.

I have included ***checklists*** of species in different groups of plants and animals recorded for the county where they could be compiled with some confidence. For many readers these lists will be mysterious-looking assemblages of Latin binomials before which the eyes inevitably lose focus. But just remember that every one of these names stands for a unique species, whose structure has been carefully and meticulously described and published according to rigid internationally agreed guidelines. Each is a creature of immense complexity, and every one of them occupies a unique corner of the natural world. All of these species live out their lives in our midst, all enriching our human world on some level.

In most cases the checklists are little more informative than records of attendance. With the exception of a very few groups such as flowering plants, birds and mammals, we know little about the detailed distribution and status in the county of the different species – or their individual lives. Very often the record of a species is based on nothing more than one or a few specimens captured on a few occasions in just a few places. Read what one of the greatest of entomologists had to say about how little even he knew about the insects he studied so assiduously:

> I have made it my business for some years to hunt out the larvae of our common Insects. I have searched the waters, both stagnant and flowing, and have pried into all accumulations of decaying organic matter that I have come across. I have particularly attended to the early stages of the Diptera [flies]. But I have to confess that nineteen-twentieths of the Diptera now buzzing about in my garden are known to me, if at all, only as items in a catalogue. No doubt a large proportion have been reared close at hand. But they are so well hidden, and the naturalist is so blind, that it is only when he sees the swarms of winged Insects that he becomes conscious of the multitude of larvae and pupae which he has overlooked.[1]

What we know is only a fraction of what remains to be discovered. This highlights the endless scope there is for further exploration. We need to know an awful lot more if we are to ensure proper conservation of the flora and fauna of the county.

It has been hard to keep track of all the people who have provided information or helped in other ways in the preparation of the Report. I hope I can remember them all: Annette Anderson, Roy Anderson, Barry Cregg, Jim Curry, Jane Feehan, Garth Foster, Hubert Fuller, Jeremy Gray, Alvin Helden, Fran Igoe, Daniel Kelly, Ferdia Marnell, Roland McHugh, Barry McMahon, Brian Nelson, Mary O'Connell, Rita O'Shea, John Prior, Gordon Purvis, Colm Ronayne, Olaf Schmidt, Mark Seaward, Michael Sheehy, Helen Sheridan, John Smith, Martin Speight, Niall Sweeney, Val Trodd, Wayne Trodd, John Whelan. The photographs on the front cover are by Tom Egan and Gordon Purvis, that on the back cover by Eddie Dunne.

The Report owes more to the enthusiasm and efficiency of Amanda Pedlow, Heritage Officer for Offaly, than it does to anybody else, myself included.

We hope this overview will help to inspire a new generation of Offaly field naturalists to take up the study of the wild creatures of the county, and begin to experience for themselves at first hand the endless fascination and sense of fulfillment their study can bring to people of every age and background.

John Feehan

[1] L.C. Miall (1896). *Round the Year. A Series of Short Nature-Studies*.

Introduction

Wild places

Offaly has many wild places, which are home to a tremendous variety of different plant and animal species. Some of these wild places, such as the bogs of Slieve Bloom and the Shannon Basin, cover large areas. Woods are among the most important places for wild plants and animals. At one time native woods covered much of the county, but these disappeared gradually over the course of history; today we have a large number of much smaller deciduous woods, all the more precious because of their small size and number. Hedgerows are like narrow strips of woodland, weaving a green web over the entire county that provides a place to live for countless species, many of them one-time woodland species. Waterways and

other wetlands – of all sizes and shapes from the Shannon to the smallest pond – are inhabited by a great variety of wild plants and animals. In fact every part of the county has its own unique mixture of places where wild species live.

Some of these wild species are large and familiar, such as birds and mammals, trees and flowers, but the vast majority are small creatures of which the most numerous are insects. What these lack in size they make up for in the amazing complexity of their structure and habits. There is more to amaze – make no mistake about it, there is truly more to wonder at, more to bring us to our knees, than our short lifetimes can ever encompass, in the lives of the wild things found in the local pond, and along the fringe of the bog, and in the last bit of woodland in the parish.

Offaly's Wild World Web

When people first settled in Offaly over 9,000 years ago everywhere was wild. Only very gradually did we begin to make any serious inroads on Nature's rule. At first our impact was little more than that of the animals with which we shared this world, but this impact increased greatly with the advent of farming 6,000 years or so ago, when we started to make fields for our crops and herds at the expense of natural woodland. Long before modern times nearly all the land that could be made productive or developed to carry our infrastructure had been taken from Nature. So few natural places are left to us now that we need to treasure those that remain and do what we can to extend their hold.

All through our long prehistory and history, Nature has been on our doorstep – no longer it is true the untamed wilderness that was there before we started to farm, but the experience of trees and flowers, birds and wind and stars, rocks and the sight and sound of rivers and the sea – that satisfied a deep psychological need in us. The places where Nature still breathes awake in us memories of that deeper childhood of our human species. The flowers and trees in every hedgerow awake them, the singing of the birds, every rock outcrop shaped by time and the elements, every stream that follows the form of the land.

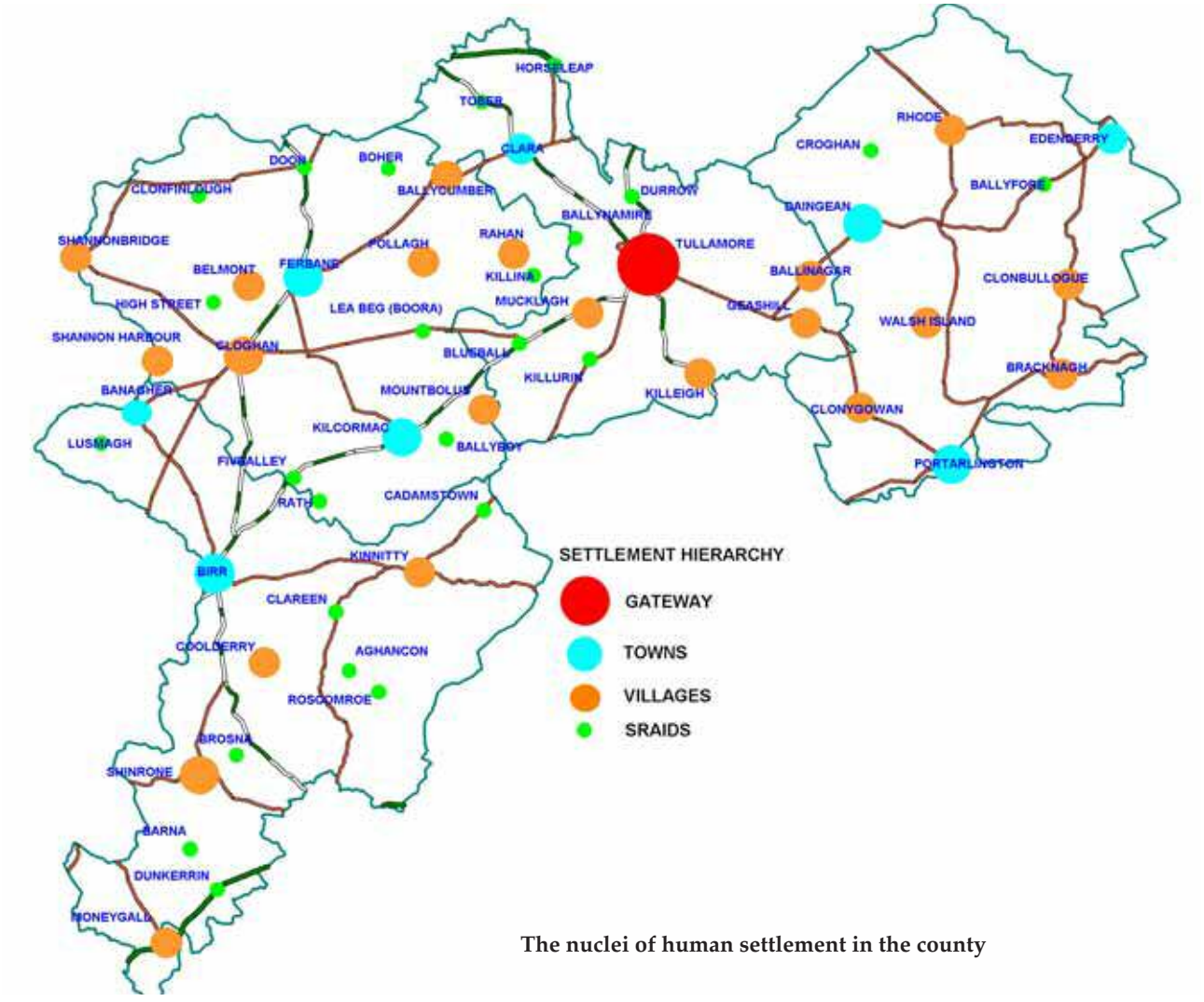
Some of the most significant places in the county, some of those richest in species, have already been designated as such and receive statutory protection (see map on pages 6-7). These however are relatively few and far between, and except for the National Nature Reserve in Slieve Bloom cover a tiny area. But alongside these is a much larger number of places that, although they are not considered to be of sufficient importance to merit formal designation, are important reservoirs of natural diversity. They include all the woods and bogs in the county – especially the vast area of bog in production by Bord na Móna, which has the potential to become the most extensive and important reservoir of natural diversity in Offaly once production ceases.

The infrastructure of our human world is spread across the county like a net. It is made up of dense hubs – towns and villages – all linked together by a trellis of roads of different sizes, interspersed among the smaller nodes of individual houses and the occasional factory. Surrounding this infrastructure is all the land whose produce supports our lives: farmland under grass or other agricultural crops, plantations of trees, bogs from which peat is being harvested, hills from which sand and gravel are being extracted.

But ramifying through this artificial world is an ecological network or **EcoNet** that interlocks and interweaves its way through our artificial network of cement and stone and steel. Within this network a vast concourse of plant, animal and other living species find their homes and make their own living. They often perform functions that are important or even essential to our human well-being: but over and above their usefulness they enrich our human existence by their presence.

On the map on pages 6-7 you can see what this web of wild places might look from a great distance. What you cannot see on this scale is the cobweb of fine threads linking all these geographically distinct areas. The finest of these threads are the hedgerows and streams. Not only are these important habitats in their own right, but they also provide routeways along which wild plants and animals can move with greater security – in their everyday lives or more slowly over time.

Wild plants and animals are largely – though by no means entirely – confined to those habitats that appear on the EcoNet map. The scale of the map is too small to show everything of course. Every single tree is an important habitat for wild things. Even a single rock in your garden is a micro-habitat: turn it over and you will see the menagerie of small creatures it shelters. We can define habitat in its broadest sense as any place where natural processes and species predominate.



The nuclei of human settlement in the county

Hedges and field walls are the finest threads in the web of wild places that extends throughout the county. This is a small section of the first edition of the Ordnance Survey six-inch map (1838), showing the hedged landscape south of Tullamore.

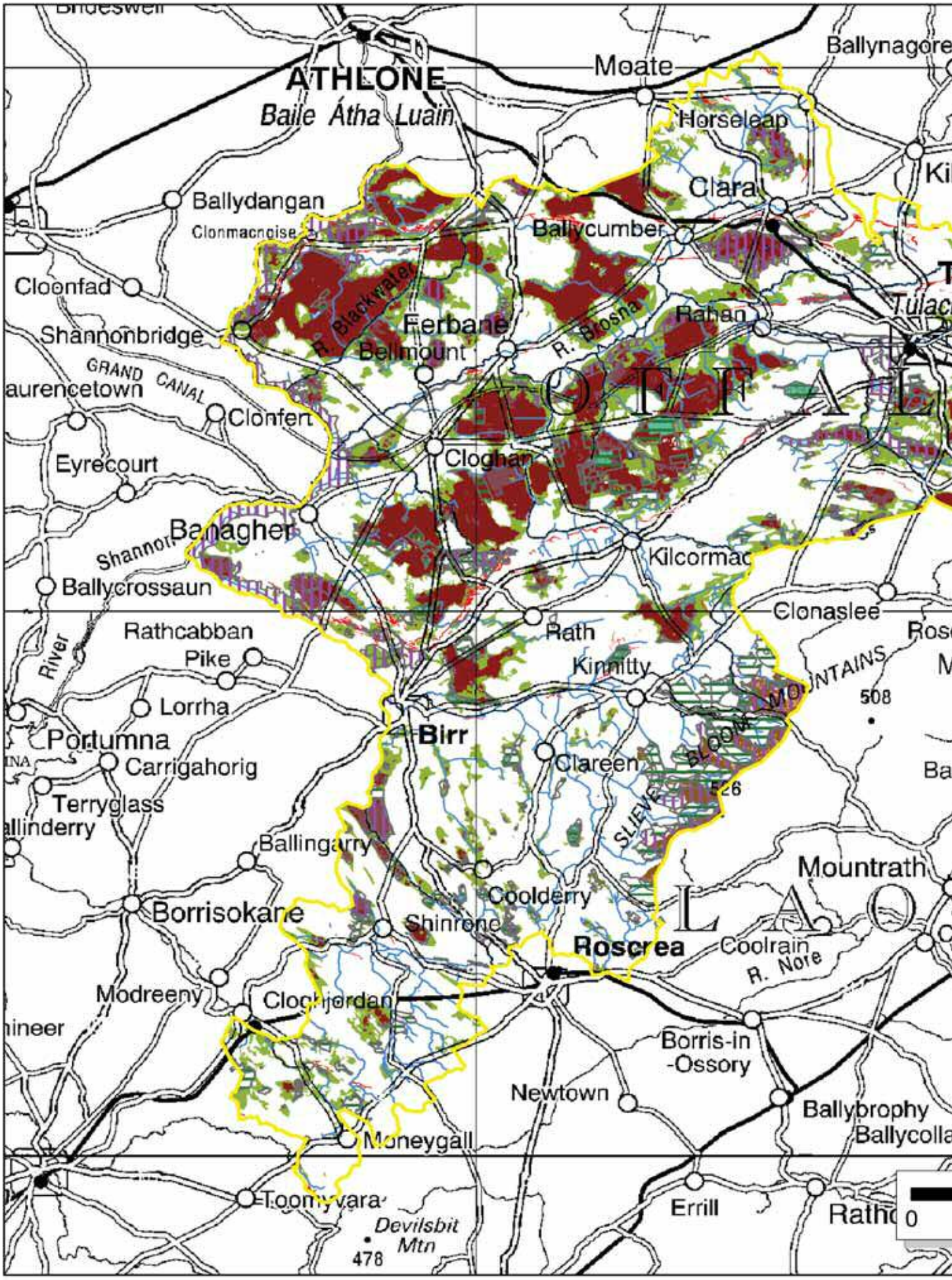
And Nature reaches out from its strongholds into our human world: occasionally to our annoyance, as when 'weeds' invade our gardens and fields or mice enter our homes: but almost invariably to enrich and diversify our lives. When we withdraw our hold altogether it takes over entirely.

The sixth extinction

We are enmeshed in biodiversity on a scale really beyond our comprehension. Our best guesses put the number of species on earth today at somewhere between 3 and 100 million: different kinds of living things, different species (the most popular estimate being somewhere around 13 million), of which less than 2 million have actually been identified and described and given proper names (75% are insects). Equally incomprehensible is its sheer abundance. It has been calculated that in every square kilometre of land there are as many as 10 billion living organisms.

In our lifetime we are experiencing – indeed, we are *causing* – the greatest mass extinction of living species there has ever been on the earth. Plant and animal species are disappearing at an unprecedented rate. Some botanists calculate that 2,000 species a year are becoming extinct in tropical forests – and extinct means gone for ever. Estimates of total global species loss range from 4,000 to 300,000 species a year, the vast majority of which we don't even have names for. Much of this loss results from the destruction of tropical rain forests, which are disappearing at a rate of perhaps 150,000 km^2 a year, which is around 2% of the standing cover. If we continue the way we are half the species of plants and animals on earth could be gone by the end of the century.

It was concern over this appalling loss that led to the Convention on Biological Diversity at Rio de Janeiro in 1992, to which Ireland signed up in 1996. In signing the Convention we took upon ourselves the


ATHLONE
Baile Átha Luain
Moate
Ballynagore
Horseleap
Clara
Ballydangan
Clonmacnoise
Ballycumber
Cloonfad
Shannonbridge
R. Blackwater
Ferbane
Bellmount
R. Brosna
Rahan
Tulac
GRAND CANAL
Clonfert
Eyrecourt
Cloghan
OFFALY
Banagher
Shannon
Kilcormac
Ballycrossaun
Clonaslee
Rathcabban
Pike
River
Rath
Kinnitty
MOUNTAINS
508
Lorrha
Birr
Portumna
Carrigahorig
Clareen
526
Terryglass
SLIEVE
Ballingarry
Mountrath
Coolderry
Borrisokane
Shinrone
LAOIS
Roscrea
Coolrain
R. Nore
Modreeny
Cloghjordan
Borris-in
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Newtown
Ballybrophy
Ballycolla
Moneygall
Errill
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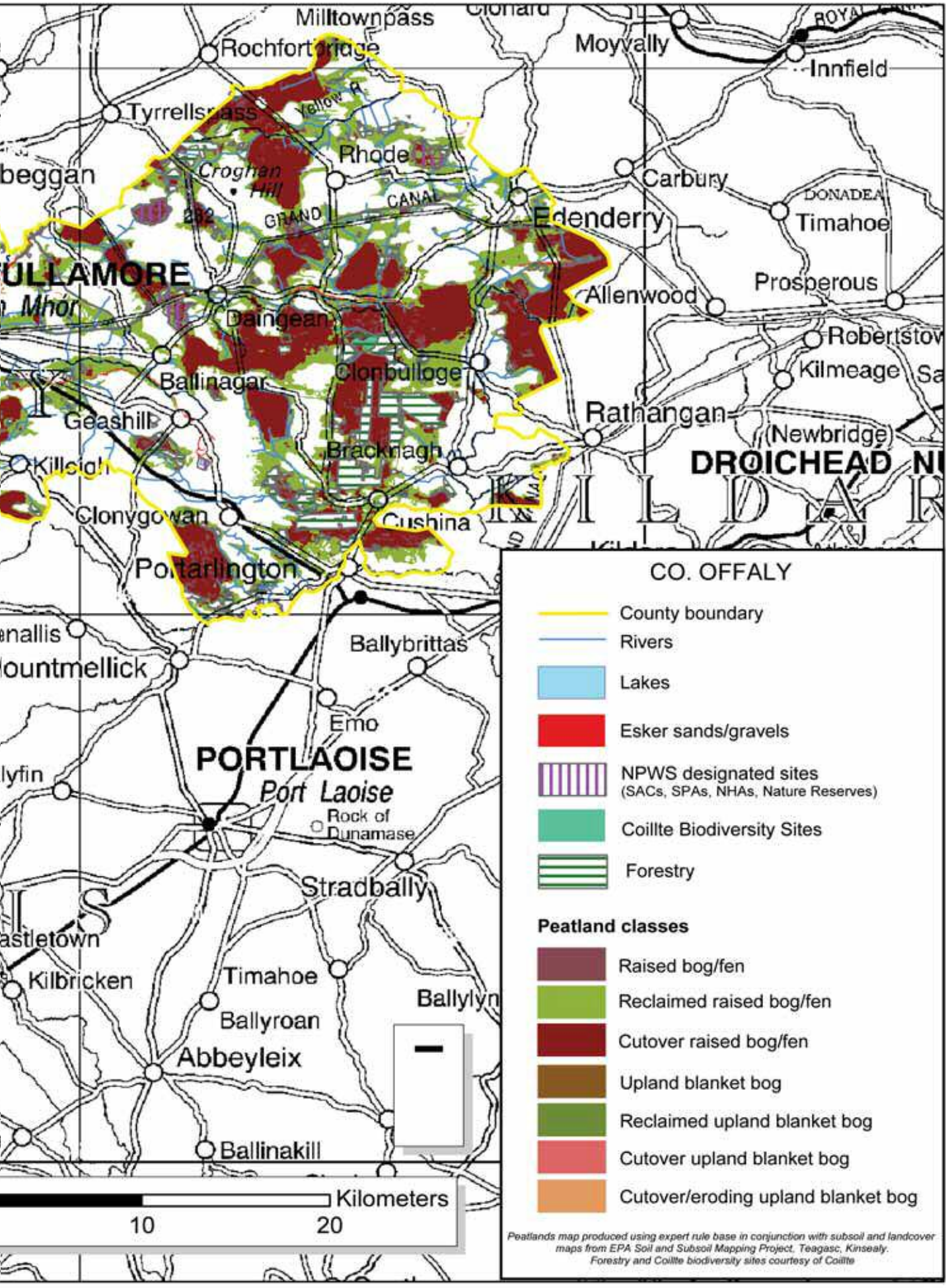

Milltownpass
Rochfortbridge
Moyvally
Innfield
Tyrrellspass
Yellow R.
Rhode
Croghan Hill
Carbury
CANAL
GRAND
Edenderry
DONADEA
Timahoe
ULLAMORE
Mhor
Prosperous
Allenwood
Daingean
Robertstow
Kilmeage
Ballinagar
Clonbulloge
Rathangan
Geashill
(Newbridge)
Bracknagh
DROICHEAD NU
Killeigh
Clonygowan
Cushina
KILDARE
Portarlington
Ballybrittas
Emo
PORTLAOISE
Port Laoise
Rock of Dunamase
Stradbally
Kilbricken
Timahoe
Ballylyn
Ballyroan
Abbeyleix
Ballinakill
Kilometers
10
20
CO. OFFALY
County boundary
Rivers
Lakes
Esker sands/gravels
NPWS designated sites
(SACs, SPAs, NHAs, Nature Reserves)
Coillte Biodiversity Sites
Forestry
Peatland classes
Raised bog/fen
Reclaimed raised bog/fen
Cutover raised bog/fen
Upland blanket bog
Reclaimed upland blanket bog
Cutover upland blanket bog
Cutover/eroding upland blanket bog
Peatlands map produced using expert rule base in conjunction with subsoil and landcover maps from EPA Soil and Subsoil Mapping Project, Teagasc, Kinsealy.
Forestry and Coillte biodiversity sites courtesy of Coillte

obligation to halt the loss of biological diversity in Ireland, and to work to regain lost biodiversity: and further afield, beyond our shores, to do what we can to address the global loss. Allied to this, the EU has now set itself the target of halting habitat loss by 2010. Ireland produced its National Biodiversity Plan in 2002, and as part of that each local area is now required to draft its own Biodiversity Action Plan

Why is it so important?

There are many reasons why the haemorrhaging of biodiversity from the earth is so serious. There are economic reasons that have to do with its practical importance in our lives, such as regulation of climate and rainfall. And there is the fact that as yet undiscovered species are a genetic treasure chest from which medicine, farming and human welfare generally may benefit in all sorts of ways, when they are discovered and their genetic potential is tapped by means of the incredibly sophisticated tools increasingly available to us. There is the increased understanding of how the living world works that science derives from the study of new species. But over and above all of this there is the sheer wonder of it, the awesome complexity and diversity that indeed is the deepest reason most of the people who study these creatures do so in the first place. It is experience of Nature's transformative value that is the real, the deepest, reason most ecologists study biodiversity.

And beyond this again, there is another reason why we need to be concerned about the dimming of life's rainbow which we are witnessing. It is wrong. Most of us are religious people at some level, some of us deeply so. If you believe in God, whatever your faith may be, you have to see the living creation as the first, the most fundamental Book of Revelation. There is a profound *ethical imperative* to care for the diversity of life: first of all because it is that primary revelation, through which God expressed himself for unimaginable epochs of time before our species appeared on the evolutionary scene. And secondly, because we are its custodians and its kin.

The loss of Nature's diversity in Offaly

Although it is nothing like that seen in tropical rain forests, there has over the last fifty years been a considerable decline in Offaly's biological diversity, mainly because of the decrease in the total area of *habitat* available to wild species. Nearly all of the raised bogs have been exploited on a large scale for peat extraction, and much of the blanket bog on Slieve Bloom has been planted with conifers. Farm improvements since we joined the EU have seen the replacement of traditional pastureland with species-poor swards of ryegrass and white clover, the drainage of species-diverse wetlands, and the removal of hedges in order to make fields bigger and more suited to machinery. The greatly increased use of fertilisers, herbicides and pesticides has contributed to the decline of countless species.

But on the other hand, the cutaway that remains where Bord na Móna has removed the economic reserves of peat from their great bogs has enormous potential for regeneration of biodiversity. Many farms now participate in the Rural Environment Protection Scheme (REPS), one of the obligations of which is looking after and improving natural habitats on the farm. Coillte now sets aside the 15% of its forest land with the highest biodiversity and manages this primarily to that end. And as important as all these positive developments is the fact that we as a community now have a much greater *awareness* of why it is so important to maintain biodiversity and the wild places which support it.

How little we know

The Biodiversity Convention places upon us the obligation to protect our wild biological heritage. What makes this so challenging is that we have no inventory, no list of all the species we have or where they live or how well they are doing. We do know a great deal about birds, mammals and flowering plants: the species we have and their distribution, and what their status is in the county – the ones we imagine Noah ticking off his list as they paraded two by two into the Ark in the most familiar early example of conservation in action! But in fact these large plants and animals account for only a small percentage of total biodiversity. There are enormous gaps in our knowledge of invertebrates, which account for the overwhelmingly greater part of biodiversity, and of non-flowering plants, fungi and lichens (to say nothing of bacteria). When you begin to look *really closely* at any habitat, a whole kaleidoscope of hitherto unseen biological diversity springs into focus.

Certainly dozens of studies have been carried out over the years that have looked at other groups in a very localized and uncoordinated way. Stephen Heery has brought these studies together and they can be reviewed on Offaly Couny Council's website: but there may be other studies we don't know about, and certainly there will be many others in the years ahead; these will be added to the list as they come to our notice . (If you spot any omissions, or if you know

of ongoing studies that add to our knowledge, we would really like to hear from you). But whatever about our knowledge of all these creatures globally, we know next to nothing about their status or distribution in Offaly, and for many of them it will be a long time before we find out. It will take lifetimes of exploration.

One of the first challenges in our county biodiversity strategy must be to ascertain what we do know, and then try to fill the gaps as time goes by, so that we can plan for the sustaining of biodiversity in Offaly: to make sure in the first instance that we can meet the challenge of halting habitat loss by 2010 – and to move beyond that to *restore* what we can of what has been lost.

But what we *do* know is that nearly all these creatures, whether known or as yet undiscovered in our midst, live within the habitats of the EcoNet. Which is why looking after the EcoNet is so very important. We should do everything we can: not only as a society by designating places for Nature and putting protective measures in place, but perhaps even more importantly as local communities, as families and individuals. Get to know the wild places that surround you: where they are and what lives in them. Look for ways to extend and bring them closer to you.

So little is known about the detailed distribution of most invertebrate groups in Offaly in particular that anyone undertaking a special study of any particular group is something of a pioneer. Even for better-known groups of invertebrates what we have are little more than lists of species. Such lists are very useful though, because the ecology of many of the species on the lists has been studied elsewhere, and we can draw conclusions about their ways of life in Offaly from these studies. On the other hand, very little is known anywhere about countless smaller species, so there is endless scope for original research by young and old. A good example of what can be discovered is the elucidation by Jane Feehan (then at St Brendan's Community School in Birr) of the detailed and hitherto unknown life history of the tiny case-carrying leaf-mining moth *Coleophora pyrhuipennella*, a study which won her the Aer Lingus (now ESAT) Young Scientist of the Year title in 1994, and first prize in the European Youth Science Contest.

It could be YOU!

Finding out more

Species lists can be compiled for a number of groups of insects such as butterflies and dragonflies, but they are little more than lists, so limited at present is our knowledge of the status and distribution of different species within the county.

The National Biological Records Centre has set about the task of compiling all existing data on the different groups of plants and animals in the country. But while such lists are an important starting point, a more adequate understanding will require further study of all groups of wild plants and animals in the county in the future. Some of this study may be carried out by professional experts from outside the county, and where resources are available they should be targeted at groups of particular significance on which our knowledge is currently very limited. There is much debate in ecological circles as to which groups are especially significant in this respect: especially as indicators of biodiversity in general. It can be argued that *plants* are the most fundamental indicator group,

Quiet churches are houses of God filled with his silent presence. So too can people find a silence in the natural world in which they may sense God's presence, even when they do not know how to pray.

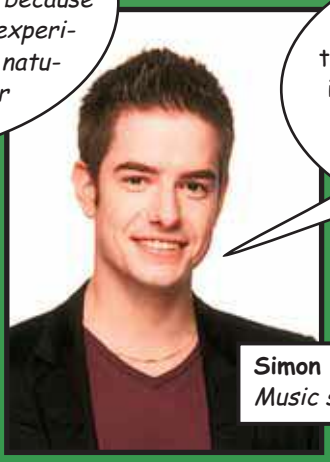
Bishop Michael Smith
Catholic Bishop of Meath

We all need to escape sometimes. This Plan is about taking care of those special places here in Offaly that we all like to escape to - those wild places that are such an important part of what makes Offaly home.

Mundy (Birr)
Rock star

Once upon a time 'bogman' was a term of abuse. Nowadays we in Offaly are proud to be one of the counties with the most bogland, because we value the enrichment that experience and appreciation of the natural world can bring to our lives.

Brian Cowan T.D. (Clara)
Minister for Finance



It is the direct experience of wild places and things at local level that brings the greatest enrichment. This is why it is so important to establish and make accessible the local places where wild things are within each and every community in the county.

Simon Casey (Ballycumber)
Music star

I often hear the phrase 'Think global, act local'. That's what this Plan is about: looking in a new way at the special places and wildlife in our local area, and valuing them in a new way. What we have in our area is an important part of the national and the European picture. More importantly, our local biodiversity makes this a beautiful and interesting place to live, and to come home to.

Jane Feehan (Birr)
Aer Lingus Young Scientist of the Year
European Union Youth Scientist

If you wish to know God, learn about his creation (***St Columban***).

Bishop Willie Walsh
Catholic Bishop of Killaloe

Offaly County Council has formulated a strategy for the protection and enhancement of the Council's natural heritage for the enjoyment of our own and future generations of Offaly people.

There is a web of wild places spread all over the county. This ***EcoNet*** is shown on the map on pages 6-7. The lives of all of us who live or work in Offaly can be enriched by experience of the wild places and things that make the world around us more diverse, more interesting, more beautiful, more inspiring.

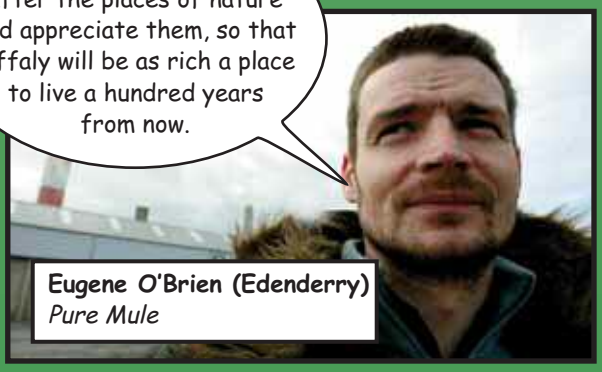
The Council will be formulating a succession of action plans in the years and decades ahead as part of its Biodiversity Action Strategy. These will have practical, achievable aims and outcomes.

CLICK HERE >
To where the wild things are

My home is the farmland of Coolderry, where the fields are framed by hedges, woods and bog, with all their great variety of wild plants and animals. Places like that make Offaly a richer and better place to live. They matter most of all to the people whose homes and farms are surrounded by these wild places.

Tom Parlon T.D. (Coolderry)
Minister for State at the Department of Finance

We need to look after the places of nature and appreciate them, so that Offaly will be as rich a place to live a hundred years from now.



Eugene O'Brien (Edenderry)
Pure Mule

Offaly's Biodiversity Action Plan will make a difference to people right across the community, and it will have the capacity to enrich everyday life in Offaly. Our local biodiversity is an integral part of our local quality of life, and it's something to be proud of and to protect.

Olwyn Enright T.D. (Birr)
Dáil Deputy for Laois-Offaly

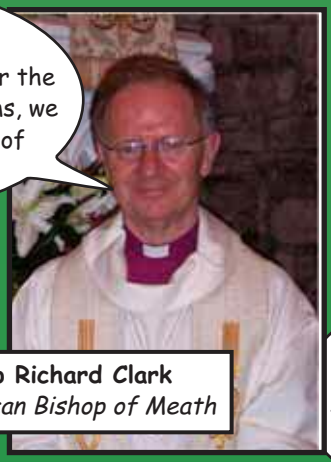
***Joe Dooley* (Coolderry)**
Offaly hurling star

If we lost the wild places of Offaly as a result of progress we would be paying a price that is too high. The better off we are the more we realise how much richer the special places of nature make our lives. More then ever, we have the resources and the education to come to know them better, and to look after them better.

The better off we are the more we realise how much richer the special places of nature make our lives. Maybe for the first time in history we have the resources and the education to come to know them better, and to look after them properly.

Miriam O'Callaghan (Tullamore)
Camogie

If we do not make small sacrifices today for the protection of eco-systems, we are the executioners of tomorrow.



Bishop Richard Clark
Anglican Bishop of Meath

Our lives, the lives of all of us in Offaly, now and in the future can be enriched by experience of the wild things that make the world about us more diverse, more interesting, more beautiful, more inspiring.

Colin Gracey
Methodist Moderator

In the years to come a series of special access points to the county EcoNet (***EcoNodes***) will be developed. These are places where you will be able to see and feel what it is all about.
You can follow the development of the County Biodiversity Strategy – and of Offaly's EcoNet development – on the WildWeb section of the County Council website …

www.offalycoco.ie

because ultimately all animal species depend on them directly or indirectly. *Birds* are also an important indicator group. Among the *invertebrates* arguments are made for the particular value of many different groups, among them ground beetles, hoverflies, bees, moths and butterflies, and the tiny parasitic wasps that prey on other invertebrates. An attempt will made in the years ahead to target these groups in particular in order to reach a better understanding of their status in the county, and to suggest ways in which that understanding can be deepened.

Professional experts are not the only ones who can increase our understanding of Offaly's biodiversity however. Most of what we know of the status of different groups comes from the investigation of *amateurs*. Amateur is a word that has come to have somewhat derogatory undertones. We speak of people who are less than truly competent as 'mere amateurs': but the definition of an amateur is somebody who is in love with his or her subject. Amateurs are people who have come to see and appreciate the beauty and fascination of a particular group to such an extent that its study has become an important part of their lives. *Any* group of plants and animals has the capacity to evoke this wonder and interest and dedication if only you can find the opportunity to enter and catch a glimpse of its fascinating otherworld. It is easier to do this with groups like flowers and birds because they are our size and we can see them without the help of a microscope or hand lens. But that is all it takes. Look at a moss or beetle through a hand lens and you could be hooked for life!

The great 18th century Swedish biologist Carl Linnaeus – the man who devised the binomial Latin system of scientific nomenclature we still use to formally name all plant and animals species – had a marvellous metaphor for biodiversity and the way in which the microscope provides access to the world of smaller creatures.

> *The museum of nature, like a palace, has an enormous number of connected chambers, filled with the stupendous contrivances and wonders of the Creator, to each of which a place is assigned according to its kind; to the greatest amphitheatres of nature the first entry is open to every one, but the smaller ones are usually shut; here there is need of skill to unclose by slow degrees the doorway of each chamber, within which a new world, as it were, displays itself before our eyes … The chief key for unfastening the bars of this palace that has been for all the ages closed is afforded by the microscope, which gives us the same help in examining minute bodies that are close to us as astronomers get from the telescope in the investigation of distant bodies in the heavens.*

For many of us the opportunity to have this experience of Nature's diversity is limited. We need a forum where it can be provided more easily. For this reason it has been decided (as part of the Offaly Biodiversity Strategy) to set about the establishment of an Offaly Naturalists Field Club.

Domain Procaryota (procaryotes)

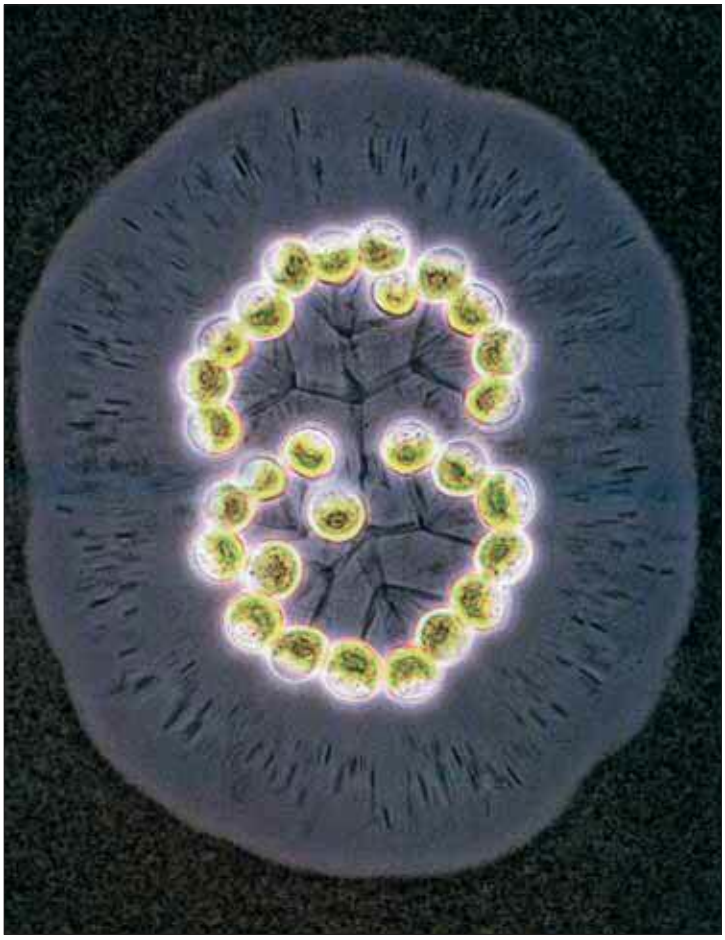
Bacteria

Meagre though our knowledge of the smaller animals and plants that live in the county may be, it is encyclopaedic compared with what we know about the bacteria of Offaly. Yet no group of living things is more ubiquitous or pervasive, or influences our living on so many levels. Indeed, life would not be possible without bacteria. We know so little about them simply because they are so small, and it is only in recent decades the techniques that enable us to get a clear picture of their complexity – and more recently still of their diversity – have become available. It now appears likely that the genetic diversity of bacteria surpasses that of all other living things together.

Most of us think of bacteria in negative terms, but the 'bugs' that cause so many of the diseases that plague us are a tiny minority. On the positive side, our bodies can almost be described as a network of bacterial ecosystems. Agriculture would be very different without the well-nigh miraculous ability of certain bacteria to package the elemental nitrogen that makes up four-fifths of the atmosphere (and which is beyond the chemical reach of plants in a form they can make use of and in turn pass on to animals). These bacteria occur in nodules on the roots of plants in the pea family (and a few others), and they play a vital role in the maintenance of soil fertility and in supplying the nitrogen that is essential for protein manufacture in plants and animals. These nitrogen fixers are one special component of an immensely complex bacterial ecosystem in soils, of which we currently know next to nothing with specific regard to Offaly – or indeed anywhere else.

Bacteria are invisible without the help of a powerful microscope, but we are surrounded on all sides by their macroscopic expression: indications – *field marks* as they are sometimes called by ecologists – of the ubiquitous presence and activity of bacteria. Every farmer knows and loves the smell of newly ploughed earth, which is largely a by-product of the activity of filamentous bacteria (actinomycetes). Around the edges of many cutaway bogs Bord na Móna people will have noticed spreads of ochre, a product of the past activity of amazing bacteria that obtain their energy by oxidying iron salts in the peat. Two other processes vital to our well-being that are dependent on bacterial ecosystems are the formation of compost and sewage decomposition.

It is probably safe to say that whereas it will take many years or decades before we have a good picture of the many currently obscure groups of plants and animals that occur in Offaly, it could be centuries before we have a good understanding of bacterial ecosystems and biodiversity in the county. The first step is just *knowing* this exciting challenge lies ahead of us, and being aware the techniques that make it possible to tackle are becoming more widely accessible. After that, every ecological study that takes some account of bacterial biodiversity is a further step in the right direction.



Rhizopods are amoeba-like organisms that surround themselves with shells. Many species live in carpets of sphagnum. *Chlamydophrys labyrinthuloides* is one of the most extraordinary.

Domain Eucaryota (eucaryotes)

A eucaryote is an organism with a complex cell or cells, in which the genetic material is organised into a nucleus or nuclei enclosed by a membrane. Eucaryotes comprise animals, plants and fungi – which are mostly multicellular – as well as various other groups that are collectively classified as protists (many of which are also multicellular). In contrast, *procaryotes* are organisms (mostly bacteria) that are without nuclei and other complex cell structures. All eucaryotes share a common origin, and are often treated formally as a *domain*. The name comes from the Greek words *eu* (meaning good) and *karyon* (meaning nut, in reference to the cell nucleus).

Adapted from Wikipedia, the free online encyclopedia.

"In these narrow Engines there is more curious Mathematicks; and the civility of these little Citizens more neatly sets forth the Wisdom of their Maker"

Sir Thomas Browne

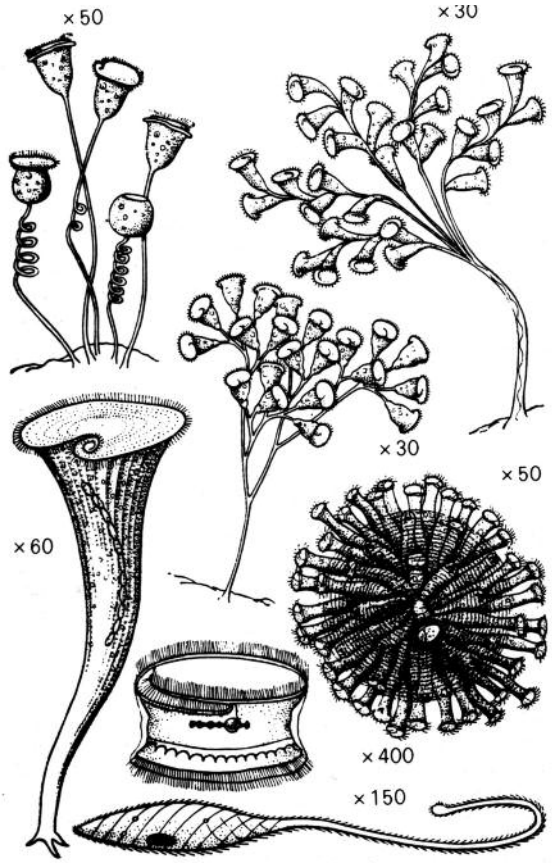
The nearly invisible wild world

This report explores the extent of our knowledge of wild life in Offaly. For many of us 'wildlife' means birds and mammals – but the term also embraces all the smaller animals (especially insects, which account for three-quarters of all described species): as well as plants and fungi. But apart from all these more-or-less visible creatures there is an unseen world of biodiversity that comprises an enormously varied assemblage of single-celled creatures of varied ancestry collectively referred to as ***protists*** or ***protoctists***.

Most protists are single-celled, but their complexity brings home at a glance just what an amazingly sophisticated piece of machinery the living cell is! Some are more animal-like than others: these are the ***protozoa***; others have plant affinities (these are assigned to several phyla of algae), and yet others are closer to fungi (the slime moulds and water moulds). Bacteria were at one time lumped in with the protists, but now that we know more about them they are in a domain of their own.

PROTOCTISTS
Nucleated micro-organisms (excluding plants, animals and fungi) that evolved by symbiotic integration of at least two different kinds of former free-living bacteria.

We will have little to say – in this first report anyway – about these amazing little creatures: simply because we know next to nothing about their status in Offaly at present – even though they are everywhere. If you examine some of the water from a moss-choked roof gutter with a compound microscope, you will be astonished at what lives there: water bears and rotifers, nematodes, and other animalcules of many



Single-celled animals

kinds, some of the most fascinating animals on earth, yet so tiny the unaided human eye sees them as mere specks, if at all. And along with these extraordinary animals is an immensely busy traffic of various green protists whizzing about their business. And there are lots and lots of desmids and other small algae. We know next to nothing about the life of Offaly on this scale, and yet there is probably not a neglected rain gutter in the county that does not have water bears and all the many tiny plants and animals that people the miniature ecosystem that is their world.

The exciting thing is that this hidden mini-universe

Slime moulds (from Ernst Haeckel's *Kunstformen der Natur*, 1904). It gives a vivid glimpse of the extraordinary beauty and variety of these strange organisms.

The exciting thing is that this hidden mini-universe still awaits its first Offaly explorers: minds young or old (you can never be too much of one or the other). To gain access to this world you need to wear glasses: in this case the glasses of the compound microscope. Which maybe costs €1000, around the price of an average computer: and there is as much or more to stimulate the mind and spirit in personal use of the microscope as any computer can offer. No school should be without one, and the ancillary projection equipment that enables its discoveries to be shared with a class. It is one of the great privileges of our age – up there along with the wonder of the internet – that such equipment is now available and not beyond the budget of any school that understands how much is has to give: understands enough to *want* it and make it happen.

Phylum Amoebozoa

Class Mycetozoa (slime moulds)

Slime moulds were traditionally regarded as fungi but are now recognised as a distinct phylum of protists. The slime moulds likely to attract attention are colourful jelly-like blobs on vegetation (two common species are bright yellow in one species, pink in the other). The blob is composed of an aggregate of individual amoebae, which have up to this been living apparently independent and separate lives, typically in soil or on tree bark. They feed by engulfing bacteria, fungi and decaying organic particles. But then, when they sense stressful change in their surroundings they all come together to form the blob, which over a period of days develops into a differentiated fruiting body that produces spores. These germinate to form new amoebae.

The drawing of slime moulds on the left is from a book published at the beginning of the last century.

The slime moulds of Offaly[1]

CERATIOMYXALES
Ceratiomyxa (Famintzinia) fruticulosa

ECHINOSTELIALES
Echinostelium minutum

LICEALES
Cribraria argillacea
C. aurantiaca
C. cancellata
Dictydiaethalium plumbeum
Enteridium (Reticularia) lycoperdon
E. splendens
Licea clarkii
L. denudescens
L. marginata
L. microscopica
L. nannengae
L. parasitica
L. pygmaea
Lycogala epidendrum sensu lato
L. exiguum
Tubifera ferruginosa (Tubulifera arachnoidea)

TRICHIALES
Arcyria cinerea
A. denudata
A. ferruginea
A. incarnata
A. nutans
A. pomiformis
Calomyxa metallica
Hemitrichia (Hyporhamma) abietina
H. calyculata
H. pardina
Metatrichia floriformis
Perichaena chrysosperma
P. corticalis
P. depressa
Trichia botrytis
T. decipiens
T. affinis
T. persimilis
T. munda
T. scabra
T. varia

STEMONITALES
Amaurochaete (Lachnobolus) atra
Collaria arcyrionema
Comatricha nigra
C. pulchella
C. tenerrima
Enerthenema papillatum
Lamproderma columbinum
L. scintillans
Macbrideola cornea
Paradiacheopsis solitaria
Stemonitis axifera
S. flavogenita
S. fusca
S. nigrescens (placed by Lado in *S. fusca*)
S. virginiensis
Stemonitopsis typhina

PHYSARALES
Badhamia affinis
B. lilacina
B. panacea
Craterium minutum
Diderma chondrioderma
D. deplanatum
D. floriforme
D. hemisphaericum
D. simplex
D. spumarioides
Didymium difforme
D. melanospermum
D. nigripes
D. squamulosum
Fuligo septica v. *flava*
Leocarpus fragilis
Mucilago crustaceum
Physarum cinereum
P. leucophaeum
P. nutans (P. album)
P. psittacinum
P. pusillum
P. viride v. *viride*

[1] Compiled by Roland McHugh.

Only a few experts have collected and studied slime moulds in Offaly: most of what we know is due to research carried out by Roland McHugh in recent years. One of the species he found in Offaly (*Licea nennengae*) has not been recorded anywhere else in Britain or Ireland.

Kingdom Plantae: plants

Vascular plants: flowering plants, ferns and their relatives

Bee orchid

The vegetation of today's earth is dominated by flowering plants. They are the cornerstone of biodiversity because the communities they constitute provide the habitats for the myriad animal species that, directly or indirectly, all ultimately depend on them for food and shelter. The variety of wild flowers, trees and shrubs is one of the most enriching things in our environment not only because of this key role in the maintenance of biodiversity overall, but because it *enhances* it as a place to live and grow up in.

The total number of flowering plants and ferns recorded for Offaly is 718, and this is not that different from what it was fifty or a hundred years ago. The only plant known to have disappeared from the county (and in doing so from Ireland as a whole) is rannock rush, which was growing in Turraun Bog before Bord na Móna began work there. What has changed dramatically though is the abundance of many of these species, and therefore the contribution they make to the enhancement of our own lives. The two main reasons for this decline are *loss of habitat* (especially of bogland), and *nutrient enrichment*. Most plants are adapted to live in conditions of moderate to low nutrient availability – because this is the natural state of things – so that when an abundance of nitrate or phosphate is supplied they are smothered by the small handful of species that are able to take advantage of this nutrient affluence. Among the plants that have suffered most in this regard are those that grew in the grasslands that were at the heart of Offaly farming until fifty or so years ago: essentially semi-natural communities which received little in the way of fertilisers.

Our priorities now with regard to the biodiversity of these habitats should be to identify and retain the few that are left to us; and to seek for opportunities to restore them, especially in contexts that make economic as well as ecological sense. The current REPS, and the agri-environmental schemes that will evolve from it in coming decades, can make a critical contribution in this regard.

What we know

Diligent observation by a small number of dedicated botanists over many years has resulted in a picture of the geographical distribution of flowering (and other vascular) plants in the county (and indeed every other county) that is more detailed than for any other group in the flora. This information is summarised in the splendid *Atlas of the British and Irish Flora* produced in 2002, which is based on the records of the County Recorders of the Botanical Society of the British Isles and other workers. There is still much to discover about the detailed distribution of wild plants in the county however, and this is something to which *everyone* with an interest can contribute. But recording the occurrence of a species is really only a first step. Every species – even the most common – has a story unique to itself to tell. Each species lives a life different from all the others, and is equipped in all sorts of special ways for this particular role. Exploring the lives of flowers is an adventure that lasts a lifetime. Knowing what names to call them is only the start. This is the reason Offaly County Council will publish in 2008 *The Wildflowers of Offaly*: a book that will be not just a guide to their names, but an introduction to the fascinating lives they lead for anybody who is interested.

The vascular plants of Offaly[1]

Acer campestre Field maple
Acer pseudoplatanus Sycamore
Achillea millefolium Yarrow
Achillea ptarmica Sneezewort
Acinos arvensis Basil thyme (1991)
Aconitum napellus sens. lat. Monk's-hood
Adiantum capillus-veneris Maidenhair fern
Aegopodium podagraria Ground-elder
Aesculus hippocastanum Horse-chestnut
Aethusa cynapium Fool's parsley
Agrimonia eupatoria Agrimony
Agrimonia procera Fragrant agrimony
Agrostis canina Velvet bent
Agrostis capillaris Common bent
Agrostis gigantea Black bent
Agrostis stolonifera Creeping bent
Aira caryophyllea Silver Hair-grass
Aira praecox Early Hair-grass
Ajuga reptans Bugle
Alchemilla filicaulis subsp. vestita Ladie's-mantle
Alchemilla xanthochlora Ladie's-mantle
Alisma lanceolatum Narrow-leaved Water-plantain
Alisma plantago-aquatica Water-plantain
Alliaria petiolata Garlic mustard
Allium ursinum Ramsons
Allium vineale Wild onion
Alnus glutinosa Alder
Alnus incana Grey alder
Alopecurus geniculatus Marsh foxtail
Alopecurus pratensis Meadow foxtail
Amaranthus retroflexus Common amaranth
Ambrosia artemisifolia Ragweed
Anacamptis pyramidalis Pyramidal orchid
Anagallis arvensis Scarlet pimpernel
Anagallis minima Chaffweed
Anagallis tenella Bog pimpernel
Anchusa arvensis Bugloss
Andromeda polifolia Bog-rosemary
Anemone nemorosa Wood anemone
Anemone ranunculoides Yellow anemone
Angelica sylvestris Wild angelica
Anisantha sterilis Barren brome
Antennaria dioica Mountain everlasting
Anthemis cotula Stinking chamomile
Anthoxanthum odoratum Sweet Vernal-grass
Anthriscus caucalis Bur chervil
Anthriscus sylvestris Cow parsley
Anthyllis vulneraria Kidney Vetch
Antirrhinum majus Snapdragon
Aphanes arvensis Parsley-piert
Aphanes australis Slender Parsley-piert
Apium inundatum Lesser Marshwort
Apium inundatum x A. nodiflorum
Apium nodiflorum Fool's-water-cress
Aquilegia vulgaris Columbine
Arabidopsis thaliana Thale cress
Arabis hirsuta Hairy rock-cress
Arctium minus Lesser burdock
Arenaria serpyllifolia Thyme-leaved sandwort
Arenaria serpyllifolia subsp. serpylli.
Arenaria serpyllifolia subsp.leptoclad.
Armoracia rusticana Horse-radish
Arrhenatherum elatius False oat-grass
Artemisia vulgaris Mugwort
Arum maculatum Lords-and-Ladies
Asplenium adiantum-nigrum Black spleenwort
Asplenium ruta-muraria Wall-rue
Asplenium trichomanes subsp.quadrivalen Maidenhair spleenwort
Aster (alien N. American taxa) Michaelmas-daisies
Athyrium filix-femina Lady-fern
Atriplex patula Common orache
Atriplex prostrata Spear-leaved orache
Atropa belladonna Deadly nightshade
Avena fatua Wild-oat
Avenula sativa Oat
Avena strigosa Bristle oat
Baldellia ranunculoides Lesser Water-plantain
Ballota nigra Black Horehound
Barbarea intermedia Medium-flowered Winter-cress
Barbarea vulgaris Winter-cress
Bellis perennis Daisy
Berula erecta Lesser Water-parsnip
Beta vulgaris subsp. vulgaris Root beet
Betula pendula Silver birch
Betula pubescens Downy birch
Bidens cernua Nodding bur-marigold
Bidens tripartita Trifid bur-marigold
Blackstonia perfoliata Yellow-wort
Blechnum spicant Hard-fern
Botrychium lunaria Moonwort
Brachypodium pinnatum Tor-grass
Brachypodium sylvaticum False brome
Brassica napus Rape
Brassica rapa Turnip
Briza media Quaking-grass
Bromopsis erecta Upright brome
Bromopsis ramosa Hairy-brome
Bromus commutatus Meadow brome
Bromus hordeaceus Soft-brome
Bromus lepidus Slender Soft-brome
Buddleja davidii Butterfly-bush
Butomus umbellatus Flowering-rush
Buxus sempervirens Box
Calendula officinalis Pot marigold
Callitriche obtusangula Blunt-fruited water-starwort
Callitriche stagnalis Common water-starwort
Calluna vulgaris Heather
Caltha palustris Marsh-marigold
Calystegia pulchra Hairy bindweed
Calystegia sepium Hedge bindweed
Calystegia silvatica Large bindweed
Campanula rotundifolia Harebell
Campanula trachelium Nettle-leaved bellflower
Capsella bursa-pastoris Shepherd's-purse
Cardamine flexuosa Wavy bitter-cress
Cardamine hirsuta Hairy bitter-cress
Cardamine pratensis Cuckooflower
Carduus crispus Welted thistle
Carduus tenuiflorus Slender thistle
Carex acuta Slender tufted-sedge
Carex acutiformis Lesser pond-sedge
Carex appropinquata Fibrous tussock-sedge
Carex binervis Green-ribbed sedge

Species in red are protected by law. The date in brackets is the most recent record of these species.

Carex caryophyllea Spring-sedge
Carex curta White sedge
Carex diandra Lesser tussock-sedge
Carex dioica Dioecious sedge
Carex disticha Brown sedge
Carex divulsa Grey Sedge
Carex echinata Star sedge
Carex elata Tufted-sedge
Carex flacca Glaucous sedge
Carex hirta Hairy sedge
Carex hostiana Tawny sedge
Carex hostiana x C. viridula
Carex laevigata Smooth-stalked sedge
Carex lasiocarpa Slender sedge
Carex limosa Bog-sedge
Carex nigra Common sedge
Carex otrubae False fox-sedge
Carex otrubae x remota
Carex ovalis Oval sedge
Carex pallescens Pale sedge
Carex panicea Carnation sedge
Carex paniculata Greater tussock-sedge
Carex pendula Pendulous sedge
Carex pilulifera Pill Sedge
Carex pseudocyperus Cyperus sedge
Carex pulicaris Flea sedge
Carex remota Remote sedge
Carex riparia Greater pond-sedge
Carex rostrata Bottle sedge
Carex spicata Spiked sedge
Carex strigosa Thin-spiked wood-sedge
Carex sylvatica Wood-sedge
Carex vesicaria Bladder-sedge
Carex viridula subsp. brachyrrhyncha
Carex viridula subsp. oedocarpa
Carex viridula subsp. viridula
Carlina vulgaris Carline thistle
Carpinus betulus Hornbeam
Carum carvi Caraway
Castanea sativa Sweet chestnut
Catabrosa aquatica Whorl-grass
Catapodium rigidum Fern-grass
Centaurea nigra Common knapweed
Centaurea scabiosa Greater knapweed
Centaurium erythraea Common centaury
Centranthus ruber Red valerian
Cerastium diffusum Sea mouse-ear
Cerastium fontanum Common mouse-ear
Cerastium glomeratum Sticky mouse-ear
Cerastium tomentosum Snow-in-summer
Ceterach officinarum Rustyback
Chaenorhinum minus Small toadflax
Chaerophyllum temulum Rough chervil
Chelidonium majus Greater celandine
Chenopodium album agg. Fat-hen
Chenopodium bonus-henricus Good-King-Henry
Chenopodium rubrum Red goosefoot
Chrysanthemum segetum Corn marigold
Chrysosplenium oppositifolium Opposite-leaved golden-saxifrage
Cicerbita macrophylla Common blue-sow-thistle
Cichorium intybus Chicory
Circaea lutetiana Enchanter's-nightshade
Cirsium arvense Creeping thistle
Cirsium dissectum Meadow thistle
Cirsium dissectum x C. palustre
Cirsium palustre Marsh Thistle
Cirsium vulgare Spear Thistle
Cladium mariscus Great fen-sedge
Clematis vitalba Traveller's-joy
Clinopodium acinos Basil thyme
Coeloglossum viride Frog orchid
Conium maculatum Hemlock
Conopodium majus Pignut
Convolvulus arvensis Field bindweed
Conyza canadensis Canadian fleabane
Cornus sanguinea Dogwood
Corylus avellana Hazel
Cotoneaster horizontalis Wall cotoneaster
Cotoneaster microphyllus Small-leaved cotoneasters
Cotoneaster simonsii Himalayan cotoneaster
Crataegus laevigata x C. monogyna
Crataegus monogyna Hawthorn
Crepis biennis Rough Hawk's-beard
Crepis capillaris Smooth Hawk's-beard
Crepis paludosa Marsh Hawk's-beard
Crepis vesicaria Beaked Hawk's-beard
Crocosmia aurea x C. pottsii Montbretia
Cymbalaria muralis Ivy-leaved toadflax
Cynosurus cristatus Crested dog's-tail
Cytisus scoparius Broom
Dactylis glomerata Cock's-foot
Dactylorhiza fuchsii Common spotted-orchid
Dactylorhiza incarnata Early marsh-orchid
Dactylorhiza maculata Heath spotted-orchid
Dactylorhiza majalis Western marsh-orchid
Dactylorhiza traunsteineri Narrow-leaved marsh-orchid
Danthonia decumbens Heath-grass
Datura stramonium Thorn-apple
Daucus carota Wild carrot
Deschampsia cespitosa Tufted hair-grass
Deschampsia flexuosa Wavy hair-grass
Descurainia sophia Flixweed
Digitalis purpurea Foxglove
Diplotaxis muralis Annual wall-rocket
Draba muralis Wall whitlowgrass
Drosera anglica Great sundew
Drosera anglica x D. rotundifolia
Drosera intermedia Oblong-leaved sundew
Drosera rotundifolia Round-leaved sundew
Dryopteris aemula Hay-scented buckler-fern
Dryopteris affinis Scaly male-fern
Dryopteris carthusiana Narrow buckler-fern
Dryopteris dilatata Broad buckler-fern
Dryopteris filix-mas Male-fern
Eleocharis acicularis Needle Spike-rush
Eleocharis multicaulis Many-stalked Spike-rush
Eleocharis palustris Common Spike-rush
Eleocharis quinqueflora Few-flowered Spike-rush
Eleocharis uniglumis Slender spike-rush
Eleogiton fluitans Floating club-rush
Elodea canadensis Canadian waterweed
Elymus caninus Bearded couch
Elytrigia repens Common couch
Empetrum nigrum Crowberry
Epilobium angustifolium Rosebay willowherb
Epilobium brunnescens New Zealand willowherb
Epilobium ciliatum American willowherb
Epilobium hirsutum Great willowherb
Epilobium montanum Broad-leaved willowherb
Epilobium obscurum Short-fruited willowherb
Epilobium palustre Marsh willowherb

Epilobium parviflorum Hoary willowherb
Epipactis helleborine Broad-leaved helleborine
Epipactis palustris Marsh helleborine
Epipactis phyllanthes Green-flowered helleborine
Equisetum arvense Field horsetail
Equisetum arvense x E. fluviatile Shore horsetail
Equisetum fluviatile Water horsetail
Equisetum hyemale Rough horsetail
Equisetum palustre Marsh horsetail
Equisetum sylvaticum Wood horsetail
Equisetum telmateia Great horsetail
Equisetum variegatum Variegated horsetail
Erica cinerea Bell heather
Erica tetralix Cross-leaved heath
Erigeron acer Blue fleabane
Erigeron karvinskianus Mexican fleabane
Erinus alpinus Fairy foxglove
Eriophorum angustifolium Common cottongrass
Eriophorum gracile Slender cottongrass (1997)
Eriophorum latifolium Broad-leaved cottongrass
Eriophorum vaginatum Hare's-tail cottongrass
Erodium moschatum Musk stork's-bill
Erophila glabrescens Glabrous whitlowgrass
Erophila verna agg, Common whitlowgrasses
Erucastrum gallicum Hairy rocket
Erysimum cheiranthoides Treacle-mustard
Erysimum cheiri Wallflower
Euonymus europaeus Spindle
Eupatorium cannabinum Hemp-agrimony
Euphorbia cyparissias Cypress spurge
Euphorbia exigua Dwarf spurge
Euphorbia helioscopia Sun spurge
Euphorbia lathyris Caper spurge
Euphorbia peplus Petty spurge
Euphrasia arctica subsp. borealis
Euphrasia micrantha
Euphrasia nemorosa
Euphrasia officinalis Eyebrights
Euphrasia rostkoviana subsp.rostkoviana
Euphrasia scottica
Fagus sylvatica Beech
Fallopia convolvulus Black-bindweed
Fallopia japonica Japanese knotweed
Fallopia sachalinensis Giant knotweed
Festuca arundinacea Tall fescue
Festuca filiformis Fine-leaved sheep's-fescue
Festuca gigantea Giant fescue
Festuca ovina Sheep's-fescue
Festuca pratensis Meadow fescue
Festuca pratensis x Lolium perenne Hybrid fescue
Festuca rubra Red fescues
Filipendula ulmaria Meadowsweet
Foeniculum vulgare Fennel
Forsythia suspensa x F. viridissima Forsythia
Fragaria vesca Wild strawberry
Fragaria x ananassa Garden strawberry
Frangula alnus Alder buckthorn
Fraxinus excelsior Ash
Fuchsia magellanica Fuchsia
Fumaria bastardii Tall ramping-fumitory
Fumaria capreolata White ramping-fumitory
Fumaria muralis Common ramping-fumitory
Fumaria officinalis Common fumitory
Galanthus nivalis Snowdrop
Galeopsis angustifolia Red hemp-nettle (1991)
Galeopsis bifida Bifid hemp-nettle
Galeopsis speciosa Large-flowered hemp-nettle
Galeopsis tetrahit Common hemp-nettle
Galium aparine Cleavers
Galium mollugo Hedge bedstraw
Galium odoratum Woodruff
Galium palustre Common marsh-bedstraw
Galium saxatile Heath bedstraw
Galium uliginosum Fen bedstraw
Galium verum Lady's bedstraw
Gentianella amarella Autumn gentian
Gentianella campestris Field gentian
Geranium dissectum Cut-leaved crane's-bill
Geranium lucidum Shining crane's-bill
Geranium molle Dove's-foot crane's-bill
Geranium pratense Meadow crane's-bill
Geranium pyrenaicum Hedgerow crane's-bill
Geranium robertianum Herb-Robert
Geranium sanguineum Bloody crane's-bill
Geum rivale Water avens
Geum rivale x G. urbanum Hybrid avens
Geum urbanum Wood avens
Glechoma hederacea Ground-ivy
Glyceria declinata Small sweet-grass
Glyceria fluitans Floating sweet-grass
Glyceria fluitans x G. notata Hybrid sweet-grass
Glyceria maxima Reed sweet-grass
Glyceria notata Plicate sweet-grass
Gnaphalium sylvaticum Heath cudweed
Gnaphalium uliginosum Marsh cudweed
Groenlandia densa Opposite-leaved pondweed (1993)
Gymnadenia conopsea Fragrant orchid
Gymnadenia conopsea subsp. conopsea
Hedera helix Ivy
Helianthus annuus Sunflower
Helictotrichon pubescens Downy oat-grass
Heracleum mantegazzianum Giant hogweed
Heracleum sphondylium Hogweed
Hesperis matronalis Dame's-violet
Hieracium agg. Hawkweeds
Hippuris vulgaris Mare's-tail
Holcus lanatus Yorkshire-fog
Holcus mollis Creeping soft-grass
Hordeum secalinum Meadow barley (1998)
Humulus lupulus Hop
Huperzia selago Fir clubmoss
Hyacinthoides hispanica Spanish bluebell
Hyacinthoides non-scripta Bluebell
Hydrocharis morsus-ranae Frogbit
Hydrocotyle vulgaris Marsh pennywort
Hymenophyllum wilsonii Wilson's filmy-fern
Hyoscyamus niger Henbane
Hypericum androsaemum Tutsan
Hypericum humifusum Trailing St John's-wort
Hypericum maculatum Imperforate St John's-wort
Hypericum perforatum Perforate St John's-wort
Hypericum pulchrum Slender St John's-wort
Hypericum tetrapterum Square-stalked St John's-wort
Hypochaeris radicata Cat's-ear
Ilex aquifolium Holly
Impatiens glandulifera Indian balsam
Iris foetidissima Stinking iris
Iris pseudacorus Yellow iris
Isolepis setacea Bristle club-rush
Jasione montana Sheep's-bit
Juncus acutiflorus Sharp-flowered rush
Juncus articulatus Jointed rush

Juncus bulbosus Bulbous rush
Juncus conglomeratus Compact rush
Juncus effusus Soft-rush
Juncus effusus x J. inflexus
Juncus inflexus Hard rush
Juncus squarrosus Heath rush
Juncus subnodulosus Blunt-flowered rush
Juncus tenuis Slender rush
Juniperus communis Common juniper
Knautia arvensis Field scabious
Koeleria macrantha Crested hair-grass
Lamiastrum galeobdolon subsp. argentatu Yellow archangel
Lamium album White dead-nettle
Lamium amplexicaule Henbit dead-nettle
Lamium hybridum Cut-leaved dead-nettle
Lamium purpureum Red dead-nettle
Lapsana communis Nipplewort
Larix decidua European larch
Larix decidua x L. kaempferi Hybrid larch
Larix kaempferi Japanese larch
Lathraea squamaria Toothwort
Lathyrus linifolius Bitter-vetch
Lathyrus palustris Marsh pea
Lathyrus pratensis Meadow vetchling
Lemna gibba Fat duckweed
Lemna minor Common duckweed
Lemna trisulca Ivy-leaved duckweed
Lens culinaris Lentil
Leontodon autumnalis Autumn hawkbit
Leontodon hispidus Rough hawkbit
Leontodon saxatilis Lesser hawkbit
Leucanthemum vulgare Oxeye daisy
Leucojum aestivum Summer snowflake
Ligustrum ovalifolium Garden privet
Ligustrum vulgare Wild privet
Linaria purpurea Purple toadflax
Linaria vulgaris Common toadflax
Linum catharticum Fairy flax
Linum usitatissimum Flax
Listera cordata Lesser twayblade
Listera ovata Common twayblade
Lithospermum arvense Field gromwell
Lithospermum officinale Common gromwell
Littorella uniflora Shoreweed
Lolium multiflorum Italian rye-grass
Lolium multiflorum x L. perenne
Lolium perenne Perennial rye-grass
Lonicera nitida Wilson's honeysuckle
Lonicera periclymenum Honeysuckle
Lotus corniculatus Common bird's-foot-trefoil
Lotus pedunculatus Greater bird's-foot-trefoil
Luzula campestris Field wood-rush
Luzula multiflora Heath wood-rush
Luzula pilosa Hairy wood-rush
Luzula sylvatica Great wood-rush
Lychnis flos-cuculi Ragged-robin
Lycopersicon esculentum Tomato
Lycopodiella inundata Marsh clubmoss (c.1988)
Lycopodium clavatum Stag's-horn clubmoss
Lycopus europaeus Gipsywort
Lysimachia nemorum Yellow pimpernel
Lysimachia nummularia Creeping-Jenny
Lysimachia vulgaris Yellow loosestrife
Lythrum portula Water-purslane
Lythrum salicaria Purple-loosestrife
Malus sylvestris Apples
Malva sylvestris Common mallow
Matricaria discoidea Pineappleweed
Meconopsis cambrica Welsh poppy
Medicago lupulina Black medick
Melampyrum pratense Common cow-wheat
Melica uniflora Wood melick
Melissa officinalis Balm
Mentha aquatica Water mint
Mentha aquatica x M. arvensis Whorled mint
Mentha aquatica x M. spicata Peppermint
Mentha arvensis Corn mint
Mentha arvensis x M. spicata Bushy mint
Mentha spicata Spear mint
Mentha suaveolens Round-leaved mint
Menyanthes trifoliata Bogbean
Mercurialis perennis Dog's mercury
Milium effusum Wood millet
Minuartia hybrida Fine-leaved sandwort
Moehringia trinervia Three-nerved sandwort
Molinia caerulea Purple moor-grass
Monotropa hypopitys Yellow bird's-nest
Montia fontana Blinks
Mycelis muralis Wall lettuce
Myosotis arvensis Field forget-me-not
Myosotis discolor Changing forget-me-not
Myosotis laxa Tufted forget-me-not
Myosotis scorpioides Water forget-me-not
Myosotis secunda Creeping forget-me-not
Myrica gale Bog-myrtle
Myriophyllum alterniflorum Alternate water-milfoil
Myriophyllum spicatum Spiked water-milfoil
Myriophyllum verticillatum Whorled water-milfoil
Nardus stricta Mat-grass
Narthecium ossifragum Bog asphodel
Neotinea maculata Dense-flowered orchid
Neottia nidus-avis Bird's-nest orchid
Nuphar lutea Yellow water-lily
Nymphaea alba White water-lily
Odontites vernus Red bartsia
Oenanthe aquatica Fine-leaved water-dropwort
Oenanthe crocata Hemlock water-dropwort
Oenanthe fistulosa Tubular water-dropwort
Oenanthe fluviatilis River water-dropwort
Oenothera glazioviana Large-flowered evening-primrose
Omalotheca sylvatica Heath cudweed (1900)
Ononis repens Common restharrow
Ophioglossum vulgatum Adder's-tongue
Ophrys apifera Bee orchid
Ophrys insectifera Fly orchid
Orchis mascula Early-purple orchid
Orchis morio Green-winged orchid
Oreopteris limbosperma Lemon-scented fern
Origanum vulgare Wild marjoram
Orobanche hederae Ivy broomrape
Orobanche minor Common broomrape
Orthilia secunda Serrated wintergreen
Osmunda regalis Royal vern
Oxalis acetosella Wood-sorrel
Papaver argemone Prickly poppy
Papaver dubium Long-headed poppy
Papaver dubium subsp. dubium
Papaver dubium subsp. lecoqii
Papaver hybridum Rough poppy (1900)
Papaver rhoeas Common poppy

Papaver somniferum Opium poppy
Parietaria judaica Pellitory-of-the-wall
Parnassia palustris Grass-of-Parnassus
Pastinaca sativa Wild parsnip
Pedicularis palustris Marsh lousewort
Pedicularis sylvatica Lousewort
Pentaglottis sempervirens Green alkanet
Persicaria amphibia Amphibious bistort
Persicaria hydropiper Water-pepper
Persicaria lapathifolia Pale persicaria
Persicaria maculosa Redshank
Persicaria minor Small Water-pepper
Petasites fragrans Winter heliotrope
Petasites hybridus Butterbur
Petroselinum crispum Garden parsley
Phalaris arundinacea Reed canary-grass
Phegopteris connectilis Beech fern
Phleum bertolonii Smaller cat's-tail
Phleum pratense Timothy
Phragmites australis Common reed
Phyllitis scolopendrium Hart's-tongue
Picea abies Norway spruce
Picea sitchensis Sitka spruce
Picris hieracioides Hawkweed oxtongue
Pilosella officinarum Mouse-ear-hawkweed
Pimpinella saxifraga Burnet-saxifrage
Pinguicula lusitanica Pale vutterwort
Pinguicula vulgaris Common vutterwort
Pinus contorta Lodgepole pine
Pinus sylvestris Scots pine
Plantago lanceolata Ribwort plantain
Plantago major Greater plantain
Plantago media Hoary plantain
Platanthera bifolia Lesser butterfly-orchid
Platanthera chlorantha Greater butterfly-orchid
Poa annua Annual meadow-grass
Poa compressa Flattened meadow-grass
Poa humilis Spreading meadow-grass
Poa nemoralis Wood meadow-grass
Poa pratensis Smooth meadow-grass
Poa trivialis Rough meadow-grass
Polygala serpyllifolia Heath milkwort
Polygala vulgaris Common milkwort
Polygonum arenastrum Equal-leaved knotgrass
Polygonum aviculare Knotgrass
Polypodium cambricum Southern polypody
Polypodium interjectum Intermediate polypody
Polypodium vulgare Polypody
Polystichum aculeatum Hard shield-fern
Polystichum setiferum Soft shield-fern
Populus alba White poplar
Populus alba x P. tremula Grey poplar
Populus deltoides x P. nigra Hybrid black-poplar
Populus nigra subsp. betulifolia Black-poplar
Populus tremula Aspen
Potamogeton alpinus Red pondweed
Potamogeton berchtoldii Small pondweed
Potamogeton coloratus Fen pondweed
Potamogeton crispus Curled pondweed
Potamogeton friesii Flat-stalked pondweed
Potamogeton gramineus Various-leaved pondweed
Potamogeton gramineus x P. lucens Long-leaved pondweed
Potamogeton gramineus x P. perfoliatus Bright-leaved Pondweed
Potamogeton lucens Shining pondweed
Potamogeton natans Broad-leaved pondweed
Potamogeton obtusifolius Blunt-leaved pondweed
Potamogeton pectinatus Fennel pondweed
Potamogeton perfoliatus Perfoliate pondweed
Potamogeton polygonifolius Bog pondweed
Potentilla anglica Trailing tormentil
Potentilla anglica x P. reptans & P. e. Hybrid cinquefoils
Potentilla anserina Silverweed
Potentilla erecta Tormentil
Potentilla palustris Marsh cinquefoil
Potentilla reptans Creeping cinquefoil
Potentilla sterilis Barren strawberry
Primula veris Cowslip
Primula veris x P. vulgaris
Primula vulgaris Primrose
Prunella vulgaris Selfheal
Prunus avium Wild cherry
Prunus cerasus Dwarf cherry
Prunus domestica Wild plum
Prunus laurocerasus Cherry laurel
Prunus padus Bird cherry
Prunus spinosa Blackthorn
Pseudorchis albida Small-white orchid
Pseudotsuga menziesii Douglas fir
Pteridium aquilinum Bracken
Pulicaria dysenterica Common fleabane
Pyrola minor Common wintergreen
Pyrola rotundifolia Round-leaved wintergreen
Quercus petraea Sessile oak
Quercus petraea x Q. robur
Quercus robur Pedunculate oak
Ranunculus acris Meadow buttercup
Ranunculus aquatilis Common water-crowfoot
Ranunculus auricomus Goldilocks buttercup
Ranunculus bulbosus Bulbous buttercup
Ranunculus circinatus Fan-leaved water-crowfoot
Ranunculus ficaria Lesser celandine
Ranunculus ficaria subsp. bulbilifer
Ranunculus ficaria subsp. ficaria
Ranunculus flammula Lesser spearwort
Ranunculus hederaceus Ivy-leaved crowfoot
Ranunculus lingua Greater spearwort
Ranunculus peltatus Pond water-crowfoot
Ranunculus penicillatus Stream water-crowfoot
Ranunculus penicillatus subsp. penicil.
Ranunculus repens Creeping buttercup
Ranunculus sceleratus Celery-leaved buttercup
Ranunculus trichophyllus Thread-leaved water-crowfoot
Raphanus raphanistrum subsp.raphanistrum Wild radish
Reseda lutea Wild mignonette
Reseda luteola Weld
Rhamnus cathartica Buckthorn
Rhinanthus minor Yellow-rattle
Rhododendron ponticum Rhododendron
Rhynchospora alba White beak-sedge
Rhynchospora fusca Brown beak-sedge
Ribes nigrum Black currant
Ribes rubrum Red currant
Ribes sanguineum Flowering currant
Ribes uva-crispa Gooseberry
Rorippa amphibia Great yellow-cress
Rorippa amphibia x R. sylvestris Hybrid yellow-cress
Rorippa microphylla Narrow-fruited water-cress
Rorippa microphylla x R. nasturtium-aq. Hybrid water-cress
Rorippa nasturtium-aquaticum Water-cress

Rorippa palustris Marsh yellow-cress
Rorippa sylvestris Creeping yellow-cress
Rosa agrestis Small-leaved sweet-briar
Rosa arvensis Field-rose
Rosa arvensis x R. canina
Rosa caesia x R. canina (R. x dumalis)
Rosa canina Dog-rose
Rosa canina x R. obtusifolia
Rosa canina x R. sherardii
Rosa canina x R. stylosa
Rosa canina x Rosa tormentosa
Rosa pimpinellifolia Burnet rose
Rosa rubiginosa Sweet-briar
Rosa sherardii Sherard's downy-rose
Rosa stylosa Short-styled field-rose
Rosa tomentosa Harsh downy-rose
Rubia peregrina Wild madder
Rubus caesius Dewberry
Rubus fruticosus Bramble
Rubus idaeus Raspberry
Rubus saxatilis Stone bramble
Rumex acetosa Common sorrel
Rumex acetosella Sheep's sorrel
Rumex conglomeratus Clustered dock
Rumex crispus Curled dock
Rumex hydrolapathum Water dock
Rumex obtusifolius Broad-leaved dock
Rumex sanguineus Wood dock
Sagina apetala Annual pearlwort
Sagina apetala subsp. erecta
Sagina nodosa Knotted pearlwort
Sagina procumbens Procumbent pearlwort
Sagittaria sagittifolia Arrowhead
Salix alba White willow
Salix aurita Eared willow
Salix aurita x S. repens
Salix caprea Goat willow
Salix caprea x S. cinerea
Salix caprea x S. viminalis Broad-leaved osier
Salix cinerea Grey willow
Salix cinerea subsp. oleifolia
Salix fragilis Crack-willow
Salix pentandra Bay willow
Salix purpurea Purple willow
Salix repens Creeping willow
Salix triandra Almond willow
Salix viminalis Osier
Sambucus ebulus Dwarf elder
Sambucus nigra Elder
Samolus valerandi Brookweed
Sanguisorba minor subsp. minor Salad burnet
Sanicula europaea Sanicle
Saponaria officinalis Soapwort
Sarracenia purpurea Pitcher plant
Saxifraga hirculus Marsh saxifrage (1866)
Saxifraga spathularis x S. umbrosa Londonpride
Saxifraga tridactylites Rue-leaved saxifrage
Scandix pecten-veneris Shepherd's-needle
Scheuchzeria palustris Rannoch-rush (extinct)
Schoenoplectus lacustris Common club-rush
Schoenoplectus tabernaemontani Grey club-rush
Schoenus nigricans Black bog-rush
Scirpus sylvaticus Wood club-rush
Scrophularia auriculata Water figwort
Scrophularia nodosa Common figwort
Scutellaria galericulata Skullcap
Sedum acre Biting stonecrop
Sedum album White stonecrop
Sedum rupestre Reflexed stonecrop
Selaginella selaginoides Lesser clubmoss
Sempervivum tectorum House-leek
Senecio aquaticus Marsh ragwort
Senecio aquaticus x S. jacobaea
Senecio jacobaea Common ragwort
Senecio sylvaticus Heath groundsel
Senecio viscosus Sticky groundsel
Senecio vulgaris Groundsel
Sesleria caerulea Blue moor-grass
Setaria viridis Green bristle-grass
Sherardia arvensis Field madder
Silene dioica Red campion
Silene dioica x S. latifolia
Silene latifolia White campion
Silene vulgaris Bladder campion
Sinapis alba White mustard
Sinapis arvensis Charlock
Sisymbrium altissimum Tall rocket
Sisymbrium officinale Hedge mustard
Sisymbrium orientale Eastern rocket
Sium latifolium Greater water-parsnip
Smyrnium olusatrum Alexanders
Solanum dulcamara Bittersweet
Solanum nigrum Black nightshade
Solanum tuberosum Potato
Soleirolia soleirolii Mind-your-own-business
Solidago virgaurea Goldenrod
Sonchus arvensis Perennial sow-thistle
Sonchus asper Prickly sow-thistle
Sonchus oleraceus Smooth sow-thistle
Sorbus aucuparia Rowan
Sorbus hibernica Irish whitebeam
Sparganium emersum Unbranched bur-reed
Sparganium erectum Branched bur-reed
Sparganium natans Least bur-reed
Spergularia rubra Sand spurrey
Spiranthes spiralis Autumn lady's-tresses
Spirodela polyrhiza Greater duckweed
Stachys arvensis Field woundwort
Stachys palustris Marsh woundwort
Stachys palustris x S. sylvatica Hybrid woundwort
Stachys sylvatica Hedge woundwort
Stellaria graminea Lesser stitchwort
Stellaria holostea Greater stitchwort
Stellaria media Common chickweed
Stellaria palustris Marsh stitchwort
Stellaria uliginosa Bog stitchwort
Succisa pratensis Devil's-bit scabious
Symphoricarpos albus Snowberry
Symphytum asperum x S. officinale Russian comfrey
Symphytum officinale Common comfrey
Syringa vulgaris Lilac
Tanacetum parthenium Feverfew
Tanacetum vulgare Tansy
Taraxacum agg. Dandelions
Taxus baccata Yew
Teucrium scorodonia Wood sage
Thalictrum flavum Common meadow-rue
Thlaspi arvense Field penny-cress
Thymus polytrichus Wild thyme
Tilia cordata x T. platyphyllos Lime
Tilia platyphyllos Large-leaved lime
Torilis japonica Upright hedge-parsley

Torilis nodosa Knotted hedge-parsley
Tragopogon pratensis Goat's-beard
Trichophorum cespitosum Deergrass
Trifolium campestre Hop trefoil
Trifolium dubium Lesser trefoil
Trifolium hybridum Alsike clover
Trifolium medium Zigzag clover
Trifolium pratense Red clover
Trifolium repens White clover
Triglochin palustre Marsh arrowgrass
Tripleurospermum inodorum Scentless mayweed
Trisetum flavescens Yellow oat-grass
Triticum aestivum Bread wheat
Tussilago farfara Colt's-foot
Typha angustifolia Lesser bulrush
Typha latifolia Bulrush
Ulex europaeus Gorse
Ulex gallii Western gorse
Ulmus glabra Wych elm
Ulmus minor Ulmus minor
Ulmus procera English elm
Umbilicus rupestris Navelwort
Urtica dioica Common nettle
Urtica urens Small nettle
Utricularia intermedia Intermediate bladderwort
Utricularia minor Lesser bladderwort
Utricularia vulgaris Greater bladderwort
Vaccinium myrtillus Bilberry
Vaccinium oxycoccos Cranberry
Valeriana officinalis Common valerian
Valerianella carinata Keeled-fruited cornsalad
Valerianella dentata Narrow-fruited cornsalad
Valerianella locusta Common cornsalad
Valerianella rimosa Broad-fruited cornsalad
Verbascum thapsus Great mullein
Verbena officinalis Vervain
Veronica agrestis Green field-speedwell
Veronica anagallis-aquatica Blue water-speedwell
Veronica arvensis Wall speedwell
Veronica beccabunga Brooklime
Veronica catenata Pink water-speedwell
Veronica chamaedrys Germander speedwell
Veronica filiformis Slender speedwell
Veronica hederifolia Ivy-leaved speedwell
Veronica montana Wood speedwell
Veronica officinalis Heath speedwell
Veronica persica Common field-speedwell
Veronica polita Grey field-speedwell
Veronica scutellata Marsh speedwell
Veronica serpyllifolia Thyme-leaved speedwell
Viburnum lantana Wayfaring-tree
Viburnum opulus Guelder-rose
Vicia cracca Tufted vetch
Vicia faba Broad bean
Vicia hirsuta Hairy tare
Vicia orobus Wood bitter-vetch (1836)
Vicia sativa Common vetch
Vicia sativa subsp. nigra
Vicia sativa subsp. sativa
Vicia sepium Bush vetch
Vicia sylvatica Wood vetch
Vinca major Greater periwinkle
Vinca minor Lesser periwinkle
Viola arvensis Field pansy
Viola canina Heath dog-violet
Viola odorata Sweet violet
Viola palustris Marsh violet
Viola reichenbachiana Early dog-violet
Viola reichenbachiana x V. riviniana
Viola riviniana Common Dog-violet
Vulpia bromoides Squirreltail fescue
Vulpia myuros Rat's-tail fescue
Zannichellia palustris Horned pondweed

[1] Compiled by Fiona Devery.

PLANTS WITHOUT FLOWERS

Bryophytes

We know a great deal about the distribution of vascular plants (flowering plants, ferns, horsetails and club-mosses: those plants which have sophisticated systems for transporting water and nutrients in solution, and are therefore able to grow large and conspicuous), but much less about the smaller, non-vascular plants and plant-like organisms. On land the most widespread non-vascular plants are mosses and their less familiar relatives the liverworts, collectively known as bryophytes. With one great exception these plants have little direct influence upon human affairs, so we tend not to notice or pay much attention to them. The exception is the bog-mosses that belong to the genus *Sphagnum*, which once dominated the great

Marchantia polymorpha

raised bogs of the county and are the main constituent of moss peat. The leaves of sphagnum mosses have an extraordinary water-holding capacity, and this is one of the things that enables them to be the dominant plants of bogs.

The sphagnum mosses have been greatly affected by our activities, especially over the past sixty years or so, during which the industrial exploitation of the raised bogs has been widespread. Most of the large bogs are now nearing the end of their commercial phase, and many bryophytes are becoming re-established on the cutaway, including various species of *Sphagnum*. We should make every effort to support this modest recovery of lost territory.

***Sphagnum* moss**

Sphagnum mosses are not as important a constituent of blanket bog, but in certain situations they are very luxuriant and prolific. The area occupied by sphagnum mosses in Slieve Bloom has been greatly reduced by afforestation, but they still thrive on steeper, unplanted slopes and beside forest tracks. They deserve to be noticed and considered during forestry operations, and in the designation and management of the 15% of forest property set aside for biodiversity value.

What we know about Offaly's mosses and liverworts

Although the great botanical explorer Lloyd Praeger described Slieve Bloom as 'very poor in mountain plants', the glens that radiate from their heart are very rich in mosses and liverworts, but still relatively unknown. A tiny hawthorn twig plucked late one afternoon in January 2006 of the glens – almost at random, because a liverwort on it looked interesting, but it was too dark to see clearly! – turned out to have *three* rare bryophytes never seen in Laois before (unfortunately this was in Gorteenameale, a stone's throw over the border!): the liverworts *Metzgeria fruticulosa* and *Colura calyptrifolia*, and the moss *Daltonia splachnoides*.

In spite of the limited amount of work that has been carried out we do have an impressive county list for Offaly, numbering 718 species so far: but much work remains to be done on these wonderful plants.

The bryophytes of Offaly[1]

Liverworts

Aneura pinguis
Blasia pusilla
Calypogeia arguta
Calypogeia fissa
Calypogeia muelleriana
Cephalozia bicuspidata
Cephalozia catenulata
Cephalozia connivens
Cephalozia lunulifolia
Cephaloziella hampeana
Chiloscyphus polyanthos
Cladopodiella fluitans
Cololejeunea minutissima
Conocephalum conicum
Diplophyllum albicans
Frullania dilatata
Frullania tamarisci
Frullania teneriffae
Gymnocolea inflata
Kurzia pauciflora
Leiocolea badensis
Lejeunea cavifolia
Lepidozia reptans
Lophocolea bidentata
Lophozia incisa
Lophozia ventricosa
Lunularia cruciata
Marchantia polymorpha
Metzgeria conjugata
Metzgeria fruticulosa
Metzgeria furcata
Microlejeunea ulicina
Moerckia hibernica
Mylia anomala
Mylia taylorii
Nardia scalaris
Nowellia curvifolia
Odontoschisma denudatum
Odontoschisma sphagni
Pellia endivifolia
Pellia epiphylla
Plagiochila asplenioides
Plagiochila porelloides
Pleurozia purpurea
Porella obtusata
Porella platyphylla
Preissia quadrata
Radula complanata
Riccardia latifrons
Riccardia multifida
Riccardia palmata
Saccogyna viticulosa
Scapania aspera
Scapania gracilis
Trichocolea tomentalla

Mosses

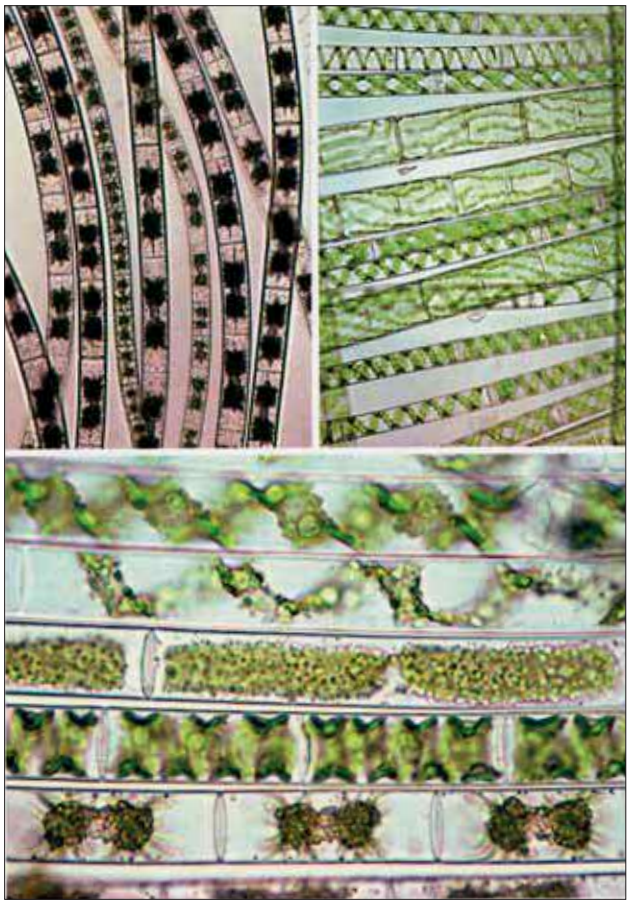
Aloina aloides Common aloe-moss
Anomodon viticulosus Rambling tail-moss
Atrichum undulatum Common smoothcap
Aulacomnium androgynum Bud-headed groove-moss
Aulacomnium palustre Bog groove-moss
Barbula convoluta Lesser Bird's-claw beard-moss
Bryum algovicum Drooping thread-moss
Bryum argenteum Silver-moss
Bryum bicolor Bicoloured bryum
Bryum capillare Capillary thread-moss
Bryum klinggraeffii Raspberry bryum
Bryum pallens Pale thread-moss
Bryum pseudotriquetrum Marsh bryum
Bryum rubens Crimson-tuber thread-moss
Bryum ruderale Pea bryum
Bryum uliginosum Cernuous thread-moss
Bryum violaceum Pill bryum
Campylopus fragilis Brittle swan-neck moss
Campylopus introflexus Heath star moss
Campylopus pyriformis Dwarf swan-neck moss
Ceratodon purpureus Redshank
Climacium dendroides Tree-moss
Cratoneuron filicinum Fern-leaved hook-moss
Cryphaea heteromalla Lateral cryphaea
Dichodontium pellucidum Transparent fork-moss
Dicranella cerviculata Red-neck forklet-moss
Dicranella palustris Marsh forklet-moss
Dicranella schreberiana Schreber's forklet-moss
Dicranella staphylina Field forklet-moss
Dicranella varia Variable forklet-moss
Dicranum bergeri (only Irish record: Pollagh bog 1957).
Waved Fork-moss
Dicranum bonjeani Crisped fork-moss
Dicranum scoparium Broom fork-moss
Didymodon acutus Pointed beard-moss
Didymodon fallax Fallacious beard-moss
Didymodon insulanus Cylindric beard-moss
Didymodon rigidulus Rigid beard-moss
Didymodon vinealis Soft-tufted beard-moss
Ditrichum gracile Slender ditrichum
Encalyptra vulgaris Common extinguisher-moss
Ephemerum serratum (/*minutissimum*) Serrated (Minute) earth-moss
Eucladium verticillatum Whorled tufa-moss
Fissidens adianthoides Maidenhair pocket-moss
Fissidens dubius Rock pocket-moss
Fissidens incurvus Short-leaved pocket-moss
Fissidens osmundoides Purple-stalked pocket- moss
Fissidens taxifolius Common pocket-moss
Fissidens viridulus Green pocket-moss
Fontinalis antipyretica Greater water-moss
Funaria hygrometrica Common cord-moss
Grimmia pulvinata Grey-cushioned grimmia
Grimmia trichophylla Hair-pointed grimmia
Homalia trichomanoides Blunt feather-moss
Leptobryum pyriforme Golden thread-moss
Leucobryum glaucum
Leucodon sciuroides Squirrel-tail moss
Mnium hornum Swan's-neck thyme-moss
Neckera crispa Crisped neckera
Neckera pumila Dwarf neckera
Orthotrichum anomalum Anomalous bristle-moss
Orthotrichum diaphanum White-tipped bristle-moss
Orthotrichum lyellii Lyell's bristle-moss
Palustriella commutata Curled hook-moss
Philonotis calcarea Thick-nerved apple-moss
Physcomitrium pyriforme Common bladder-moss
Plagiomnium elatum Tall thyme-moss
Plagiomnium rostratum Long-beaked thyme-moss
Plagiomnium undulatum Hart's-tongue thyme-moss
Pohlia melanodon Pink-fruited thread-moss
Pohlia nutans Nodding thread-moss
Pohlia wahlenbergii Pale glaucous thread-moss
Polytrichum commune Common haircap
Polytrichum formosum Bank haircap
Polytrichum juniperinum Juniper haircap
Polytrichum longisetum Slender haircap
Polytrichum strictum Strict haircap
Racomitrium aquaticum Narrow-leaved fringe-moss
Racomitrium ericoides Dense fringe-moss
Racomitrium lanuginosum Woolly fringe-moss
Rhizomnium punctatum Dotted thyme-moss
Rhodobryum roseum Rose-moss
Schistidium apocarpum agg.
Schistidium crassipilum Thickpoint grimmia
Schistidium strictum Upright Brown grimmia
Seligeria pusilla Dwarf rock-bristle
Sphagnum austinii Austin's bog-moss
Sphagnum capillifolium Red bog-moss
Sphagnum cuspidatum Feathery bog-moss
Sphagnum denticulatum Cow-horn bog-moss
Sphagnum fallax Flat-topped bog-moss
Sphagnum fimbriatum Fringed bog-moss
Sphagnum fuscum Rusty bog-moss
Sphagnum inundatum Lesser Cow-horn bog-moss
Sphagnum palustre Blunt-leaved bog-moss
Sphagnum papillosum Papillose bog-moss
Sphagnum squarrosum Spiky bog-moss
Sphagnum subnitens Lustrous bog-moss
Sphagnum subsecundum Slender cow-horn bog-moss
Sphagnum tenellum Soft bog-moss
Syntrichia intermedia Intermediate screw-moss
Syntrichia laevipila Small hairy screw-moss
Syntrichia papillosa Marble screw-moss
Syntrichia ruralis Great hairy screw-moss
Tetraphis pellucida Pellucid four-tooth moss
Tetraplodon angustatus (only Irish record) Narrow cruet-moss (protected by law)
Thamnobryum alopecurum Fox-tail feather-moss
Thuidium delicatulum Delicate tamarisk-moss
Thuidium tamariscinum Common tamarisk-moss
Tortella tortuosa Frizzled crisp-moss
Tortula acaulon Cuspidate earth-moss
Tortula modica Blunt-fruited pottia
Tortula muralis Wall screw-moss
Trichostomum crispulum Curly crisp-moss
Ulota bruchii Bruch's pincushion
Ulota calvescens Balding pincushion
Ulota crispa Crisped pincushion
Weissia condensa Curly beardless-moss
Weissia controversa Green-tufted stubble-moss
Zygodon conoideus Lesser yoke-moss

[1] Extracted from *The Distribution of Bryophytes in Ireland* (2003), compiled by D.T. Holyoak (Broadleaf Books).

Algae and others

The term algae encompasses a diverse assemblage of phyla, the most familiar of which are the various seaweeds and the green 'stuff' often seen in stagnant ponds and ditches. Many others comprise predominantly single-celled organisms, and as with every other group of such creatures their small size should not blind us to their great complexity and variety. Even the most widespread and abundant kinds are hardly ever noticed. These include a number of species of green thread algae (phylum Chlorophyta) such as the *Spirogyra* found in bog pools and old drains throughout the county. They are not much to look at with the unaided eye: *Spirogyra* is like a slimy mass of very fine hair, but under the microscope algae are plants of great beauty: for plants is what they are, and indeed the ancestors of all other plants lie somewhere among the green algae of the Palaeozoic earth. *Cladophora* is one type of green alga that has become much more abundant as a result of the eutrophication of surface waters that has been a feature of the last half century.

It will be no surprise to learn that apart from casual observations, and occasional lists from a few habitats, we know virtually nothing about the status of algae in Offaly. Here is yet another universe of life awaiting exploration.



Different species of green algae

KINGDOM FUNGI

Fungi are everywhere, but we usually only notice them when they produce their spore-producing fruit bodies (*sporocarps*). They play enormously important roles in the economy of nature. Without the work of the saprobic fungi that break down the tissues of dead plants nutrient recycling would come to an end and everything would simply pile up. A number of fungi cause diseases, especially of plants, including many cultivated plants.

Bread moulds

Fungi are assigned to a separate kingdom, and comprise three phyla. **Zygomycota** are mould-like fungi, with some 1,100 described species. The **Basidiomycota**, of which there are 22,500 described species include mushrooms and toadstools, puffballs, jelly fungi and stinkhorns, as well as rusts and smuts. Many of the basidiomycetes form mutually beneficial associations with plants (*ectomycorrhiza*) which are vitally important to their nutrient economy. The **Ascomycota** comprise 30,000 species, of which some 13,500 are **lichens** (see below).

The list of fungi recorded for Offaly is surprisingly long. One reason for this is that in September 1989 the British Mycological Society held its annual Autumn Foray in the midlands, and visited several sites in the county. This shows just how much remains to be found once we start to look carefully – and this is as true of most other groups of plants and animals as it is of fungi.

***Sarcoscypha austriaca* - Scarlet elf cup**

The Fungi Of Offaly[1]

Kingdom Fungi (Mycota)
Phylum Basidiomycota
Basidiomycetes: Agaricales

Agaricus augustus The prince
Agaricus campestris Field mushroom
Agaricus fuscofibrillosus
Agaricus langei Scaly wood mushroom
Agaricus silvaticus Blushing wood mushroom
Agaricus silvicola Wood mushroom
Agaricus urinascens var. excellens Macro mushroom
Amanita ceciliae Snakeskin grisette
Amanita crocea Orange grisette
Aminita fulva Tawny grisette
Amanita muscaria Fly agaric
Amanita pantherina Panthercap
Amanita phalloides Deathcap
Amanita rubescens Blusher
Amanita strobiliformis Warted amanita
Armillaria gallica Bulbous honey fungus
Armillaria mellea Honey fungus
Arrhenia onisca
Arrhenia retiruga
Arrhenia rustica
Arrhenia sphagnicola
Bolbitius titubans
Calocybe carnea
Pink Domecap
Clitocybe gibba Common funnel
Clitocybe odora Aniseed funnel
Clitopilus prunulus The miller
Collybia butyracea Butter cap
Collybia confluens Clustered toughshank
Collybia distorta
Collybia dryophila Russet toughshank
Collybia erythropus Redleg toughshank
Collybia fusipes Spindle toughshank
Collybia maculata Spotted toughshank
Collybia peronata Wood woolyfoot
Collybia racemosa Branched shanklet
Conocybe apala
Conocybe subovalis
Conocybe vexans
Coprinus acuminatus Humpback inkcap
Coprinus atramentarius Common inkcap
Coprinus comatus Shaggy inkcap
Coprinus disseminatus Fairy inkcap
Coprinus heptemerus
Coprinus hiascens
Coprinus lagopus Hare's Foot inkcap
Coprinus micaceus Glistening inkcap
Coprinus narcoticus
Coprinus subdisseminatus
Cystoderma amianthinum Earthy powdercap
Cystoderma jasonis
Cystolepiota bucknallii Lilac dapperling
Cystolepiota seminuda
Entoloma chalybaeum var. lazulinum Indigo pinkgill
Entoloma conferendum Star pinkgill
Entoloma corvinum
Entoloma elodes
Entoloma formosum
Entoloma fuscomarginatum
Entoloma incanum Mousepee pinkgill
Entoloma longistriatum var. sarcitulum
Entoloma nausiosme
Entoloma pallens
Entoloma porphyrophaeum Lilac pinkgill
Entoloma rhodopolium Wood pinkgill
Entoloma sericellum Cream pinkgill
Entoloma sericeum Silky pinkgill
Entoloma serrulatum Blue edge pinkgill
Entoloma sinuatum Livid pinkgill
Flammulina velutipes Velvet shank
Hemimycena cucullata
Hemimycena tortuosa Dewdrop bonnet
Hygrocybe cantharellus Goblet waxcap
Hygrocybe chlorophana Golden waxcap
Hygrocybe coccinea Scarlet waxcap
Hygrocybe colemanniana Toasted waxcap
Hygrocybe conica Blackening waxcap
Hygrocybe insipida Spangle waxcap
Hygrocybe intermedia Fibrous waxcap
Hygrocybe miniata Vermilion waxcap
Hygrocybe mucronella Bitter waxcap
Hygrocybe nitrata Nitrous waxcap
Hygrocybe persistens Persistent waxcap
Hygrocybe psittacina Parrot waxcap
Hygrocybe quieta Oily waxcap
Hygrocybe virginea var. fuscescens Snowy waxcap
Hygrocybe virginea var. ochraceopallida Snowy waxcap
Hygrocybe virginea Snowy waxcap
Hypholoma elongatum Sphagnum brownie
Hypholoma fasciculare Sulphur tuft
Hypholoma marginatum Snakeskin brownie
Hypholoma myosotis Olive brownie
Hypholoma udum Peat brownie
Kuehneromyces mutabilis Sheated woodtuft
Laccaria amethystina Amethyst deceiver
Laccaria bicolor Bicoloured deceiver
Laccaria laccata Deceiver
Laccaria proxima Scurfy deceiver
Lachnella villosa
Lacrymaria lacrymabunda Weeping widow
Lacrymaria pyrotricha
Lepiota boudieri Girdled dapperling
Lepiota castanea Chestnut dappereling
Lepiota cristata Stinking dapperling
Lepista sordida
Lichenomphalia hudsoniana
Lichenomphalia umbellifera
Limacella guttata
Lyophyllum decastes Clustered domecap
Macrocystidia cucumis Cucumber cap
Macrolepiota procera Parasol
Macrolepiota rhacodes Shaggy parasol
Marasmiellus ramealis Twig parachute
Marasmius androsaceus Horsehair parachute
Marasmius cohaerens
Marasmius epiphylloides
Marasmius rotula Collared parachute
Megacollybia platyphylla Whitelaced shank
Melanoleuca melaleuca
Melanoleuca polioleuca Common cavalier
Melanoleuca strictipes
Melanotus phillipsii
Mycena acicula Orange bonnet
Mycena adonis Scarlet bonnet
Mycena adscendens Frosty bonnet
Mycena aetites Drab bonnet
Mycena amicta
Mycena arcangeliana Angel's bonnet

Mycena bulbosa
Mycena filopes Iodine bonnet
Mycena galericulata Common bonnet
Mycena galopus Milking bonnet
Mycena galopus var. nigra Black milking bonnet
Mycena haematopus Burgandydrop bonnet
Mycena inclinata Clustered bonnet
Mycena megaspora
Mycena olida Rancid bonnet
Mycena polygramma Grooved bonnet
Mycena pura Lilac bonnet
Mycena sanguinolenta Bleeding bonnet
Mycena speirea Bark bonnet
Mycena vitilis Snapping bonnet
Mycenella bryophila/margaritispora
Oudemansiella mucida Porcelain fungus
Panaeolus acuminatus Dewdrop mottlegill
Panaeolus semiovatus Egghead mottlegill
Pholiota flammans Flaming scalycap
Pholiota squarrosa Shaggy scalycap
Pleurocybella porrigens Angel's wings
Pluteus atromarginatus
Pluteus cervinus Deer shield
Pluteus cinereofuscus
Pluteus ephebeus
Pluteus romellii Goldleaf shield
Pluteus salicinus Willow shield
Pluteus umbrosus Velvet shield
Psathyrella candolleana Pale brittlestem
Psathyrella conopilus Conical brittlestem
Psathyrella corrugis Red Edge brittlestem
Psathyrella piluliformis Common stump brittlestem
Psathyrella pseudogracilis
Psathyrella spadicea Chestnut brittlestem
Psathyrella spadiceogrisea Spring brittlestem
Psathyrella sphagnicola
Psilocybe crobula
Psilocybe semilanceata Magic mushroom/ liberty cap
Rickenella fibula Orange mosscap
Stropharia caerulea Blue roundhead
Stropharia semiglobata Dung roundhead
Tricholoma album White knight
Tricholoma fulvum Birch knight
Tricholoma imbricatum Matt knight
Tricholoma lascivum Aromatic knight
Tricholoma sulphureum Sulphur knight
Tricholomopsis rutilans Plums and custard
Xerula pudens
Xerula radicata Rooting shank

Basidiomycetes: Auriculariales
Auricularia auricula-judae Jelly ear

Basidiomycetes: Boletales
Boletus badius Bay bolete
Boletus chrysenteron Red cracking bolete
Boletus edulis Penny bun/cep
Boletus luridiformis
Boletus pruinatus Matt bolete
Boletus rubellus Ruby bolete
Boletus subtomentosus Suede bolete
Chalciporus piperatus Peppery bolete
Chroogomphus rutilus Copper spike
Gomphidius maculatus
Hygrophoropsis aurantiaca False chanterelle
Leccinum duriusculum Slate bolete
Leccinum rigidipes
Leccinum scabrum Brown birch bolete
Leccinum variicolor Mottled bolete
Paxillus involutus Brown rimroll
Suillus granulatus Weeping bolete
Suillus grevillei Larch bolete
Suillus variegatus Velvet bolete
Suillus viscidus Sticky bolete

Basidiomycetes: Cantharellales
Botryobasidium aureum
Botryobasidium conspersum
Cantharellus cibarius Chanterelle
Clavaria argillacea Moor club
Clavaria fragilis White spindles
Clavaria fumosa Smoky spindles
Clavulina cinerea Grey coral
Clavulina coralloides Crested coral
Clavulina rugosa Wrinkled club
Clavulinopsis corniculata Meadow coral
Clavulinopsis helvola Yellow club
Clavulinopsis luteoalba Apricot club
Clavulinopsis subtilis
Hydnum repandum Wood hedgehog
Sparassis crispa Wood cauliflower

Basidiomycetes: Cortinariales
Cortinarius anomalus Variable webcap
Cortinarius betuletorum
Cortinarius croceus
Cortinarius flexipes var. flabellus Pelargonium webcap
Cortinarius helvelloides
Cortinarius hinnuleus Earthy webcap
Cortinarius malicorius
Cortinarius semisanguineus Surprise webcap
Cortinarius turmalis (?)
Cortinarius variicolor
Cortinarius violaceus Violet webcap
Crepidotus applanatus Flat oysterling
Crepidotus mollis Peeling oysterling
Galerina calyptrata
Galerina hypnorum
Galerina marginata Funeral bell
Galerina tibiicystis
Galerina vittiformis
Gymnopilus fulgens
Gymnopilus junonius Spectacular rustgill
Hebeloma crustuliniforme poisonpie
Hebeloma leucosarx
Hebeloma sacchariolens Sweet poisonpie
Hebeloma sinapizans Bitter poisonpie
Hebeloma theobrominum
Inocybe adaequata
Inocybe asterospora Star fibrecap
Inocybe cincinnata var. major Collared fibrecap
Inocybe fraudans
Inocybe fuscidula
Inocybe geophylla White fibrecap
Inocybe geophylla var. lilacina Lilac fibrecap
Inocybe godeyi
Inocybe hirtella
Inocybe maculata Frosty fibrecap
Inocybe mixtilis
Inocybe napipes Bulbous fibrecap
Inocybe rimosa Split fibrecap
Naucoria escharioides
Naucoria subconspersa
Tubaria conspersa Felted twiglet
Tubaria furfuracea Scurfy twiglet

Basidiomycetes: Dacrymycetales
Calocera cornea Small stagshorn
Calocera furcata
Calocera viscosa Yellow stagshorn

Dacrymyces capitatus
Dacrymyces stillatus Common jellyspot

Basidiomycetes: Exobasidiales
Exobasidium karstenii
Exobasidium oxycocci

Basidiomycetes: Fistulinales
Fistulina hepatica Beefsteak fungus

Basidiomycetes: Ganodermatales
Ganoderma applanatum Artist's bracket
Ganoderma australe Southern bracket

Basidiomycetes: Hericiales
Gloiothele lactescens
Lentinellus cochleatus Aniseed cockleshell

Basidiomycetes: Hymenochaetales
Hymenochaete corrugata Glue crust
Hymenochaete rubiginosa Oak curtain rust
Inonotus dryadeus Oak bracket

Basidiomycetes: Lycoperdales
Calvatia gigantea Giant puffball
Handkea excipuliformis Pestle puffball
Lycoperdon nigrescens Dusky puffball
Lycoperdon perlatum Common puffball
Lycoperdon pyriforme Stump puffball
Vascellum pratense Meadow puffball

Basidiomycetes: Nidulariales
Crucibulum laeve Common bird's nest

Basidiomycetes: Phallales
Geastrum triplex Collared earthstar
Gomphus clavatus Pig's ear
Mutinus caninus Dog stinkhorn
Phallus impudicus Stinkhorn

Basidiomycetes: Poriales
Abortiporus biennis Blushing rosette
Bjerkandera adusta Smoky bracket
Ceriporia reticulata
Datronia mollis Common mazegill
Grifola frondosa Hen of the woods
Heterobasidion annosum Root rot
Laetiporus sulphureus Chicken of the woods
Meripilus giganteus Giant polypore
Physisporinus sanguinolentus Bleeding porecrust
Piptoporus betulinus Birch Polypore/razorstrop fungus
Polyporus leptocephalus Blackfoot polypore
Polyporus squamosus Dryad's saddle
Postia subcaesia Blueing bracket
Postia tephroleuca Greyling bracket
Pleurotus ostreatus Oyster mushroom
Skeletocutis nivea Hazel bracket
Trametes versicolor Turkeytail oyster mushroom

Basidiomycetes: Russulales
Lactarius acerrimus
Lactarius acris
Lactarius aurantiacus Orange milkcap
Lactarius blennius Beech milkcap
Lactarius camphoratus Curry milkcap
Lactarius deterrimus False Saffron milkcap
Lactarius fulvissimus Tawny milkcap
Lactarius glyciosmus Coconut milkcap
Lactarius helvus Fenugreek milkcap
Lactarius pallidus Pale milkcap
lactarius pterosporus
Lactarius quietus Oakbug milkcap
Lactarius rufus Rufous milkcap
Lactarius scoticus
Lactarius subdulcis Mild milkcap
Lactarius tabidus Birch milkcap
Lactarius torminosus Wooly milkcap
Lactarius turpis Ugly milkcap
Lactarius uvidus
Russula albonigra
Russula atropurpurea Purple brittlegill
Russula betularum Birch brittlegill
Russula caerulea Humpback brittlegill
Russula chloroides Blue band brittlegill
Russula claroflava Yellow swamp brittlegill
Russula cyanoxantha Charcoal burner
Russula delica Milk white brittlegill
Russula densifolia Crowded brittlegill
Russula exalbicans Bleached brittlegill
Russula fellea Geranium brittlegill
Russula foetens Stinking brittlegill
Russula fragilis Fragile brittlegill
Russula ionochlora Oilslick brittlegill
Russula nigricans Blackening brittlegill
Russula nitida Purple Swamp brittlegill
Russula nobilis Beechwood sickener
Russula ochroleuca Ochre brittlegill
Russula queletii Fruity Brittlegill
Russula sanguinaria Bloody brittlegill
Russula sardonia Primrose brittlegill
Russula xerampelina Crab brittlegill

Basidiomycetes: Schizophyllales
Schizophyllum commune Split-gill/Common porecrust

Basidiomycetes: Sclerodematales
Scleroderma areolatum Leopard earthball
Scleroderma bovista Potato earthball
Scleroderma citrinum Common earthball
Scleroderma verrucosum Scaly earthball

Basidiomycetes: Steareales
Athelia epiphylla
Chondrostereum purpureum Silverleaf fungus
Hyphoderma argillaceum
Hyphodontia crustosa
Hyphodontia sambuci Elder whitewash
Laetisaria fuciformis
Mycoacia uda
Peniophora lycii
Schizopora paradoxa Split porecrust
Steccherinum fimbriatum
Steccherinum ochraceum
Stereum hirsutum Hairy curtain crust
Stereum rugosum Bleeding broadleaf crust
Subulicystidium longisporum
Tubulicrinis regificus
Tylospora fibrillosa

Basidiomycetes: Thelephorales
Hydnellum ferrugineum Mealy tooth
Thelephora terrestris Earthfan
Tomentella bryophila
Tomentella lapidum

Basidiomycetes: Tremellales
Eichleriella deglubens
Exidia glandulosa Witch's butter
Exidia nucleata Crystal brain
Exidia thuretiana White brain
Sebacina epigaea
Stypella crystallina
Stypella subhyalina
Tremella mesenterica Yellow brain

Urediniomycetes: Uredinales Rusts
Coleosporium tussilaginis on *Euphrasia, Petasites & Tussilago*
Cumminsiella mirabilissima on *Mahonia*
Kuehneola uredinis on *Rubus*
Melampsora caprearum on *Salix*
Melampsora epitea on *Salix*
Melampsora euphorbiae on *Euphorbia*
Melampsora hypericorum on *Hypericum*
Melampsoridium betulinum on *Betula*
Milesina scolopendrii on *Phyllitis*
Miyagia pseudosphaeria on *Sonchus*
Phragmidium bulbosum on *Rubus*
Phragmidium fragariae on *Potentilla*
Phragmidium mucronatum on *Rosa*
Phragmidium rosae-pimpinellifoliae on Burnet rose
Phragmidium rubi-idaei on *Rubus idaeus*
Phragmidium violaceum on *Rubus*
Puccinia acetosae on *Rumex*
Puccinia brachypodii on *Brachypodium*
Puccinia buxi on *Buxus*
Puccinia calcitrapae on *Cirsium*
Puccinia caricina on *Carex*
Puccinia caricina var. ribesii-pendulae on *Carex*
Puccinia circaeae on *Circaea*
Puccinia coronata on *Festuca* & *Holcus*
Puccinia glechomatis on *Glechoma*
Puccinia graminis subsp. Graminis on *Festuca*
Puccinia lagenophorae on *Senecio*
Puccinia lapsanae on *Lapsana*
Puccinia magnusiana on *Phragmites*
Puccinia malvacearum on *Malva*
Puccinia menthae on *Menta*
Puccinia obscura on *Bellis* & *Luzula*
Puccinia phragmitis on *Phragmites*
Puccinia poarum on *Tussilago*
Puccinia punctata on *Galium*
Puccinia punctiformis on *Cirsium*
Puccinia recondita on *Elytrigia*
Puccinia urticata var. urticae-inflatae on *Carex*
Puccinia veronicae on *Veronica*
Puccinia violae on *Viola*
Triphragmium ulmariae on *Filipendula*
Uromyces dactylidis on Rannunculus
Uromyces rumicis on *Rumex*
Uromyces valerianae on *Valeriana*
Uromyces viciae-fabae on *Vicia*

Ustilaginomycetes: Ustilaginales
Ustilago filiformis on *Glyceria*
Ustilago grandis on *Phragmites*
Ustilago striiformis on *Phalaris*

Kingdom Fungi (Mycota)
Phylum Ascomycota

Archaeascomycete: Taphrinales
Protomyces macrosporus
Taphrina tosquinetii
Euascomycetes: Boliniales
Endoxyla cirrhosa
Euascomycetes: Calosphaeriales
Calosphaeria
Euascomycetes: Capnodiales
Tripospermum myrti
Euascomycetes: Diaporthales
Diaporthe arctii
Phomopsis stictica
Sydowiella fenestrans

Euascomycetes: Dothidiales
Bactrodesmium obovatum
Dothiorella candollei
Leptospora rubella

Euascomycetes: Erysiphales Powdery Mildews
Erysiphe alphitoides on *Quercus*
Erysiphe aquilegiae on *Aquilegia*
Erysiphe berberidis on *Mahonia*
Erysiphe biocellata on *Mentha*
Erysiphe circaeae on *Circaea*
Erysiphe cruciferarum on *Sisymbrium*
Erysiphe depressa on *Arctium*
Erysiphe heraclei on *Heracleum*
Erysiphe hyperici on *Hypericum*
Erysiphe knautiae on *Succisa*
Erysiphe lythri on *Lythrum*
Erysiphe pisi on *Vicia*
Erysiphe sordida on *Plantago*
Erysiphe trifolii on *Trifolium*
Golovinomyces cichoracearum va. chicoracearum on Compositae
Golovinomyces cichoracearum var. fischeri on *Senecio*
Neoerysiphe galeopsidis on *Stachys*
Phyllactinia fraxini on *Fraxinus*
Phyllactinia guttata on *Corylus*
Podosphaera myrtillina on *Vaccinium*
Podosphaera aphanis on *Potentilla* & *Geum*
Podosphaera fusca on *Taraxacum* & *Senecio*
Podosphaera pannosa on *Rosa*
Sawadaea bicornis on *Acer*
Sphaerotheca epilobii on *Epilobium*

Euascomycetes: Eurotiales
Paecilomyces farinosus

Ascomycota; Halosphaeriales
Clavariopsis aquatica

Euascomycetes: Helotiales
Bisporella citrina Lemon disco
Bisporella sulfurina
Botrytis cinerea Grey mould
Chlorociboria aeruginascens Green elfcup
Claussenomyces prasinulus
Crocicreas cyathoideum
Diplocarpon earlianum
Geoglossum cookeanum Earth tongue
Heterosphaeria patella
Hymenoscyphus albidus
Hymenoscyphus fructigenus Nut disco
Hymenoscyphus imberbis
Hymenoscyphus scutula
Hymenoscyphus splendens
Lachnum apalum Rush disco
Lachnum ciliare
Lachnum clavisporum
Lachnum corticale
Lachnum diminutum
Lachnum dumorum
Lachnum virgineum Snowy disco
Laetinaevia carneoflavida
Leptotrochila ranunculi
Moellerodiscus tenuistipes
Mollisia cinerea Common Grey disco
Mollisia juncina
Mollisina rubi
Myriosclerotinia

Neobulgaria pura Beech jellydisc
Pezizella albosanguinea
Phacidium multivalve
Phialina lachnobrachya
Phialina ulmariae
Polydesmia pruinosa
Psilalachnum inquilinum
Pyrenopeziza escharodes
Pyrenopeziza revincta
Rutstroemia firma Brown cup
Rutstroemia petiolorum
Rutstroemia sydowiana Oakleaf cup
Strossmayeria atriseda
Tapesia fusca
Tapesia lividofusca
Tapesia yallundae
Trichoglossum hirsutum Hairy earthtongue
Tricladium angulatum
Trochila craterium
Trochila ilicina Holly Speckle
Trochila laurocerasi

Euascomycetes: Hypocreales
Byssostilbe stilbigera
Claviceps purpurea Ergot
Erostrotheca multiformis
Hyalopeziza millepunctata
Hypocrea schweinitzii
Hypomyces chrysospermus Bolete mould
Hypomyces lateritius
Nectria cinnebarina Coral spot
Nectria desmazieri
Nectria episphaeria
Nectria hederae
Nectria leptosphaeriae
Nectria lugdunensis
Nectria peziza
Pseudonectria rousseliana
Pycnofusarium rusci

Euascomycetes: Hysteriales
Hysterium angustatum
Hysterographium fraxini

Euascomycetes: Incertae sedis
Alatospora acuminata
Anguillospora crassa
Arthrobotrys sp.
Bactridium flavum
Campylospora chaetocladia
Campylospora tetracladia
Coleophoma empetri
Dendrospora erecta
Dictyosporium toruloides
Flabellospora acuminata
Flagellospora curvula
Haplariopsis fagicola
Lemonniera aquatica
Lunulospora curvula
Mycocentrospora acerina
Orbilia curvatispora
Orbilia euonymi
Orbilia leucostigma
Orbilia xanthostigma Common glasscup
Periconia cookei
Sesquicillium buxi
Stachybotrys dichroa
Stomiopeltis pinastri
Tetracladium marchalianum
Tetracladium setigerum
Torula herbarum
Tridentaria carnivora
Triposporium elegans
Triscelophorus monosporus
Tuberculina persicina
Wiesneriomyces laurinus
Xylohypha nigrescens

Euascomycetes: Meliolales
Appendiculella calostroma

Euascomycetes: Microascales
Cephalotrichum microsporum

Euascomycetes: Microthyriales
Lichenopeltella pnophylla
Microthyrium macrosporum
Microthyrium microscopicum
Microthyrium pinophyllum
Microthyrium versicolor

Euascomycetes: Mycosphaerellales
Cladosporium macrocarpum
Ramularia bistorte
Ramularia circaeae
Ramularia didyma
Ramularia glechomatis
Ramularia lactea
Ramularia lapsanae
Ramularia rhabdospora
Ramularia scrophulariae
Ramularia sphaeroidea
Ramularia taraxaci
Mycosphaerella tulasnei
Septoria convolvuli
Septoria stachydis

Euascomycetes: Ophiostomatales
Ophiostoma novo-ulmi Dutch elm disease
Ophiostoma ulmi Dutch elm disease

Euascomycetes: Pezizales
Aleuria aurantia Orange peel fungus
Cheilymenia fimicola
Coprobia granulata
Helvella crispa White saddle
Helvella elastica Elastic saddle
Helvella macropus Felt saddle
Melastiza chateri Orange cup
Miladina lecithina
Otidea alutacea Tan ear
Peziza badia Bay cup
Peziza micropus
Peziza repanda Palamino cup
Scutellinia crinita

Euascomycetes: Phyllachorales
Colletotrichum trichellum
Phyllachora dactylidis
Phyllachora junci

Euascomycetes: Pleosporales
Coleroa robertiani
Dendryphion comosum
Hendersonia innumerosa
Leptosphaeria acuta Nettle rash

Leptosphaeria doliolum
Leptosphaeria libanotis
Lophiostoma compressum
Lophiostoma semiliberum
Lophiostoma vagabundum
Massarina aquatica
Massarina tetraploa
Melanomma pulvis-pyrius
Paraphaeosphaeria glaucopunctata
Paraphaeosphaeria vectis
Phoma hedericola
Rhopographus filicinus Bracken map
Sporormiella bipartis
Tubeufia cerea

Euascomycetes: Rhytismatales
Hypoderma rubi
Lophodermium apiculatum
Lophodermium piceae
Rhytisma acerinum Sycamore tar spot
Rhytisma andromedae
Rhytisma salicinum

Euascomycetes: Sordariales
Bertia moriformis Wood mulberry
Coniochaeta ligniaria
Dictyochaeta simplex
Endophragmiella pinicola
Lasiosphaeria hirsuta
Melanopsammella vermicularioides
Podospora appendiculata
Sporoschisma juvenile

Euascomycetes: Trichosphaeriales
Chaetosphaerella phaeostroma

Euascomycetes: Xylariales
Anthostomella appendiculosa
Anthostomella punctulata
Anthostomella tomicoides
Cainia graminis
Daldinia concentrica Cramp balls
Diatrype disciformis Beech barkspot
Discostroma tostum
Eutypa flavovirens
Eutypa spinosa
Hypoxylon fragiforme Beech woodwart
Hypoxylon fuscum Hazel woodwart
Hypoxylon intermedium
Hypoxylon multiforme Birch woodwart
Kretzschmaria deusta Brittle cinder
Melomastia mastoidea
Phomatospora dinemasporium
Rosellinia aquila
Xylaria hypoxylon Candlesnuff fungus
Xylaria longipes Dead Moll's fingers
Xylaria polymorpha Dead man's fingers

Kingdom Fungi (Mycota)
Phylum Zygomycota
Zygomycetes: Mucorales
Spinellus fusiger Bonnet mould

Fungus-like Organisms
Kingdom: Straminipila
Phylum Oomycota

Oomycetes: Peronosporales
Albugo candida White blister
Albugo tragopogonis Downy mildew
Peronospora aparines Downy mildew
Peronospora oerteliana Downy mildew
Peronospora parasitica Downy mildew

Oomycetes: Pythiales
Phytophthora infestans Potato blight

Kingdom: Uncertain Affinity
Phylum Myxomycota (Slime Moulds)

Myxomycota: Liceales
Cribraria argillacea
Cribraria aurantiaca
Cribraria cancellata var. cancellata
Licea clarkii
Lycogala epidendrum
Lycogala exiguum
Tuberifera ferruginosa

Myxomycota: Physarales
Badhamia lilacina var. lilacina
Badhamia panicea
Diderma deplanatum
Diderma simplex
Didymium difforme
Didymium squamulosum
Fuligo septica var. septica
Leocarpus fragilis
Physarum cinereum
Physarum nutans
Physarum pusillum

Myxomycota: Protosteliales
Ceratiomyxa fruticulosa var. fruticulosa

Myxomycota: Stemonitales
Collaria arcyrionema
Comatricha nigra
Comatricha tenerrima
Lamproderma scintillans
Macbrideola cornea
Stemonitis fusca var. fusca
Stemonitopsis typhina

Myxomycota: Trichiales
Arcyria denudata
Arcyria incarnata
Calomyxa metallica
Perichaena chrysosperma
Trichia affinis
Trichia botrytis var. botrytis
Trichia decipiens var. decipiens
Trichia varia

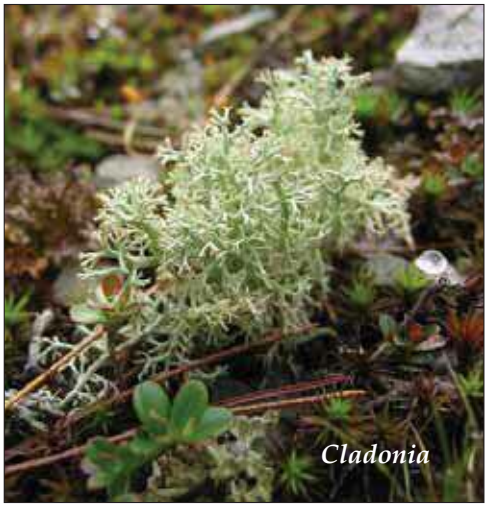
[1] Contributed by Hubert Fuller, School of Biology and Environmental Science, UCD.

Lichens

Most people will have noticed the bushy grey outgrowths that often festoon the branches of trees, most conspicuously perhaps in old orchards. These are lichens, dual organisms that consist of an association between an alga and a fungus so extraordinarily intimate that the result is an organism totally different in appearance from either of the constituent partners on their own. In point of fact though, only the algal partner is capable of independent existence: for the fungi involved in the partnership the association has become obligatory.

Bushy (*fruticose*) lichens are the most familiar type. Other lichens are irregular, frilly plates, rather like certain seaweeds or leafy liverworts; such *thallose* lichens are particularly common on tree bark and rock in unpolluted districts. Many kinds of lichens live in the surface tissue of trees or the outer skin of rock; these are *crustose* lichens. Certain kinds (especially *Cladonia* species) have fruiting structures (podetia) that look like miniature clubs or golf tees. In the old days various lichens were used for making dyes, but their main practical interest today is for monitoring air pollution, because they are extraordinarily sensitive in this regard. This sensitivity varies greatly from species to species, which makes the group as a whole ideal for assessing the level of pollution.

Lichens are a very diverse group. A mature oak tree may have as many as several dozen species, and there could be as many again on an old gravestone. 1285 species have been recorded from the whole of Ireland. We have a reasonably accurate list of the species that occur in Offaly, but our knowledge of their detailed distribution is limited and there is plenty of scope for detailed studies. Of particular interest from the conservation viewpoint are those lichens characteristic of old woodland, and especially the lungworts (*Lobaria* species), known from only a handful of locations in the county. A lichen survey of the towns of Offaly would be an ideal way to draw attention to the variety and importance of the group, as well as highlighting issues of air quality.



Caloplaca

Lecanora

Three common lichens: *Cladonia*, *Caloplaca* and *Lecanora* (Frank Dobson).

The Lichens Of Offaly[1]

The current number of taxa in the Irish flora (lichens, lichenicolous fungi and allied fungi) is 1285. The following Offaly list contains only 271 taxa; although the county lacks many of the important habitats for a rich lichen flora, clearly there is considerable scope for lichenological study and a total of at least 400 taxa is to be expected. Nomenclature is mainly according to Coppins (2002). Taxa indicated by an asterisk (*) are lichenicolous fungi and non-lichenized fungi which are traditionally treated by lichenologists and usually overlooked by mycologists.

Acarospora fuscata (Schrad.) Th.Fr.
Acrocordia conoidea (Fr.) Körb.
A. gemmata (Ach.) A.Massal.
A. salweyi (Leight. ex Nyl.) A.L.Sm.
Agonimia tristicula (Nyl.) Zahlbr.
Amandinea punctata (Hoffm.) Coppins & Scheid.
Anisomeridium biforme (Borrer) R.C.Harris
* *Arthonia cinnabarina* (DC.) Wallr.
A. muscigena Th.Fr.
A. pruinata (Pers.) Steud. ex A.L.Sm.
* *A. punctiformis* Ach.
A. radiata (Pers.) Ach.
A. spadicea Leight.
* *Arthopyrenia analepta* (Ach.) A.Massal.
* *A. cerasi* (Schrad.) A.Massal.
A. cinereopruinosa (Schaer.) A.Massal.
* *A. punctiformis* A.Massal.
Aspicilia calcarea (L.) Körb.
A. contorta (Hoffm.) Kremp.
Bacidia arceutina (Ach.) Arnold
B. friesiana (Hepp) Körb.
B. laurocerasi (Delise ex Duby) Zahlbr.

B. phacodes Körb.
B. rubella (Hoffm.) A.Massal.
Belonia nidarosiensis (Kindt) P.M.Jørg. & Vězda
Bilimbia sabuletorum (Schreb.) Arnold
Bryophagus gloeocapsa Nitschke ex Arnold
Bryoria fuscescens (Gyeln.) Brodo & D.Hawksw.
Byssoloma leucoblepharum (Nyl.) Vain.
B. subdiscordans (Nyl.) P.James
Calicium viride Pers.
Caloplaca aurantia (Pers.) Hellb.
C. cerina (Ehrh. ex Hedw.) Th.Fr.
C. cerinella (Nyl.) Flagey
C. citrina (Hoffm.) Th.Fr.
C. crenularia (With.) J.R.Laundon
C. flavescens (Huds.) J.R.Laundon
C. holocarpa (Hoffm.) A.E.Wade
C. luteoalba (Turner) Th.Fr.
C. obscurella (Lahm ex Körb.) Th.Fr.
C. saxicola (Hoffm.) Nordin
Candelaria concolor (Dicks.) Stein
Candelariella aurella (Hoffm) Zahlbr.
C. medians (Nyl.) A.L.Sm.
C. reflexa (Nyl.) Lettau
C. vitellina (Hoffm.) Müll.Arg.
C. xanthostigma (Ach.) Lettau
Catapyrenium pilosellum Breuss
C. squamulosum (Ach.) Breuss
Catillaria lenticularis (Ach.) Th.Fr.
C. nigroclavata (Nyl.) Schuler
Cetraria aculeata (Schreb.) Fr.
C. muricata (Ach.) Eckfeldt
Chrysothrix candelaris (L.) J.R.Laundon
Cladonia arbuscula (Wallr.) Flot.
C. cervicornis (Ach.) Flot. ssp. *verticillata* (Hoffm.) Ahti
C. chlorophaea (Flörke ex Sommerf.) Spreng.
C. ciliata Stirt. var. *tenuis* (Flörke) Ahti
C. coccifera (L.) Willd.
C. coniocraea (Flörke) Spreng.
C. crispata var. *cetrariiformis* (Delise ex Duby) Vain.
C. fimbriata (L.) Fr.
C. floerkeana (Fr.) Flörke
C. furcata (Huds.) Schrad.
C. glauca Flörke
C. gracilis (L.) Willd.
C. macilenta Hoffm.
C. ochrochlora Flörke
C. pocillum (Ach.) Grognot
C. polydactyla (Flörke) Spreng.
C. portentosa (Dufour) Coem.
C. pyxidata (L.) Hoffm.
C. ramulosa (With.) J.R.Laundon
C. rangiformis Hoffm.
C. scabriuscula (Delise) Nyl.
C. squamosa Hoffm.
C. subulata (L.) F.H.Wigg.
C. uncialis ssp. *biuncialis* (Hoffm.) M.Choisy
Clauzadea immersa (Hoffm.) Hafellner & Bellem.
C. monticola (Ach.) Hafellner & Bellem.
Cliostomum griffithii (Sm.) Coppins
Collema auriforme (With.) Coppins & J.R.Laundon
C. crispum (Huds.) F.H.Wigg.
C. cristatum (L.) F.H.Wigg.
C. flaccidum (Ach.) Ach.
C. tenax (Sw.) Ach.
Cresponea. premnea (Ach.) Egea & Torrente
Dermatocarpon miniatum (L.) W.Mann
Dimerella lutea (Dicks.) Trevis.
Diploicia canescens (Dicks.) A.Massal.
Diplotomma alboatrum (Hoffm.) Flot.
Enterographa crassa (DC.) Fée
Evernia prunastri (L.) Ach.
Fellhanera bouteillei (Desm.) Vězda
Flavoparmelia caperata (L.) Hale
Fuscidea kochiana (Hepp) V.Wirth & Vězda
F. lightfootii (Sm.) Coppins & P.James
Graphina anguina (Mont.) Müll.Arg.
Graphis elegans (Borrer ex Sm.) Ach.
G. scripta (L.) Ach.
Hyperphyscia adglutinata (Flörke) Mayrhofer & Poelt
Hypocenomyce scalaris (Ach. ex Lilj.) M.Choisy
Hypogymnia physodes (L.) Nyl.
H. tubulosa (Schaer.) Hav.
Hypotrachyna revoluta (Flörke) Hale
Icmadophila ericetorum (L.) Zahlbr.
Japewiella tavaresiana (H.Magn.) Printzen
Lecanactis abietina (Ach.) Körb.
Lecania cuprea (A.Massal.) Van den Boom & Coppins
L. cyrtella (Ach.) Th.Fr.
L. erysibe (Ach.) Mudd
L. hutchinsiae (Nyl.) A.L.Sm.
L. naegelii (Hepp) Diederich & Van den Boom
Lecanora aitema (Ach.) Hepp
L. albella (Pers.) Ach.
L. albescens (Hoffm.) Branth & Rostr.
L. argentata (Ach.) Malme
L. campestris (Schaer.) Hue
L. carpinea (L.) Vain.
L. chlarotera Nyl.
L. confusa Almb.
L. conizaeoides Nyl. ex Cromb.
L. dispersa (Pers.) Sommerf.
L. expallens Ach.
L. intumescens (Rebent.) Rabenh.
L. jamesii J.R.Laundon
L. muralis (Schreb.) Rabenh.
L. piniperda Körb.
L. polytropa (Hoffm.) Rabenh.
L. pulicaris (Pers.) Ach.
L. sambuci (Pers.) Nyl.
L. symmicta (Ach.) Ach.
L. varia (Hoffm.) Ach.
Lecidea fuscoatra (L.) Ach.
L. lithophila (Ach.) Ach.
Lecidella elaeochroma (Ach.) M.Choisy
L. stigmatea (Ach.) Hertel & Leuckert
Lepraria incana s.lat.
Leproplaca chrysodeta (Vain. ex Räsänen) J.R.Laundon
Leptogium gelatinosum (With.) J.R.Laundon
L. lichenoides (L.) Zahlbr.
L. tenuissimum (Dicks.) Körb.
L. teretiusculum (Wallr.)Arnold
* *Lichenodiplis lecanorae* (Vouaux) Dyko & D.Hawksw.
Lichenomphalia hudsoniana (H.S.Jenn.) Redhead et al.
* *Lichenostigma maureri* Hafellner
Loxospora elatinum (Ach.) A.Massal.
Melanelia exasperata (De Not.) Essl.
M. fuliginosa (Fr. ex Duby) Essl.
ssp. *glabratula* (Lamy) Coppins
M. subaurifera (Nyl.) Essl.
Micarea denigrata (Fr.) Hedl.
M. leprosula (Th.Fr.) Coppins & A.Fletcher
M. lignaria (Ach.) Hedl.

M. nitschkeana (J.Lahm ex Rabenh.) Harm.
M. peliocarpa (Anzi) Coppins & R.Sant.
M. prasina Fr.
M. sylvicola (Flot.) Vězda & V.Wirth
Normandina pulchella (Borrer) Nyl.
Ochrolechia androgyna (Hoffm.) Arnold
O. parella (L.) A.Massal.
O. subviridis (Hoeg) Erichsen
O. tartarea (L.) A.Massal.
Opegrapha atra Pers.
O. calcarea Turner ex Sm.
O. herbarum Mont.
O. niveoatra (Borrer) J.R.Laundon
O. rufescens Pers.
O. varia Pers.
O. vulgata (Ach.) Ach.
Parmelia saxatilis (L.) Ach.
P. sulcata Taylor
Parmelina pastillifera (Harm.) Hale
Parmotrema crinitum (Ach.) M.Choisy
P. perlatum (Huds.) M.Choisy
Peltigera hymenina (Ach.) Delise ex Duby
P. membranacea (Ach.) Nyl.
P. praetextata (Flörke ex Sommerf.) Zopf
P. rufescens (Weiss) Humb.
Pertusaria albescens (Huds.) M.Choisy & Werner
var. *corallina* (Zahlbr.) J.R.Laundon
P. amara (Ach.) Nyl.
P. coccodes (Ach.) Nyl.
P. corallina (L.) Arnold
P. hemisphaerica (Flörke) Erichsen
P. hymenea (Ach.) Schaer.
P. leioplaca DC.
P. pertusa (Weigel) Tuck.
Petractis clausa (Hoffm.) Kremp.
Phaeographis smithii (Leight.) de Lesd.
Phaeophyscia orbicularis (Neck.) Moberg
Phlyctis agelaea (Ach.) Flot.
P. argena (Spreng.) Flot.
Physcia adscendens (Fr.) H.Olivier
P. aipolia (Ehrh. ex Humb.) Fürnr.
P. caesia (Hoffm.) Fürnr.
P. leptalea (Ach.) DC.
P. tenella (Scop.) DC.
P. tribacia (Ach.) Nyl.
Physconia distorta (With.) J.R.Laundon
P. enteroxantha (Nyl.) Poelt
P. grisea (Lam.) Poelt
Placynthiella uliginosa (Schrad.) Coppins & P.James
Placynthium nigrum (Huds.) Gray
Platismatia glauca (L.) W.L.Culb. & C.F.Culb.
Polyblastia dermatodes A.Massal.
Porina aenea (Wallr.) Zahlbr.
P. chlorotica (Ach.) Müll.Arg.
P. leptalea (Durieu & Mont.) A.L.Sm.
P. linearis (Leight.) Zahlbr.
Porpidia macrocarpa (DC.) Hertel & A.J.Schwab
P. tuberculosa (Sm.) Hertel & Knoph
Protoblastenia calva (Dicks.) Zahlbr.
P. rupestris (Scop.) J.Steiner
Pseudevernia furfuracea (L.) Zopf
Punctelia borreri (Sm.) Krog
P. subrudecta (Nyl.) Krog
Pyrenula chlorospila Arnold
P. macrospora (Degel.) Coppins & P.James
Pyrrhospora quernea (Dicks.) Körb.
Ramalina calicaris (L.) Fr.
R. canariensis J.Steiner
R. farinacea (L.) Ach.
R. fastigiata (Pers.) Ach.
R. fraxinea (L.) Ach.
R. lacera (With.) J.R.Laundon
Rhizocarpon geographicum (L.) DC.
R. petraeum (Wulfen) A.Massal.
R. reductum Th.Fr.
R. umbilicatum (Ramond) Flagey
Rinodina gennarii Bagl.
R. oleae Bagl.
R. roboris (Dufour ex Nyl.) Arnold
R. sophodes (Ach.) A.Massal.
Sarcogyne regularis Körb.
Schismatomma cretaceum (Hue) J.R.Laundon
S. decolorans (Turner & Borrer ex Sm.) Clauzade & Vězda
Scoliciosporum chlorococcum (Graewe ex Stenh.) Vězda
Sticta limbata (Sm.) Ach.
Strangospora ochrophora (Nyl.) R.A.Anderson
Thelidium papulare (Fr.) Arnold
Thelotrema lepadinum (Ach.) Ach.
Toninia aromatica (Sm.) A.Massal.
* *T. episema* (Nyl.) Timdal
T. sedifolia (Scop.) Timdal
T. verrucarioides (Nyl.) Timdal
Trapelia coarctata (Sm.) M.Choisy
T. placodioides Coppins & P.James
Trapeliopsis granulosa (Hoffm.) Lumbsch
Usnea ceratina Ach.
U. cornuta Körb.
U. esperantiana P.Clerc
U. fragilescens Hav. ex Lynge
U. fulvoreagens (Räsänen) Räsänen
U. hirta (L.) F.H.Wigg.
U. subfloridana Stirt.
Verrucaria baldensis A.Massal.
V. calciseda DC.
V. dufourii DC.
V, fuscella (Turner) Winch
V. hochstetteri Fr.
V. macrostoma Dufour ex DC. forma *furfuracea* de Lesd.
V. muralis Ach.
V. nigrescens Pers.
V. viridula (Schrad.) Ach.
* *Weddellomyces epicallopismum* (Weddell) D.Hawksw.
Xanthoria candelaria (L.) Th.Fr.
X. elegans (Link) Th.Fr.
X. parietina (L.) Th.Fr.
X. polycarpa (Hoffm.) Th.Fr. ex Rieber
X. ucrainica S.Kondratyuk

Reference:

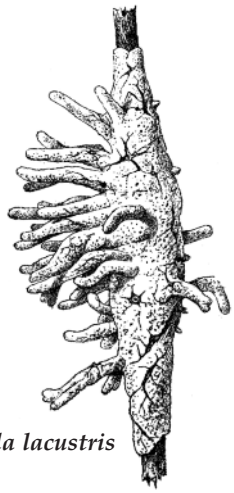
Coppins, B.J. (2002) *Checklist of Lichens of Great Britain and Ireland*. British Lichen Society, London.

[1] Contributed by M.R.D. Seaward, Department of Geography & Environmental Science, University of Bradford, Bradford BD7 1DP.

Kingdom Animalia: animals

Phylum Porifera: sponges

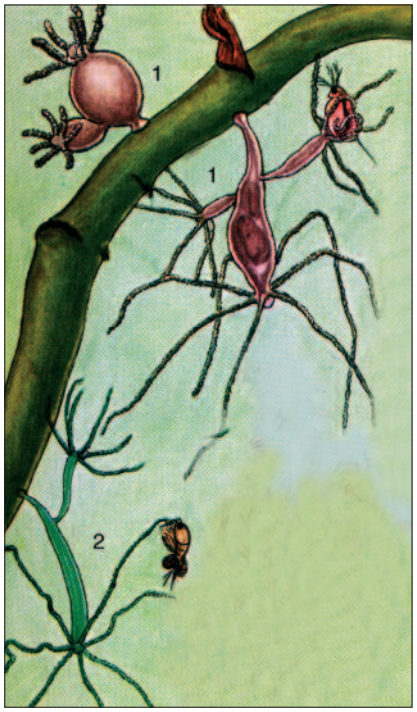
Sponges are the simplest of multicellular animals. Most of them are marine, but there are several freshwater species, three of which are common in ponds, lakes and rivers (*Ephydatia fluviatilis*, *Spongilla lacustris* and *Spongilla fragilis)*. They appear to be widespread in the county, but records are too sporadic to be more specific.



Spongilla lacustris

Phylum Coelenterata: *Hydra*

The phylum to which sea anemones belong is almost entirely marine, but it does include a small number of freshwater species. *Hydra* is a fascinating little creature found on occasion in ponds and ditches (many biology students will know it from their textbooks, but meeting it in the flesh is a very different – and unforgettable – experience. There are two common species; one is green because it harbours green algae in its cells, the other is brown. Both occur in Offaly, but there are two few records yet to say how common or widespread they are.



Hydrozoans

1 Hydra vulgaris
2 Chlorohydra viridissima

The tiny freshwater jellyfish *Craspedacusta sowerbyi* has been recorded from a small lake at Derryad, outside Birr. It may well be more widespread: but so tiny it is very easily overlooked.

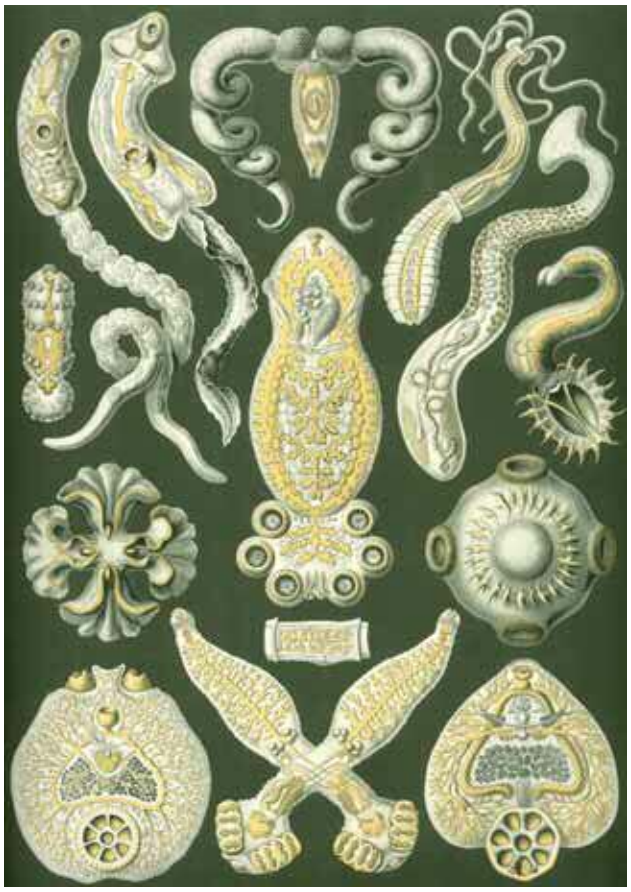
Phylum Rotifera: rotifers

Rotifers are very remarkable creatures. They are widespread members of the freshwater microbiota, the biggest no more than half a millimetre long, and to terrestrial eyes accustomed to the familiar body plans of larger animals as 'alien' as anything life has produced over the long course of its evolution. About 2,000 speies are known worldwide, but their distribution and status in Offaly is almost entirely unexplored.

Rotifers

Phylum Platyhelminthes: flukes, tapeworms and other flatworms

About 25,000 species of platyhelminths have been described. Commonly known as flatworms, most are free-living animals, but a large minority are parasites, most importantly the flukes and tapeworms that are internal parasites of animals. We know next to nothing about the wild species that occur in Offaly, but species that attack domestic animals, most notably sheep liver fluke, are only too well known to farmers.



Flukes

Tapeworms in foxes have attracted interest as a possible source of infection for dogs. An important zoonotic tapeworm occurs in foxes in central Europe and is the reason for treating pets (through the Pet Passport Scheme) against tapeworm before their return to Ireland.

The free-living species are aquatic animals, and very easy to recognise from their characteristic gliding motion. Most species are marine, but some are common in freshwater. Platyhelminths are hermaphroditic, so when matiing takes place the two participants exchange sperm and fertilise each other. Flatworms also have the unusual ability of splitting in two to produce two new individuals.

Phylum Nematoda: roundworms

We go through our lives unaware of the existence of these practically invisible worms, of which there may actually be millions of species, accounting for as much as 4/5 of all the animals on earth! One estimate puts the number of nematodes in an acre of topsoil at 3,000,000,000, and there might be 90,000 in a rotting apple. Many of the 20,000 species described so far are free-living inhabitants of soil and water, where they are enormously important in recyling the elements necessary for plant and animal growth. Others are parasitic, and these often have extremely complex life cycles. In spite of their importance we know next to nothing of their distribution on a county basis.

Phylum Bryozoa: moss animalcules

Most of the 5,000 or so living bryozoans are marine animals, but this is only a fraction of the total: many thousands more are known only as fossils, some of them going all the way back to the early Ordovician period 510 million years ago. About 50 species live in freshwater, and a few of these occur in ponds and lakes in Offaly, though nobody has paid any attention to them here yet. Like corals they are colony-forming creatures, the individual animals in which are less than 1mm long. They are truly fascinating, many with beautiful plume-like feeding tentacles. They are commonly found under water lily leaves and on other aquatic plants, and on detritus or stones at the bottom of ponds.

Bryozoans

Phylum Arthropoda

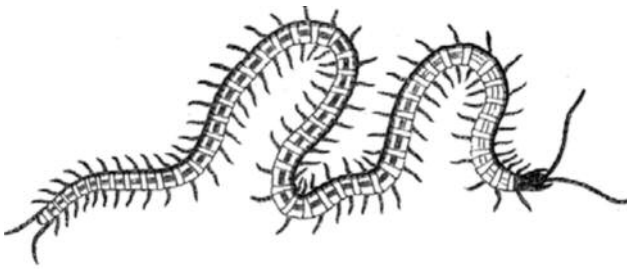
Subphylum MYRIAPODA: centipedes and millipedes

Class Chilopoda (centipedes)
Class Diplopoda (millipedes)

Centipedes are the multi-legged dragons of the invertebrate world, able to move very fast with their numerous legs. They are predators, hunting under stones, bark and logs and in other dark underworlds for insects and other invertebrates, which they grab with their venomous fangs. The two commonest species are the scary *Lithobius forficatus* (often seen under stones) and *Haplophilus subterraneus*, which is common in soil. Centipedes are distinguished from millipedes in having only one pair of legs per segment, and by their predatory life-style. In spite of the name, they don't have 100 legs: the usual number is around 50. There are some eight centipede species listed for Offaly in the *Provisional Atlas of the Centipedes of the British Isles* (1988) (out of an Irish total of 21): but the Irish records here are very few and far between. The Offaly records do not include the common *Haplophilus subterraneus*, which is a sure indication that many species remain unrecorded.

The centipedes of Offaly

Schendyla nemorensis
Geophilus electricus
Necrophloeophagus flavus
Brachygeophilus truncorum
Lithobius varietagus
Lithobius forficatus
Lithobius microps
Lamycetes fulvicornis
Haplophilus subterraneus



Millipedes have cylindrical bodies with two pairs of legs for each of their 20 to 100 segments. There are some 10,000 known species, nearly all of which consume decaying leaves and other dead plant material. The oldest known land animal is a millipede (*Pneumodesmus newmani* from the Silurian), so they are an extremely ancient lineage indeed. A new *Atlas of the Millipedes of Britain and Ireland* has just been published (2006). This lists 18 species for Offaly, but again this is based on very limited information for the county.

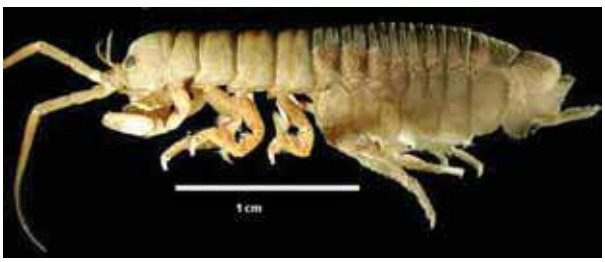
The millipedes of Offaly

Ommatoiulus sabulosus
Brachyiulus pusillus
Cylindroiulus punctatus
Cylindroiulus latestriatus
Cylindroiulus britannicus
Ophyiulus pilosus
Nemasoma varicorne
Boreoiulus tenuis
Archiboreoiulus pallidus
Blaniulus guttulatus
Proteroiulus fuscus
Macrosternodesmus palicola
Polydesmus denticulatus
Polydesmus coriaceus
Nanogona polydesmoides
Polydesmus angustus
Brachydesmus superbus
Glomeris marginata

Subphylum CRUSTACEA: crustaceans

Malacostraca

The Malacostraca include all the larger and familiar crustaceans such as crabs, lobsters and shrimps. Most of the 22,000 described species are marine, but Offaly has several freshwater representatives including the protected freshwater crayfish (*Austropotamobius pallipes*), the freshwater shrimp *Gammarus duebeni* and the water hoglouse *Asellus aquaticus*.



Order ISOPODA: woodlice

The vast majority of crustaceans are aquatic animals, woodlice being the only group to make the transition to dry land in the course of their evolution. They are familiar to everybody, but few of us realise how very abundant they are because they stay hidden during the day in order to conserve body moisture – their aquatic ancestry remains with them to that extent. The distribution of woodlice in Ireland is rather well known, largely because of an island-wide survey of their distribution published in 1982. There are 33 Irish species, of which only 11 (including the water hoglouse *Asellus aquaticus*) have been recorded from Offaly to date. Several widespread species have not so far been recorded from the county, so a number of other species certainly await discovery.

Wood louse

The isopods of Offaly

Androniscus dentiger	*Philoscia muscorum*
Armadillidium pulchellum	*Porcellio scaber*
Armadillidium vulgare	*Porcellio spinicornis*
Asellus aquaticus	*Porcellionides cingendus*
Oniscus asellus	*Trichoniscus pusillus*
	Trichoniscus pygmaeus

Entomostraca

Class Branchiopoda

Subclass Copepoda

Subclass Cladocera

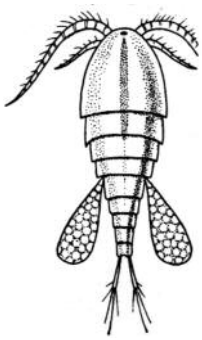
Class Ostracoda

Entomostraca is a somewhat old-fashioned name used to collectively describe the smaller crustaceans. It comprises three main groups, two of which belong to the class Branchiopoda (the copepods and the cladocerans) and the third to a separate class, the Ostracoda (ostracods or fairy shrimps).

There are various scattered county records of these tiny beasts, which need to be gathered together and assessed: another task for the coming years. Their main importance is that they are among the most important food organisms for fish and other aquatic animals. Some years ago Gillian McCall carried out a study of the Entomostraca of neighbouring Laois; we do not yet have such a study for Offaly but we can be sure they have much in common.[1]

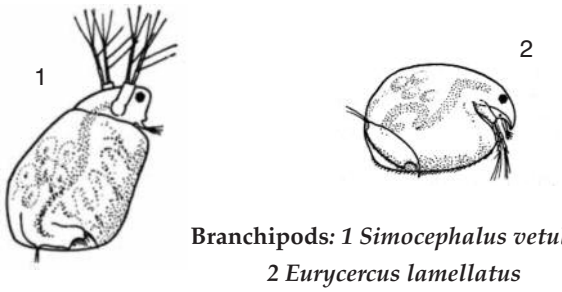
Freshwater shrimp

Copepods are a very diverse group, with some 14,000 described species. They are found in astronomical numbers in the sea and in just about every body of freshwater, including puddles and rain-gutters. Most are either parasitic or benthic, though the group includes a considerable contingent of parasites. They are typically between 1-2mm long, with a teardrop-shaped transparent body, one red eye in the middle of their 'foreheads,' and long antennae. They generally feed on plankton (except for the parasitic forms).



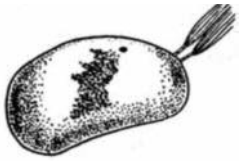
Cyclops

The **Cladocera** includes the water fleas (there are about 400 species), among them the very intensively-studied and familiar *Daphnia*. We have a clearer picture of what water fleas occur in the county; in 1984 and 1985 Catherine Duigan collected them at eleven sites in Offaly, recording 47 different kinds, including some rare species such as *Monospilus dispar* and *Oxyurella tenuicaudis*.



Branchipods*: 1 Simocephalus vetulus; 2 Eurycercus lamellatus*

The **seed shrimps** are tiny animals typically about 1mm across. They don't look like crustaceans at all on the outside because they are enclosed in two shells, just like bivalves. They are abundant, ubiquitous and very diverse, with no fewer than 50,000 named species.



Ostracod*: Cypris*

[1] Water fleas and their allies in *Laois: an Environmental History* pp. 153-161.

The Cladocera of Offaly

Acantholeberis curvirostris
Acroperus elongatus
Acroperus harpae
Alona affinis
Alona costata
Alona guttata
Alona intermedia
Alona quadrangularis
Alona rectangula
Alona rustica
Alonella excisa
Alonella exigua
Alonella nana
Bosmina longirostris
Bosmina sp.
Ceriodaphnia megalops
Ceriodaphnia pulchella
Ceriodaphnia quadrangula
Ceriodaphnia sp.
Chydorus cf. sphaericus
Chydorus ovalis
Chydorus piger
Chydorus sphaericus
Daphnia hyalina s.str.
Daphnia hyalina var. lacustris
Daphnia pulex
Daphnia sp.
Disparalona rostrata
Eurycercus lamellatus
Graptoleberis testudinaris
Ilyocryptus sp.
Lathonura rectirostris
Latona setifera
Monospilus dispar
Oxyurella tenuicaudis
Pleuroxus aduncus
Pleuroxus laevis
Pleuroxus trigonellus
Pleuroxus truncatus
Polyphemus pediculus
Pseudochydorus globosus
Scapholeberis mucronata
Scapholeberis sp.
Sida crystallina
Simocephalus serrulatus
Simocephalus vetulus
Streblocerus serricaudatus

Subphylum CHELICERATA: spiders, harvestmen and scorpions

Class Arachnida

Order OPILIONES: harvestmen

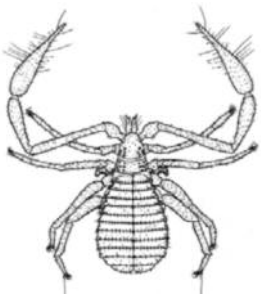
Harvestmen look like long-legged spiders, a sort of daddy-longlegs without wings. They are grassland specialists, predators like their spider cousins, their long and highly-flexible stilt-like legs designed to help them manoeuvre between the jungle of tall stems and leaves. The number of Irish species currently stands at 18, of which only half have been recorded so far from Offaly.

All of these are very common and widespread species. It is an indicator of how little these animals have been studied here that Offaly is one of only three counties (the others being Armagh and Derry) from which another common species of harvestman, *Nelima gothica*, has not yet been recorded.

The harvestmen of Offaly

Nemastoma bimaculatum
Oligolophus tridens
Paroligolophus agrestis
Lacinius ephippiatus
Mitopus morio
Phalangium opilio
Leiobunum rotundum
Leiobunum blackwalli
Chthonius ischnocheles

Order PSEUDOSCORPIONIDA: false scorpions



False scorpions are the least familiar of the arachnids, and among the smallest – which is just as well in one way because they are so frighteningly scorpion-like! None of them is as big as a centimetre long, and most are a fraction of this. The scorpion-like appearance is confined to the front end, where it has a pair of long pincers; it does not have the whip-like stinger at the end of its tail. Spiders are their closest relatives: like them they have a venom gland and duct, and silk glands in their jaws. They are a very ancient group, fossils going back to the Devonian period of earth history 380 million years ago. They are not uncommon indoors (though seldom noticed because they are so tiny): and can be very useful because they eat the larvae of clothes moths and carpet beetles, mites, ants and other small invertebrates.

Of the 17 or so species of Irish false scorpions so far known we appear to have a record of only one Offaly species so far: *Neobisium carcinoides*.

Order Acari (Acarina): (mites and ticks)

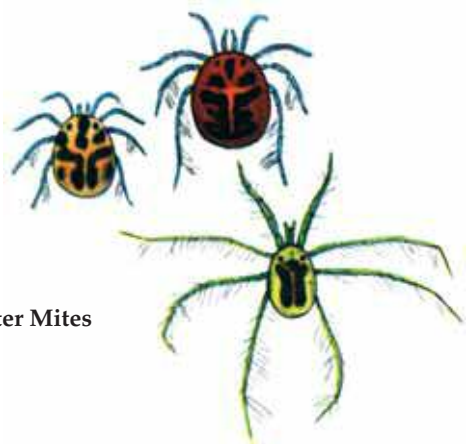
Mites are among the most diverse and successful of all animals. More than 45,000 different species have been described, and some experts consider this may only be 5% of the true number. They are also among the most ancient of arachnids, with fossil forms as old as 400 million years. Many mites are free-living, but others are parasites of plants and animals.

A species of *Parasiticus*. These mites are found in numbers on dung beetles and bumblebees especially.

Ticks constitute a small but very important sub-order of acarines – important because they are blood-sucking ectoparasites of vertebrates, and the most important vector of human and animal disease after mosquitoes.

Few species of animals are free of the attentions of mites and ticks – and this includes small creatures like insects. Species that attack humans, domestic animals and crop plants have been the subject of much study, but much less attention has been paid to 'wild' species – and next to none to their distribution in Offaly.

Most mites and ticks are rather drab-looking slow-moving creatures. Not so the **water mites** that parasitise aquatic invertebrates though. Many are beautifully coloured, with long hair-fringed legs that enable them to swim with great speed.



Water Mites

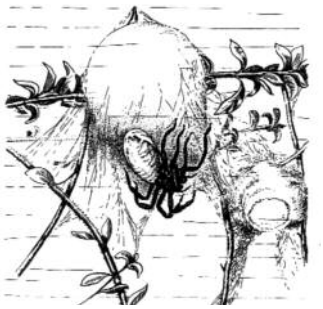
Order Araneae: spiders

Most of us are acquainted with only three or four different kinds of spiders: that acquaintance, moreover, is of the most casual sort, and that is the way we probably want it to stay. As is the case with every group of creatures introduced in this book, that would quickly change if we knew them better! Indeed, the names we give these few familiar spiders is a measure of how vague is our appreciation of them: garden spider, house spider. The only reason we have names for them at all is that the ways of these few happen to connect with our own in casual lives, but never enough to make enemies of us, because their activities do no significant harm to our interests. But although our vague vocabulary knows only one 'garden spider', there are probably several dozen other spider species in your garden as well, most of them smaller than the one we have a common name for, each going about its hidden way of making a living in the garden world. Their generally unappreciated lives are generally beneficial because they are insect predators.

***Atypus*, the trapdoor spider**

Offaly is of special interest to arachnologists as the only Irish county from which the trapdoor spider *Atypus affinis* had been recorded. There appears to be no record of exactly *where* in the county this rare and very special spider lives: something we would dearly like to know in order to ensure the protection of its habitat. One of its favourite habitats elsewhere is the warmer south-facing sides of the nest mounds of the yellow meadow ant (*Lasius flavus*), which are very much less common today than they were in the not-so-distant past.

However, it is often the case that species are thought to be rare simply because nobody who can recognise them has actually *looked* for them (and this applies to most invertebrate groups). This is the case with the wonderful water spider *Argyroneta aquatica* for example, which is found in many (perhaps most) cutaway bogs, and the largest Irish spider *Dolomedes fimbriatus*, sometimes called the bog spider (but remember what we said about 'garden spider' above!), which often haunts the margins of the same boghole in whose depths the water spider has its diving bell.



Water-spider beside its diving bell

In recent years the distinctive long-legged spider *Pholcus phalangioides* has become more common than it used to be in outbuildings and houses in the county, and because this is a spider of warm climates its spread is linked to global warming. Like most other groups of plants and animals spiders are being affected by global warming, though we simply don't know enough to be able to track these changes for Offaly.

In 1991 and 1992 spiders were systematically but briefly collected during a detailed study of the Shannon and Little Brosna floodplains. A total of 63 species were recorded during this short study, and 33 of these were new county records – but yet excluding many species common elsewhere. This clearly demonstrates how poorly we know the spider fauna of the county. A careful study of any other natural habitat in the county would have similar results, and shows how much scope there is for anybody interested to take up their study.

The spiders of Offaly[1]

Family *ATYPIDAE trapdoor spiders*
Atypus affinis (only Irish county)

Family *AMAUROBIDAE large cribellate spiders*
Amaurobius fenestralis
Amaurobius similis

Family *DYCTINIDAE small cribellate spiders*
Dictyna arundinacea

Family *PHOLCIDAE longleg spiders*
Pholcus phalangioides

Family *GNAPHOSIDAE nocturnal hunting spiders*
Micaria pulicaria
Zelotes pusillus

Family *LIOCRANIDAE*
Agroeca proxima
Scotina gracilipes

Family *CLUBIONIDAE nocturnal hunting spiders*
Clubiona reclusa
Clubiona neglecta
Clubiona stagnatilis
Clubiona trivialis

Clubiona trivialis Male

Family *ZORIDAE*
Zora spinimana

Family *ANYPHAENIDAE*
Anyphaena accentuata

Family *PHILODROMIDAE*
Philodromus cespitum
Tibellus maritimus
Tibellus oblongus

Family *THOMISIDAE crab spiders*
Oxyptila trux
Xytiscus cristatus
Xytiscus erraticus

Family *SALTICIDAE jumping spiders*
Heliophanus cupreus
Neon reticulatus
Salticus scenicus

Agrocea proxima Male

Family *LYCOSIDAE wolf spiders*
Alopecosa pulverulenta
Arctosa leopardus
Pardosa amentata
Pardosa lugubris
Pardosa nigriceps
Pardosa palustris
Pardosa prativaga
Pardosa pullata
Pirata hygrophilus
Pirata latitans
Pirata piraticus
Pirata uliginosus
Trochosa ruricola
Trochosa spinipalpis
Trochosa terricola

Family *PISAURIDAE nursery web spiders*
Dolomedes fimbriatus
Pisaura mirabilis

Family *AGELENIDAE sheet web spiders*
Tegenaria domestica
Tetrix denticulata

Family *ARGYRONETIDAE water spiders*
Argyroneta aquatica

Family *HAHNIIDAE*
Antistea elegans

Family *MIMETIDAE pirate spiders*
Ero furcata

Family *THERIDIIDAE comb-footed spiders*
Enoplognata ovata
Euryopis flavomaculata
Neottiura bimaculata
Pholcomma gibbum
Robertus lividus
Theridion impressum
Theridion pallens
Theridion sisyphium

Salticus scenicus Male

Family *METIDAE orb weavers*
Metellina mengei
Metellina merianae

Family *TETRAGNATHIDAE elongated orb weavers*
Pachygnatha clercki
Tetragnatha extensa

Family *ARANEIDAE orb web spiders*
Araneus diadematus
Araneus quadratus
Gibbaranea gibbosa
Hypsosinga pygmaea
Larinioides cornutus
Zygiella x-notata

Family *LINYPHIIDAE money spiders*
Agyneta cauta
Agyneta subtilis
Allomengea vidua
Araeoncus crassiceps
Araeoncus humilis
Baryphyma gowerense
Baryphyma trifrons
Bathyphanates approximatus
Bathyphanates parvulus
Bathyphanates setiger
Bathyphantes gracilis
Centromerita bicolor
Centromerus dilutus
Ceratinella brevipes
Ceratinella brevis
Dicymbium nigrum
Diplocephalus latifrons
Diplocephalus permixtus
Diplostyla concolor
Erigone atra
Erigone dentipalpis
Erigone longipalpis
Erigonella hiemalis
Erigonella ignobilis
Gnathonarium dentatum
Gonatium rubens
Gongylidiellum latebricola
Gongylidiellum vivum
Hypomma bituberculatum

Lepthyphantes leprosus Female

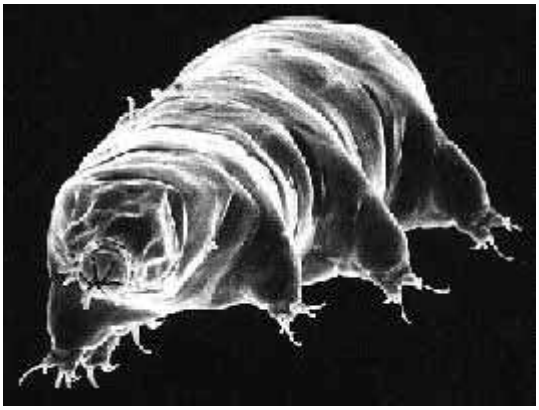
Jacksonella falconeri (only Irish county)
Kaestneria dorsalis
Labulla thoracica
Leptyphantes ericaeus
Leptyphantes leprosus
Leptyphantes mengei
Leptyphantes minutus
Leptyphantes tenuis
Leptyphantes zimmermanni
Linyphia triangularis
Lophomma punctatum
Maro sublestus (only Irish record)
Maso sundevalli
Micrargus herbigradus
Micrargus subaequalis
Microlinyphia pusilla
Microneta viaria
Monocephalus fuscipes
Neriene clathrata
Neriene peltata
Oedothorax fuscus
Oedothorax gibbosus
Oedothorax retusus
Peponocranium ludicrum
Pocadicnemis juncea
Pocadicnemis pumila
Porrhomma pygmaeum
Saaristoa abnormis
Savignia frontata
Silometopus elegans
Tallusia experta
Tiso vagans
Trichopterna thorelli
Walckenaeria acuminata
Walckenaeria antica
Walckenaeria nudipalpis

***Lepthyphantes leprosus* Male**

[1] Van Helsdingen's 1996 list of spiders with one addition - 378 Irish species +

Phylum Tardigrada: water bears

Tardigrades are truly among the most extraordinary of living creatures. Colin Tudge in his wonderful book *The Variety of Life* (Oxford University Press, 2000) tells us that if the world is ever laid waste by ecological disaster or collision with yet another asteroid the tardigrades are good candidates for survival. They can survive extreme desiccation for centuries – perhaps for millennia; they can endure temperatures of between –272 and +149 degrees Celsius, and levels of radiation a thousand times higher than would be a fatal dose for humans. They are common in moss-choked gutters, but no attention has been paid to them yet – not in Offaly anyway: and indeed hardly anywhere else in Ireland. The main reason they are so seldom noticed is that they are so small: most of them not much more than 0.1mm long. They feed for the most part on bacteria or small plants. Some 750 species have been described; their closest relatives are the arthropods.



Water bear

Phylum Annelida: earthworms and their allies

The annelids with which everybody is most familiar are the earthworms, though the vast majority of this large phylum of 15,000 species are marine. All are worm-like creatures with clearly-segmented bodies. Most of the marine species belong to the class Polychaeta, many of which are colourful and beautiful creatures – often really flamboyant-looking; they are characterised by having a pair of often elaborate appendages (called parapodia) on each of the body's identical segments.

Earthworms

The other class (Clitellata) comprises two subclasses: the parasitic and predatory leeches (sub-class Hirudinea) and the worms 'proper', which include the large and familiar earthworms (megadriles) and the much smaller worms collectively known as microdriles, which include the tubificids or tubeworms that are often so prodigiously abundant in polluted environments. Common aquatic worms recorded in Offaly include *Eiseniella tetraedra, Tubifex tubifex* and species of *Stylodrilus* and *Lumbriculus.*

The earthworms of Offaly[1]

Allolobophora chlorotica (Savigny, 1826)
Aporrectodea caliginosa (Savigny, 1826)
Aporrectodea longa (Ude, 1885)
Aporrectodea rosea (Savigny, 1826)
Dendrobaena octaedra (Savigny, 1826)
Dendrodrilus rubidus (Savigny, 1826)
Eiseniella tetraedra (Savigny, 1826)
Lumbricus castaneus (Savigny, 1826)
Lumbricus festivus (Savigny, 1826)
Lumbricus rubellus (Hoffmeister, 1843)
Lumbricus terrestris Linnaeus, 1758
Octolasion cyaneum (Savigny, 1826)
Octolasion tyrtaeum (Savigny, 1826)
Satchellius mammalis (Savigny, 1826)

[1] Compiled by Olaf Schmidt

The most familiar and largest leech species is the horse leech *Haemopsis sanguisuga*, which is found everywhere in rivers, lakes and ponds: but there are also many smaller species that are also common (and some that are less so), the majority of which prey on invertebrates. We know little about their status in Offaly at present. A check list for Irish leeches was published by T.K. McCarthy in 1975 which recorded only six species for Offaly (three of them only in streams along the county boundary!) This list doesn't include the horse leech, which shows how incomplete it was. A number of species are regularly recorded during water quality sampling by the EPA, including species of *Erpobdella*, *Glossiphonia complanata*, *Helobdella stagnalis* as well as the fish parasite *Piscicola geometra*.

The leeches of Offaly

Erpobdella spp.
Glossiphonia complanata
Glossiphonia heteroclita
Haemopsis sanguisuga
Helobdella stagnalis
Hemiclepsis marginata
Piscicola geometra
Theromyzon tessulatum
Trocheta bykowskii

All of these groups of worms play important roles in the varied habitats in which they live, but the most obviously important annelids from our human viewpoint are the terrestrial earthworms (family Lumbricidae). It would be hard to overestimate their importance in the maintenance of soil fertility, and for this reason alone we should be more aware and appreciative of their presence. Published records of earthworms from county Offaly are restricted to a number of cutover peat soils surveyed in the late 1970s.

Fourteen lumbricid species out of 26 on the Irish list have been recorded from County Offaly. It is highly likely that a number of other common species occur in habitats not covered by these surveys, especially compost and manure heaps, semi-aquatic habitats and deciduous forests.

We know even less about the microdriles. In a 1970s survey of the small microdriles known as enchytraeids (which are among the most important and widespread soil animals), Brenda Healy recorded 75 Irish species: she collected records from 15 counties but unfortunately Offaly was not one of them. This is almost virgin territory where the microdriles are concerned.

Phylum Mollusca: snails and slugs

The freshwater and terrestrial mollusc fauna of the country as a whole is fairly well-known, but little detailed work has been done in Offaly. The only molluscs familiar to most people are the garden snail *Helix aspera* and a number of slug species whose depredations draw attention to themselves. However, there are dozens of other species, but most are small and all are silent and more or less sedentary, so they escape our notice until we actually go looking for


Horny orb mussel

them. The Irish list of freshwater and terrestrial molluscs stands at 125 at present, some 80% of the number found in Britain, and 113 of these have been recorded in Offaly. The commoner aquatic molluscs found in the county include species of *Pisidium* and *Sphaerium*, *Lymnaea peregra*, *Lymneaea stagnalis*, species of *Planorbis* and *Valvata*, *Physa fontinalis* and *Potamopyrgus antipodarum*.The largest are the freshwater mussels *Anodonta anatina* and *Anodonta cygnea*; the invasive zebra mussel *Dreissena polymorpha* also lives in Offaly in the Shannon and Grand Canal.

One tiny snail that has received a disproportionate amount of attention is the glacial relict species *Vertigo geyheri*, which is found in a number of bogs and is sufficiently rare to merit special conservation status for

these locations because it signals that there is something out of the ordinary about their ecology. Further studies are likely to show other distinctive species among the flora and fauna here as well.

Irish yellow slug

Fossil molluscs are abundant in the limestones of Lower Carboniferous age, but of more particular geological interest in Offaly are the *sub-fossil* mollusc assemblages found in two postglacial sedimentary deposits. One of these is the white *marl* which accumulated in the lakes that were widespread in the county before the initiation of bog development some 9,000 years ago. Some preliminary studies have been carried out on the abundant snail fauna that is contained in the marl, but it would certainly repay further and more systematic study.

The second deposit is a postglacial tufa found along the Millpark stream that runs along the boundary with Tipperary between Birr and Roscrea. This has yielded an exceptionally rich and important assemblage of molluscs and other freshwater creatures and should be conserved.

The snails and slugs of Offaly[1]

Acanthinula aculeata (Müller, 1774)	Prickly snail
Acicula fusca (Montagu, 1803)	Point snail
Acroloxus lacustris (Linnaeus, 1758)	Lake limpet
Aegopinella nitidula (Draparnaud, 1805)	Smooth glass snail
Aegopinella pura (Alder, 1830)	Clear glass snail
Ancylus fluviatilis Müller, 1774	River limpet
Anisus leucostoma (Millet, 1813)	Button ram's-horn
Anisus vortex (Linnaeus, 1758)	Whirlpool ram's-horn
Anodonta anatina (Linnaeus, 1758)	Duck mussel
Anodonta cygnea (Linnaeus, 1758)	Swan mussel
Aplexa hypnorum (Linnaeus, 1758)	Moss bladder snail
Arion ater (Linnaeus, 1758)	Large black slug
Arion circumscriptus Johnston, 1828	Bourguignat's slug
Arion distinctus Mabille, 1868	
Arion flagellus Collinge, 1893	Durham slug
Arion hortensis Férussac, 1819	Garden slug
Arion intermedius Normand, 1852	Hedgehog slug
Arion silvaticus Lohmander, 1937	
Arion subfuscus (Draparnaud, 1805)	Dusky slug
Balea cf. *perversa* (Linnaeus, 1758)	Tree snail
Bathyomphalus contortus (Linnaeus, 1758)	Twisted ram's-horn
Bithynia tentaculata (Linnaeus, 1758)	Common bithynia
Bithynia leachii (Sheppard, 1823)	Leach's bithynia
Candidula intersecta (Poiret, 1801)	Wrinkled snail
Carychium minimum Müller, 1774	Herald snail
Carychium tridentatum (Risso, 1826)	Slender herald snail
Cecilioides acicula (Müller, 1774)	Blind snail
Cepaea hortensis (Müller, 1774)	White-lipped snail
Cepaea nemoralis (Linnaeus, 1758)	Brown-lipped snail
Cernuella virgata (Da Costa, 1778)	Striped snail
Clausilia bidentata (Ström, 1765)	Common door snail
Cochlicella acuta (Müller, 1774)	Pointed snail
Cochlicopa cf. *lubrica* (Müller, 1774)	Slippery moss snail
Cochlicopa cf. *lubricella* (Rossmässler, 1834)	
Columella aspera Waldén, 1966	
Columella edentula (Draparnaud, 1805)	
Cornu aspersum (Müller, 1774)	Garden snail
Deroceras laeve (Müller, 1774)	Marsh slug
Deroceras panormitanum (Lessona & Pollonera, 1882)	Sicilian slug
Deroceras reticulatum (Müller, 1774)	Field slug
Discus rotundatus (Müller, 1774)	Rounded snail
Dreissena polymorpha (Pallas, 1771)	Zebra mussel

Zebra mussel

Pointed snail

Grey field slug

Brown-lipped snail

The snails and slugs of Offaly (continued)

Euconulus cf. *alderi* (Gray, 1840)	
Euconulus cf. *fulvus* (Müller, 1774)	
Galba truncatula (Müller, 1774)	Fluke snail; dwarf pond snail
Gyraulus albus (Müller, 1774)	White ram's-horn
Gyraulus crista (Linnaeus, 1758)	Nautilus ram's-horn
Gyraulus laevis (Alder, 1838)	Smooth ram's-horn
Helicella itala (Linnaeus, 1758)	Heath snail
Hippeutis complanatus (Linnaeus, 1758)	Flat ram's-horn
Lauria cylindracea (Da Costa, 1778)	Common chrysalis snail
Lehmannia marginata (Müller, 1774)	Tree slug
Leiostyla anglica (Férussac, 1821)	English chrysalis snail
Limacus flavus (Linnaeus, 1758)	Yellow slug
Limacus maculatus (Kaleniczenko, 1851)	Irish yellow slug
Limax maximus Linnaeus, 1758	Great grey slug
Lymnaea fusca (C. Pfeiffer, 1821)	Marsh pond snail
Lymnaea stagnalis (Linnaeus, 1758)	Great pond snail
Merdigera obscura (Müller, 1774)	Lesser bulin
Milax gagates (Draparnaud, 1801)	Jet slug
Nesovitrea hammonis (Ström, 1765)	Rayed glass snail
Oxychilus alliarius (Miller, 1822)	Garlic snail
Oxychilus cellarius (Müller, 1774)	Cellar snail
Oxychilus draparnaudi (Beck, 1837)	Draparnaud's snail
Oxyloma elegans (Risso, 1826)	Pfeiffer's amber snail
Physa fontinalis (Linnaeus, 1758)	Common bladder snail
Pisidium amnicum (Müller, 1774)	River pea shell
Pisidium casertanum (Poli, 1791)	
Pisidium henslowanum (Sheppard, 1823)	
Pisidium hibernicum Westerlund, 1894	
Pisidium milium Held, 1836	Rosy pea shell
Pisidium nitidum Jenyns, 1832	
Pisidium obtusale (Lamarck, 1818)	
Pisidium personatum Malm, 1855	
Pisidium pulchellum Jenyns, 1832	
Pisidium subtruncatum Malm, 1855	
Planorbarius corneus (Linnaeus, 1758)	Great ram's-horn
Planorbis carinatus Müller, 1774	Keeled ram's-horn
Planorbis planorbis (Linnaeus, 1758)	Margined ram's-horn
Potamopyrgus antipodarum (Gray, 1843)	Jenkin's spire shell
Punctum pygmaeum (Draparnaud, 1801)	Dwarf snail
Pupilla muscorum (Linnaeus, 1758)	Moss chrysalis snail
Pyramidula pusilla (Vallot, 1801)	Rock snail
Quickella arenaria (Potiez & Michaud, 1835)	Sand amber snail
Radix auricularia (Linnaeus, 1758)	Ear pond snail
Radix balthica (Linnaeus, 1758)	Wandering snail
Spermodea lamellata (Jeffreys, 1830)	Plated snail
Sphaerium corneum (Linnaeus, 1758)	Horny orb mussel
Succinea putris (Linnaeus, 1758)	Great amber snail
Tandonia budapestensis (Hazay, 1881)	Budapest slug
Tandonia sowerbyi (Férussac, 1823)	Sowerby's slug
Testacella haliotidea Draparnaud, 1801	Shelled slug
Testacella scutulum Sowerby, 1820	Shield slug
Theodoxus fluviatilis (Linnaeus, 1758)	River nerite
Trochulus hispidus (Linnaeus, 1758)	Hairy snail
Trochulus striolatus (C. Pfeiffer, 1828)	Strawberry snail
Vallonia cf. *excentrica* Sterki, 1893	Eccentric grass snail
Vallonia costata (Müller, 1774)	Ribbed grass snail
Vallonia pulchella (Müller, 1774)	Smooth grass snail
Valvata cristata Müller, 1774	Flat valve snail
Valvata piscinalis (Müller, 1774)	Common valve snail
Vertigo antivertigo (Draparnaud, 1801)	Marsh whorl snail
Vertigo geyeri Lindholm, 1925	
Vertigo moulinsiana (Dupuy, 1849)	Des Moulin's whorl snail
Vertigo pusilla Müller, 1774	Wall whorl snail

Button ram's horn

Cellar snail

Prickly snail

Smooth glass snail

Common door snail

The snails and slugs of Offaly (continued)

Vertigo pygmaea (Draparnaud, 1801)	Common whorl snail
Vertigo substriata (Jeffreys, 1833)	Striated whorl snail
Vitrea contracta (Westerlund, 1871)	Milky crystal snail
Vitrea crystallina (Müller, 1774)	Crystal snail
Vitrina pellucida (Müller, 1774)	Pellucid glass snail
Zenobiella subrufescens (Miller, 1822)	Brown snail
Zonitoides nitidus (Müller, 1774)	Shiny glass snail

English chrysalis snail

[1] Compiled by Roy Anderson, Queen's University of Belfast.

Insects

The apterygote classes: insects that never developed wings

CLASS Collembola (springtails)
CLASS Protura (proturans)
CLASS Diplura (diplurans
CLASS Thysanura (silverfish)

CLASS PTERYGOTA (winged insects)
Subclass Palaeoptera
Order **Ephemeroptera** (mayflies)
Order **Odonata** (dragonflies and damselflies)

Subclass Neoptera
Order **Blattodea** (cockroaches)
Order **Plectoptera** (stoneflies)
Order **Orthoptera** (grasshoppers)
Order **Dermaptera** (earwigs)
Order **Psocoptera** (book and bark lice)
Order **Thysanoptera** (thrips)
Order **Siphunculata** (sucking lice)
Order **Mallophaga** (biting lice)
Order **Hemiptera** (true bugs)
Order **Homoptera** (aphids and plant bugs)
Order **Coleoptera** (beetles)
Order **Neuroptera** (lacewings)
Order **Megaloptera** (alderflies)
Order **Siphonaptera** (fleas)
Order **Diptera** (flies, mosquitoes and gnats)
Order **Trichoptera** (caddisflies)
Order **Lepidoptera** (butterflies and moths)

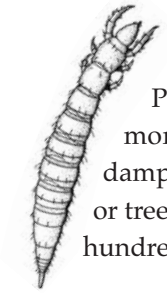
With more than 750,000 species formally described so far, the insects are by far the most diverse animals on earth – and the number awaiting discovery and description is several times as high. Our knowledge of the status of the different orders of insects in Offaly is very uneven. Little attention was paid to Offaly in most of the early surveys, which tended to concentrate on favoured areas on the periphery of Ireland. Back in 1920 (in her account of Ireland's freshwater sponges) Jane Stephens noted the way in which 'in particular, the midlands have been neglected.' The same can be said of most groups of small animals, and it is still true. A survey of the fauna of raised bogs in 1983 added greatly to our knowledge of the biodiversity of several groups of insects and crustaceans in the county's peatland habitats, and there have been a number of brief insect forays into Slieve Bloom. A few groups of larger insects are fairly well known. These more conspicuous, and more evidently attractive and interesting insects are sometimes described as 'charismatic' groups because they are big enough for us to appreciate with eye and camera just how wonderful they are, and how marvellously adapted for their chosen way of life. But size is never the measure of the degree of wonder in living things. The smallest insects are just as amazing as the larger and more familiar – and indeed often more amazing. But you need to look more closely to see this, and you need new eyes that can see into the world of these tiny creatures.

Even so, no group is sufficiently well known at present for us to be able to produce and entirely satisfactory account of its status in the county. And so it is not possible for us to produce 'Action Plans' that would ensure favourable conservation status for individual groups and species. Rather do we need to *concentrate on the preservation of the habitats* where we know the majority of species live, and encourage people to devote more time and attention to the study of the individual groups of plants and animals in these habitats, particularly those about which we know very little.

CLASS *COLLEMBOLA*: springtails

Springtails are the largest of three orders of wingless arthropods long considered to be insects, but now relegated to a distinct class. They are highly successful and enormously abundant, but unfamiliar to most people because they are very small creatures (seldom more than 5mm long), and the worlds they inhabit are hidden from view. For the most part they live in the soil and among litter, feeding on the fungi that decompose organic matter. More than 7,500 modern species

have been described, but springtails have been around for nearly as long as there has been soil and litter to exploit. They are very ancient creatures, belonging to lineages that go back as far as the Devonian period of earth history 400 million years ago. Several dozen species have been recorded for neighbouring Laois, and we can expect a comparable number from Offaly – when somebody eventually looks for them.

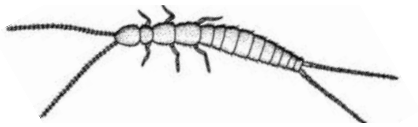


CLASS *PROTURA*: proturans

Proturans are tiny white insects seldom more than a millimetre long that live in damp and shady places, such as under stones or tree bark, and in leaf litter. There are about a hundred species.

CLASS *DIPLURA*: diplurans

Diplurans are perhaps closer to the ancestral insects from which all modern forms evolved that any other insects. They are tiny white wingless creatures (mostly less than 1mm long). Only a hundred or so species are known.



CLASS *THYSANURA*: silverfish

Silverfish are very well named. Some of them really are fish-shaped, with rounded heads and pointy tails, and they have a shiny or silvery look because their bodies are covered with reflective scales. They have been around for 300 million years, so they are among the most ancient of insects. The number of described species is around 370, the most familiar of which is *Lepisma saccharina*, which often lives in our homes but only ventures out after dark to forage for scraps of starchy or sugary food, disappearing in a flash when a light is switched on. Several other species live in the wild.

CLASS *PTERYGOTA*: winged insects

Order *EPHEMEROPTERA*: mayflies

Mayflies are one of four very important insect orders that spend the first part of their life as fully aquatic larvae, which are referred to as nymphs or naiads. These naiads moult several times, before emerging from the water to become winged adults. Several species are found in Offaly's rivers and streams, including *Ephemerella ignita, Ecdyonurus venosus, Heptagenia sulphurea, Rhithrogena semicolorata* and species of *Baetis* and *Caenis*. The largest species is *Ephemera danica*, the fisherman's mayfly, which occurs in lake and river sites with gravel and sand suitable for the burrowing nymphs (See Box). All mayflies are sensitive to

The Mayfly *Ephemera danica* Müller

Of the 33 mayfly species found in Ireland *Ephemera danica* is the largest of all, and the only member of its genus in Ireland. The larva is a burrowing animal with a hairy appearance and powerful, flattened limbs adapted for digging or for moving sediment. The life cycle of *Ephemera danica* in Ireland is normally two years, but under exceptional conditions it may complete its life cycle in one year, and it has been known to stretch to three at higher altitudes.

In a study of Lough Derg mayfly nymphs constituted one of the most important items of the trout's diet (***See Croneen Box, page 70***), being eaten in large numbers at all times of the year except August and September, and *Ephemera danica* was found to be the most important mayfly taken by surface-feeding trout in limestone lakes.

It was all but wiped out by pollution from a number of midland waters, but its requirements have been studied and populations have now been successfully reintroduced. Although *Ephemera danica* had never been recorded from Pallas Lake (***See Box. page 69***) a biological survey showed that the resident fauna was similar in composition and abundance to many of the larger midland limestone lakes that had established populations. First instar nymphs were introduced into the lake in June 1977 and a hatch of mayflies was recorded in June 1978 showing that under favourable environmental conditions adults can emerge after spending only eleven months as nymphs.

Larva and adult *Ephemera danica* from Little Brosna

pollution to varying extents, which makes them very valuable indicators of water quality (along with other groups of aquatic macroinvertebrates). In bogholes and other still waters the elegant little mayfly *Leptophlebia* often occurs in great numbers. The number of described species worldwide is between 2,100 and 2,500.

Order *BLATTODEA*: cockroaches

Although several species occur occasionally in most parts of Ireland, cockroaches are not an important part of the Irish insect fauna. Their usual haunts are buildings that are well and constantly heated.

Order *ODONATA:* dragonflies and damselflies

There are 5,500 species of dragonflies and damselflies worldwide, some of them with wing-spans of many centimetres – though this is modest compared to some of the dragonflies that lived during the Upper Carboniferous period of earth history, which had wingspans nearly a metre wide!

Dragonflies are a group of insects that have been attracting much more popular interest in recent years. This has been due in large measure to the Dragonfly Ireland Survey. We now have a good picture of the national distribution of the different species, but the picture at county level is still sketchy. Most of the Offaly records have come from habitat surveys, particularly of raised bogs and canals, or generated in the course of the regular monitoring of rivers and streams.

Dragonflies and damselflies in County Offaly[1]

Dragonfly recording in Ireland recently received a huge boost from the DragonflyIreland project, which ran from 2000 to 2003 and aimed to document the distribution and status of dragonflies throughout Ireland. The project culminated in the publication of *The Natural History of Ireland's Dragonflies* (Nelson and Thompson, 2004). For full details on the project, in addition to a huge wealth of other information relating to dragonflies in Ireland and elsewhere, along with advice on fieldcraft, identification and an exhaustive bibliography, visit the project's excellent web pages at http://www.habitas.org.uk/dragonflyireland/index.html

Another key reference is the *Atlas of the dragonflies of Britain and Ireland* (Merritt, Moore and Eversham, 1997), which includes a checklist of dragonfly records at the county level (including Ireland, although coverage in Ireland was quite poor in certain areas).

At present, there is much discussion on a standardised approach to European names for dragonflies but none of the proposals has been universally adopted as yet. The nomenclature used below follows that proposed by Dijkstra, Branson and Lewington (2005). However, for clarity, earlier common names in use in Britain and Ireland have been added where they differ from the proposed European ones (proposed European names appear in **bold**, then Latin names in italics, followed by (in brackets) former British names (underlined) and Irish names (after Nelson and Thompson, 2004) which are in *underlined italics*).

References

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Merritt, R., Moore, N.W. and Eversham, B.C. (1997). *Atlas of the dragonflies of Britain and Ireland*. London, The Stationery Office.

Nelson, B and Thompson, R. (2004). *The Natural History of Ireland's Dragonflies*. Belfast, The Ulster Museum.

[1] Contributed by Alex Copland.

Zygoptera: the damselflies of Offaly

Calopteryx splendens **Banded demoiselle** (*Banded Jewelwing*). Widespread and common alongside slow-flowing rivers and streams.

Calopteryx virgo **Beautiful demoiselle** (*Beautiful Jewelwing*). Scarce and restricted to the southern half of the county.

Lestes dryas **Robust spreadwing** (Scarce Emerald Damselfly; *Turlough Spreadwing*). Ireland's rarest dragonfly and, although not recorded in County Offaly, has been recorded close to its borders in Counties Galway, Tipperary and Westmeath. Often found in turloughs (although present in other waterbodies with fluctuating levels) it is possible that colonies of this species may be present but overlooked in the county.

Lestes sponsa **Common spreadwing** (Emerald Damselfly). Fairly common and widespread.

Coenagrion lunulatum **Crescent bluet** (Irish Damselfly; *Irish Bluet*). Only known from one site in the county (although there may be other, as yet undiscovered colonies). The only dragonfly species present in Ireland but absent from Britain.

Coenagrion puella **Azure bluet** (Azure Damselfly). Common and widespread.

Coenagrion pulchellum **Variable bluet** (Variable Damselfly). Common and widespread.

Enallagma cyathigerum **Common bluet** (Common Blue Damselfly). Common and widespread.

Pyrrhosoma nymphula **Large red damsel** (Large Red Damselfly; *Spring Redtail*). Common and widespread.

Ischnura elegans **Common bluetail** (Blue-tailed damselfly; *Common Blue-tip*). Common and widespread.

Anisoptera: the dragonflies of Offaly

Aeshna grandis **Brown hawker** (*Amber-winged Hawker*). Common and widespread.

Aeshna juncea **Moorland hawker** (Common Hawker). Fairly common and widespread.

Brachytron pratense **Hairy hawker** (Hairy Dragonfly; *Spring Hawker*). Scarce but widespread.

Libellula quadrimaculata **Four-spotted chaser** Common and widespread.

Orthetrum cancellatum **Black-tailed skimmer** Very scarce and localised.

Orthetrum coerulescens **Keeled skimmer** (*Heathland Skimmer*). Very scarce and limited to only a few sites within the county.

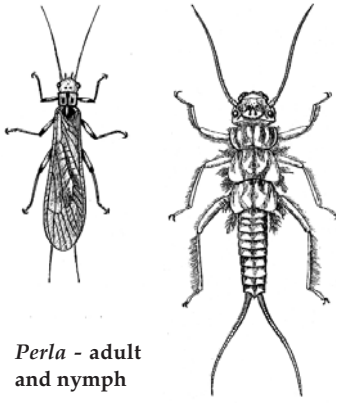
Sympetrum danae **Black darter** Fairly common but thinly distributed.

Sympetrum sanguineum **Ruddy darter** Scarce but widespread.

Sympetrum striolatum **Common darter** Common and widespread.

Order *PLECOPTERA*: stoneflies

Stoneflies inhabit rivers and streams where there is plenty of oxygen. Most are very sensitive to pollution, which makes them valuable bioindicators of water quality. Like mayflies, dragonflies and caddisflies, they spend their early days as fully aquatic larvae (often called caddis-worms) and are important in the diet of fish, emerging as winged adults after moulting maybe ten times. Common species found in Offaly include *Perla bipunctata, Isoperla grammatica, Chloroperla tripunctata*, several species of *Leuctra, Amphinemura sulcicollis* and *Protonemura meyeri.* The most striking genus is *Perla* – mainly because of its large size: a fully-grown nymph is 30mm or more long. About 1600 species have been described.



***Perla* - adult and nymph**

Order *ORTHOPTERA:* grasshoppers

Grasshoppers and crickets are the main insects that are assigned to the Orthoptera. Their economic importance comes from the fact that a few species, locusts mainly (locusts are really just big grasshoppers) can cause great damage to crops. We have only a handful of species in Offaly, and with the great decline in the area of species-diverse grassland over the last half century, the abundance of the species which live here has greatly decreased. The singing of stridulating grasshoppers in summer is one of the unforgettable hallmarks of these wonderful habitats, and its scarcely noticed disappearance from common experience means one more chord lost from the symphony of earlier summers.

Only sixteen species are known from Ireland at present, and not enough is known about their occurrence or distribution in Offaly to make a list worth presenting in our present state of

ignorance. For many groups of insects there is barely enough information for an Irish list to be meaningful.

Order *DERMAPTERA:* earwigs

The Dermaptera are a small order of insects, just 1,800 of them worldwide, with just one species common in Offaly – the widespread, successful and harmless earwig (*Forficula auricularia*) familiar to most people.

Order *PSOCOPTERA:* book and bark lice

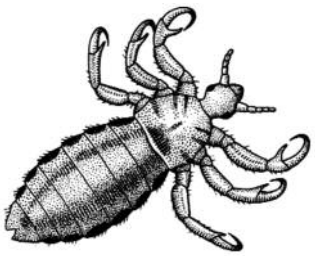
Psocopterans are tiny wingless insects with whip-like antennae that live very inconspicuously on trees and among vegetation, in bird's nests and such places, where they feed on fungi and algae. They very seldom attract our attention – except for the common book-louse *Liposcelis divinatorius*, which has developed a liking for the binding of damp books.

Order *THYSANOPTERA:* thrips

Thrips are tiny insects with feathery wings that live in flowers, where they feed mostly on pollen plant juices ('thrips', oddly enough, is the Greek word for woodlouse). Different species of plants have different thrips species, so there are dozens of different kinds in Offaly, but nobody has paid any attention to them up to now (about 5,000 species have been described worldwide).

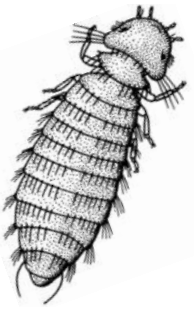
Order *SIPHULCULATA:* sucking lice

Sucking lice are obligate parasites of mammals. Nearly every mammal has its own species of louse (or more than one!), but we are so careful about hygiene in modern Ireland that – fortunately – the several kinds that attack humans are seldom seen in Offaly nowadays.



Order *MALLOPHAGA:* biting lice

Biting lice are parasites of birds mainly, but occasionally of mammals, feeding on flakes of skin and bits of feathers or hair, causing much irritation in the process to their host– although they do not bite, in spite of their name – chewing lice would be a more accurate name. All wild birds have them, as well as domestic poultry.



Order *HEMIPTERA:* bugs

In everyday discourse we often use the word 'bug' in a vague and general way for any sort of creepy-crawly – just as we use 'fly' for any insect with wings. These words however have a more precise meaning for the naturalist, for whom bugs are a particular order of insects characterised by mouthparts that have become adapted for sucking the juices of plants (and sometimes of animals, mainly arthropods). It is an enormous and truly successful group, with 67,500 or so species described so far.

The order comprises three groups. Cicadas and froghoppers (suborder **Auchenorrhyncha**) account for nearly half the total, but there are almost as many **Prosorrhyncha** – the suborder that includes the insects to which the name Hemiptera properly applies. Hemiptera means 'half-wings,' and in the Prosorrhyncha one part of each forewing is horny and tough, the other part membranous. At rest the hard part folds protectively over the soft part. The third group of Hemiptera is the **Sternorrhyncha**, and although it is the smallest of the three (with 12,500 species) it is the most familiar, because it includes the aphids or greenflies – all too familiar to anybody with a garden: but actually nearly every species of plant or plant group has its own distinct aphid or group of aphid species specifically adapted to feed them.

The bugs about which we know most in Offaly are the aquatic insects recorded during water quality surveys over the last two decades or so, and in studies of the aquatic fauna of bogs. We hope to collate all these records in the near future. As of now fewer than 50 hemipteran species have been recorded for Offaly, a fraction of the true number. (Kerry has four times as many – out of an Irish total to date of 309 species).

The bugs of Offaly[1]

Anthocoris confusus
Anthocoris nemorum
Arctocorisa germari
Callicorixa praeusta
Campyloneura virgula
Closterotomus norwegicus
Corixa panzeri
Cymatia bonsdorffi
Dicyphus constrictus
Gerris argentatus
Gerris costae
Gerris lacustris
Gerris odontogaster
Gerris thoracicus
Hebrus ruficeps
Hesperocorixa castanea
Hesperocorixa linnaei
Hesperocorixa sahlbergi
Liocoris tripustulatus
Lygocoris pabulinus
Lygus maritimus
Malacocoris chlorizans
Metatropis rufescens
Nabis ericetorum
Nabis flavomarginatus
Nepa cinerea
Orthops campestris
Orthotylus marginalis
Orthotylus prasinus
Phytocoris longipennis
Phytocoris tiliae
Plagiognathus arbustorum
Plagiognathus chrysanthemi
Sigara distincta
Sigara dorsalis
Sigara falleni
Sigara fossarum
Sigara lateralis
Sigara scotti
Sigara semistriata
Stenodema calcarata
Stenodema laevigata
Temnostethus gracilis
Tingis cardui
Troilus luridus
Velia caprai
Zicrona caerulea

[1] Contributed by Brian Nelson, Ulster Museum Belfast.

Order *COLEOPTERA*: beetles

There are more beetles than any other group of animals on earth, a fact that prompted the famous British scientist J.B.S. Haldane (when asked what could be inferred about God from a study of his creation) to famously answer 'an inordinate fondness for beetles.' And as is the case with most insect groups our knowledge of Offaly's beetles is patchy in the extreme – except for water beetles or carabids. Ground beetles or carabids are considered to be among the best indicator groups, i.e. groups that can be regarded as a surrogate for biodiversity more generally: yet only a tiny handful of species has been recorded for Offaly so far (29 out of 213).

The water beetles of Offaly[2]

***Haliplidae* crawling water beetles**
Haliplus confinis
Haliplus fluviatilis
Haliplus fulvus
Haliplus lineatocollis
Haliplus obliquus
Haliplus ruficollis
Haliplus variegatus
Haliplus sibiricus

***Noteridae* noterids**
Noterus clavicornis

***Dytiscidae* water beetles, diving beetles or dytiscids**
Laccophilus minutus
Hyphydrus ovatus
Hygrotus impressopunctatus
Hygrotus inaequalis
Hydroporus angustatus
Hydroporus erythrocephalus
Hydroporus gyllenhalii
Hydroporus obscurus
Hydroporus palustris
Hydroporus planus
Hydroporus pubescens
Hydroporus striola
Hydroporus tessellatus
Suphrodytes dorsalis
Stictonectes lepidus
Graptodytes granularis
Graptodytes pictus
Porhydrus lineatus
Agabus affinis
Agabus bipustulatus
Agabus congener
Agabus labiatus
Agabus nebulosus
Agabus paludosus
Agabus sturmii
Ilybius aenescens
Ilybius ater
Ilybius fuliginosus
Ilybius guttiger
Ilybius quadriguttatus
Ilybiusus montanus
Rhantus exsoletus
Rhantus frontalis
Colymbetes fuscus
Dytiscus marginalis great diving beetle
Dytiscus semisulcatus

***Gyrinidae* whirligigs**
Gyrinus caspius
Gyrinus marinus
Gyrinus natator
Gyrinus substriatus

***Helophoridae* scavenger water beetles**
Helophorus aequalis
Helophorus brevipalpis
Helophorus flavipes
Helophorus grandis
Helophorus minutes

***Hydrophilidae* scavenger water beetles**
Cercyon convexiusculus
Cercyon melanocephalus
Cercyon sternalis
Cercyon tristis
Paracymus scutellaris
Hydrobius fuscipes
Anacaena limbata
Anacaena lutescens
Laccobius bipunctatus
Laccobius minutus
Enochrus affinis
Enochrus coarctatus
Enochrus ochropterus
Enochrus testaceus
Cymbiodyta marginellus

***Hydraenidae* hydraenids, minute moss beetles**
Ochthebius minimus
Hydraena riparia

***Limnebiidae* minute moss beetles**
Limnebius truncatellus

***Scirtidae* marsh beetles**
Cyphon ochraceus
Cyphon padi
Cyphon pubescens

***Dryopidae* long-toed water beetles**
Dryops ernesti
Dryops similaris

***Elmidae* riffle beetles**
Elmis aenea
Esolus parallelepipedus
Limnius volckmari
Oulimnius tuberculatus

***Coccionellidae* ladybirds**
Coccidula rufa

***Chrysomelidae* leaf beetles**
Macroplea appendiculata
Donacia aquatica
Donacia bicolora
Donacia impressa
Donacia obscura
Donacia simplex
Donacia thalassina
Donacia vulgaris
Plateumaris discolor
Plateumaris sericea

Phaedon armoraciae
Prasocuris junci
Prasocuris phellandrii
Galerucella lineola
Galerucella sagittariae
Galerucella tenella
Aphthona nonstriata

***Curculionidae* weevils**
Tanysphyrus lemnae duckweed weevil
Notaris bimaculatus
Thryogenes nereis
Limnobaris dolorosa

2 Contributed by Garth Foster and Roy Anderson. The list includes all species associated with aquatic habitats and water plants, not just those that swim and live in water.

Ground beetles or ***carabids*** are considered to be among the best indicator groups, i.e. groups that can be regarded as a surrogate for biodiversity more generally. In spite of this little attention has been paid to the group in Offaly. Jane Feehan's survey of the carabids on Offaly farms in 1999 and 2000 almost doubled the number of species known from the county to 51 (but this is out of an Irish total of 213 species: many more await discovery). Among the species she added to the list are several rare species, notably *Poecilus cupreus*, *Poecilus anthracinus*, *Trechoblemus micros* and *Cychrus caraboides* (which feeds on snails and slugs).

The ground beetles of Offaly[3]

Abax parallelepipedus
Acupalpus parvulus
Agonum afrum
Agonum dorsale
Agonum fuliginosum
Agonum gracile
Agonum muelleri
Agonum piceum
Agonum thoreyi
Agonum vicuum
Amara aenea
Amara fuliginosum
Amara lunicollis
Asaphidion flavipes
Badister bipustulatus
Bembidion doris
Bembidion lampros
Bembidion mannerheimii


Abax parallelepipedus


Amara lunicollis


Bembidion tetracolum

Bembidion tetracolum
Bracycellus ruficollis
Calathus fuscipes
Calathus melanocephalus
Carabus granulatus
Carabus nemoralis
Cicindela campestris
Clivina fossor
Cychrus caraboides
Demetrias atricapillus
Elaphrus cupreus
Harpalus rufipes
Leistus rufescens
Metabletus truncatellus
Nebria brevicollis
Loricera pilicornis
Ocys harpaloides
Oxypselaphus obscurus


Calathus melanocephalus


Carabus granulatus


Elaphrus cupreus


Oxypselaphus obscurus

Paranchus albipes
Pterostichus anthracinus
Pterostichus cupreus
Pterostichus diligens
Pterostichus gracilis
Pterostichus madidus
Pterostichus melanarius
Pterostichus niger
Pterostichus nigrita
Pterostichus rhaeticus
Pterostichus strenuus
Pterostichus vernalis
Pterostichus versicolo
Stenolophus mixtus
Trechoblemus micros

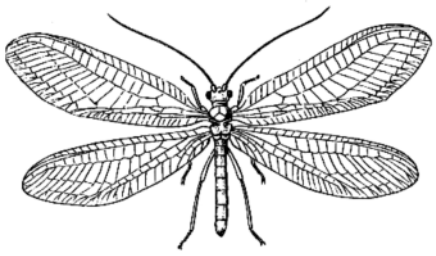

Pterostichus cupreus

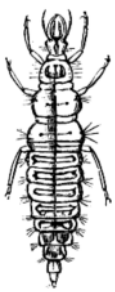

Trechoblemus micros

3 Contributed by Roy Anderson and Jane Feehan.

Order *NEUROPTERA:* lacewings

Lacewings have four membranous lace-like wings, with the forewings and hindwings about the same size, and with many veins: and they have amazing golden eyes. They feed mainly on aphids, both as larvae and adults, and the larvae often camouflage themselves with the drained skins of their prey. There are about 4,000 species, of which 31 have been recorded as Irish so far. A review of the Irish lacewings published in 1991 listed only four Offaly species, but very little collecting has been done, and many of the others on the list are described as 'widely distributed'. Diligent observation and collection in the years to come can be expected to record most of these and perhaps many other species. The four Offaly species known so far are *Chrysoperla carnea, Cunctochrysa albolineata, Hemerobium micans* and *Psectra diptera.*

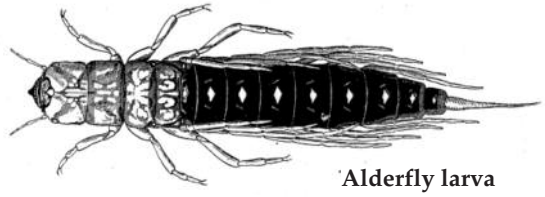




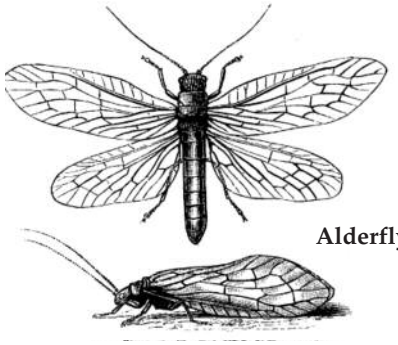
Lacewing - adult and larva

Order *MEGALOPTERA:* alderflies

The small order of the Megaloptera (just 300 species worldwide) is represented in Offaly by just one species, the alderfly *Sialis lutaria*. As an adult it is a blackish caddis-like fly with glossy wings that are held roof-like over the body, and have prominent dark veins. The highly distinctive larvae are aquatic and carnivorous. They spend two years in the water, moulting ten times before emerging to become winged adults. They are quite often met with in weedy bog pools, and the species is probably fairly frequent in many areas.



Alderfly larva



Alderfly adult

Order *HYMENOPTERA:* bees, wasps, ants and sawflies

Most of us are familiar with only a few of the larger members of the Hymenoptera: honey and bumble bees, the wasps that annoy us especially in late summer (though less so than formerly because they appear to be on the decline) – and a few species of ants. The order also includes about 5,000 sawflies and horntails and 175,000 ants, bees and wasps. At present we know little about the status of the many species of ants, bees, wasps and sawflies that inhabit the county. Their investigation is another big adventure on the research horizon. We are naturally preoccupied, mesmerised, captivated by the honey-bee. We are enchanted by its biology and ecology. More is known about it than about any other insect. But this is not because there is *more* to know – it is simply because it has been studied so much more, and the reason for that is because it is so important to us. We have little idea of the diversity of its relatives, or of the fascinating lives *they* lead, hidden from our everyday gaze. There are in fact 25,000 different species of bees, each of which in its own way is as complex and fascinating as the honey bee.

The larger bees and wasps

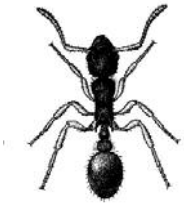
After the honey bee, **social wasps** are the Hymenoptera that get most attention – because they are large and dangerous and live in large communities. They are also fascinating insects, and easy to study

Priocnemis hyalinata

Crossocerus annulipes

Ancistrocerus gazella

V. (Paravespula) vulgaris



Myrmica scabrinodis

Hylaeus spilotus

Colletes daviesanus

Andrena chrysoscles

Lasioglossum lativentre

Sphecodes ephippius

Nomada flavoguttata

Bombus lucorum

Sphecodes gibbus

Nomada sex-fasciata

Pemphredon lugubris

because of their size. There are six species in Ireland of which certainly two occur in Offaly: *Vespula vulgaris* and *Vespula germanica*, though there are few formal records even of these, so that we can say little about their distribution and habitat preferences.

The starting point for any study of the distribution of the larger Hymenoptera is a list published in 1927 by the great Irish entomologist Arthur Stelfox (1883-1972), but this has disappointingly few records for Offaly. Collecting in recent years by Colm Ronayne has added many more records, and the total now stands at 43, but this is in the context of an Irish list of over two hundred species. Records for many common species are still missing – ants and social wasps for instance, as well as species that have been recorded from sites just over the border in Laois and Kildare – and indeed some less common species which are known to occur but not officially recorded (such as the resplendent little fire wasp *Chrysis ignita*).

Hardly any study of ants has been carried out in Offaly. Several species are commonly found under stones, among them the red ants *Myrmica rubra*, *Myrmica ruginodis* and *Myrmica scabrinodis*, and the black garden ant *Lasius niger*. *Lasius flavus* is the common – or rather once common – yellow meadow ant, whose nest mounds were a familiar feature of less intensively-managed grassland but are now few and far between.

The wasps and bees of Offaly[1]

Ancistrocerus oviventris (Wesmael,1836)
Andrena barbilabris (Kirby, 1802)
Andrena barbilabris (Kirby,1802)
Andrena coitana (Kirby, 1802)
Andrena fucata (Smith, F., 1847)
Andrena haemorrhoa (Fabricius, 1781)
Andrena haemorrhoa (Fabricius, 1781)
Andrena minutula (Kirby, 1802)
Andrena semilaevis, Perez 1903
Andrena semilaevis, Perez 1903
Andrena subopaca, Nylander, 1848
Anoplius nigerrimus (Scopoli, 1763)d
Arachnospila anceps (Wesmael, 1851)
Bombus bohemicus (Seidl, 1837)
Bombus hortorum (Linnaeus, 1761)
Bombus jonellus (Kirby, 1802)
Bombus lapidarius, Linnaeus
Bombus lucorum (Linnaeus, 1761)
Bombus pratorum (Linnaeus, 1761)
Bombus sylvarum, (Linnaeus, 1761)
Ceropales maculata (Fabricius, 1775)
Colletes succinctus (Linnaeus, 1758)
Colletes succinctus (Linnaeus, 1758)
Crossocerus cetratus (Shuckard, 1837)
Crossocerus dimidiatus (Fabricius, 1781)
Crossocerus podagricus (Vander Linden, 1829)
Crossocerus pusillus (Lepeletier & Brulle, 1835)
Ectemnius cavifrons (Thomson, 1870)
Ectemnius continuus (Fabricius, 1804)
Ectemnius continuus (Fabricius, 1804)
Ectemnius continuus (Fabricius, 1804)
Ectemnius continuus (Fabricius, 1804)
Ectemnius lapidarius (Panzer, 1799)
Ectemnius lapidarius (Panzer,1799)
Ectemnius lapidarius (Panzer,1799)
Hylaeus communis (Nylander, 1852)
Lasioglossum albipes (Fabricius, 1781)
Lasioglossum albipes (Fabricius, 1781)
Lasioglossum albipes (Fabricius, 1781)
Lasioglossum calceatum (Scopoli, 1763)
Lasioglossum fratellum (Perez, 1903)
Lasioglossum leucopum (Kirby, 1802)
Lasioglossum villosulum (Kirby, 1802)
Myrmosa atra Panzer (1801)
Myrmosa atra Panzer (1801)
Nomada flavoguttata (Kirby, 1802)
Pemphredon inornatus (Say, 1824)
Priocnemis exaltata (Fabricius, 1775)
Priocnemis perturbator (Harris, 1780)
Sphecodes geofrellus (Kirby 1802)
Sphecodes hyalinatus (von Hagens, 1882
Spilomena differens (Bluthgen, 1953)
Spilomena enslini (Bluthgen, 1953)
Symmorphus bifasciatus (Linnaeus, 1761)
Symmorphus bifasciatus (Linnaeus, 1761)
Symmorphus bifasciatus (Linnaeus, 1761)
Vespula germanica (Fabricius, 1793)
Vespula vulgaris (Linnaeus, 1758)

[1] Compil ed by Colm Ronayne

Sawflies

Sawflies comprise several groups of often rather wasp-like herbivorous insects. They are the most ancient of the Hymenoptera; 200 million years or so ago one group of sawflies gave rise to the Apocrita: the ants, bees and wasps, all of which have a common ancestor. The larvae look very like caterpillars for the most part, and they feed on a great variety of wild plants (and some crops), many being quite specific in their choice of host. They lack the narrow waist of the Apocrita, and have a saw-like ovipositor at the tip of the abdomen which they use to cut into plants in order to deposit their eggs.

Sawflies are a highly diverse and ecologically important group of insects. Worldwide there are in the order of 6,000 species. The number of Irish species stood at 272 in 1997. Of these only 33 have been recorded in Offaly, but the true number is much higher than this. This figure of 33 only shows how little attention has been paid to this fascinating group in the county. Many species that are widespread have not even been recorded here once, and are just waiting for someone to notice them!

The Smaller Hymenoptera

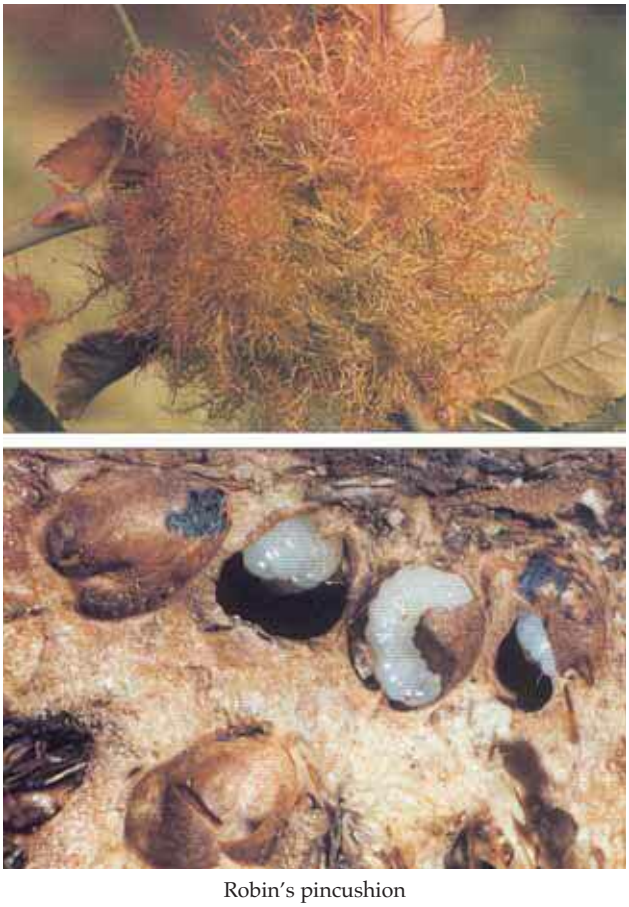
A good example of how little we know about so many groups in our fauna is provided by the chalcid wasps. The **Superfamily Chalcidoidea** is probably the largest of all the Hymenoptera. They are mainly parasites or hyperparasites of other insects – and of great economic importance on this account. They prey mainly on butterflies and moths, bugs and flies: and many are parasites of other Hymenoptera; we probably have somewhere in the region of a thousand species in Ireland (some 1,400+ are listed as British). One of the most important chalcid families are the Trichogrammatidae (they have such lovely big names, these tiny wasps), which has over 620 described species. They are all tiny egg-parasites. They are absolutely tiny,

The larvae of several families of tiny wasps - so small they are hardly visible to the naked eye - feed entirely on the eggs of larger insects.

from 0.2 to 1.5mm in length. *Trichogramma* itself (which has 145 species) usually parasitises butterflies and moths, and as many as 20 individuals may develop within a single egg! Some *Trichogramma* species are important in biological control.

These little insects are ubiquitous in Offaly although – hardly surprisingly in view of the above – you have to look very hard to find them. And yet, in the *Catalogue of the Irish Chalcoidea* published in 2006 there is not a single record for the county, except for one species (*Chalcis sispes*) captured on one occasion in 1933 on the shore of Ballinderry Lough on the Offaly-Westmeath boundary.

The small wasps that cause galls on oak – the **cynipids** – have received much attention in recent years, and have been systematically collected from a number of Offaly localities. Eleven species are known at present. Another common cynipid causes the familiar galls known as robin's pincushions on wild roses. This is *Diplolepis rosae*.



Robin's pincushion

Another vast group of small Hymenoptera are the **ichneumon wasps.** This is an enormous group, totalling some 80,000 described species more or less evenly split between two families, the Braconidae and the Ichneumonidae. There are few more fascinating or extraordinary insects.

The cynipid gall wasps of Offaly

Andricus anthracina
Andricus curvator
Andricus fecundator
Andricus inflator
Andricus kollari
Andricus lignicola
Andricus quercuscalicis
Biorhiza pallida
Cynips divisa
Neuroterus numismalis
Neuroterus numismalis

A cynipid gall wasp

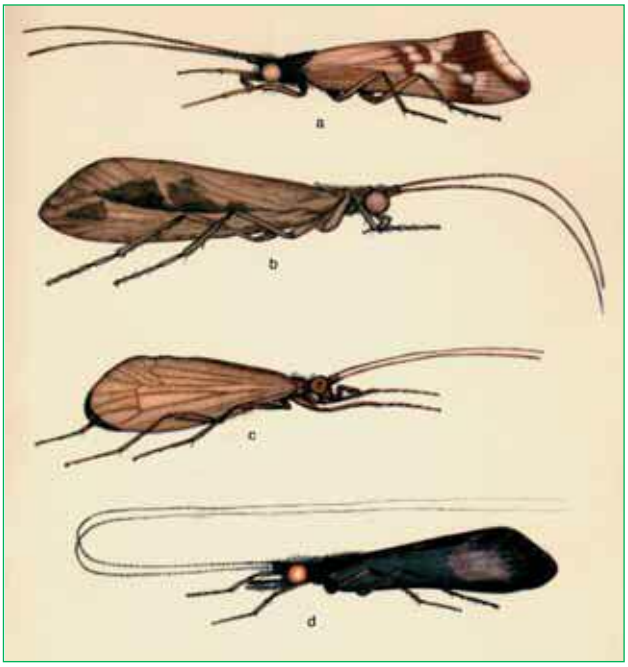
Nearly all are *parasitoids*, feeding as larvae on the living bodies of other insects which the mother wasp has first immobilised by stinging, and which die when the little wasp grub has finished with them. Most are very small insects, seldom noticed by anybody except entomologists (and very few of those indeed!), even though they are very important: many are useful in pest control, and they are considered to be among the most valuable biological indicator groups. We know next to nothing about their status in Offaly. But you can be sure that wherever cabbage butterflies are found in the county the braconid wasp *Apanteles glomeratus* will be there to keep them under some control.

An ichneumon wasp

And yet, in a catalogue of the braconids of Ireland published in 1999 (which lists 529 Irish species) there is not a single braconid record for the county! A catalogue of the Irish Ichneumonidae is currently nearing completion, but that is unlikely to shed much light either on their status in Offaly.

Order *TRICHOPTERA:* caddisflies

Caddisflies look rather like drab-coloured moths as adults, and are not often noticed on that account – especially as they are mainly nocturnal (and, like moths, attracted to lights, often in great numbers). Young caddisflies (caddis-worms) are unfamiliar for a different reason: they live in water. There are two main groups, those that spin elaborate webs and those that construct cases of stones, sand or plant material in which to live. From an ecological viewpoint the web-spinners can be thought of as underwater spider-substitutes (there are almost no aquatic spiders). In addition to these big groups there are free-living hunters represented in Offaly by species of *Rhyacophila* and *Polycentropus*. The case-makers include different species of *Glossosoma* and *Agapetus, Phryganea bipunctata* and others from the families Limnephilidae, Lepidostomatidae and Sericostomatidae. By far the commonest web-spinner is *Hydropsyche*.



Adult caddisflies
(a) Limnephilus lunatus (b) Phryganea grandis
(c) Chaetopteryx villosa (d) Mystacides azurea

Order *LEPIDOPTERA:* butterflies and moths[1]

Butterflies are among the most familiar of all insects – part of the experience of nearly everybody. They are the birds of the insect world, in the sense that their beauty and diversity have attracted an enormous following so that we know a lot about their distribution. Offaly is known to have 26 species, which are listed in the table on page 62 (along with two other species that are *likely* to be here: indicated with asterisks*). Although as many as 15 – 20,000 species have been described worldwide, butterflies are just one *superfamily* in a much larger *order* of 180,000 species, organised into 127 families and 46 superfamilies (second only to the Coleoptera). In fact, butterflies are really best thought of as a group of day-flying moths. We know a great deal less about the night-flying species – the vast majority – which are much less brightly coloured, although each species has its own quite distinctive wing pattern.

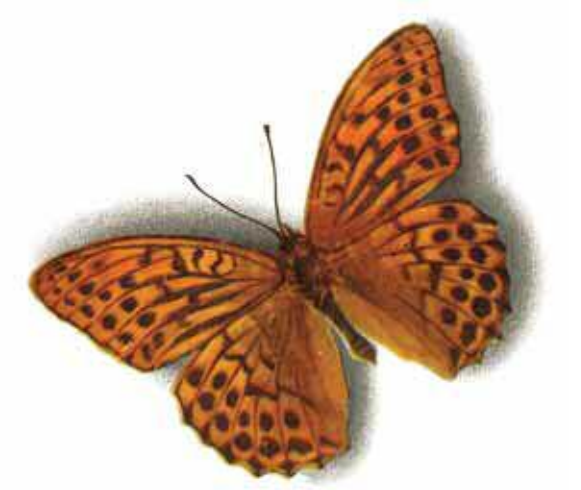
The recording of butterflies in Ireland has been greatly enhanced in recent years through work associated with the production of *The Millennium Atlas* and the follow-up to this, *The State of Butterflies in Britain and Ireland*. The older records on our list are taken from the Irish Catalogue of Macrolepidoptera (Baynes, 1964). Reference was also made to the Dublin Naturalist Field Club's two excellent websites, http://www.dnfc.net (which contains a history of formal butterfly recording in Ireland) and http://www/butterflyireland.com (which details the findings from DNFCs butterfly recording work).

Perhaps the most important key habitats for butterflies in Offaly are the calcareous grasslands found along many of the county's eskers. Unfortunately, these are among the habitats that are under most threat from agricultural improvement, development (for building), sand and gravel extraction or even abandonment of land (leading to scrubbing over). In 2006, Offaly County Council undertook a survey of the eskers in the county, and the results of this should enable conservation management of key esker grassland sites to be targeted.

The extensive boglands throughout the Midlands are also important to many scarce butterfly species. The Lough Boora Parklands are one component of this, and could play a key role in creating and managing suitable habitats for a wide range of species, including butterflies. Also important are the grasslands on the Shannon Callows. The planned introduction of conservation measures through the National Parks and Wildlife Farm Plan Scheme in the very near future, which will run in parallel with the Rural Environment Protection Scheme, may have an important part to play in preserving grasslands, with correct management, to benefit plant diversity and therefore, hopefully, butterfly populations.

[1] Written with Alex Copland.

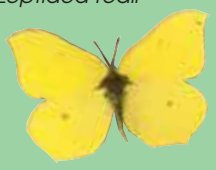
Painted lady



Silver-washed fritillary

The butterflies of Offaly

Species	*Associated habitats*
Dingy skipper *Erynnis tages*	Localised and scarce, but easily overlooked or confused with other species (principally day-flying moths). Three were seen at Turraun, Lough Boora Parklands in 2003, and it was recorded at Finlough about ten years ago. Food plant Bird's-foot trefoil.
Réal's wood white *Leptidea reali*	Only identified as a separate species from wood white 'proper' (*Leptidea sinapsis*) in 2001, and separable only by analysis of genetalia (which requires dissection of specimens). In Ireland as a whole, the wood white has only been recorded in and around the Burren, Co. Clare. Réal's wood white is therefore presumed to be the species recorded in Offaly where it is probably fairly common and widespread. Food plant meadow vetchling etc.
Clouded yellow *Colias croceus*	This strongly migrant species is not recorded every year, but can be recorded in substantial numbers in 'good' years (e.g. 2000). Food plant clover.
Brimstone *Gonepteryx rhamni*	Widespread and common where its food plants (buckthorn (*Rhamnus cathartica*) and alder buckthorn (*Frangula alnus*)) occur. Food plant buckthorn.
Large white *Pieris brassicae*	Widespread and common. Food plant crucifers (cabbage family).
Small white *Pieris rapae*	Widespread and common. Food plant crucifers (cabbage family).
Green-veined white *Pieris napi*	Widespread and common. Food plant crucifers (cabbage family).
Orange-tip *Anthocharis cardamines*	Widespread and common. Food plant crucifers (cabbage family).
Green hairstreak *Callophrys rubi*	Localised and scarce, despite utilising a wide-range of larval foodplants. Usually found (occasionally in good numbers) in and around bogs where furze (*Ulex europeaus)* is present. Food plant furze,buckthorn, bird's-foot *trefoil, bilberry etc.*
Purple hairstreak *Neozephyrus quercus*	First recorded in 2002 in Charleville Estate outside Tullamore. It has been recorded subsequently at this site, but is not known from any other location in the county.
Small copper *Lycaena phlaeas*	Widespread and fairly common. Food plant common and sheep's sorrels.
***Small blue** *Cupido minimus*	Status uncertain, occurs in small numbers in neighbouring counties but not common anywhere in Ireland. May be present on some of the species-rich esker grasslands. Food plant kidney vetch.
Common blue *Polyommatus icarus*	Widespread and common. Food plant bird's-foot trefoil.
Holly blue *Celastrina argiolus*	Localised and scarce. Found in and around deciduous woodlands (and occasionally rural gardens) containing Holly (*Ilex aquifolium*). Food plant holly.
Red admiral *Vanessa atalanta*	Common and widespread migrant. Food plant nettle.
Painted lady *Vanessa cardui*	Common and widespread migrant. Food plant thistles.
Small tortoiseshell *Aglais urticae*	Common and widespread. Food plant nettle.
Peacock *Inachis io*	Common and widespread. Food plant nettle.
***Dark green fritillary** *Argynnis aglaja*	Status uncertain. Typically has a coastal distribution, but may be recorded occasionally elsewhere. Food plant dog-violet.
Silver-washed fritillary *Argynnis paphia*	Local in distribution, but can be common in broadleaf woodland sites. Food plant dog violet.
Marsh fritillary *Euphydryas aurinia*	Scarce and confined to a number of localities on the margins of bogs, where its food plant (devil's-bit scabious *Succisa scabiosa*) is often abundant. Food plant devil's-bit scabious.
Speckled wood *Pararge aegeria*	Common and widespread. Food plant various grasses.
Wall *Lasiommata megera*	Thinly scattered on suitable grassland sites, particularly species-rich esker grasslands. Food plant various grasses.
Grayling *Hipparchia semele*	Very scarce and localised to some esker sites, especially those where quarrying has taken place. Food plant grasses.
Meadow brown *Maniola jurtina*	Common and widespread. Food plant grasses.
Ringlet *Aphantopus hyperantus*	Common and widespread. Food plant grasses.
Small heath *Coenonympha pamphilus*	Common and widespread on heathland and bog sites. Food plant grasses.
Large heath *Coenonympha tullia*	Scarce and localised to a few bogland sites. Food plant hare's-tail cottongrass.



The macromoths of Offaly[1]

A total of 223 species of larger moths (macromoths) have been recorded in Offaly to date. No comment on the status of individual species is given, since knowledge of distribution, abundance or conservation status for most of these species is unknown.

Hepialus humuli	Ghost moth
Hepialus lupulinus	Common swift
Hepialus fusconebulosa	Map-winged swift
Zygaena filipendulae	Six-spot burnet
Poecilocampa populi	December moth
Lasiocampa quercus	Northern/oak eggar
Macrothylacia rubi	Fox moth
Pavonia pavonia	Emperor
Falcaria lacertinaria	Scalloped hook-tip
Drepana falcataria	Pebble hook-tip
Cilix glaucata	Chinese character
Thyatira batis	Peach blossom
Habrosyne pyritoides	Buff arches
Ochropacha duplaris	Common lutestring
Achlya flavicornis	Yellow horned
Alsophila aescularia	March moth
Pseudoterpna pruinata	Grass emerald
Geometra papilionaria	Large emerald
Hemithea aestivaria	Common emerald
Jodis lactearia	Little emerald
Cyclophora albipunctata	Birch mocha
Scopula immutata	Lesser cream wave
Idaea muricata	Purple-bordered gold
Idaea biselata	Small fan-footed wave
Idaea dimidiata	Single-dotted wave
Idaea aversata	Riband wave
Orthonama vittata	Oblique carpet
Xanthorhoe designata	Flame carpet
Xanthorhoe spadicearia	Red twin-spot carpet
Xanthorhoe ferrugata	Dark-barred twin-spot carpet
Xanthorhoe montanata	Silver-ground carpet
Xanthorhoe fluctuata	Garden carpet
Scotopteryx chenopodiata	Shaded broad-bar
Scotopteryx mucronata umbrifera	Lead belle
Epirrhoe alternata	Common carpet
Epirrhoe galiata	Galium carpet
Camptogramma bilineata	Yellow shell
Anticlea derivata	Streamer
Cosmorhoe ocellata	Purple bar
Coenotephria salicata latentaria	Striped twin-spot carpet
Eulithis testate	Chevron
Eulithis populata	Northern spinach
Eulithis pyraliata	Barred straw
Chloroclysta siterata	Red-green carpet
Chloroclysta miata	Autumn green carpet
Chloroclysta truncata	Common marbled carpet
Cidaria fulvata	Barred yellow
Thera firmata	Pine carpet
Thera obeliscata	Grey Pine carpet
Thera britannica	Spruce carpet
Electrophaes corylata	Broken-barred carpet
Colostygia pectinataria	Green carpet
Hydriomena furcata	July highflyer
Rheumaptera hastata	Argent and sable
Euphyia unangulata	Sharp-angled carpet
Epirrita dilutata	November moth
Perizoma bifaciata	Barred rivulet
Eupithecia exiguata	Mottled pug
Eupithecia pygmaeata	Marsh pug
Eupithecia satyrata callunaria	Satyr pug
Eupithecia absinthiata	Wormwood pug
Eupithecia vulgata	Common pug
Eupithecia tripunctaria	White-spotted pug
Eupithecia subfuscata	Grey pug
Eupithecia subumbrata	Shaded pug
Eupithecia nanata	Narrow-winged pug
Eupithecia virgaureata	Golden-rod pug
Chloroclystis v-ata	V-pug
Chloroclystis rectangulata	Green pug
Gymnoscelis rufifasciata	Double-striped pug
Aplocera plagiata	Treble bar
Odezia atrata	Chimney sweeper
Asthena albulata	Small white wave
Abraxas grossulariata	Magpie moth
Lomaspilis marginata	Clouded border
Macaria liturata	Tawny-barred angle
Macaria clathrata	Latticed heath
Petrophora chlorosata	Brown silver-line
Plagodis pulveraria	Barred umber
Plagodis dolabraria	Scorched wing
Opisthograptis luteolata	Brimstone moth
Epione repandaria	Bordered beauty
Apeira syringaria	Lilac beauty
Ennomos alniaria	Canary-shouldered thorn
Selenia dentaria	Early thorn
Odontopera bidentata	Scalloped hazel
Crocallis elinguaria	Scalloped oak
Ourapteryx sambucaria	Swallow-tailed moth
Colotois pennaria	Feathered thorn
Lycia hirtaria	Brindled beauty
Biston strataria	Oak beauty
Biston betularia	Peppered moth
Agriopis marginaria	Dotted border
Peribatodes rhomboidaria	Willow beauty
Cleorodes lichenaria	Brussels lace
Ectropis crepuscularia	Small engrailed
Ematurga atomaria	Common heath
Bupalus piniaria	Bordered white
Cabera pusaria	Common white wave
Cabera exanthemata	Common wave
Lomographa temerata	Clouded silver
Theria primaria	Early moth
Dyscia fagaria	Grey scalloped bar
Perconia strigillaria	Grass wave
Smerinthus ocellata	Eyed hawk-moth
Laothoe populi	Poplar hawk-moth
Macroglossum stellatarum	Humming-bird hawk-moth
Deilephila elpenor	Elephant hawk-moth
Deilephila porcellus	Small elephant hawk-moth
Phalera bucephala	Buff-tip
Cerura vinula	Puss moth
Furcula furcula	Sallow kitten
Notodonta dromedarius	Iron prominent

The macromoths of Offaly (continued)

Eligmodonta ziczac	Pebble prominent
Pheosia gnoma	Lesser swallow prominent
Pheosia tremula	Swallow prominent
Ptilodon capucina	Coxcomb prominent
Odontosia carmelita	Scarce prominent
Pterostoma palpina	Pale prominent
Clostera pigra	Small chocolate-tip
Diloba caeruleocephala	Figure of eight
Orgyia antiqua	Vapourer
Calliteara pudibunda	Pale tussock
Thumata senex	Round-winged muslin
Nudaria mundana	Muslin footman
Atolmis rubricollis	Red-necked footman
Eilema lurideola	Common footman
Lithosia quadra	Four-spotted footman
Arctia caja	Garden tiger
Spilosoma lubricipeda	White ermine
Spilosoma luteum	Buff ermine
Diaphora mendica	Muslin moth
Phragmatobia fuliginosa	Ruby tiger
Tyria jacobaeae	Cinnabar
Agrotis segetum	Turnip moth
Agrotis exclamationis	Heart and dart
Agrotis ipsilon	Dark sword-grass
Axylia putris	Flame
Ochropleura plecta	Flame shoulder
Noctua pronuba	Large yellow underwing
Noctua comes	Lesser yellow underwing
Noctua fimbriata	Broad-bordered yellow underwing
Noctua janthe	Lesser broad-bordered yellow underwing
Graphiphora augur	Double dart
Paradiarsia glareosa	Autumnal rustic
Lycophotia porphyrea	True lover's knot
Diarsia mendica	Ingrailed clay
Diarsia rubi	Small square-spot
Xestia triangulum	Double square-spot
Xestia baja	Dotted clay
Xestia xanthographa	Square-spot rustic
Anarta myrtilli	Beautiful yellow underwing
Hada plebeja	Shears
Mamestra brassicae	Cabbage moth
Melanchra persicariae	Dot moth
Lacanobia thalassina	Pale-shouldered brocade
Lacanobia oleracea	Bright-line brown-eye
Ceramica pisi	Broom moth
Orthosia gracilis	Powdered quaker
Orthosia cerasi	Common quaker
Orthosia incerta	Clouded drab
Orthosia munda	Twin-spotted quaker
Orthosia gothica	Hebrew character
Mythimna conigera	Brown-line bright eye
Mythimna pudorina	Striped wainscot
Mythimna impura	Smoky wainscot
Mythimna comma	Shoulder-striped wainscot
Cucullia umbratica	Shark
Aporophyla nigra	Black rustic
Lithophane hepatica	Pale pinion
Lithophane ornitopus	Grey shoulder-knot
Xylocampa areola	Early grey
Agrochola lota	Red-line quaker
Agrochola lychnidis	Beaded chestnut
Atethmia centrago	Centre-barred sallow
Xanthia icteritia	Sallow
Acronicta psi	Grey dagger
Acronicta rumicis	Knot grass
Rusina ferruginea	Brown rustic
Thalpophila matura	Straw underwing
Euplexia lucipara	Small angle shades
Phlogophora meticulosa	Angle shades
Cosmia trapezina	Dun-bar
Apamea monoglypha	Dark arches
Apamea lithoxylaea	Light arches
Apamea crenata	Clouded-bordered brindle
Apamea epomidion	Clouded brindle
Apamea remissa	Dusky brocade
Apamea sordens	Rustic shoulder-knot
Oligia latruncula	Tawny marbled minor
Oligia fasciuncula	Middle-barred minor
Mesapamea secalis	Common rustic
Mesapamea didyma	Lesser common rustic
Photedes minima	Small dotted buff
Chortodes pygmina	Small wainscot
Luperina testacea	Flounced rustic
Amphipoea lucens	Large ear
Hydraecia micacea	Rosy rustic
Gortyna flavago	Frosted orange
Celaena haworthii	Haworth's minor
Celaena leucostigma	Crescent
Nonagria typhae	Bulrush wainscot
Rhizedra lutosa	Large wainscot
Hoplodrina alsines	Uncertain
Hoplodrina blanda	Rustic
Caradrina morpheus	Mottled rustic
Heliothis peltigera	Bordered straw
Deltote uncula	Silver hook
Colocasia coryli	Nut-tree tussock
Diachrysia chrysitis	Burnished brass
Plusia festucae	Gold spot
Autographa gamma	Silver Y
Autographa pulchrina	Beautiful golden Y
Autographa jota	Plain golden Y
Syngrapha interrogationis	Scarce silver Y
Abrostola triplasia	Dark spectacle
Abrostola tripartita	Spectacle
Euclidia glyphica	Burnet companion
Phytometra viridaria	Small purple-barred
Rivula sericealis	Straw dot
Hypena proboscidalis	Snout
Zanclognatha tarsipennalis	Fan-foot
Herminia grisealis	Small fan-foot

1 Compiled by Alex Copeland

Emperor moth

References

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***Coleophora pyrullipennella*, the heather case-carrier moth**

Microlepidoptera

The very smallest moths – Microlepidoptera – have received a good deal of attention, especially those that are leaf-miners. These moths lay their eggs in the leaves of plants, different moth species in different plant species, and the caterpillar feeds on the tissue between the upper and lower skin of the leaf (the epidermis). In 1995 the great lepidopterist Maitland Emmet (accompanied by John Langmaid) collected leaf-miners over three days in Offaly, and Ireland's leading microlepidopterist, Ken Bond, has also collected in the county on a number of occasions. On their brief visit to Offaly Emmet and Langmaid recorded 42 species, of which 15 were new to the county and one new to Ireland. The list of species known from the county now stands at 205.

The micromoths of Offaly[1]

Micropterix calthella
Eriocrania chrysolepidella
Eriocrania sangii
Ectoedemia occultella
Trifurcular cryptella
Trifurcular eurema
Stigmella aurella
Stigmella splendidisimella
Stigmella ulmariae
Stigmella continuella
Stigmella sorbi
Stigmella plagicolella
Stigmella salicis
Stigmella floslactella
Stigmella tityrella
Stigmella hemargyrella
Stigmella catharticella
Stigmella hybnerella
Stigmella oxyacanthella
Stigmella nylandriella
Stigmella cragaegella
Stigmella betulicola
Stigmella microtheriella
Stigmella luteella
Stigmella lapponica
Stigmella confusella
Pseudopostega crepusculella
Emmetia marginea
Phylloporia bistrigella
Nematopogon schwarziellus
Heliozela hammoniella
Agonopterix capreolella
Monopis laevigella Skin moth
Ochsenheimeria urella
Leucoptera laburnella Laburnum leaf miner
Leucoptera lotella
Lyonetia clerkella Apple leaf miner
Caloptilia betulicola
Caloptilia stigmatella
Caloptilia syringella
Aspilapteryx tringipennella
Parornix betulae
Parornix anglicella
Parornix devoniella
Parornix torquillella
Phyllonorycter quercifoliella
Phyllonorycter messaniella
Phyllonorycter oxyacanthae
Phyllonorycter salicicolella
Phyllonorycter maestingella
Phyllonorycter coryli Nut leaf blister moth
Phyllonorycter nigrescentella
Phyllonorycter ulmifoliella
Phyllonorycter nicellii
Anthophila fabriciana
Glyphipterix simpliciella Cocksfoot moth
Glyphipterix schoenicolella
Glyphipterix thrasonella
Argyresthia goedartella
Argyresthia curvella
Argyresthia spinosella
Argyresthia bonnetella
Argyresthia albistria
Yponomeuta plumbella
Pseudoswammerdamia combinella
Swammerdamia caesiella
Paraswammerdamia albicapitella
Plutella xylostella Diamond-back moth
Schreckensteinia festaliella
Coleophora serratella
Coleophora milvipennis
Coleophora lusciniaepennella
Coleophora deauratella
Coleophora pyrullipennella
Coleophora otidipennella
Coleophora taeniipennella
Coleophora tamesis
Coleophora alticolella
Elachista gleichenella
Elachista alpinella
Elachista subnigrella
Elachista canapennella
Elachista rufocinerea
Elachista maculicerusella
Elachista argentella
Elachista gangalbella
Biselachista cinereopunctella
Biselachista serricornis
Biselachista albidella
Cosmiotes freyerella
Hoffmannophila pseudospretella Brown house moth
Endrosis sarcitrella White-shouldered house moth
Pleurota bicostella
Depressaria pastinacella Turnip moth
Depressaria badiella
Agonopterix propinquella
Agonopterix kaekeritziana
Agonopterix umbellana
Agonopterix nervosa
Eulamprotes atrella
Aristotelia ericinella
Teleiodes wagae
Bryotropha senectella
Bryotropha terrella
Mirificarma mulinella
Neofaculta ericetella
Scrobipalpa artemisiella Thyme moth
Syncopacma taeniolella
Syncopacma cinctella
Hypatima rhomboidella
Blastobasis lignea
Mompha locupletella
Limnaecia phragmitella
Spuleria flavicaput
Piercea minimana
Cochylimorpha straminea
Agapeta hamana
Agapeta zoegana
Aethes piercei
Aethes cnincaca
Eupoecilia angustana
Pandemis cerasana Barred fruit-tree tortrix
Pandemis heparana Dark fruit-tree tortrix

The micromoths of Offaly (continued)

Archips podana Large fruit-tree tortrix
Syndemis musculana
Aphelia viburnana Bilberry tortrix
Clepsis senecionana
Clepsis spectrana Cyclamen tortrix
Clepsis consimilana
Capua vulgana
Philedonides lunana
Pseudargyrotoza conwagana
Olindia schumacherana
Eulia ministrana
Cnephasia stephensiana Grey tortrix
Cnephasia incertana Light grey tortrix
Eana osseana
Acleris holmiana
Acleris laterana
Acleris caledoniana
Acleris rhombana Rhomboid tortrix
Acleris aspersana
Acleris variegana Garden rose tortrix
Acleris hastiana
Acleris hyemana
Olethreutes rivulana
Olethreutes schulziana
Celypha lacunana
Hedya pruniana Plum tortrix
Hedya nubiferana Marbled orchard tortrix
Epilema costipunctana
Endothenia marginana
Bactra furfurana
Bactra lancealana
Ancylis unguicella
Ancylis uncella
Ancylis geminana
Ancylis badiana
Epinotia ramella
Epinotia tetraquetrana
Epinotia tenerana Nut bud moth
Epinotia signatana
Epinotia solandriana
Rhopobota naevana Holly tortrix
Epiblema cynosbatella
Epiblema scutulana
Epiblema cirsiana
Epiblema sticticana
Epilema costipunctana
Eucosma campoliliana
Eucosma cana
Pammene rhediella Fruitlet mining tortrix
Cydia succedana
Pammene gallicana
Dichrogrampha simpliciana
Dichrogrampha plumbana
Dichrogrampha aeratana
Chrysoteuchia culmella
Crambus pascuella
Crambus lathoniellus
Crambus perlella
Agriphila straminalla
Agriphila tristella
Agriphila geniculea
Donacaula mucronellus
Scoparia pyralella
Eudonia pallida
Eudonia truncicolella
Eudonia mercurella
Elophila nymphaeata Brown china-mark
Cataclysta lamnate Small china-mark
Pyrausta purpuralis
Eurrhypara hortulata Small magpie
Opsibotys fuscalis
Udea lutealis
Udea prunalis
Udea olivalis
Nomophila noctuella Rush veneer
Pleuroptya ruralis Mother of pearl
Aphomia sociella Bee moth
Nymphula stagnata Beautiful china-mark
Pyla fusca
Amblyptilia punctidactyla
Stenoptilia bipunctidactyla
Emmelina monodactyla

1 Many of the records have been provided by Ken Bond. Also the input of Ian Rippey, Dave Allen, Michael O'Donnell and Angus Tyner in going through the list and passing on comments is greatly appreciated.

Hummingbird hawk moth

Elephant hawk moth

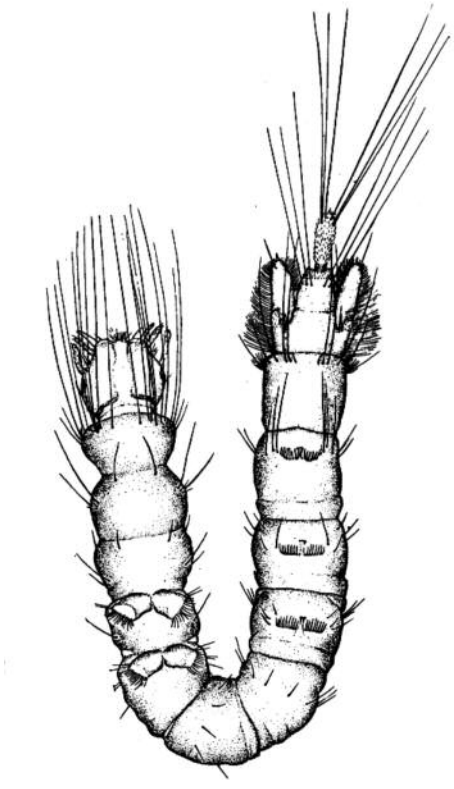
Order *DIPTERA:* true flies

The term 'true flies' is used to distinguish the order to which such two-winged insects as houseflies and mosquitoes belong from all the other 'flies' we are familiar with: butterflies, caddisflies, stoneflies, dragonflies – all of which have *four* wings. In the course of their evolution the hindwings of true flies have developed into whirring stabilisers called halteres. They are an enormously successful group of insects, with about 150,000 known species and hundreds of thousands more that have never been described. They include the most significant insect vectors of disease, but many more species that are beneficial.

It would be premature to attempt a list of all the flies formally recorded for the county, knowing it is only a fraction of the total and will be out of date even before it appears in print. This is a task that will be undertaken in the near future by the Irish Biological Records Centre, and it is hoped the results can be evaluated in a future issue of the Review.

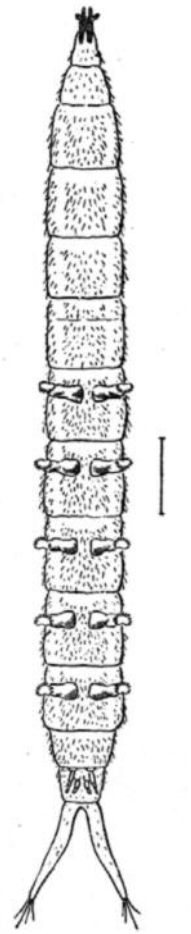
The reason for the lack of information on most groups of small animals (not just flies) is well illustrated by how little we know about one group of large and (some of them) familiar flies: the group to which horseflies and their allies belong (the superfamily Tabanoidea). The total number of Irish species stands at

about sixty, but in an account of these flies written by Peter Chandler in 1975 there were *no* formal records for Offaly – though many of the species were known to be widely distributed and some of them have been recorded in Offaly subsequently. This lack of information is even truer of the families of smaller flies, such as the fungus gnats (family Mycetophilidae). During six visits between 1968 and 1973 Peter Chandler recorded 24 fungus gnats for Kildare (out of a total Irish species count at the time of 165), just one for Laois, and none for Offaly. This is not because there aren't any, but simply because he didn't visit Offaly. In the 1980s Chandler did visit Offaly, and on three brief visits to Charleville recorded 34 species, and remarked that 'autumn collecting in the midland counties should add greatly to knowledge of the Irish gnats.' The meniscus midges (Dixidae) provide another example of the extent to which Offaly still remains something of a *terra incognita* when it comes to flies. Eleven species are known to occur in Ireland, but only three have been recorded from Offaly so far. But when you see that these three were all captured on the same occasion in a roadside ditch at Mongan Bog you realise how unrepresentative that figure must be. Meniscus midges are widespread in Killaun Bog at the other end of the county and doubtless throughout Offaly.



***Meniscus* midge**
ventral aspect of larva

Craneflies (daddy-longlegs) (family **Tipulidae**) are among the easiest of flies to recognise: and some have been intensively studied because of their negative role in agriculture (the main culprit being *Tipula paludosa*). The larvae of some species feed on the roots of grasses and can cause great damage, but most species live quiet lives that have little impact on ours. Some even live in water. There are three cranefly sub-families. *Tipula paludosa* belongs to the subfamily Tipulinae (of which there are several dozen Irish species). The largest sub-family is the Limnoniidae, which are smaller insects that are often seen in swarms (and rest with their wings folded over the abdomen, unlike their larger relatives). Around 55 species of this sub-family are known in Ireland (as of 1995), yet there are records of only six from Offaly: *Tricyphona immaculata,* the species complex *Dicranomyia mitis, Dicranomyia modesta, Limonia nubeculosa, Lipsothrix remota* and *Rhiphidia maculata*, all common and widespread species. It speaks volumes that there are no records for *Dicranota*, even though it is found in nearly every river in the county and its distinctive larvae turn up all the time in stream invertebrate samples.



***Dicranota* larva**

Further investigation into this little-explored area of natural history is an adventure for the future. And in the course of gathering such data about distribution there is the opportunity for a new generation of dipterists (that's what you call people who study flies) – ideally people for whom Offaly is home – to learn more about a world whose fascination words do no justice to.

FAMILY SYRPHIDAE: the hoverflies[1]

Hoverflies are one of the most diverse and important of the 75 or so families of true flies that occur in this part of the world. Worldwide there are about 6,000 described species in 180 genera. The Irish hoverfly fauna consists of 175 recorded species so far, and has been studied in more detail perhaps than any other family of flies. Ninety-four species have been seen in Offaly.

One of the reasons hoverflies are such an important group is that they are considered to be one of the best

[1] Written with Helen Sheridan.

indicator groups. This means that variation in their status can give us a lot of information about change in the broader environment. They have three principal characteristics that make them so useful in this regard. Firstly, their larvae are highly diversified in terms of feeding habits. Some are plant feeders, others live on fungi, others on decaying matter, and others again are predators or parasites, depending collectively on a very wide range of habitats and other plant and animal species. And while larvae of certain species may share similar feeding habits, their environmental requirements are often quite different. This diversity of larval requirements means that they are particularly sensitive to a reduction of landscape diversity. Secondly, due to their wide distribution, syrphids are easily available and located in the landscape. Finally, there are many books available to aid in their identification.

Offaly County Council hopes in the future to carry out a detailed survey of the county's hoverfly fauna. This will serve in the future as a baseline against which to assess environmental change in the county.

Hoverfly

The hoverflies of Offaly[1]

Anasimyia contracta
Anasimyia lineata
Anasimyia lunulata
Baccha elongata
Brachyopa scutellaris
Chalcosyrphus nemorum
Cheilosia albipila
Cheilosia albitarsis
Cheilosia antiqua
Cheilosia bergenstammi
Cheilosia illustrata
Cheilosia latifrons
Cheilosia pagana
Cheilosia variabilis
Cheilosia vernalis
Chrysogaster coemiteriorum
Chrysogaster solstitialis
Chrysotoxum bicinctum
Chrysotoxum fasciatum
Criorhina berberina
Criorhina ranunculi
Dasysyrphus albostriatus
Episyrphus balteatus
Eristalinus sepulchralis
Eristalis abusivus
Eristalis arbustorum
Eristalis horticola
Eristalis interruptus
Eristalis intricarius
Eristalis pertinax
Eristalis tenax
Eumerus strigatus
Eupeodes latifasciatus
Eupeodes luniger
Ferdinandea cuprea
Helophilus hybridus
Helophilus pendulus
Helophilus trivittatus
Heringia heringi
Lejogaster metallina
Leucozona laternaria
Leucozona lucorum
Melangyna lasiophthalma
Melangyna umbellatarum
Melanogaster aerosa
Melanogaster hirtella
Melanostoma mellinum
Melanostoma scalare
Meliscaeva cinctella
Microdon mutabilis
Myathropa florea
Neoascia geniculata
Neoascia meticulosa
Neoascia podagrica
Neoascia tenur
Orthonevra geniculata
Paragus haemorrhous
Parasyrphus lineolus
Parasyrphus punctulatus
Parhelophilus consimilis
Parhelophilus versicolor
Pipizella viduata
Platycheirus albimanus
Platycheirus angustatus
Platycheirus clypeatus
Platycheirus fulviventris
Platycheirus granditarsus
Platycheirus immarginatus
Platycheirus manicatus
Platycheirus perpallidus
Platycheirus rosarum
Platycheirus scambus
Platycheirus scutatus
Portevinia maculata
Rhingia campestris
Riponnensia splendens
Scaeva pyrastri
Sericomyia lappona
Sericomyia silentis
Sphaerophoria interrupta
Sphaerophoria philantha
Sphegina clunipes
Syritta pipiens
Syrphus ribesii
Syrphus torvus
Syrphus vitripennis
Trichopsomyia flavitarsis
Tropidia scita
Volucella bombylans
Volucella pellucens
Xylota abiens
Xylota segnis
Xylota sylvarum

1 Compiled by Helen Sheridan and Martin Speight

Order *SIPHONAPTERA:* fleas

Fleas are most unpopular insects, notwithstanding the fact that they are among the most highly evolved and specialised! Most of us will be familiar with the species that inhabit our own bodies or those of our pets and other domestic animals. But there are dozens of other species that we are unlikely ever to encounter. These find a warm home and secure food supply on wild mammals and birds. If the host species occur in Offaly then we can be sure the common flea species associated with these vertebrates are here too. However, when it comes to the study of the fleas of Offaly in their own right it can fairly be said we have so far barely scratched the surface.

Phylum Chordata: vertebrates

Class Pisces*:* (fishes)[1]

A dozen or so species of fish are to be found in Offaly waters, including trout and salmon, eel and minnow, bream, pike, roach, rudd and two sticklebacks, stone loach and the protected lamprey. It often comes as a surprise to learn that all except eel, lamprey, trout and salmon are introduced species. A unique kind of trout, the ***croneen***, migrates from Lough Derg to the Camcor to spawn each year. The fish farm at Fanure, run by the Central Fisheries Board, produces trout for stocking some rivers and lakes in the county. The presence of pollan has recently been confirmed in the Shannon near Meelick, which may actually be where they spawn: ongoing research hopes to establish this. Pollan is known to occur at only five locations in Ireland, and nowhere else in western Europe.

Croneen

PALLAS LAKE: A CASE STUDY

Pallas Lake is a 50-hectare landlocked limestone lake between Tullamore and Kilcormack. It consists of a shallow, very weedy part and a deeper, more open section. It is fed by springs and by a short, spring-fed stream. The outflow sinks down into a swallow-hole in the limestone a short distance from the lake. It supports good populations of the Irish damselfy (also known as Irish bluet *Coenagrion lunulatum*): important because it is one of very few species found in Ireland but not in Britain (and the only odonate in that category). Pallas is the most southerly location at which it has been recorded in Ireland.

The lake formerly held pike, perch and tench, but no trout; crayfish disappeared in 1954. During the years between then and 1957, some 10,000 pike were trapped and netted in the lake, as well as considerable numbers of perch, and brown trout were introduced from the Little Brosna. Following their introduction the stock made very rapid growth, and they became silvery in colour and developed deep red flesh. This study showed that the rate of growth of trout, as well as their external appearance and condition, are influenced by environment as well as heredity.

The lake is sampled by Offaly County Council and has been classed as oligotrophic, i.e. indicating a very low level of pollution, but having increased phytoplankton growth in 2003.

As a *'put and take'* trout fishery, Pallas Lake is stocked regularly by the Shannon Regional Fisheries Board with rainbow and brown trout, and gives good angling sport throughout the season. When fish over-winter they tend to grow large; rainbows of 7-12lbs have been caught here.

[1] Contributed by John Lucey, Environmental Protection Agency.

THE CRONEEN

Ireland appears to have a larger diversity of trout than was hitherto believed, with the 'gillaroo', 'ferox' and 'sonaghan' now regarded as distinct species according to genetic work carried out at Queen's University Belfast. 'Croneen' may soon be added to this list of distinct trout species, though research on this is still ongoing at Queen's University Belfast. What is certain is that it is one of the most distinct forms in Irish waters. The origin of the name is unclear but may be derived from the diminutive form of *cr n* (meaning brown or dark brown) (in Irish the diminutive form does not always imply smallness!) or *cr n ine* indicating swarthy/black. Both words would aptly describe this brown trout, which lacks the red spots of other species. Croneen has also been 'translated' as simply 'Shannon trout'.

In July or August the adult fish migrate a considerable distance (some 40km), from Lough Derg to their natal stream, the Camcor River. Some also enter the Nenagh and Ballyfinboy rivers but the great majority continue up the Shannon from the lake, turn into the Little Brosna River and from there enter the Camcor, at the confluence of the two rivers in Birr Castle Demesne. From there they gradually work their way upstream until they reach the headwaters in the Slieve Bloom mountains. The migrating fish average 0.6 –0.9kg in weight, but fish of up to 2kg are not unusual; they behave like sea trout, feeding only intermittently. Anglers fish for them in the Little Brosna and Camcor rivers in the Birr area, using large wet flies at dusk; they are also taken on worms and spinning baits during the daytime. Investigations carried out in 2002 by the Shannon Regional Fisheries Board in collaboration with the Little Brosna and Camcor Fishing Club, found that the majority were 3+ and 4+ years old, i.e. fish in their 4th and 5th years of growth, but some were almost 6 years old. Fecundity ranged from about 300 to 500 eggs per female in the fish examined. Most juveniles appear to spend two years in the nursery stream before migrating down to the lake and following rapid growth reach maturity a year later.

The croneen's fluvial and lacustrine habitat is under threat of enrichment. Water quality continued to be of a highly satisfactory standard in the upper reaches of the Camcor River in August 2002 but for most of its course quality was only 'fair.' The reach below Kinnitty was polluted by suspected sewage discharges and cattle manure as well as impacts of dredging and removal of stones and gravel from the river bed. Bed material exploitation has previously been recorded in this area (in 1985 and 1993) as well as at Coneyburrow (in 1987 and 1993) and again at Clonbrone (in 1985). Slurry spreading is also suspected as a contributory cause of the overall mediocre quality of the middle and lower stretches of the river in recent years. Remedial action is urgently needed if the Camcor is not to go the way of so many other formerly high quality rivers throughout the country. In June 2005 silage effluent caused the deaths of hundreds of young croneen in a spawning area of the river. While Lough Derg has shown some amelioration of eutrophication symptoms in recent years (thought to be as a result of large populations of zebra mussels filtering the water) it remains enriched with phosphorus. These habitats of the juvenile and adult croneen are in need of protection and restoration if this unique trout is to continue migrating between the two rivers. It is listed in the Offaly County Heritage Plan (Objective 3.15) as a species requiring attention. In 2003 the Little Brosna and Camcor Angling Club was awarded a Heritage Council Community Grant to collect more information on the croneen and increase awareness both in the county and nationally of the heritage importance of this fish.

The fishes of Offaly

Petromyzon marinus Sea lamprey
Lampetra fluviatilis River lamprey
Lampetra planeri Brook lamprey
Salmo salar Salmon
*Salmo trutta*Brown trout
**Oncorhynchus mykiss* Rainbow trout
Coregonus albula Pollan
**Esox lucius* Pike
**Cyprinus carpio* Carp
**Gobio gobio* Gudgeon
**Tinca tinca* Tench
**Abramis brama* Bream
**Phoxinus phoxinus* Minnow
**Scardinius erythrophthalmus* Rudd
**Rutilus rutilus* Roach
**Leuciscus leuciscus* Dace
**Noemacheilus barbatulus* Stone loach
Anguilla anguilla Eel
**Gasterosteus aculeatus* Three-spined stickleback
**Pungitius pungitius* Ten-spined stickleback
**Perca fluviatilis* Perch

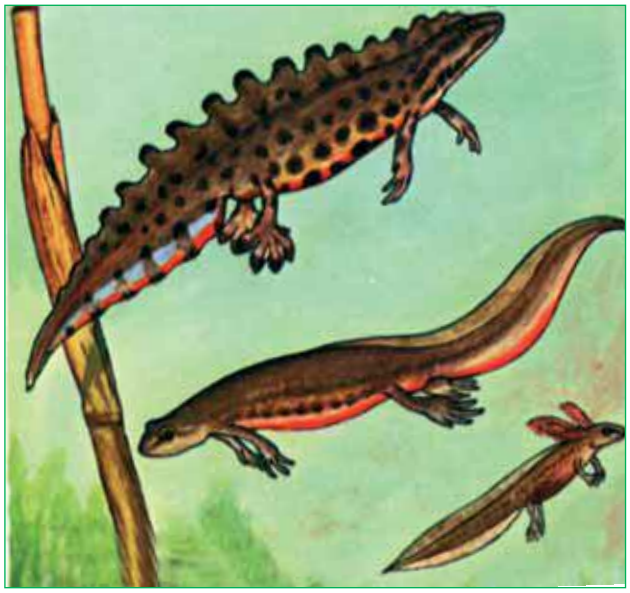
*Probably or certainly introduced by man

° Populations not self-sustaining

Class Amphibia (amphibians)

Frog

There are approximately 5,763 species of amphibians, most of them frogs and toads. The group has been declining dramatically in recent times: one-third of all species is today threatened with extinction. This is due to a combination of factors resulting from global warming, and the impact of human population growth and its direct and indirect effects on natural habitats. Ireland has only three amphibian species, two of which occur in Offaly. The common frog *Rana temporaria* occurs everywhere and appears to be holding its own. The smooth newt *Triturus vulgaris* is also widespread, but not often seen, although a more careful survey would probably show it to be more common than we think. It keeps very much to itself, and its retiring ways make it easy to underestimate its distribution and frequency.



Smooth newt

Class Reptilia (reptiles)

The class of reptiles, whose mighty antecedents ruled the earth once upon a time, and still plays a very important role in many parts of the world. About 7,925 living species have been described, the vast majority of which (7,600 species) are lizards and snakes. The order is represented in Ireland today by just two species, and one of these (the slow worm) is believed to be a recent introduction. The common lizard *Lacerta vivipara* is widespread across Offaly, especially on raised bogs, but is seldom seen because of its timid ways.

Lizard

Class Aves: (birds)[1]

Song thrush

The place of birds in County Offaly

Birds are part of most people's everyday life: a pair of song thrushes on the lawn, a robin's nest in the garden, swallows nesting in the shed, rooks in the beeches, grey wagtails along the river that flows through town, flocks of winter starlings, early morning birdsong. Because they are often near the top of the food chain birds are important indicators of the health of the environment: a healthy hay meadow flora and fauna is conserved by conserving the corncrake; a healthy river aquatic environment is needed for breeding dippers.

If a species becomes extinct or nears extinction in Offaly, Ireland's biodiversity is diminished. On the other hand the presence in the county of a species that is rare, such as some breeding wildfowl, enhances the island's biodiversity. As you can see from Table 4 below, some species that are of European Conservation Importance are found in Offaly, so our birds contribute significantly to European biodiversity.

Robin

[1] The section on birds has been written by Stephen Heery.

Habitats for birds in Offaly

Habitats for which Offaly is specially noted

1. Industrially cutaway peatlands
2. Lowland raised bogs
3. Upland blanket bogs
4. Callows of the River Shannon and Little Brosna

Other habitats

5. Woodlands and forests
   - 5a. Broad-leaved and native woodland
   - 5b. Mixed broad-leaved/conifer woodland
   - 5c. Conifer plantations
6. Wetlands
   - 6a Lakes
   - 6b. Rivers
7. Farmland
8. Man-made habitats (urban areas, buildings and gardens)

1. *Industrial cutaway bogland could cater for almost every bird species native to Offaly*

Industrial cutaway peatlands occur throughout the county from east to west. In the planned habitats of Lough Boora Parklands and the wider Boora Complex a mosaic of created wetland and lakes, wild recolonising grassland, improved grassland, tillage and conifer plantations of varying quality have been developed. More extensive areas of these habitats are already appearing and this mosaic may become the dominant wildlife habitats in the county. It may be true to say that the habitat of almost every bird species native to Offaly can be created on these cutaways.

2. Intact raised bogs are rare, but degraded bogs and cutovers provide valuable marginal habitats

The vast lowland raised bogs complex disappeared with the start of industrial peat harvesting in the 1940s. Very large populations of curlew, red grouse and black-headed gulls were probably the main losers. Only a few relatively intact bogs remain (e.g. Raheenmore, Ferbane, Moyclare, All Saints and Clara). However, there are still extensive areas of degraded raised bog with heather and marginal rough abandoned cutover bog whose open space provides places for species such as skylark, meadow pipit, cuckoo and locally whinchat.

3. Slieve Bloom provides distinctive upland habitats

About one third of the Slieve Bloom mountains is in Offaly. The blanket bog here provides habitat for upland birds (hen harrier, curlew and wheatear) but at the same time it is not too high for other species of marginal farmland, such as stonechat, skylark and merlin.

4. The Shannon Callows in Offaly have a unique year-round assemblage of birds

About one quarter of the flooded grasslands of the Shannon and Little Brosna Callows occurs on the southern and western borders of County Offaly.This includes some of the best and most extensive areas (Inch callow on the Little Brosna; and callows at Lusmagh, Shannon Harbour, Woodlands, Shannonbridge, Clonmacnoise and Bloomhill on the Shannon). On these sites the full complement of the Callows' unique combination of breeding, passage and wintering bird species occurs.

5. Woodland and forest provide habitat for specialised and common birds

Native (or broad-leaved woodland more generally, including beechwood) is uncommon in the county, Charleville Wood being the only extensive example. Birch woods developing on cutaways comprise a significant proportion of the 'native woodland' in the county (the 15ha wood at Turraun is the best documented example). These woods provide habitat for specialist birds such as treecreeper, jay and blackcap as well as breeding refuges for more generalist birds such as chaffinch, raven etc. Mixed broad-leaved / conifer woods often have a more diverse bird fauna.

Coillte owns large tracts of plantation in Slieve Bloom and isolated plantations elsewhere in the county. Some of these have special value as bird habitats at different stages of their rotation from clear-fell to well-thinned maturity.

6. Rivers provide corridors between the highest and lowest parts of County Offaly; other natural wetlands are rare

The Camcor, Silver, Clodiagh, Brosna and the Little Brosna Rivers are aquatic corridors linking the mountains to the Shannon. They are crossed at places by another aquatic corridor, the Grand Canal. The only old or naturally occurring lakes are Fin Lough, Pallas Lake, Annaghmore Lough and Charleville Lake (but see lakes on cutaway boglands, above).

7. Farmland hosts most of Offaly's birds

Farmland, with all its diversity of land and landscape due to past and present farming practices, is the key habitat for the conservation of 'common bird species'. Hedges and headlands are very important features for the maintenance of bird numbers and diversity.

8. ***Man-made habitats are where most people encounter birds***

The 'built' environment is attractive, at times essential, to a number of bird species (e.g. barn owl, dipper, spotted flycatcher, swallow). A surprising number of species will nest in old ruins. Mature gardens can be a true haven for birds and birdwatching. Sand cliffs exposed by quarrying the eskers are home to colonies of sand martins, and pools in sandpits attract waders on migration.

Categories of birds in County Offaly

Different species have different temporal relationships with County Offaly – although the relationships can be blurred for some species. For instance, blackcaps reach Offaly in summer from the south but also from the east in winter; resident starlings are supplemented by thousands of winter visitors from the east; wheatears pass through Offaly on their migrations but some stay to breed.

Breeding birds, resident all year: e.g. robin.

Breeding birds, summer visitors only: e.g. swallow, corncrake.

Winter visitors from the north: e.g. greenland white-fronted goose, redwing.

Winter visitors from the east: e.g. starling.

'Passage birds' migrating through Offaly en route to and from breeding grounds: e.g. whimbrel, various waders.

Swallow

Conservation status

Different species of birds have different 'conservation status.'

Table 1. Birds that have become extinct in County Offaly in the past 200 years

Species	Distribution in Offaly
Corn bunting	Apparently always rare in Offaly; probably became extinct in Ireland in the late 20th century; one was seen and heard singing at Clonmacnois in 1995.
Nightjar	Breeding near Birr about forty years ago; one was heard churring near Edenderry in 1996.
Dunlin	Breeding on the Callows in 1904. Today, regular passage birds are heard 'singing' in May.
Marsh harrier	Formerly bred on the great bogs in Offaly, decreasing by 1900. Today it is regularly seen on passage.
Bittern	Not recorded as breeding in Offaly (but in neighbouring counties); probably extinct in 19th century; one heard booming near Birr around 1940.
Crane	Probably bred on the bogs of Offaly in the late medieval times (1400s). Today occasionally seen on passage (seven at Clonmacnois in 1957; one at Boora in 2000; one on the Little Brosna in 2004).
Red grouse	Last seen on Raheenmore Bog in 1997, not since; probably extinct on lowland bogs in Offaly, but still found on Slieve Bloom.

Birds of Conservation Concern in Ireland (BoCCI)

Birdwatch Ireland and RSPB Northern Ireland have agreed a list of priority species for conservation action on the island of Ireland.

The Red List

Those on the 'Red List' are breeding birds of high conservation concern in Ireland. Nine out of the 18 species on the Red List breed in County Offaly. Table 2 summarises their distribution and status in the county. Table 3 summaries the type of information we have on these species at present.

Table 2. Offaly Birds on the Red List of Birds of Conservation Concern in Ireland

Species	Distribution in Offaly	Comments
Hen harrier	Breeds in the Slieve Bloom mountains, winters throughout Offaly.	Probably stable breeding population. Roosting sites in lowland areas (including Boora).
Grey partridge	Lough Boora Parklands.	Probably the only site in Ireland.
Red grouse	Slieve Bloom mountains	Extinct from lowland bogs.
Quail	Shannon Callows, occasionally tillage fields elsewhere.	The Shannon Callows is now the only known regular/annual breeding location in Ireland.
Corncrake	Shannon Callows.	In 2004, 5 out of 22 (22%) corncrakes calling on the Callows were in Offaly. Summer floods are a threat.
Lapwing	Cutover bogs and the Shannon Callows. Scattered elsewhere.	Probably declined dramatically over the past 15 years. Reasons not known.
Curlew	Shannon Callows and bogs, local elsewhere.	Curlews have not yet colonised the cutaways; status in Slieve Bloom not known; uncertain population on the many smaller degraded bogs.
Barn owl	Local but probably widespread.	Nesting sites critical.
Yellowhammer	Local breeding species, especially around Tullamore. Winter flocks occur.	

Table 3. Sources of knowledge of the Red List BoCCI species

Species	State of knowledge
Hen harrier	Regular 5-year year census. Probably one or two breeding pairs on the Offaly side of Slieve Bloom. Roosting sites in lowland areas (including Boora Parklands).
Grey partridge	Intensive conservation project at Boora.
Red grouse	Status in the Slieve Bloom not known. Nationwide survey 2006.
Quail	Only casual recording during corncrake research; corncrake conservation is expected to favour quail.
Corncrake	Intensive conservation project on the Shannon Callows.
Lapwing	Casual recording at present; a conservation project on the Shannon Callows is in its early stages.
Curlew	Casual recording. Uncertain population on the many smaller degraded bogs. Status in Slieve Bloom not known.
Barn owl	Casual recording of sightings and nesting sites.
Yellowhammer	Casual recording of singing males and winter flocks.

The Amber List

Those on the 'Amber List' are birds of medium conservation concern on the island of Ireland. There are 77 species on the 'Amber List,' 27 of which are coastal birds. Of the remaining 50 species, 32 regularly occur in Offaly. Table 4 summarises the distribution and status of these species in the county.

Table 4. Birds on the Amber List of Birds of Conservation Concern in Ireland regularly occurring in County Offaly. (E) = species of European Conservation Concern; ** = species occurring in internationally important numbers on the Callows in County Offaly; * = species occurring in nationally important numbers on the Callows in Offaly.

Bird species	Distribution and status
Wintering birds Black-tailed godwit (E)**, Whooper swan (E)**, Greenland white-fronted goose**, Golden plover (E)**	Most of these birds (with the exception of the last three) rely largely on the flooded Callows of the River Shannon and Little Brosna for their winter habitat.
Wigeon*, pintail (E)*, dunlin (E)*, Bewick's swan (E), gadwall (E), teal, jack snipe, common snipe, black-headed gull	In the Lough Boora Parklands, whooper Swans occur in internationally important numbers and golden plover in nationally important numbers.
Breeding birds	
Great crested grebe	Scarce on Callows; present on the few lakes; has recently colonised new wetlands at Boora.
Pintail (E)	Intermittent very rare breeder (proved 1984, suspected 1998).
Garganey (E)	Annual, scarce passage species on Little Brosna.
Merlin	Thinly spread on bogs, and cutaways with heather remnants.
Peregrine (E)	No natural breeding sites. Attempted breeding at Shannonbridge Power Station; family parties regular in autumn.
Black-headed gull	Probably almost confined to cutaway lakes at Lough Boora Parklands; previously (around 1900) there were vast colonies on certain Offaly raised bogs (now gone).
Water rail	Common on all water bodies.
Coot	Scarce because lake habitat is scarce.
Redshank (E)	Relatively good numbers on Callows and at Boora.
Snipe	Good numbers on Callows and scattered on other wetlands.
Cuckoo	Probably thinly spread, mainly on marginal land.
Kingfisher (E)	Good numbers along most rivers, streams and the Grand Canal.
Swallow (E)	Common summer visitor to all types of open buildings.

Table 4. *continued*

Bird Species	Distribution and status
Breeding birds	
Sand martin (E)	Good numbers in sandpits; future there depends upon end state of sandpits; numbers nesting in riverbanks unknown.
Redpoll	Probably naturally thinly spread throughout Offaly.
Woodcock (E)	Probably good numbers in woods and forests.
Stock dove	Thinly spread.
Skylark	Probably concentrated on Callows and grassland in Lough Boora Parklands. Scattered elsewhere.
Swallow	Common.
Whinchat	Very local on bog margins and Callows, probably very scarce but numbers unknown. Status unknown in Slieve Bloom.
Stonechat (E)	Probably good numbers.
Spotted flycatcher (E)	Good numbers in west Offaly at least.

The Green List

The remainder of Offaly's birds are on the 'Green List' – birds for which conservation status in Ireland is considered favourable at present. This is either because they are very common or there has been no evidence of decline in the past 25 years. Most of the 'common' birds are birds that will come to a garden and feeders.

Nevertheless, there are some species with more specialised habitats requirements for which County Offaly has a significant contribution to make.

Table 5. Birds on the Green List of special significance in County Offaly

Bird Species	Distribution and status
Shoveler	Always a very scarce breeding duck in Ireland. Possibly between two and five pairs on Shannon Callows and Lough Boora Parklands.
Ringed plover	A coastal bird, extremely scarce inland; ten or so pairs bred at Blackwater and Lough Boora Parklands in 2002, probably the largest single inland population.
Dipper	On rocky streams in Slieve Bloom. On stony stretches of lowland rivers where they nest under bridges. Lowland distribution and numbers not known.
Wheatear	Almost unknown as an inland lowland breeder in Ireland, but has bred successfully recently in Lough Boora Parklands.
Crossbill	Confined to conifer plantations. Flocks are seen throughout the year, especially in Slieve Bloom; breeding difficult to prove; rarely proved in Ireland, never in Offaly.

Whooper swans

The Birds of Offaly

There are 181 species (including subspecies) on the County Offaly bird list (up to the end of 2005) and records have come from all parts of the county. The Offaly sections of the Rivers Shannon and Little Brosna, and the cutaway bog-lands in the Lough Boora Parklands, Blackwater and surrounding areas, have added a significant number of species in recent years.

The status of the species on this list is based on c. 1,300 records for Offaly collected from many observers during the course of compiling the three editions of *Birds in Central Ireland*: *1992-95; 1996-1999; and 2000-2003* (Heery 1996, 2000, 2005). The sources of pre-1992 records are also given in *Birds in Central Ireland,* except two marked with an asterisk, which are from Valentine Trodd's *Birds of the Brosnaland* (1980). Two records where the common name is in italics are reliable records that have not been processed by the Irish Rare Birds Committee. Records for 2004 and 2005 have not yet been published.

The system of symbols used to denote the status of species in this list is a simplified version of that used in *The Complete Checklist of Irish Birds* http://www.birdsireland.com/pages/features.html. The distinction between 'common' and 'uncommon' is a subjective one made by the compiler.

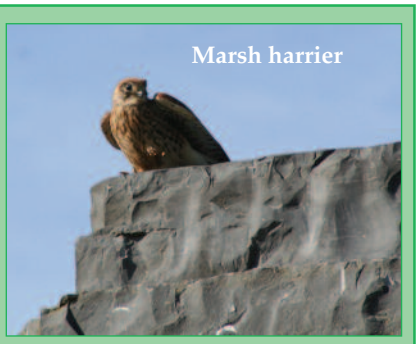
C = common;
U = uncommon;
L = local;
R = rare (less than 20 records);
V = vagrant (less than 5 records);
S = summer;
W = winter;
P = passage migrant;
A = all year;

* = breeding;
(*) = has bred, followed by year of last confirmed breeding;
F= feral.
For vagrants, the species' usual range is indicated thus: Irl = Ireland; Eu = Europe (including Britain); As = Asia; Am = America. The year last seen is given.

SPECIES	STATUS IN OFFALY
Red-throated diver *Gavia stellata*	V-Irl 2002
Little grebe *Tachybaptus ruficollis*	*CA
Great-crested grebe *Podiceps cristatus*	*UA
Leach's petrel *Oceanodroma leucorhoa*	V-Eu 1891
Gannet *Sula bassana*	V-Irl 1976
Cormorant *Phalacrocorax carbo*	CA
Bittern *Botaurus stellaris*	V-Eu 1940
***Night heron** *Nycticorax nycticorax*	V-Eu 1865
Great white egret *Egretta alba*	V-Eu 2003
Little egret *Egretta garzetta*	V-Irl 2005
Grey heron *Ardea cinerea*	*LA
Glossy ibis *Plegadis falcinellus*	V-Eu 1909
Mute swan *Cygnus olor*	*C A
Whooper swan *Cygnus cygnus*	CW & RS
Bewick's swan *Cygnus columbianus*	UW
Bean goose *Anser fabalis*	*V-Eu 1993*
Pink-footed goose *Anser brachyrhynchus*	RW
Greenland white-fronted goose *Anser albifrons flavirostris*	LUW
Greylag goose *Anser anser*	RW & LUF
Snow goose (`blue phase') *Anser c. caerulescens*	V-As or Am 1973
Canada goose *Branta canadensis*	V or F?
Barnacle goose *Branta leucopsis*	VW-Irl 1996
Ruddy shelduck *Tadorna ferruginea*	V-Eu, As 1892
Shelduck *Tadorna tadorna*	UP & RW
Wigeon *Anas penelope*	CW
Gadwall *Anas strepera*	UW
Teal *Anas crecca*	*? & CW
Green-winged teal *Anas c. carolinensis*	RW
Mallard *Anas platyrhynchos*	*CA
Pintail *Anas acuta*	(*1987) UW
Garganey *Anas querquedula*	UP
Blue-winged teal *Anas discors*	V-Am 1960
Shoveler *Anas clypeata*	*RS & CW

Kingfisher

SPECIES	STATUS IN OFFALY
Pochard *Aythya farina*	UW
Ferruginous duck *Aythya nyroca*	V-Eu 1955
Tufted duck *Aythya fuligula*	*LCS & UW
Scaup *Aythya marila*	V-Eu 1999
Goldeneye *Bucephala clangula*	V-Irl 2000
Smew *Mergus albellus*	V-Eu 2000
Red-breasted merganser *Mergus serrator*	RP
Goosander *Mergus merganser*	V-Eu 1963
Honey buzzard *Pernis apivorus*	V-Eu 1903
Red kite *Milvus milvus*	V-Eu 1993
Marsh harrier *Circus aeruginosus*	(* early 20th century)RP
Hen harrier *Circus cyaneus*	*UA
American goshawk *Accipiter gentilis atricapillus*	V-Am 1871
Sparrowhawk *Accipiter nisus*	*CA
Buzzard *Buteo buteo*	*UA
Osprey *Pandion haliaetus*	V-Eu 1999
Kestrel *Falco tinnunculus*	*CA
Merlin *Falco columbarius*	*UA
Hobby *Falco subbuteo*	V-Eu 2002
Peregrine falcon *Falco peregrinus*	UA
Red grouse *Lagopus lagopus*	*LA
Grey partridge *Perdix perdix*	*LUA
Quail *Coturnix coturnix*	*LS
Pheasant *Phasianus colchicus*	*CA
Water rail *Rallus aquaticus*	*LCA
Spotted crake *Porzana porzana*	(* 2002, probable) RLS
Little crake *Porzana parva*	V-Eu 1903
Corncrake *Crex crex*	*LUS
Moorhen *Gallinula chloropus*	*CA
Coot *Fulicra atra*	*LCA
Crane *Grus grus*	V-Eu 2000
Oystercatcher *Haematopus ostralegus*	RP
Black-winged stilt *Himantopus himantopus*	V-Eu 1987
Ringed plover *Charadrius hiaticula*	*RS & UP
Killdeer *Charadrius vociferous*	V-Am 1996
Dotterel *Charadrius morinellus*	RP
American golden plover *Pluvialis dominica*	V-Am 1996
Golden plover *Pluvialis apricaria*	CW & CP
Grey Plover *Pluvialis squatarola*	V-Irl 2004
Sociable lapwing *Vanellus gregaria*	V-As 1996
Lapwing *Vanellus vanellus*	*LCS & CW
Knot *Calidris canutus*	RP
Sanderling *Calidris alba*	VP-Irl 2000
Little stint *Calidris minuta*	RP
Temminck's stint *Calidris temminckii*	V-Eu 1999
Pectoral sandpiper *Calidris melanotus*	V-Am 1947
Curlew sandpiper *Calidris furruginea*	V-Eu 2001
Dunlin *Calidris alpina*	CW & CP
Ruff *Philomachus pugnax*	UW & UP
Jack snipe *Lymnocryptes minimus*	UW
Snipe *Gallinago gallinago*	*CS & CW
Woodcock *Scolopax rusticola*	* UA
Black-tailed godwit *Limosa limosa*	(* 1987) LCW & LCP
Bar-tailed godwit *Limosa lapponica*	V-Eu 1997
Whimbrel *Numenius phaeopus*	CP
Curlew *Numenius arquata*	*US & CW
Spotted redshank *Tringa erythropus*	RP
Redshank *Tringa totanus*	*US & RW
Greenshank *Tringa nebularia*	UP & RW
Lesser yellowlegs *Tringa flavipes*	V-Am 1996
Green sandpiper *Tringa ochropus*	UW & UP
Wood sandpiper *Tringa glareola*	V-Eu 1997
Common sandpiper *Actitis hypoleucos*	*UA
Turnstone *Arenaria interpres*	V-Irl 2003


Marsh harrier


Heron


Blue tit

SPECIES	STATUS IN OFFALY
[2]**Arctic skua** *Stercorcarius parasiticus*	V-Irl no date
Black-headed gull *Larus ridibundus*	*CA
Common gull *Larus canus*	RS & UP
Lesser black-backed gull *Larus fuscus*	UA
Herring gull *Larus argentatus*	V-Irl 2000
Glaucous gull *Larus hyperboreus*	V-Irl 1994
Great black-backed gull *Larus marinus*	UP & RW
Kittiwake *Larus trydactyla*	V-Irl 1998
Sandwich tern *Sterna sandvicensis*	V-Irl 2002
Common tern *Sternus hirundo*	UP
Arctic tern *Sternus paradisaea*	V-Irl 1997
Little auk *Alle alle*	V-Irl 1991
Pallas's sandgrouse *Syrrhaptes paradoxus*	V-As 1888
Feral pigeon *Columba livia*	*CA
Stock dove *Columba oenas*	*UA
Woodpigeon *Columba palumbus*	*CA
Collared dove *Streptopelia decaocto*	*CA
Cuckoo *Cuculus canorus*	*US
Barn owl *Tyto alba*	*UA
Long-eared owl *Asio otus*	*UA
Short-eared owl *Asio flammeus*	V-Irl 2003
[1]**Nightjar** *Caprimulgus europaeus*	*V-Eu 1996*
Swift *Apus apus*	*CS
Kingfisher *Alcedo atthis*	*CA
Bee-eater *Merops apiaster*	V-Eu 1993
Hoopoe *Upupa epops*	V-Eu 1995
Great spotted woodpecker *Dendrocopos major*	V-Eu winter 1949/50
Skylark *Alauda arvensis*	*CA
Sand martin *Riparia riparia*	*CS
Swallow *Hirundo rustica*	*CS
House martin *Delichon urbica*	*CS
Meadow pipit *Anthus pratensis*	*CA
Grey wagtail *Motacilla cinerea*	*CA
Pied wagtail *Motacilla alba yarrelli*	*CA
White wagtail *M.a.alba*	RP
Waxwing *Bombycilla garrulus*	RW
Dipper *Cinclus cinclus*	*LUA
Wren *Troglodytes troglodytes*	*CA
Dunnock *Prunella modularis*	*CA
Robin *Erithacus rubecula*	*CA
Black redstart *Phoenicurus ochrurus*	V- Eu 1999
Whinchat *Saxicola rubreta*	*LUS
Stonechat *Saxicola torquata*	*CA
Wheatear *Oenanthe oenanthe*	* LS & CP
Blackbird *Turdus merula*	*CA
Fieldfare *Turdus pilaris*	CW
Song thush *Turdus philomelos*	*CA
Redwing *Turdus iliacus*	CW
Mistle thrush *Turdus viscivorus*	*CA
Grasshopper warbler *Locustella naevia*	*LUS
Sedge warbler *Acrocephalus schoenobaenus*	*CS
Whitethroat *Sylvia communis*	*U?S
Blackcap *Sylvia atricapilla*	*CS & UW
Chiffchaff *Phylloscopus collybita*	*CS & RW
Willow warbler *Phylloscopus trochilus*	*CS
Goldcrest *Regulus regulus*	*CA
Spotted flycatcher *Muscicapa striata*	*CS
Long-tailed tit *Aegithalos caudatus*	*CA
Coal tit *Parus ater*	*CA
Blue tit *Parus caeruleus*	*CA
Great tit *Parus major*	*CA
Treecreeper *Certhia familiaris*	*CA
Jay *Garrulus glandarius*	*CA
Magpie *Pica pica*	*CA

Barn owl

Wren

SPECIES	STATUS IN OFFALY
Jackdaw *Corvus monedula*	*CA
Rook *Corvus frugilegus*	*CA
Hooded crow *Corvus corone cornix*	*CA
Raven *Corvus corax*	*UA
Starling *Sturnus vulgaris*	*CA
House sparrow *Passer domesticus*	*CA
Chaffinch *Fringilla coelebs*	*CA
Brambling *Fringilla montifringilla*	RW
Greenfinch *Carduelis chloris*	*CA
Goldfinch *Cardeulis carduelis*	*CA
Siskin *Carduelis spinus*	*UA
Linnet *Carduelis cannabina*	*CA
Twite *Carduelis flavirostris*	V-Irl 1982
Lesser redpoll *Carduelis flammea*	*CA
Common crossbill *Loxia curvirostra*	*?UA
Bullfinch *Pyrrhula pyrrhula*	*CA
Snow bunting *Plectrophenax nivalis*	UW
Yellowhammer *Emberiza citrinella*	*LUA
Reed bunting *Emberiza schoeniclus*	*CA
Corn bunting *Miliaria calandra*	V-Irl 1995 (now extinct in Ireland)

Blackbird

Chaffinch

Acknowledgements

[1]Thanks to Declan Manley for the nightjar record, which was from Edenderry.

[2] There is an Arctic skua specimen, collected from Edenderry, in the National Museum, Dublin. It is labelled 'Richardson's Skua' (information supplied by Dermot Breen).

Thanks also to Dermot Breen, Brian Caffrey and Alec Copland for very useful comments on first drafts. Any errors in the final version are entirely my own (SH).

Birds have been studied much more closely than other group of animals: not just in Offaly, but everywhere else. Indeed, this focus of attention is probably greater today than it has ever been. The national Annual Common Bird Census administered by BirdWatch Ireland is carried out each year for each of the 11km squares that cover Offaly. A survey of farmland birds has recently been completed by Alex Copland. Ringing surveys are currently being carried out on sand martins and swallows in east Offaly as part of a British Trust for Ornithology study of survival rates. Research and conservation work on the corncrake and grey partridge continue.

Goldfinch

Class Mammalia (mammals)

For most of us mammals are our first encounter with the world of animals outside the human family, giving us our first glimpse of the wonder of life's diversity. Often it is an early encounter with a badger or pine marten that transforms the way we think about the natural world and its importance in our own lives.

In earlier times Offaly's mammal fauna was perhaps more exciting than it is today, but by the time people first arrived here 9,000 or so years ago the great mammals of the late-glacial and early post-glacial periods – including brown bear and giant deer – had disappeared: although in the case of the giant deer not all that long before. The bones of giant deer have been found at a number of locations in Offaly in the lake clays underneath the lowland bogs. Today Offaly has 23 mammal species. Most of them live in the wild places of the EcoNet (see page 6-7) on the fringes of the human world, but several have established a place for themselves inside that world, and a few interfere with our economic activities sufficiently to be considered pests. None of the mammals – except for deer perhaps – is any longer important in the human diet. It was different not so long ago, when hare and rabbit especially were important.

It comes as something of a surprise to learn that eight of our wild mammal species were introduced, deliberately or accidentally, by humans. One such is the **hedgehog**, which occurs more widely than most of us realise: its noctural habits and quiet unobtrusive ways enable it to go about its life without attracting much attention to itself. The **fox** is found throughout the county. It has been here as long as we have and has come to know us very well, its intelligence enabling it to adapt as our way of life has evolved, so that in today's sophisticated human world it makes the most of the opportunities presented while managing to continue its millennia-old evasion of persecution. Today the **badger** is feared and hunted because it has been implicated in the spread of bovine TB. In the late 1980s and early 90s all the badgers in east Offaly were killed in an experiment that clearly established this link. In spite of this it remains widespread.

Hedgehog

When Saint Ciarán arrived at Saighir, the first thing he did was sit under a certain tree, in whose shade a ferocious wild boar was lying. At first when he saw the man, the boar fled in terror, but then he was made gentle by God, and he came back to Ciarán as if he had known him all his life: and that boar became a disciple of Ciarán in that place just like any monk. And he assiduously rooted up bushes and hay with which the holy man could make his cell. At this time no man lived with Ciarán, because he had escaped from his disciples to his remote place on his own. But afterwards other animals came out of their lairs in the wilderness to Saint Ciarán: namely a fox, a badger, and a wolf and a deer: they remained tame in his presence, and obeyed him in everything, just as though they were monks.

But the day came when the fox, being shiftier and more sly than the other animals, stole the sandals of his abbot, holy Ciarán himself, and abandoning his vocation, took them away with him to his former lair in the wilderness, wishing to eat them there in peace. Knowing this, holy father Ciarán called another of his monks to him, namely the badger, and sent him into the wilderness after the fox, so that he might bring back his erring brother. The badger, because he was a creature skilled in the ways of the woods, obediently headed off in search of the thief, quickly picked up the trail and arrived at the lair of brother fox. Finding him about to eat his lord's sandals, the badger cut off the fox's two ears and his tail, and beat him up, and then compelled him to come back with him to his monastery, so that he might atone for his theft. The fox, having little choice in the matter, accompanied the badger, and they arrived back at None with the sandals undamaged. And the holy man said to the fox, 'Brother, why have you done this evil thing which does not become a monk. You know that the water here is sweet and free to us all, and likewise we all eat the same food? And if you had a yearning for flesh, almighty God would have provided it from the trees of the wood for us to give to you. So then the fox, begging forgiveness, did penance for his deed, and from then on he only ate what he was told to eat, living out his days as one of the brothers.[1]

[1] C. Plummer, (1910), *Vitae Sanctorum Hiberniae*, 1; the loose translation is my own.


Badger

We should remember that the bovine TB problem is caused by modern farming practice rather than the badger. We need to find a way to co-exist with this most charismatic of all wild mammals, if only because of the fondness with which it features in the traditions of our county (**See below**).


Pine marten

The increase in forest cover in the county has seen the return of the **pine marten**, especially in Slieve Bloom, where it is now well established, though seldom seen because of its retiring habits. More often seen, especially crossing rural roads, is the **mink**, a recent arrival whose depredations on waterfowl make it less than welcome in our midst. The **stoat** is found all over Offaly; of all our wild mammals it seems to be the one that best has the measure of our world and is thoroughly at home in it: though it knows better than to step into the limelight of our attention too often.

Slieve Bloom is the stronghold of the **fallow deer**, where its numbers need to be controlled to prevent damage to trees, but it ranges widely across the county and is seen from time to time in most areas: indeed, it is involved surprisingly often in collision with cars! A number of **feral goats**, the descendants of once domestic ancestors, also live in Slieve Bloom, preferring more open, shrubby habitats than the deer and causing considerable damage when their numbers are high.


Fallow deer

The **hare** occurs throughout the county, but is especially at home nowadays on the open expanse of


Hare

the cutaway. The **rabbit**, introduced in medieval times to be farmed, has established a certain measure of coexistence with us at the present time. Its numbers though can easily rise to a level where the farmer needs to take steps to bring it under control: nowadays mainly through expensive fencing and the use of tree guards


Rabbit

The **red squirrel** is one of the most loved of wild animals. For a time in the sixties and seventies it looked as though it would be ousted from our midst by the alien **grey squirrel**, but the red has returned to many of its old haunts in recent years, and it looks now as if the grey may be the one in decline. The red squirrel is more at home in conifer or mixed woodland; one wonders whether the increasing area of farmland planted with broadleaves will favour the grey.


Red squirrel

The **brown rat** is the member of the mammal fauna we would be happiest without. It can be found nearly everywhere, but its preferred habitat is within our

human infrastructure where it can be a serious problem wherever it can find sufficient food and shelter for its numbers to rise.


Brown rat

The **house mouse** is also an animal that has made our human world its own, and it is rarely absent wherever humans are found. It may not be as abundant as formerly because modern homes do not provide it with quite the same convenient network of warm living places as do older buildings: but it seems to be adapting well! Its more rural cousin the **wood mouse** is the most common wild mammal in Ireland, at home especially in woods and hedges, where its numbers fluctuate with its food supply. The **pygmy shrew** dwells in similar places, and seems to do well wherever the invertebrate food supply is sufficiently abundant to satisfy a voracious appetite: because of its size it needs to eat constantly to get the energy it needs for its activities.


House mouse


Shrew

We may expect the number of rodent species in the county to increase by one in the near future, because the **bank vole**, which was recorded for the first time in Ireland in Kerry in 1964, has been making its way slowly across the country in the years since. It now occurs in most areas in Cork, and has reached Galway and Waterford. Its spread is dependent on thick ground cover, but with an estimated extension of its range of between 2 and 5km a year on farmland it is surely a matter of time before it reaches us. It feeds on leaves, seeds and fruits.


Otter

Few people in Offaly have seen an **otter** in the wild, because although it is widely distributed it is not common. We must hope the strict protection it now enjoys will allow the species to recover sufficiently for an encounter with this splendid animal to be a more common experience in Offaly. It feeds on a variety of fish species, but mainly slow swimming fish such as eels (as well as crayfish), so it is unclear to what extent its scarcity echoes the decline in the population levels of trout and salmon.

The mammals that have received most attention in recent decades are the **bats**. Over this time period the attitude of the general public towards these extraordinary creatures has been gradually changing, as we have come to know them better and to realise how minimal is the disturbance they cause us. Modern methods of survey have also helped us to understand more about their ways of life and their distribution: their nocturnal habits and very limited contact with us meant there was much about them that was hidden from our human eyes. Bat detectors now enable us to eavesdrop on their conversations in a new and fascinating way. We have 5 species in Offaly, much the most common being the pipistrelle.


Grey squirrel


Bat

The mammals of Offaly[1]

Order Insectivora: insectivores		
Family Erinaceidae (hedgehogs)		
Erinaceus europaeus (L)	Hedgehog	Introd.
Family Soricidae (shrews)		
Sorex minutus (L)	Pygmy Shrew	Indig.
Order Chiroptera: bats		
Family Vespertilionidae		
Myotis daubentonii (Kuhl)	Daubenton's bat	
Nyctalus leisleri (Kuhl)	Leisler's bat	
Pipistrellus pipistrellus (Schreber) (45kHz)	Common pipistrelle	
Pipistrellus pygmaeus (55kHz)	Soprano pipistrelle	
Plecotus auritus	Long-eared bat	
Order Rodentia: rodents		
Family Sciuridae (squirrels)		
Scirurus vulgaris (L)	Red squirrel	Indig.
Sciurus carolinensis (G)	Grey squirrel	Introd.
Family Muridae (mice and rats)		
Apodemus sylvaticus (L)	Wood mouse	Introd.
Mus musculus L.	House mouse	Introd.
Rattus norvegicus L	Common rat	Introd.
Clethrionomys glareolus (Schreber)	Bank vole	Introd.
Order Lagomorpha		
Family Leporidae (hares and rabbits)		
Lepus timidus L.	Mountain hare	Indig.
Oryctolagus cuniculus (L)	Rabbit	Introd.
Order Carinvora: terrestrialCarnivores		
Family Canidae (dogs)		
Vulpes vulpes (L)	Fox	Indig.
Family Mustelidae		
Martes martes (L)	Pine marten	Indig.
Mustela erminea (L)	Stoat	Indig.
Mustela vison (Schreber)	Mink	Introd.
Meles meles (L)	Badger	Indig.
Lutra lutra (L)	Otter	Indig.
Order Artiodactyla: even-toed ungulates		
Family Cervidae (deer)		
Dama dama (L).	Fallow deer	Introd.
Family Bovidae (cattle, sheep and goats)		
Capra hircus	Feral goat	Introd.

[1] Compiled by John Whelan

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