SHERKIN COMMENT

Issue No. 55 Environmental Quarterly of Sherkin Island Marine Station *2013*

INSIDE

The Wild Plants of Bere, Dursey, Whiddy and other Islands in Bantry Bay

Main photo: **Looking out towards Whiddy Island, with Hungry Hill in the background.**
Left inset: **A view up Bantry Bay from the top of Bere Island.**
Right inset: **The southern coast of Dursey Island.**

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Editorial

Fulfilling a Dream

Image courtesy of Robbie Murphy

Bogbean (*Menyanthes trifoliata*) is a fine sight in May, fringing bog pools and loughs on the islands of Bere and Whiddy in Bantry Bay, West Cork.

By Matt Murphy

THE publishing of our latest book *The Wild Plants of Bere, Dursey, Whiddy and other Islands of Bantry Bay* (see page 6) brings to fruition a project we began in 1997. That year, for a number of months, we based three botanists on the islands of Bere, Dursey and Whiddy to record the wild plant life. It was like an Aladdin's Cave, revealing a flora close in number to those we had found for the Roaringwater Bay islands. We knew further survey work had to be undertaken and following a number of visits, ending in 2008, we had a total of 578 species, close to the 627 for Roaringwater Bay. Our next task was to publish the data, a huge task in itself. Fortunately Dr John Akeroyd who edited the Station's first flora *The Wild Plants of Sherkin, Cape Clear and adjacent Islands of West Cork* (published in 1992) and *Supplement* (2011) came onboard again. John has now visited the marine station annually for 25 years and has been a major influence in guiding our botanists over the years. After much work, editing, checking, rechecking, etc.., the second flora was finished and printed this May.

I feel very proud of both floras. These two books show how special the islands off the southwest coast of Ireland are in the richness of their plant life. It makes them, for their size, unique in Ireland today. Even now I believe there is much more work to be done, which would see more species added to the lists of all the islands. It is hard to understand why the flora of these islands has never before been systematically recorded.

I had hoped that we could begin surveying the three peninsulas of West Cork – Beara, Sheep's Head and Mizen – once the latest book was published. Unfortunately the financial cost would be too great as each peninsula would need a team of botanists for as least a 3-year period. It is hard to believe that a systematic study of the wild plant life of Cork County has never been undertaken. Since 1971, there have been only two recorders for the County – Tony O'Mahony and the late Maura Scannell, the latter based at the National Botanic Gardens, Glasnevin, Dublin. All the work Tony has undertaken has been done using his own resources. He has added so much to the flora of the county. Thankfully he was able to produce *The Wildflowers of Cork City and County* (The Collins Press, 2009) – a wealth of botanical information. It is beautifully written, bringing the layperson on a journey with him through the flora of many areas in Cork city, such as Sunday's Well, St. Luke's, the Glen and Blackrock and in the County, from the coast to the lakes to the mountains.The chronic shortage of botanists means so much of the diversity of the wild plants are being lost forever. To do a systematic survey of the county would take many teams of botanists. Frighteningly, Tony O'Mahony is the last systematic botanist for the county. To quote his own words "when I go there is no resident Cork botanist to follow me". Sadly he could be the last botanical surveyor in Cork County.

I cannot understand the lack of interest in one of our most vital natural resources, our wild plants. We can save bats, dolphins, seals, whales and yet the flowers provide pollen and nectar for many insects such as bees, butterflies and moths, all vital in the foodchain for other animals and for humans.

Establishing the flora of an area is an important resource. Having a baseline record of native and non-native wild plants species helps to build a picture of the biological diversity of an area. It can serve a tool to educate people about their local environment and help to monitor the presence of invasive plants species, which can sometimes have a negative impact on native species.

Tony in his book highlights the main areas of botanical biodiversity within Cork County. He lists eleven focal points that are worthy of conservation measures. These include:

- The southwest peninsula of Mizen, Sheep's Head and Beara.
- The West Cork mountain range.
- Inland and coastal fen, lakelet and marsh habitats of north Cork.
- Cork City and its environs - which boasts an inordinately rich and diverse flora.
- The conservation of small, widely scattered waterbodies.
- Roadside ditch habitats.

The last 30 years has seen thousands of miles of ancient roadside ditch habitats destroyed and replaced by concrete panels or posts as necessary road improvements have been made. These ancient roadside ditch habitats harboured a diverse, rich flora that was irreplaceable. In some cases, destruction of these hedgerows may have been unavoidable but surely with so much topsoil available wonderful new ditches could have been established, either in front or behind that odious concrete. In a short space of time new habitats would have been formed for wildlife. What a legacy that would have been for future generations. Maybe someday someone in authority, whether it be in Ireland or Brussels will insist that if hedgerows have to be destroyed, new ones must be established. At present Ireland's roadside ditch habitats are "second class citizens" and looked on as a nuisance, not the crucial habitats on which much of our wildlife relies.

If we don't look at what plant species are where, there will no true record of the plant species around us and many may be lost, simply through ignorance. Plants may not be the stars of conservation but they are a vital part of every ecosystem and we should at least record their presence.

Matt Murphy, Director, Sherkin Island Marine Station, Sherkin Island, Co Cork, Ireland.

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Dublin Port Terns

Predation by Alien Species

Common Tern.

Images courtesy of Oscar Merne

From the top: **An adult Common Tern; A close-up of the platform showing nesting "compartments"; The main nesting platform in Dublin Port; A nest with eggs; A brood of small tern chicks.**

By Oscar Merne

IN 2002 I wrote an article in *Sherkin Comment* (Issue No 31) about the tern breeding colonies on artificial platforms (mooring dolphins) in Dublin Port, and described how the numbers breeding there increased from 34 pairs in 1994 to 200 pairs by 2001. This increase was due largely to improvements made to the platforms to make them a much safer breeding place, including covering the surface with shingle, fitting retaining walls to prevent eggs and chicks falling over the side, and providing shelters for the tern chicks to protect them from wet and windy weather.

Since 2001, the tern conservation project continued annually, with further improvements to the safety of the platforms (with thanks to Dublin Port and the ESB), and by June 2012 the numbers of terns breeding there had tripled to 600 pairs. Only the colony on Rockabill, 7 km off the north Co. Dublin coast, has larger numbers – almost 2,000 pairs of Common Terns in 2012, plus 1,200 pairs of Roseate Terns. Things were looking good at the Dublin Port colonies, in spite of a lot of wet weather in May, June and July, with high average clutch sizes and good hatching rates. By mid-season almost 500 chicks had been ringed, and there were still many eggs to hatch and chicks that would be large enough to ring later. Then disaster struck! Brown Rats discovered the colony, and being good swimmers and climbers they were able to raid the platforms and run amok among the nests, killing all the chicks that had not yet fledged. I won't go into the grim and gory details, but suffice to say that was the end of the colony for 2012.

On a positive note, many of the early chicks had fledged and thus escaped the mass slaughter, while all but one of the breeding adults escaped. They are long-lived birds (some surviving to 30 years or more), so they will be able to breed again. Furthermore, it is known from similar experiences elsewhere that terns will return to such routed colonies in subsequent years – providing the rat problem has been resolved. So, for 2013, plans are already being developed to prevent rats from wreaking havoc again on the Dublin Port colonies.

This episode raises the issue of the impact of introduced alien species on our native fauna and flora. Brown Rats are thought to have originated in eastern Asia and spread westwards by man along trade routes. They reached Britain and Ireland by the early 18th century and quickly became firmly established here. They are found throughout Ireland, including many offshore islands, and are now considered our most troublesome mammalian pests. From a bird conservation point of view their impact on colonial nesting seabirds can be particularly severe, sometimes permanently wiping out whole populations of species such as Manx Shearwaters, Storm Petrels and Puffins. Further afield rats have managed to populate the remotest of oceanic islands, usually transported there unintentionally by man, having "stowed away" on ships. Eradicating rats on islands which are vital for the conservation of unique threatened native species, is now seen as essential for the conservation of those species. But this requires an enormous amount of dedication, determination, hard work, difficult logistics and money. For example, the rat population which was introduced to the Antarctic island of South Georgia by 19th century whalers and sealers is now being target in order to stop the serious decline in the important colonies of albatrosses, shearwaters, petrels, penguins, and unique South Georgia Pipits and Pintail. This will be an enormous and costly task and it would have been much better had the rats not colonised the island in the first place.

Around the world there are thousands of examples where introduced alien animals and plants have caused enormous damage to the local ecology, fauna and flora, and also huge economic damage. Very often such introductions were accidental or unintentional, but, unfortunately many were deliberate. In New Zealand, for example, European settlers deliberately introduced species mentioned by Shakespeare and in the bible. Many of these introduced species have displaced unique native ones, which nowadays just about survive on small offshore islands where the aliens have been eradicated or never reached. When I was in New Zealand a few years ago I discovered that c.80% of the entire annual budget of the state conservation body had to be devoted to dealing with harmful alien species – including 80,000,000 Australian possums!

Now, in the 21st century, it is recognised that the introduction of alien species of animals and plants can have disastrous ecological and economic repercussions, and such deliberate actions are generally illegal. In spite of this, deliberate and illegal introductions are still occurring. When will we ever learn?

Oscar Merne (RIP) retired from Ireland's National Parks & Wildlife Service in January 2004.

Oscar J. Merne
Rest in Peace

Sadly Oscar Merne died on 17th January 2013 after a long illness. We were so fortunate that Oscar wrote for *Sherkin Comment,* having written an article in every issue since No. 3. During the final months of his illness, Oscar said he would like to write some further articles to be published in future issues and we were thrilled that he did so. We were in awe of Oscar's many achievements and his vast worldwide knowledge of birds. With his work and his many publications, he has left a great legacy.

Oscar retired from the National Parks & Wildlife Service in January 2004. He worked as an ornithologist for this Service and its predecessors since 1968. He was responsible for establishing the Wexford Wildfowl Reserve on the North Slob in Wexford, one of Ireland's most important wintering areas for waterfowl — especially the Greenland White-fronted Goose. After ten years he transferred to the NPWS Research Branch headquarters where he was given national and international responsibilities for bird research and conservation. One of his major achievements was the establishment of a network of 110 Special Protection Areas for birds, under the European Union's Birds Directive. His main research interests were the status, distribution and ecology of breeding seabirds and migratory waterfowl. He has over 200 publications on these and other topics.

Matt Murphy, Editor

A Lifetime of News

Matt Murphy, Editor of *Sherkin Comment*, speaks to Alex Kirby, a regular contributor to *Sherkin Comment* and a speaker at a number of Sherkin Island Marine Station conferences over the years.

Image courtesy of Robbie Murphy

Alex Kirby

When did you take up journalism as a career?

I'd always thought it would be wonderful to be a journalist, but in fact I started my career as an Anglican priest (deacon, actually). After a year in an East London parish I realised it wasn't for me and migrated slowly via magazines and a stint as a Reuters stringer in Burkina Faso, west Africa, to full-time journalism in the mid-1970s.

When did you join the BBC?

I found in 1978 that a friend worked for the BBC World Service. She arranged for me to take a test to do a three-month summer relief job in the newsroom, and I stayed in the BBC for 26 years.

Did you join as a religious correspondent?

No, as a sub-editor, a lowly form of life. The religious correspondent job was much later, in the late 1990s, just before I retired from broadcasting (though I went on with on-line reporting).

Was this a difficult brief with so many different religions, some with opposing views?

Not really. I got on well with most of the religious people I met, although almost every one was convinced that they possessed the ultimate truth and that it was my job to pass it on to the viewers and listeners (it wasn't – my job was to cover religion when it made news, not when it was attracting little attention from non-religious people). The real problem was the editors, many of whom were interested mainly in tabloid stories about deviant clergy.

In 1987 you became the BBC Environment Correspondent. Was this your choice and if so why?

Yes, I wanted the job badly, and just managed to get it, although I discovered that - as so often – the BBC had really wanted to attract a big name from Fleet Street. I was very happy being a general reporter, but when the environment job came up I went for it because I thought - and think – the subject is vital to every part of life.

Did you always have an interest in the environment?

An interest, yes, but no detailed knowledge or understanding of it. I had a degree in theology, but no science qualifications at all.

How did you handle high-powered PR from politicians and NGOs?

By trying always to remember the journalist's watchword – scepticism (which is very different from cynicism).

Did you find that the environment was a priority for governments?

Some governments, yes – mainly in Scandinavia and northern Europe. The much-derided European Union has done a huge amount to protect and improve the environment. And although the UK was known in the 1980s as the dirty man of Europe, it was starting to improve in many ways.

Do the public in general have an interest in protecting the environment?

I don't think you can generalise about that. Some people are consistently set on caring for the environment; some lose interest if the economy is in poor shape. And because I think poverty is a key environmental threat, I understand why many people may feel it is a low priority.

What NGOs in the UK do you admire most?

Friends of the Earth are consistently modest and trustworthy. I also admire the Global Action Plan and Practical Action.

What is the major environmental issue facing the world today?

Our need to recognise that we ourselves have become the dominant force that shapes the Earth. That is why many scientists say we're now in a new geological age, the Anthropocene epoch. If we did accept that we'd act to limit climate change (it's technically and economically possible, but we need to want to do it). We'd end poverty (ditto) and limit our own numbers.

Do you have faith that the younger generation will bring real change in the environment?

The trouble is that idealistic young people often grow into disillusioned old cynics. But perhaps this generation will manage not to; perhaps the immense changes in communications will mean they stay clear-eyed and impatient.

Is there sufficient education on the environment in schools?

Certainly not in the UK, where the government has just cut the amount there was!

Give three priorities you would like governments to tackle?

Ensuring everyone has access to affordable non-polluting energy; working to make European agriculture and fisheries sustainable; ending perverse subsidies (for example to fossil fuel industries).

Are the public complacent on the environment? What should they themselves be addressing?

Some are complacent, but many care, even if they don't know what exactly they should do. I think if we could all get into the habit of thinking about the implications of what we do today for our children and grandchildren, that would probably spur us very quickly to try to live a lot more sustainably. That's not an argument for a spartan, hair-shirt existence. It would be very different, but it needn't be miserable or deprived.

In retirement from the BBC what are you working on now?

With three friends, all former national print or broadcast journalists, I'm running a website to provide good coverage of climate science to journalists and newsrooms worldwide. It's free of charge, because we pay the costs ourselves – the Climate News Network, www.climatenewsnetwork.net/.

Ground slows glacier ice loss

By Kieran Cooke

New understanding of some of Greenland's major glaciers suggests they may not melt in the future nearly as fast as they are doing now.

SCIENTISTS tread very carefully when it comes to glaciers. While the consensus is that glaciers around the world are generally in retreat, there are the exceptions: in the west of the Himalayas some glaciers have been found to be growing, not shrinking. In Antarctica some glaciers are gaining mass balance while others are losing it. Meanwhile glaciers in other parts of the world, particularly in the Andes, are disappearing at an ever increasing rate.

The impact of climate change on the Greenland ice sheet has been well documented: Arctic temperatures are rising at levels well above the global average, and ice-loss has been accelerating.

This has raised concerns that these constantly increasing rates of ice loss will lead to a rise in sea levels that could threaten coastal communities around the world. Yet the future contribution of Greenland's glaciers to sea-level rise is uncertain.

A new study published in the journal *Nature* questions whether present trends of ice loss on the Greenland ice sheet will be maintained.

The report – *Future Sea-level Rise from Greenland's Major Outlet Glaciers in a Warming Climate* – looks at the behaviour of the four major fast flowing glaciers in Greenland. The Petermann, Kangerdlugssuaq, Helheim and Jakobshavn glaciers together drain about 22% of the island's ice sheet.

Lower loss expected

By building up a computer model of these four glaciers, scientists have revealed that the shape of the ground beneath the ice has a marked impact on the way the ice moves, with the rate at which the glaciers are losing ice depending critically on the shape of the fjords in which they sit and the topography of the rock below them.

In turn, this has led the scientists to doubt whether present rates of ice loss and the "calving" of icebergs from the glaciers will be maintained.

"...While these glaciers may show several bursts of retreat and periods of high iceberg formation in future, the rapid acceleration seen in recent years is unlikely to continue unchecked", says the report.

The computer model suggests that, because of the influence of various topographical features, the projected sea level rise from ice loss of these four glaciers will be of the order of between 2cm and 5cm by 2200 - considerably lower than previous estimates which have been based solely on the extrapolation of current trends.

However, the rate of calculated ice loss will still be considerable: the model predicts that the combined ice loss of the four will amount to between 30 gigatonnes (Gt) and 47Gt per year over the present century. One Gt of ice is equivalent to one cubic kilometre of water. By way of comparison, Lake Geneva contains 90Gt of water.

More clarity needed

"I am excited by the way we have managed to create a detailed picture of the workings of the glaciers", says Dr Faezeh Nick, of the Universite Libre de Bruxelles, lead author of the study.

"It turns out that if the fjord a glacier sits in is wide or narrow, it really affects the way the glacier reacts. The important role of the terrain below the ice shows we need to get a much clearer picture of the rest of Greenland's glaciers before we have the whole story."

Work on the modelling of the glaciers was carried out under the EU-funded Ice2sea programme which links scientific expertise among 24 institutions in Europe and elsewhere.

Professor David Vaughan, head of the programme, told Climate News Network that though there were various ways of analysing the behaviour of glaciers, the new computer modelling could be vital in assessing future levels of ice loss.

"The key point is that we actually need to know about the land beneath the ice if we are going to come up with really good projections on future ice loss and the contribution to sea level rise of these glaciers. This computer modelling could be a big step forward and adds to our understanding of how glaciers behave."

Kieran Cooke, Climate News Network – a free, ready-to-use factual service that brings you the latest news of climate change science. Website: www.climatenewsnetwork.org

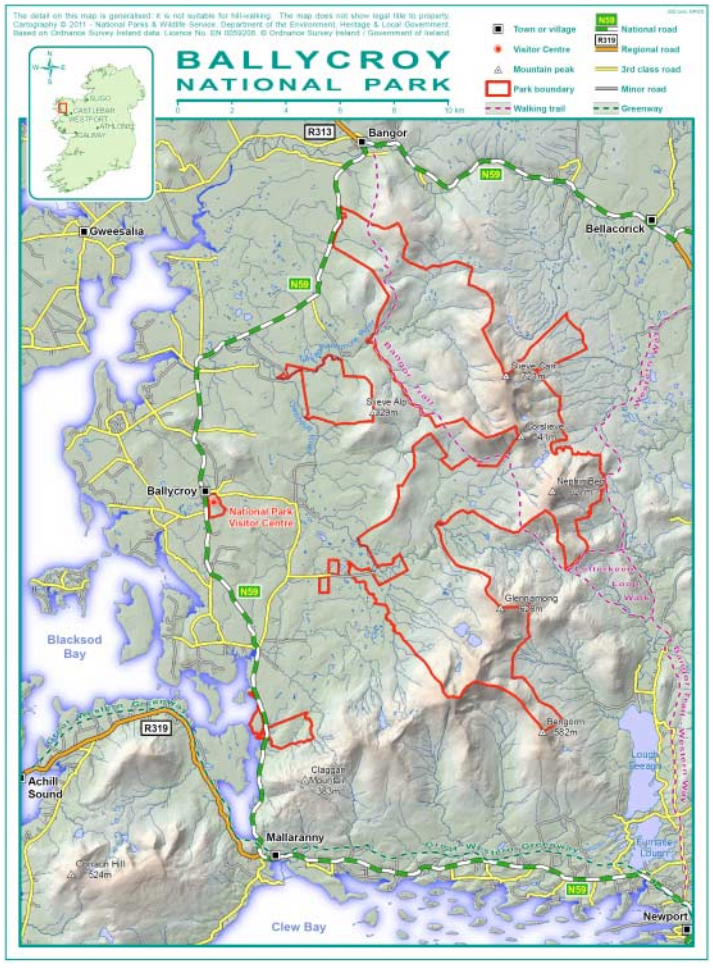
(LONDON, 13 May 2013)

Images courtesy of NPWS

By Susan Callaghan

IN the vast open expanse of north Mayo lays a treasure waiting to be explored. Ballycroy National Park is a truly beautiful place dominated by the ever changing sky that blankets a vast uninhabited and unspoilt wilderness. The Nephin Beg mountain range is the backbone of the Park where Atlantic blanket bog, alpine heath, corrie lakes and scree enshroud you - inspiring you and inspiriting you.

Ballycroy National Park is one of six national parks that are managed by the National Parks and Wildlife Service (NPWS) of the Dept. of Arts, Heritage and the Gaeltacht. It is part of the Owenduff/ Nephin Complex Special Area of Conservation (SAC) and Special Protection Area (SPA). These European designations make up the Natura 2000 Network, which protect rare and important habitats and species under the EU Habitats and Birds Directives. The Park covers an area of 11,000 hectares, the majority of which is remote and far from road access. A visitor centre is located in Ballycroy village which is on the N59 north of Mulranny. The centre is crucial for the visitor experience as the heart of the Park is remote and quite inaccessible to the day tripper. The centre's interactive displays explain the importance of the habitats and species in the National Park and surrounding area and serve to remind us of the myriad of wonderful plants and creatures that inhabit these hills and bogs. Social and cultural history is explored, highlighting the inextricable link we have with our natural world. An education programme also serves to raise awareness of our natural environment – school, college groups, tourists and locals benefit from our natural history interpretation.



For the adventurous, the Bangor Trail provides a path into the heart of the Park. Meandering along the lower slopes of the Nephins it skirts along the edge of the Owenduff bog - one of the largest intact active blanket bog systems in Western Europe. It is breathtaking here and you are rewarded with an experience of true peace and pure wilderness. This is an important habitat for Golden Plover, Red Grouse and an array of other moorland birds. The Owenduff and Tarsaghaun rivers are important salmonid rivers – here you may be lucky enough to spot an otter journeying up river to the mosaic of bog pools in search of frogs, or hear the Common Sandpiper's distinctive alarm-call. The rare Ivy leaved bellflower decorates the river edge with its delicate purple flower. Other plants brighten the landscape – bog asphodel, cross-leaved heath, and the enchanting bog cotton that always entertains with a dance in the breeze. There is so much here to relish.

There are challenges though for the Park - some that create management conundrums. Park accessibility is crucial but it has to be done in such a way that does not impact upon the essence and conservation value of the Park. Over the past three years NPWS have been improving the condition of the Bangor Trail to national way marked route standard – water management, board walking, bridging and stone pitching are all necessary. However, the Bangor Trail is a tough and long walk - other smaller trails are planned for the outer edges of the Park that will be suitable for the majority of visitors.

In the past overgrazing has been a serious problem in the area, sheep stripped the heath on the hills, and with as much as 2000mm of rain per year, erosion of the bare peat was inevitable. There are no fences between commonages and National Park lands so these grazing pressures were also experienced in the Park. Co-operation with the local farming community through grazing restrictions and reductions in sheep numbers has led to a marked improvement in the vegetation cover.

Top: **Field of bog cotton;** ***Above:*** **Bog wood meets the sea.** ***Right*** **Ballycroy National Park visitor's centre.**

This April, following a long spell of dry, cold weather, we were faced with a new challenge – over three days a devastating fire engulfed large tracts of blanket bog and heath – the first such fire here for 40 years. Around 5000 ha was burnt, with about 3000 ha of this in the National Park. As a consequence delicate lichens, mosses and liverworts that had taken years to establish themselves were wiped out in an instant. Many species were affected including frogs, lizards, and invertebrates such as beetles and spiders. For what should be a chorus of larks, pipits and other moorland birds, all you can hear this season is the crunch under foot as you walk. We wait with interest to monitor the recovery.

This highlights the importance of research by National Park staff. Surveys equip us with knowledge that informs our management practices.

Our environment is constantly changing and this sets the challenge for nature conservation. Research, interpretation, education and land management are the tools we use to face that challenge. Ballycroy National Park is a wonderful working example of this – it is a place to be treasured.

Contact Ballycroy National Park Visitor Centre on (098) 49888. Open daily in 2013 from 21st March to 30th September. Admission is free.

James Kilroy NPWS

Irene O'Brien NPWS

In April, devastating fire engulfed large tracts of blanket boy and heath in the National Park. (Inset: A burnt pygmy shrew – just one of the many species affected by the fire.)

Large-flowered Butterwort (*Pinguicula grandiflora*), one of the most special plants of West Cork and Kerry, is not found in Britain – and occurs elsewhere no nearer than northern Spain.

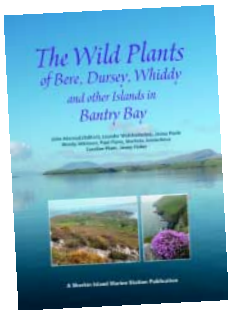
Images courtesy of Robbie Murphy

A view up Bantry Bay from the top of Bere Island: Old Red Sandstone provides the structural framework of Europe's second largest natural deep-water harbour.

Whiddy Island in tranquil Bantry Bay.

The Wild Plants of Bere, Dursey, Whiddy and other Islands in Bantry Bay

By John Akeroyd



THE latest publication from Sherkin Island Marine Station is an illustrated account of the diversity of wild plants to be found on the islands of Bantry Bay. This long deep bay has a key place in Irish history; it is also a major centre for Irish plants. Here, in a natural harbour, of mild climate and dramatic scenery, the rocks, soils, wild plants, people and landscape have shaped one another since the Ice Age. The book not only examines trees, flowers and ferns but also, in the introductory sections, the scenery, geology, geography, human history and land use of Bantry Bay. This we hope will take the book to a wider audience, as a guidebook and souvenir of the area. At the same time the annotated catalogue of the plants should provide valuable data for botanists, geographers and other scientists.

We have worked hard to ensure that *The Wild Plants of Bere, Dursey and Whiddy Islands in Bantry Bay, West Cork* is as detailed but yet as readable as *The Wild Plants of Sherkin, Cape Clear and Adjacent Islands of West Cork,* published in 1996, with a 2011 Supplement. Advances in desktop publishing technology, especially high resolution digital photography, have greatly facilitated the production of the Bantry Bay book relative to its predecessor, and we hope that Robbie Murphy's evocative pictures of plants, scenery and old buildings will enhance the book's appeal to a broad readership. The islands are firmly on the tourist trail, with the Beara Way long-distance walking trail now extending to Bere and the very western tip of Dursey. Garinish too has always attracted large numbers of visitors to its famous garden.

Each of the four main islands covered is quite different in atmosphere. The most westerly, Dursey, is heathy, hilly, wild and windswept, with almost deserted villages and wide Atlantic views. Bere is a large island with a high hilly backbone, a fragment of the mountains of the adjacent mainland. Much of it is rough pasture and bog, with some attractive small loughs, but it has a network of lanes and settlements, a substantial resident population and facilities for tourists. Garinish is best known for its sub-tropical gardens, tucked behind shelter-belts of trees, but still holding patches of wild habitat. Whiddy is the least known island, a lush landscape of rolling farmland, hedges, loughs and marshes, rather like some eastern parts of Ireland. The oil terminal, scene of the 1979 Betelgeuse oil tanker explosion, is discretely screened by trees. All the islands are steeped in history, from the Irish resistance to Elizabeth I and Wolfe Tone's abortive French invasion in 1796, to the early 20th century when Bere and adjacent Castletownbere were a base for the Royal Navy's battleships and Whiddy a base for US seaplanes.

In the past botanists have largely neglected these biodiversity-rich islands, which have a total of 578 wild plants recorded, although the nearby Beara peninsula was long famous for plant rarities. Most of the records reported in the book were compiled from 1997 by botanists based at Sherkin Island Marine Station. However, Bantry Bay plant records go back over four centuries. Philip O'Sullivan Beare (1590–1636), who lived on Dursey as a boy in the 1590s, and later wrote *The Natural History of Ireland,* noted Betony (*Stachys officinalis*) and other medicinal plants, as well as crops and trees, from Bantry Bay and the islands. Richard Pococke (1704–65), Bishop of Ossory, explored Whiddy and Dursey, from where he accurately described the rare Crowberry (*Empetrum nigrum*) – the first confirmed plant record from

Bogbean and White Water-lily in a loughan in wet heath south-west of the Signal Tower on Bere, perhaps a site of former turf-cutting.

the islands! In the early 19th century, Ellen Hutchins (1785–1815) from Ballylickey, perhaps Ireland's first woman botanist, compiled an annotated list of some 360 flowering plants on and around the Beara peninsula. She was an invalid but made excursions even into the hills, and was the first botanist to record plants on Whiddy, including rare weeds and medicinal plants that persist today.

In late spring and summer, Bere Island especially is a flowery paradise, the hedges and waysides bright with bluebell, St Patrick's cabbage (in fact a saxifrage), honeysuckle, foxglove, wild thyme, clovers, speedwells, vetches and knapweeds. The heaths and bogs are bright with gorse, dwarf gorse, heather and reddish-purple bell-heather, and in the wettest places there are insect-digesting plants such as sundews and butterworts, especially the magnificent Large-flowered Butterwort (*Pinguicula grandiflora*), and yellow-flowered Bog Asphodel (*Narthecium ossifragum*), and pink and white Bogbean (*Menyanthes trifoliata*) fringes peaty pools. Fields and ditches are home to buttercups, water forget-me-not, bird's-foot trefoils, tormentil, marsh orchids, self-heal, marsh woundwort, purple loosestrife and meadowsweet. Garden escapes add to summer colour: hydrangea, fuchsia, montbretia and rhododendron. Even in early autumn, flowers still abound, such as chamomile, goldenrod, autumn hawkbit and devil's-bit scabious.

Apart from the beauty and variety of the wild flowers, the area is of enormous interest and value for plant conservation in Ireland. Yet Dursey has had few visiting botanists, Bere has had more visitors but without any extensive study, Garnish has had little or no study of its wild plants, and Whiddy has had almost no botanical study since the 1880s. Some of the Sherkin Marine Station team's more remarkable finds include: the rare Spotted Rockrose (*Tuberaria guttata*) in coastal heath on Bere, extending the known range of this Irish Red Data Book species, and new populations of rarities such as Field Mouse-ear Chickweed (*Cerastium arvense*) on Dursey and Betony (*Stachys officinalis*) on Dursey and Bere; the rediscovery of the ancient medicinal plant Dwarf Elder (*Sambucus ebulus*) on Whiddy; the discovery of rare fumitories (*Fumaria* spp.) and other scarce arable weeds, and new populations of the rare ferns Irish Spleenwort (*Asplenium onopteris*) and Adder's-tongue (*Ophioglassum vulgatum*). A curious discovery was the mountain plant Fir Clubmoss (*Huperzia selago*) almost as sea-level on a heath on Bere, growing with Pale Dog-violet (*Viola lactea*) and other rare plants. Numerous of the records, especially from Whiddy and Bere, add to the maps published in the *New Atlas of the British and Irish Flora* (2002), which will be valuable in any update. Many records of alien species are already published in *A Catalogue of Irish Alien Plants* (ed. Sylvia Reynolds, National Botanic Gardens, 2002).

The photos also record some of the fascinating historical buildings that dot the islands. Here are Ireland's first Martello towers, built to counter the French threat, along with medieval O'Sullivan castles and tower houses, early 19th-century signal towers, and the forts and gun batteries on Bere and Whiddy that defended against invasions that never came. These buildings are not only of historical interest, but they also provide habitats for several ferns and flowering plants that benefit from the lime in the concrete used in their construction. One cannot separate the botanical and cultural riches of the islands, one of the most interesting and important regions of Ireland and a national treasure. *The Wild Plants of Bere, Dursey and Whiddy Islands in Bantry Bay, West Cork* is a record of both the state of the flora and of the islands at the beginning of the 21st century. We hope readers will visit the islands to enjoy their special scenery and tranquillity.

Dr John Akeroyd has studied the Irish flora for over 30 years. He edited The Wild Plants of Sherkin, Cape Clear and adjacent islands of West Cork *(1996) and is author of* A Beginner's Guide to Ireland's Wild Flowers *(2008).*

Image courtesy of Robbie Murphy

Field Mouse-ear (*Cerastium arvense*), a rare plant of Irish coasts, at its only site in Co. Cork, on Dursey Island.

Fir Clubmoss (*Huperzia selago*), growing in coastal heath near Lonehort Fort on Bere. This is usually a mountain plant in Ireland.

Semi-prostrate Broom in flower on cliffs at Foilburren on Dursey, growing with other relict coastal heathland plants.

The Martello tower at Ardagh on Bere, with its extra defensive battery. Two towers survive on the island, two more were demolished in 1898.

The rugged southern coast of Dursey.

Crossing from Castletownbere to Bere Island: (left to right) Jenna Poole, Marketa Janouchova, Dr John Akeroyd and Wendy Atkinson.

A flowery meadow in May on Bere Island.

Capsize at 75° North

Images courtesy of John Gore-Grimes

Part of the timber handrail caught in the shape of a crucifix after the knockdown.

By John Gore-Grimes

***SHARDANA* is a 31 foot Nicholson sloop and in July/August 1980 we sailed from Howth to the Shetlands and then on to Svalbard, reaching 80° North. We sailed from Svalbard to the small volcanic island named Jan Mayen and it was on that passage that the events, which are described below, occurred:**

By two o'clock on the morning of Thursday the 21st of August, 1980 the barometer had risen to nine hundred and ninety-three millibars. It was still bright but overcast. Half an hour at the helm was enough and I had just come on watch to relieve Black Bob Fannin, who shouted on the hand over:

"At these speeds we will be home before we know it." He went below to sit at the chart table in an attempt to regenerate some body heat while sheltered from the wind chill.

I was just about to settle in and to clip on my safety harness when the boat suddenly fell from the top of a wave, and crashed downwards. It was as if someone had dropped *Shardana* from a two story building. My stomach came right up to the top of my head and then there was a sickening thud as the hull hit the water surface below. Within an instant the wave from which we had fallen broke over the boat and turned her upside down. I thought of shouting but I was underwater, and my hands no longer held the helm. I reached up and for a second I touched the cockpit floor above me. Then it was gone and vivid, split-second pictures of my childhood: my first holy communion, my parents, my wife and children darted through my mind. The life jacket in my oilskins was partially inflated. I felt sure that I would come to the surface eventually, but I did not know where. I was still under the surface, and quickly running out of air, when, inexplicably, some ropes came into my hands. I grabbed them, and realised that I was holding the strands of the mainsheet. I started to pull myself along the ropes, and then I felt an almighty bang on my chest. As the boat came to the surface and righted itself, I was scooped back on board by the stainless steel safety rail on the stern. I landed head first on the cockpit floor with the upper part of my body still under water. I picked myself out of the flooded cockpit and clung firmly to the safety rails as another wave washed forceably over the boat and lay it on its side. Ice green water gushed into the cabin. The weather boards had fallen out when the boat had stood upside down beneath the surface. Looking below I could see a shambles of bodies and equipment. The water was above the level of the bunks. Those below had been thrown from their bunks and had landed on the cabin roof before falling together in a heap, into the water on the cabin floor. Jake Kelly had been asleep in the pilot berth with the lee cloth up. Green water poured in and submerged him in the bunk. He believed that he was drowning and that the boat was going down. Black Bob had left his seat beside the chart table, and had somehow ended up seated on top of the gas cooker on the opposite side of the cabin. If the situation had not been so serious we might have found time to laugh. Black Bob looked a little dazed on the top of the cooker, sitting there clasping the sodden pages of his book. The heavy ship's batteries, which had been underneath him as he sat at the chart table, joined him in his flight across the cabin roof. Somehow the batteries had missed him as they fell to the cabin floor beneath the gas cooker. Everybody had been immersed in cold sea water with the exception of Grey Bob (Black Bob's father), who had been asleep in the forward section of the boat. Hitting the roof had not been a new experience for this hardy mariner. Grey Bob had been bounced off his bunk many times in his dreams, and for him the capsize was little more than a mild inconvenience which had disturbed this usually heavy sleeper's nocturnal habits.

We surveyed the damage and got to work with buckets and pumps, to reduce the level of water in the cabin. Each man's reaction was different. Andrew Somerville was full of plans which poured out cheerfully in the form of logical advice. Johnny Burrows and Andrew went on deck and hauled down the mainsail. They set a trisail and lashed the helm down so the boat could lie more comfortably to the wind instead of across it. When they came below they were shivering as they told us that the rigging was sound, but the rubber dinghy and its contents of freshwater, fuel and gas had been torn from the deck and washed away. As the water level reduced we noticed that there was a gaping hole where the port hand cabin window had been. The seas continued to wash over the boat and several gallons flowed into the cabin at regular intervals. The cabin window had been removed from its mounting but the perspex was still intact. Johnny and I went back on deck and forced the window into its mounting, thus reducing the intake of water to a steady dribble. Grey Bob pumped for a full hour with calm and seemingly unworried, rhythmic strokes. Jake worked in total silence. We took some planks from the floor and shored up the window from the inside. After two hours conditions below started to improve. Everything below decks was sodden. We changed from sodden clothing into wet clothing. Only Johnny had taken the precaution of wrapping all of his spare clothing in tied plastic bags. With true generosity he passed around as many pairs of dry trousers and as many shirts, pullovers and towels as he could spare. The chimney piece of the stove had been washed overboard and we were unable to light the charcoal. We jammed blocks of timber on the inside of the window in an attempt to make it water-tight but it was not completely successful. Andrew once again suggested that it was time to eat, and once again this suggestion earned him the task of cooking it. We replaced the battery and the engine started on the first press of the button. We refilled the batteries with distilled water and we left the engine running to restore the battery charge. As Andrew cooked, Jake sat alone and silent in the cockpit. He had nothing to do apart from study the compass course. We untangled the trailing log and set it to work again. We were able to observe our course and distance but we had no means of calculating leeward drift.

As the stew bubbled on the gas rings a little heat returned, and for some irrational reason I became obsessed with the fact that my American Express card could not be found. The log book, charts, ship's papers and crew's passports had ended up in the deep well of the bilge and these were retrieved. A few sodden Norwegian and Sterling notes were also fished out of the bilge but nothing could do me until I had recovered the ridiculous credit card. It was an inexcusable, irrational fuss over something that could be of no value at all at 75°N in the Atlantic Ocean.

Just as Andrew served up piping hot helpings of stew, Johnny found the missing credit card caught in the doorway between the main cabin and the heads. It had been tossed out of the chart table and had somehow found its way forward.

With the good hot stew a slight confidence returned, supported by the fact that the boat had behaved impeccably during our two hours of labour. Morale on board improved. Outside, the north-east wind brought heavy, driving snow which was washed from the decks by the sea before it had a chance to settle. The wind increased as the barometer continued to rise. When I went on watch I looked up at the masthead and noticed that pieces of the hand rail, which had been ripped from the deck when the dinghy went adrift, were caught aloft in the halyards in the shape of a crucifix. I supposed that it was a good omen, but perhaps it was a timely reminder of the vulnerability of our circumstances on the wave crests of a mighty ocean. The radar reflector at the top of the mast had been flattened and the VHF aerial, masthead light and wind direction equipment had been washed away.

Twelve hours after the knockdown the barometer read one thousand and six, and we estimated that the wind varied from gale force eight to storm force ten. The boat was ahull, lying at an angle of between 40° and 50° to the wind. Life below decks would have been fine except for the cold. Sleep was impossible because the bedding had been completely immersed in sea water with a temperature of between 0° and plus 1°C. We lay ahull, battened down in the storm, for twenty-five hours. The words of the traveller, Samuel Johnson, suited our experience precisely: "Comfort must not be expected by folks that go apleasuring."

John Gore-Grimes, Shack, Baily ,Co Dublin

The window repairs after the knockdown.

Sailing on the 75th parallel north about half an hour before the knockdown.

Shardana's spray hood was flattened when the boat went over.

The Cork Folklore Project

A portrait of Ger Healy by Gráinne Macgee.

Meithal Mara from the Hunter Hudson collection.

Coal Quay Women by Fawn Allen.

Images courtesy of The Cork Folklore Project

By Geraldine Healy

THE Cork Folklore Project was founded as a non-profit community research and oral history archive in a partnership with the Department of Folklore and Ethnology at University College Cork, Northside Community Enterprises and FÁS. We are located in the former seminary building of St. Finbarr's College, Farranferris in Cork City. The project first opened its doors in August 1996, and began interviewing the people of the Northside of Cork City to record and preserve their life stories and traditions. This was seen as a valuable effort for posterity, as well as a chance to take an 'oral snapshot' of a way of life in a period of great change.

The team of interviewers and researchers tapped into the rich memories of people, some of whom had been born in the 1920s and 1930s, sharing stories of their lives during the 'Emergency'. The transcripts of these interviews reveal details of life in Shandon Street, with the great character Molly Owens lighting a tar barrel to signal the arrival of Eamonn De Valera in the neighbourhood, childhood pranks on Gerald Griffin Street with local author, Noel Magnier, as he and his friends gathered funds for a visit to a milk and cake shop, and the exploits of the noted local historian, Liam Ó h-Uigín, growing up in Henry Street in the Marsh area of Cork City in the 1940s. Social conditions from the thirties onwards were documented with families struggling to provide the necessities. What emerged from the interviews was a vibrant tapestry of a resilient community. The great wealth of material in our permanent archive represents, above all, a valuable repository of social and cultural history for future generations.

Our permanent public archive contains hundreds of hours of sound and film recordings and around 5,000 photographs, and is available to community groups, schools and individual researchers free of charge. The list of subjects that have come within our ambit is long and includes: bingo; hurling; road bowling; showbands; drag hunting; Roy Keane; children's games and rhymes; toys and fashions; textile production and the Sunbeam Wolsey Factory; religious processions and feast days; boat building; superstitions; wedding traditions; Fr. Christy O'Flynn; Traveller culture; the Coal Quay and Rory Gallagher, but most centrally, documenting the everyday lives of the local people. All of our interviews are transcribed and great care is taken in the accurate representation of what has been said. There is a strong sense of 'duty of care' towards the generous people who give us their time and life stories. Materials from our archive have proved an invaluable asset to many visiting researchers and students of all ages.

The Cork Folklore Project has had over 90 staff members over the years, providing a variety of training in computers, oral history, interviewing, photography, video and sound recording, desktop publishing, archival methods and more. The researchers are employed on Community Employment Schemes, designed as a stepping stone back to full time employment. Indeed many of the group have found work or resumed full time education as a result of their experiences at the project.

Cork Folklore Project accomplishments include: the annual production of our journal, *The Archive*; six half hour radio programmes; two full length books, *How's it goin', boy?* and *Life Journeys*; four short films, made in conjunction with Framework Films; regular Heritage Week events; a travelling exhibition; and a series of postcards. Check out our website to listen to interview excerpts, watch short films, look at samples of our photo collections, to read our annual journal and find out more about our work. Our recently created Facebook page is updated and added to regularly with interesting photos, audio slideshows and more.

An exciting new endeavour begun in 2010 is the Cork Memory Map, an interactive city map that portrays the landscape in the words of its people. Including visuals, text and audio, the Memory Map documents the personal memories, folklore, occupational lore, characters and stories associated with landmarks, streets and lanes of Cork. This is an ongoing project and will ultimately embrace the entire city of Cork. The project also hopes to develop self-directed city tours which can be downloadable on to smartphones and other media devices.

The Cork Folklore Project offers training, advice and support to groups and individuals involved in oral history and folklore. We are linked as members to the Oral History Network of Ireland and are working with them to provide a framework of support for those interested in collecting the oral history of our country nationwide. To promote this endeavour, The Oral History Network of Ireland hosted a Munster wide forum for oral history practitioners in Cork City in April 2013. The forum was the first of four regional events planned by the OHNI for 2013. These events provide people with an opportunity to meet and connect with others active or interested in the field, and to identify training and support opportunities and needs of individuals and groups.

The Cork Memory Map, found at www.corkmemorymap.org

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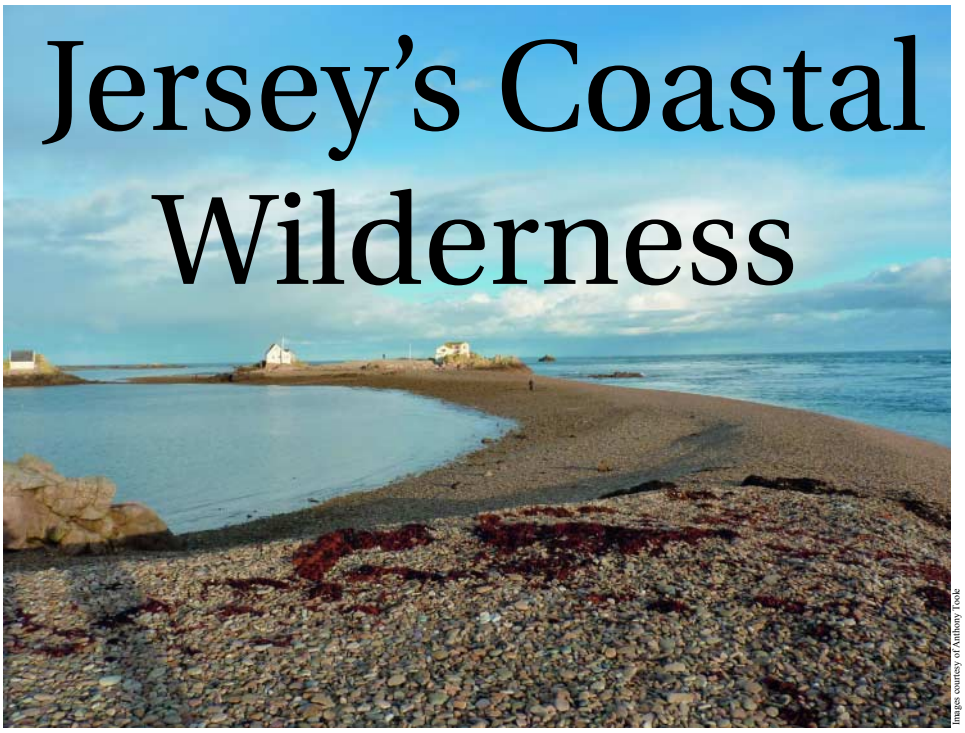
Jersey's Coastal Wilderness



Images courtesy of Anthony Toole

Shingle bank and La Blianque Ile from La Marmotiere.

Rigid inflatable boat - La Marmotiere beach.

La Marmotiere.

Fisherman's hut near La Marmotiere.

By Anthony Toole

AS the boat slowly sailed past the St Catherine's breakwater, on the north-east corner of Jersey, a small flock of Brent geese, winter visitors from the Arctic, took off ahead of us. Clearing the breakwater, our skipper, Richard, revved the motor, sending the inflatable leaping over the first wave and crashing down beyond it, shooting a large cloud of spray to the sides. Though Richard assured us that this was a relatively calm day, one or two of us might well have been pleased that we had not yet had breakfast.

It was 7.15 am, and though the sky was brightening, the sun had not yet cleared the cloud that hung low over the horizon and almost obscured the French coast. Eight of us had clambered into the *Jersey Seafaris* boat for the 15-minute, early morning trip to Les Écréhous, a reef of rocks and small islands that lay about ten kilometres from Jersey and thirteen from France. We were accompanied by Gareth, a Marine Biologist.

The occasional seal bobbed its head above the waves. A flock of oystercatchers flew away as we approached one of the islands. Other rocks were guarded by cormorants and shags. A solitary razorbill ignored us as we sailed past it.

As the boat ran up onto the shingle beach of La Marmotière, the second largest island, the dawn sun broke through, transforming the drab, flat scene into one of shining facets and sharp shadows.

Like much of Jersey, Les Écréhous are composed of granite. They and other similar reefs are remnants of a land bridge between England and France that was inundated as the glaciers of the last Ice Age melted. Belonging to the Duchy of Normandy, they became part of England following the Norman Conquest of 1066. Three centuries later, Henry III gave up his claim to the French crown, and Normandy, but held onto the Channel Islands and its rocky reefs.

Over the centuries, Les Écréhous were inhabited, at various times, by monks, smugglers and fishermen. Indeed, the houses of the last group still crown the highest rocks and remain in seasonal use. The highest concentration of these dwellings, dating from the 1880s, cluster around a tiny courtyard on the summit of La Marmotière.

As we scrambled up the shingle, a thin line of surf stretched a few hundred metres across to La Blianque Île. The sea level, however, was dropping fast, and during the minutes it took for us to explore around the houses and admire the luxuriance of the lichens and succulents that covered the granite boulders, it had fallen sufficiently for a broad shingle bank to link the two islands. Elsewhere, previously hidden reefs had become rocks and rocks had become peninsulas.

The tidal range around Jersey and Les Écréhous is said to be the world's second highest, extending, at times, to around twelve metres. This has helped create a unique ecology, such that, in 2005, Les Écréhous was declared a marine area of international importance under the terms of the Ramsar Convention.

The extent of the tidal flow, and the movement of currents around the islands has produced very clear, highly oxygenated waters, in which many species of planktonic larvae flourish. The rocky platforms offer shelter, protection and food to a high diversity of creatures. More than 100 fish species have been recorded, which include conger eel, blennies, rays, pollack, bass, Atlantic salmon, common sturgeon and Twaite shad. In addition to seals, there are bottlenose, white-beaked and Risso's dolphins, harbour porpoise and pilot whales.

Of more than thirty species of invertebrate living in the mud and sand, half are rare in British Isles waters. These attract large numbers of wading birds, including winter visitors and passing migrants.

An important characteristic of these waters is that some species are found here at the northern or southern limit of their range. For example, this is the most southerly reach of the beadlet sea anemone. In contrast, it also marks the northerly limit of the giant goby, a Mediterranean fish. Gareth, our Marine Biologist informed us that a small number of the latter confine themselves to a particular pool that becomes exposed at low tide. These gobies leave the pool at high tide, but return to it when the tide falls.

Some of the species at this limit of their natural habitats are showing signs of genetic variations, resulting from their relative isolations from the main populations.

We spent more than an hour exploring the linked islands, and sitting on the shingle to enjoy our breakfasts, during which time Gareth explained the ecology of Les Écréhous . Then it was back into the boat for the return trip, as some of us had a second morning appointment.

The south-east coast of Jersey, stretching from St Helier to Gorey, was declared a Ramsar site in 2000. Here, the seabed is so shallow that at low tide an area of 17.5 square kilometres becomes exposed, making this one of the largest intertidal reefs in the world.

We drove to La Roque, on the south-east corner of the island and joined a group led by Trudie and Keith, of *Jersey Walk Adventures*. About two kilometres from the coast, the Seymour Tower stood on its craggy plinth, separated from

Rock plant and lichens - La Marmotiere.

us by an expanse of sand and mud flats, pools and channels and rock platforms. Some in our party accepted the offer of gumboots, others of us decided we could put up with wet feet.

We were first taken to the holding cages that contained thousands of oysters, harvested from the beds that lay in deeper waters. The oysters would be held here for a time before being transferred to tanks exposed to ultra-violet light prior to being sent to markets, mostly in France. There were European oysters in the pools, but the farmed ones were Pacific. Farther out among the rocks were poles festooned with farmed mussels.

We continued through calf-deep pools and over fields of serrated, knotted and bladder wrack, kelp and carrageen. Trudie pointed out examples of velvet horn seaweed and coralline algae, and tempted us to taste sea lettuce and other rock pool delicacies. She also found a piece of seaweed clustered with small colonies of star sea squirt (*Botryllus schlosseri*), and in one pool, a snake locks sea anemone.

The pools and channels held myriad shells, tops, limpets, periwinkles, whelks and the occasional ormer and oyster, half of them abandoned, half still occupied. In one pool, we saw a limpet being predated by a whelk. The roof of a small grotto, formed by boulders, was coated with a layer of orange sponges. A series of incongruous tracks across gravel beds, some of them several metres long, led to stones that had been dragged along by currents acting on bunches of seaweed rooted to them.

Among the sand ripples were concentrations of what appeared to be dark green algae, but on closer examination, proved to consist of millions of tiny mint sauce worms (*Symsagittifera roscoffensis*) that obtained their nutrition and their colour from a symbiotic alga. Each worm contained around 25000 algal cells.

We came to a rock on which a large letter P was carved. This, said Keith, dated from 1740, when, following a dispute, the rights to harvest seaweed were granted to the Paine family. Evidence of much earlier, probably seasonal human activity had been found in butchered mammoth bones dating back to Neolithic times, when the land bridge still existed and forests of alder and birch covered the area.

As we approached the Seymour Tower, a waterspout appeared over the sea to the south. Seeming to form in a lower stratum of cloud, it reached up to a higher, broader cumulus, and hovered there for several minutes before slowly fading.

The Tower itself was built as a defensive structure during the 18th century, and stands on a tall, granite shelf. It is reached by means of a rough-hewn staircase, and contains seven bunk beds and a stove, with fridge and lighting powered by roof-mounted solar panels. It can be booked by groups of people who are happy to spend a night cut off from the land by the high tides.

We climbed to the roof, where Trudie hoisted the Jersey pennant while we enjoyed the quite stunning view back over the rocky expanse to the coast. Despite its sometimes being compared to a moonscape, we had found it to be a magical region, teeming with a huge variety of marine life.

Websites:

www.jerseyseafaris.com

www.jerseywalkadventures.co.uk

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Oyster holding trestles.

Whelk predating a limpet.

Serrated wrack.

Waterspout.

Final approach to the Seymour Tower.

Seymour Tower from La Roque.

The Crowded Highway of Ireland's Skies

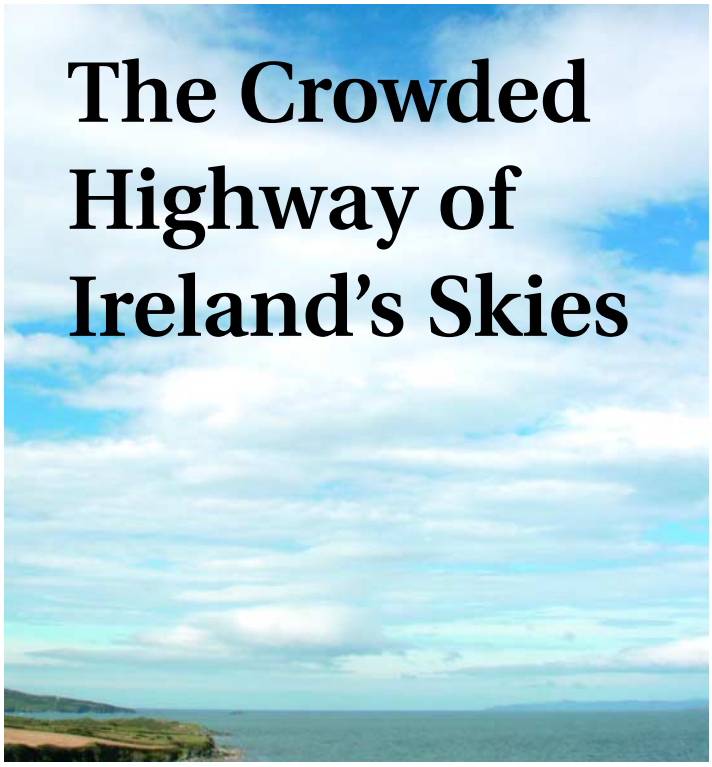


Image courtesy of Robbie Murphy

By Daphne Pochin Mould

MANY people have eyes but make no use of them. You might notice the blue background or the odd clouds drifting past but look at the actual sky and all that's in it. There are birds, yes, but much more - from the lordly hornet to the little ladybird. Look again to see tiny midges, little flies and butterflies and of course, bees and wasps - all air borne and flying yet not colliding: "See and be seen". You do not have to be tiny to make the sky your home. Think of the arctic skies and the great albatross; think of the muscles of the wings tirelessly keeping the bird airborne. Think of our own gannets - big, heavy and strong and tirelessly patrolling over the ocean, scanning for fish and food. A fish sighted and the vertical dive to strike it, a gannet's body is built to take the savage impact of the dive into water, hard as iron when struck that way. But gannets do well and humans did well eating them. They were a lifeline of our island communities. They only come ashore to breed, where islanders hunted them by the hundreds when the young birds were grown and fat and about to fly. The people in St. Kilda's, Scotland, built little stone huts in which to dry the birds, with air moving between dry stone work. I fancy we would not enjoy a dried gannet but it's better than nothing. Sir Walter Scott in his great novel "The Antiquary" (from which even modern archaeologists could learn caution) tells of the cooking of a gannet, for he was a great man for old dishes. But the cook had misjudged its toughness and Scott almost hurled the bloody carcass at her. However all was forgiven with her hotch-potch, which I take to have been Scots broth, a noble dish and easier to cook.

Men had always wanted to fly and drew images of winged spirits and angels with feather appendages. The birds knew better. You did not take off with ruffled plumage - flight depended on a smooth and adjustable surface. Some warm, moist summer evenings watch swifts hunting flies. They must have incredible eyesight as they swoop and wheel at low level. The swift is a beautiful, flying machine, streamlined and agile, with all its black feathers glassy smooth. A mediaeval abbot man made himself wings, and took off from the ramparts of Stirling Castle in Scotland, he landed on a manure heap below and blamed his failure to fly on having used hen feathers, for hens haunt middens (waste heap) and do not fly much.

It was a woman that got men into the air. The discovery of the New World brought sugar to sweeten our food, and the great sugar plantations and the Slave Trade (whose vast profits were the power behind much of the industrial revolution). So there were sugar workers everywhere and Cork had a number of sugar works. The refined sugar was poured into conical moulds, making a sugar loaf - whence our sugar loaf hills. Madame Montgolfier was burning used paper bags, when a gust of wind carried one to the sky. Her proprietor husband watched and got an idea. Not a paper bag but a balloon, filled with hot air from a fire, could lift a man – or woman. So from an Eighteenth century sugar works in France ballooning took off and indeed is a still flourishing sport. Bottled gas is today's source of lift, while in the past hydrogen gas was used.

The Editor of the "Hibernian Chronicle" was very good at getting permission to print interesting letters in his paper "Extracts of a letter from Paris, dated June 24, 1784. Yesterday about three o'clock in the afternoon, an air balloon, 156 feet in diameter was let off at Versailles, for the entertainment of the King of Swedes. There was a large gallery fixed to it in which were M. Charles, M. James, an officer of the army, and M. Montgolfier. It ascended very gradually till it was totally out of sight, and remained some time, then it became visible and passed over the Tuilleries at Paris, the gentleman waving flags all the time they were in flight. About five o'clock the gentleman were safely landed, after an aerial jaunt of more than 20 miles.

A balloon was preparing to represent the castle at Stockholm, which it was intended to have been illuminated and sent up by night: but the experiment was given up as too dangerous."

Remember only candles and oil lamps were used for light in those days. Fire was always a risk.

Although we were close on the French Revolution, the King of France was no fool and realised how much harm could follow with an excited public all trying to fly. It had to be properly controlled. Today's highly efficient Air Traffic Control can look to a far off birthday and a soon to be deposed French King.

Extract of a letter from Paris, May 2, 1784. "His Majesty forbids the Fabrication or sending up of any aerostatic machine, under pain of imprisonment. His Majesty strictly enjoining such persons as were desirous of making any experiment of that nature to apply to him for permission… the reasons for these prohibitions are the dangers which are likely to follow the failings of these machines upon thatched houses, hay stacks, or other inflammable materials."

The king did not want to halt progress. "These precautions are not intended, however, to let this sublime discovery fall into neglect, but only that the experiments should be confined to the direction of intelligent persons."

The French were active in aviation: M. Bleriot flew the first crossing of the English Channel by air and Concorde was a British French project. But birds and insects do it rather better. Tiny little feathered balls fly vast oceans and lands, from swallow nests in Irish barns to summer days in Africa. How do they do it? It seems probable that they have some in-built knowledge of the earth's magnetic field for direction. But it goes deeper than a general heading, these birds can fly thousands of miles and end up at last year's nest. Fragile butterflies can and do travel, migrate and cross the sea. Bats are the most skilful flyers and navigators. People are afraid of these pretty little flying "mice" tangling their hair, which will never happen. Bats do not have collisions. Their high pitched calls, too high frequency for most human hearing, are like radar signals, bouncing back to the bat and allowing it to avoid any unwanted object. Bats live in colonies of many individuals, "roosts" in caves, tunnels, old building and barns. Here are vast numbers of bats and their young but in all this noisy crowd, mother bat knows the call of her young (bats are mammals) and can fly direct to feed it. Today more and more people are becoming interested in bats. You can listen to them with audio equipment that scales down their squawks to the frequency we can hear. Many tiny birds fly high, getting up to the jet streams above our local weather and going fast. Butterflies can use them too.

On October 9th, the "Irish Times" published a photo of the Belted Kingfisher, an American species only rarely seen here, last in 1985. These birds get blown across at times. They migrate south in big flocks and are the most ornamental of species with a plume of blue feathers on the head and blue belt under the chin. Now one or more have turned up in Connemara, at Lough Fee and Kylemore Irish bird watchers are hoping for a sight of it - or more. Its probable that it got there riding a trans-Atlantic jet stream.

The American species (and they migrate in big flocks) is a striking little creature, but anyone who watches our native species is entranced - the patient wait and the flash of blue as the little bird dives for a fish.

So look at the sky and see what's in it. You may see a kingfisher, or a mosquito, a swarm of locusts or honey bees, going about their honey-making business. Our skies are busy places with a multitude of flight paths and flyers.

INDIUM

Metal of Modern Communications

Image courtesy of USGS

Indium is a member of the same group, or family of elements as aluminium.

By Anthony Toole

LCD displays, flat screen televisions and computer monitors, solar cells and touch screen devices all depend upon a rare element that few people have heard of.

Indium is a member of the same group, or family of elements as aluminium, but whereas the latter is the most abundant metal in the earth's crust, indium is the 61st most plentiful.

Its name has nothing to do with India, but refers to the manner of its discovery. In 1863, German chemists, Ferdinand Reich and Hieronymus Richter isolated a yellow powder they were able to extract from a sample of the zinc ore, sphalerite. On testing this with a flame and analysing the light produced, they found a distinctive indigo coloured line in the spectrum, which could not be related to any previously known element. They named the metal after this spectral line.

An ore of indium is known, but it is extremely rare and of no commercial value. The metal is obtained as a by-product of the extraction of zinc and lead from their ores, of which indium may comprise up to 1%. The impure metal is then purified by electrolysis.

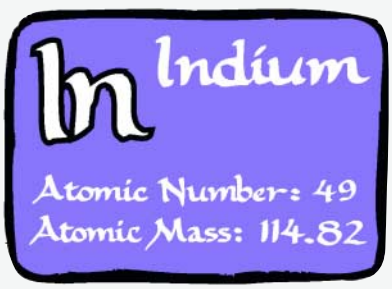
It is almost unique among the elements in that, although it does have stable isotopes, its most abundant isotope, that with an atomic mass number of 115, is very weakly radioactive, though its half-life is thousands of times longer than the present age of the universe. Another unusual property of indium is that, when bent, it emits an audible squeak.

Indium was used during World War II to form a thin, lubricating film on the bearings of aircraft engines. Its vapour, when condensed onto a glass surface, makes a mirror of high quality. It can be used in low melting point alloys in sprinkler systems and to make lead-free solder. An alloy of tin and indium with gallium, another member of the aluminium family of elements, is liquid down to a temperature of minus 19°C, and is employed as a non-toxic alternative to mercury in thermometers. The same alloy can also substitute for mercury in liquid mirror telescopes.

Modern semiconductor technology, particularly in the field of communications, has discovered new uses for indium. Light emitting diodes (LEDs) make use of alloys of indium and gallium with either nitrogen or phosphorus. CIGS semiconductors (copper-indium-gallium-selenium) are used in flexible thin-film solar cells.

The most widely applied compound, however, is indium tin oxide (ITO), which is made of 90% indium oxide (In_2O_3) and 10% tin oxide (SnO_2), and is transparent, yet able to conduct electricity. This almost unique combination of properties has led to its extensive use as the electrodes in liquid crystal displays (LCDs) and flat screen televisions. In these devices, each pixel consists of a light absorbing material sandwiched between the ITO electrodes, which are able to convert the light energy into electricity.

Touchscreens in the newer generations of mobile phones and e-readers also use ITO electrodes separated by a tiny gap, the capacitance of which alters when touched by a finger. ITO is brittle, but the manufacturers of mobile phones operate on the expectation of the lifetimes of their devices stretching to little more than one-and-a-half years. Items such as e-readers, however, which would be expected to last longer, might not have sufficiently durable touch screens.



A bigger problem with indium is in its supply. Around 1200 tonnes are used each year, about 40% from mining and the rest from re-cycling. Indeed, the touch screen market alone is at present worth almost $1.5 billion per year, and rising rapidly. Known reserves are estimated at 16 000 tonnes, over 60% of which are found in China, which has recently begun to restrict its export of metals, among them indium.

Possible alternatives to ITO are generally less transparent, less conducting, more brittle, toxic or a combination of these. However, the Indium Corporation, which controls much of the supply of the rare metal, has invested in the discovery of new deposits and more efficient recovery methods. Even as the demand soars for the modern devices we are becoming ever more dependent upon, the Corporation remains confident that supplies can meet the demand.

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Thoughts on the Future for the Irish Fishing Sector

By Lorcán Ó Cinnéide

"WHEN you're gone, you're gone, and it's better to keep your counsel after that" was a wise piece of advice an old political friend of mine once gave me. With a year's space from direct involvement in the fishing industry, it is only as a result of serious arm-twisting from *Sherkin Comment* that I venture to give some views as to its future. To do so in a serious way would take a book but at the risk of over-simplification, I venture a few opinions which may not be popular.

The fishing industry is a series of very diverse activities that involve the catching of wild fish from the sea. It is a common misconception to treat the industry as one amorphous unit: The catching sector includes small inshore potters and netters, a variety of day-boats trawling and gillnetting, whitefish trip boats – trawlers, netters and seiners – spending from three to ten days at sea, their near relations the dedicated Nephrops (Prawn) fleet, polyvalent now mainly pelagic vessels and at the end of the spectrum the large-scale RSW pelagic fleet. The economic and resource outlook for each fleet segment is specific to each and their present – and futures – vary accordingly. For example, Mackerel and herring are good businesses to be in. Whitefish in general is anything but.

Let's be clear, many indicators exist which suggest that the Irish fishing industry *should* have a bright future: The huge continental shelf and inshore waters off Ireland still contain a fantastic resource of fish stocks which are resilient and capable of rapid regeneration if managed properly. That is not to say that all stocks are in a healthy state, they certainly are not. The market demand for fish globally is rising rapidly and Europe is dramatically under-supplied from within, even if the current economic climate and global trade trends have led to depressed prices for many fish species. The huge projected rise in the earth's population is fuelling a vast increase in demand for protein and there is growing appreciation of the health benefits of eating fish. While aquaculture can play a role in meeting some of the increased demand, mother nature and better management can allow the business of wild fish capture to contribute substantially, despite the fact that many policymakers have apparently come to discount the potential of wild-caught fisheries.

Conversely, massive problems exist, some of which are completely in the lap of the Gods: The price of fuel is likely to be high into the future due to global demand for oil and its finite nature. While there is scope for efficiencies from vessel and engine design and more fuel-efficient fishing gear, these are in the long-term and even then fuel will be a major input cost. The impact of ocean acidification and global warming may have long term impacts on the distribution and abundance of stocks in a manner as yet unknown.

There are massive *solvable* problems which show no sign as I see it of being tackled in a serious way and which are and will, if they remain unaddressed, continue to undermine the prospects for the fishing industry and the potential of much of it to survive, still less develop.

There is a seanfhocal which is applicable to a major problem in the Irish industry *"I ndeireadh na coda a throideann na coileáin"* (The pups only fight for the scraps!). Not that we are facing the last of the stocks – far from it – but the issue is the availability to individuals of legally available quota of the most profitable species. This has to do with developments in share-out of quotas in Ireland and the EU, the decreases in those quotas over time, enforcement, viability and indeed in some cases, sheer greed. Enormous fragmentation in representative structures, geographic rivalries and conflict over who gets what share of available quotas is tearing the industry apart and the less than impressive policy and management response to these pressures is not helping the situation. These resource fights occupy a lot of energy which mitigate against any coherent unity emerging from the industry and an industry less capable of rationally addressing the external pressures from regulation or international policy and proper, sustainable management.

The management framework for fisheries, particularly the share-out of quotas within and outside Ireland, determines the access to the resource – the volume individual vessels can catch. From an Irish perspective, given that most fisheries outside the inshore areas are shared with other countries, what the catching sectors in France, Spain, the UK, Netherlands and others do is of vital significance. Thus the shape of the future Common Fisheries Policy which is currently under review is a major issue – quota share-outs, technical regulations, restrictions on vessel power and the overall size of fleets, however measured and the whole enforcement regime which will exist.

The development of global standards of good management where fisheries would compete on a like-with-like basis as regards environmental, hygiene and safety standards would go a long way to ensuring the ability of Irish and European fish to compete – profitably – in the EU market which is currently flooded with supply from outside sources.

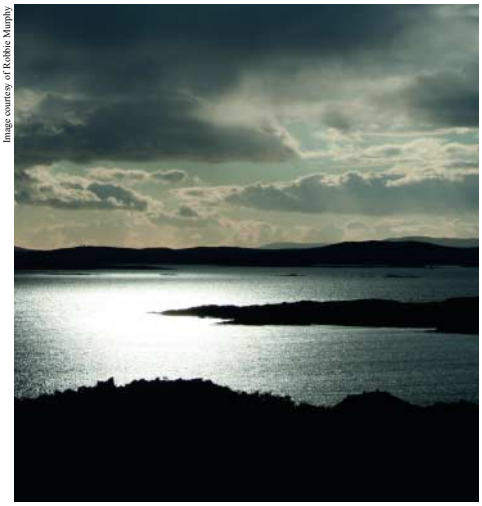


Image courtesy of Robbie Murphy

Personally and this I accept is very much a minority view, I think that not individualising fishing rights for fixed periods for some fisheries at least is a major mistake. I appreciate the risks of concentration and foreign ownership – things that can be legislated for in my view – but the lack of individual rights and certainty about the future also leads to a lack of individual responsibility and also a lack of opportunity for essential investment and employment.

The over-concentration on discards policy in the new CFP reform is distracting from many of the real issues which should be tackled: that an ever-increasing complexity of policy and ineffective management measures substituting for action has sucked everyone involved – fishermen, policy-makers, managers, scientists, control agencies and development agencies – into a type of parallel universe which breeds massive cynicism and huge despondency – although the degree of disillusion is very much related to which part of the industry one is situated and the state of one's bank balance.

The enormous prize of sustainable long-term employment and wealth creation through a system which provides reliable inputs for scientific analysis, proper setting of quota levels, compliant fisheries and optimised supply of high quality food – as well as employment and profits – seems for many to be an unattainable goal. It is not.

The complete, total and abject failure to bring in rational management of fishing *inshore* waters – entirely within Ireland's own control – due to local political difficulties, the unwillingness of many inshore fishermen to accept the need for management – or fear of inappropriate management – and what seems to be a loss of confidence by officialdom and successive Ministers in the face of experience in the past decade – is blighting the present and future for Ireland's inshore fisheries which account for the majority of vessels and indeed employment in the catching sector.

To retain optimism about the future in a situation as we find ourselves is difficult and there is a general unwillingness to accept some of the realities on many sides of the equation but I believe that many people involved at various levels of the industry would privately share some of the concerns I have expressed here. The prospect that it might be possible to join those private voices together to an extent that might influence general thinking – without giving a veto on essential change to recalcitrant minorities but nonetheless respecting minorities' rights – one has to be hopeful of. There is a great deal to play for, despite all the difficulties that exist. We haven't died a winter yet....

Lorcán Ó Cinnéide is a former CEO of the Irish Fish Producers' Organisation and a current board member of the Marine Institute. The views expressed here are entirely personal and do not represent the views of any organisation or body he is or has been associated with.

CONSERVATION THROUGH INNOVATION

A Namibian Vision

By Stuart Munro

OPENED in 2007 by renowned conservationist Marlice van Vuuren and her husband Dr Rudie van Vuuren, N/a'an ku sê Lodge and Wildlife Sanctuary strives to protect and improve the lives of the people and wildlife of Namibia. Their vision of "an Africa where humans and wildlife can live and thrive together" has been the driving force behind all the efforts towards fulfilling their mission: "to conserve the land, cultures and wildlife of Namibia and rescue species threatened by an ever shrinking habitat". Their philosophy of "Conservation through Innovation" is at the core of the management techniques used in the many award-winning projects run by the N/a'an ku sê Foundation as it was renamed in 2011. The name N/a'an ku sê means "God will protect us" in the San bushman language.

Situated 42km east of Windhoek, the Wildlife Sanctuary provides a safe haven for many orphaned and injured animals including lions, cheetah, leopards, African wild dog, caracals and baboons, all of which are cared for by a dedicated team of staff and volunteers. It also serves as the base for the Carnivore Conservation Research Project. The N/a'an ku sê Foundation also works with the San bushman community to provide employment, healthcare and education. We have an on-site pre-primary school, the 'Clever Cubs', providing free education for the children of all the local staff. The not for profit charity lodge on the property was set up to provide jobs and training for the local bushmen community and provides an excellent starting or finishing point for those travelling around Namibia.

The N/a'an ku sê Foundation also runs its Lifeline Clinic at Epukiro in the east of Namibia. This facility, set up in 2003, provides free primary health care to the marginalised San bushman community in the area. The clinic examines and treats approximately 3,500 patients a year (40% of whom are babies and children) and provides transport for those in need of urgent medical attention to the nearest hospital 120km away in Gobabis.

Farther south is the Neuras Wine and Wildlife Estate where "wine supports conservation". Neuras is an oasis on the edge of the Namib Desert region and is host to the driest terroirs in the world. Most of the profits from the wine making are channelled straight back into the vital research of the vulnerable Namibian wildlife carried out by the researchers based there.

N/a'an ku sê receives no government funding relying on the generous donations and sponsorships from individuals, companies, trusts and foundations around the world to fund all their conservation efforts. These include Land Rover, Seaworld & Bush Gardens, National Geographic 'Big Cat Initiative', Chester zoo, Colchester zoo, Sirtrack, Idea Wild, Spots Foundation and of course the Jolie-Pitt Foundation.

However, none of the day-to-day work on the sanctuary could be carried out without the hundreds of ecotourism volunteers that come from all corners of the world to give their invaluable time and energy to help us in our mission. Volunteers stay from between 2 weeks to 3 months, working alongside the Wildlife and Research staff, getting involved in a wide range of different activities. From preparing and distributing all the food for the animals, taking the baboons on their daily walks in the veldt, helping with the building and maintenance of vital infrastructure to joining the research team on game counts, the volunteers' routines are varied and busy.

Whilst we strive to rehabilitate and release as many animals as possible back into the wild, many of the animals living at N/a'an ku sê will unfortunately never be able to be released. Most of them have been orphaned as babies or kept as pets by private individuals who can no longer care for them. As such these animals have become so accustomed to humans that if they were to be released they would not show the natural reaction of running away from humans, and as such, would most likely be shot. Some however (for example leopard, cheetah and brown hyena) are healthy animals which have come into conflict with human activities such as livestock farming or game-ranching. These animals may then become candidates for the release programme run by the research team.

Images courtesy of N/a'an ku sê Foundation

N/a'an ku sê Wildlife Sanctuary provides a safe haven for many orphaned and injured animals including lions, cheetah, leopards, African wild dog, caracals and baboons, all of which are cared for by a dedicated team of staff and volunteers.

Volunteers on a baboon walk.

Tracking animals on foot.

The research department has, since 2008, been responsible for the successful capture, rehabilitation and release of more than 50 large carnivores from conflict situations. These individuals have been intensively monitored by the research staff for up to 3 years after release and provide invaluable information on the ecology and movements of these elusive and beautiful animals. Their work to mitigate human-wildlife conflict is on-going, providing advice and assistance to over 150 commercial livestock farmers on management techniques to reduce losses by opportunistic livestock predators.

My 2 years working with the research team at N/a'an ku sê thus far have been the most rewarding I have ever experienced and with many exciting new projects in the pipeline I have no doubt that the satisfaction I experience every day will continue to multiply. If you wish to visit us and volunteer, or support any of our projects, visit us at www.naankuse.com or follow us on facebook (www.facebook.com/naankuse).

Meatball is one of five lions at the sanctuary.

Stuart Munro, a Research Biologist with the N/a'an ku sê Foundation, was formerly a volunteer at Sherkin Island Marine Station.

Conservation through Innovation

A Namibian Vision

Images courtesy of N/a'an ku sê Foundation

Since N/a'an ku sê's Carnivore Conservation Research Programme began in early 2008, they have captured and safely re-released over 50 large predators, including cheetah, leopard (above) and brown hyena.

N/a'an ku sê are working to find a sustainable and successful solution for the translocation and release of problem carnivores.

Brushing teeth at the Clever Cubs School.

Welcoming the new Dr Laura.

The children at the Clever Cubs School enjoying Sunday games.

The Lifeline Clinic provides free primary health care to the marginalised San bushman community.

Marlice van Vuuren, one of Namibia's most well known conservationists, and her husband Dr. Rudie van Vuuren started N/a'an ku sê Foundation in 2007 with two aims - to protect and conserve Namibia's vulnerable wildlife and to improve the lives of the marginalised San Bushman community. In addition to the projects mentioned above we now run several projects including:

- A Wildlife Sanctuary for orphaned and injured animals
- Carnivore Conservation Research Project to protect and conserve wild cheetah, leopard and brown hyena in Namibia.
- Clever Cubs School and education for San children
- Lifeline Clinic and medical outreach for the San community
- Namibia's only charity lodge - where all proceeds are channelled back into our charitable aims

In 2011 N/a'an ku sê partnered with the Solitaire Guest Farm to form the Namib Carnivore Conservation Centre. An educational centre with a 500 ha cheetah boma used both for cheetah that cannot be released and as a 'training ground' for cheetah that will ultimately be released in suitable areas.

In 2012 N/a'an ku sê became the new owners of Neuras Wine and Wildlife Estate. Combining land use for both conservation and wine production. All profits from the wine production are channelled back into our charitable aims.

For further information on N/a'an ku sê Foundation, read the article by Stuart Munro on page 15 and also visit the website www.naankuse.com or email gemma@naankuse.com

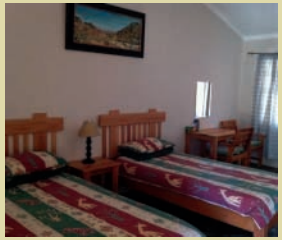
The African Wild Dog (*Lycaon pictus*) is the continent's second most endangered predator. N/a'an ku sê is leading the way in conserving this critically endangered predator in Namibia.

Volunteers come from all over the world to be a part of the working projects which support the wildlife and people of Namibia.

To help protect and conserve large wild carnivores, a research programme was started in 2008 to track cheetahs and leopards on Namibian farmland.

Volunteers on enclosure patrol.

A cosy chalet at the Neuras Wine and Wildlife Estate.



The interior of accommodation at the Neuras Wine and Wildlife Estate.

N/a'an ku sê Lodge is a not for profit eco-tourism destination, where all profits are directed straight back into supporting the foundation's charitable projects.

INNISCARRA

A coarse angling paradise

By Dr Ciaran Byrne

Images courtesy of Inland Fisheries Ireland

Cathal landing a fish at Clooncower on Carrigadrohid.

THE River Lee rises near the border of Cork and Kerry in the steep mountains which encircle Gougane Barra Lake. It flows almost due east along a narrow valley for about 65km to Cork City, draining a total area of 1,100km. Inniscarra Reservoir is situated on the River Lee system. The reservoir encompasses an area of 489 hectares and was created by the Electricity Supply Board (ESB) between 1952 and 1957, with the construction of two dams on the River Lee at Carraigadrohid (21m high) and Inniscarra (44m high). The reservoir is also fed by three secondary streams. These are the Dripsey and Glashagarriff Rivers from the north and north-west and the Kame River to the south-west of the reservoir.

The reservoir is situated in a mainly rich agricultural land area with several wooded areas along its banks. Around 30% of its shoreline is gently sloping with sloping stony sandy margins, which provides good areas for angling, while several areas withhold the traditional reservoir aspect; steep banks of sheer rock etc, especially when water levels are high. At normal levels this water covers an area of over 530 ha with fishable bank covering over 25 miles.

In the creation of such a large water supply, one of the added bonuses was the potential to create a large angling resource in the region, and we have the insight and dedication of a wonderful man, Mr Noel Hackett to thank for this. Noel was a technical officer with the Inland Fisheries Trust, the 'IFT' as it was commonly known. It was the precursor to the former Regional Fisheries Boards and now Inland Fisheries Ireland (IFI). The IFT was responsible, amongst other things, for developing coarse fisheries in Ireland and by 1980 had provided in the region of over 18,000 fishing stands throughout the country. In some respects the Technical Officers of the IFT were the pioneers of the fisheries world. There was a wonderful sense of what could be done to develop the fisheries resource coupled with an understanding of the biology and ecology of the main fish species which ensured significant successes. To a pioneer like Noel the creation of two large dams on the River Lee in the mid 1950's would have been an unmissable opportunity. In some respects the work done by the IFT and pioneers like Noel sowed the seeds for the coarse angling resource which we have today, and the continued popularity of Ireland as a coarse angling destination.

Michael Hennessy catching a lovely bream.

Babs Kijewski with a pike.

Before the reservoirs were created, the River Lee was a salmonid river and it provided the initial stocks of brown trout (*Salmo trutta*) for the reservoir. This stock was enhanced in the 1960's with a number of stockings of brown trout fingerlings. Other species such as pike (*Esox lucius*) also thrived in the still-water environment. However the fish stock history of the lake altered significantly since its creation and the designation of Inniscarra as a major coarse fishing water in the region was ultimately defined by the stocking of other coarse fish species into the reservoir. Perhaps the most famous of all of these events occurred when Noel and his colleagues introduced 200 adult bream (*Abramis brama*) into the upper Carrigadrohid Lake in 1974. It was not until 15 years later that large stocks of bream were discovered in the lower Inniscarra Lake, which we believe derived from this initial stocking. Since then the reservoir has been famous for its bream angling with fish of around 7lbs not uncommon. Along with further stockings of roach x bream hybrids and the presence of large natural populations of rudd (*Scardinius erythropthalmus*) and pike, Inniscarra Lake has earned a reputation as one of the premier coarse fishing waters in the entire country with mixed bags of 100lbs not uncommon and potentially catchable to even the average recreational angler.

In 2008 the then Central Fisheries Board conducted a comprehensive survey of the lake, primarily to assess the species present, their relative abundances and also to assess their growth rates when compared with other waters. The fish community was composed of eleven fish species, with the population dominated by stocks of perch and bream, and reasonable stocks of other species.

The stock of bream present in the lake during this survey was found to be one of the most prolific populations in the country. Their presence in all depths and locations of the lake was a clear indication of that dominance and the sustainability of the population. Their catch per unit effort (CPUE) densities were found to be considerably higher that two other premier angling venues, Lough Garadice and Lough Ramor. Given that bream are one of the most important coarse fish species for angling tourism in Ireland this survey has further enhanced the lakes reputation as a coarse angling paradise. It is though that in part the success of the bream stock is related to the availability of a range of different habitat types, from shallow bays circa 3m in depth, which younger fish tend to favour, to deep open water (>15m) channels, which provide habitat for older fish.

Thus it is from the dedication and foresight of a true fisheries pioneer, Noel Hackett, that we now have one of the of the finest coarse fisheries in the country, providing recreational angling not only to a host of local angling clubs but also to a swathe of visiting anglers. I have no doubt that the stocking of bream and other coarse fish in to the lake is also generating a huge economic boost to this part of Cork, and I also suspect that Noel probably had an inkling that it would. I never had the pleasure of meeting Noel but from what I have heard from Fisheries staff and anglers alike we had a man who had what we now know as a 'can do attitude'.

Dr Ciaran Byrne,
Chief Executive Officer,
Inland Fisheries Ireland,
Swords Business Campus,
Swords, Co. Dublin, Ireland.
www.fisheriesireland.ie

Noel Hackett – the Visionary

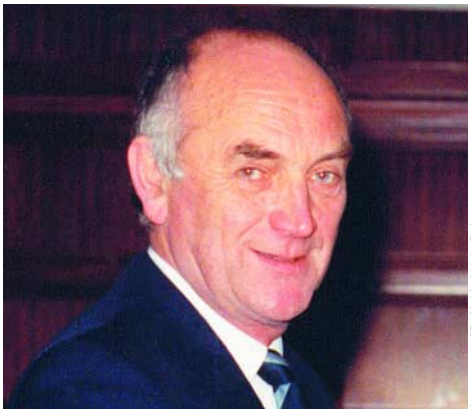


Image courtesy of Sherkin Island Marine Station

Noel Hackett, whose dedication in developing community lakes at Inniscarra, Co. Cork, has brought immense happiness to thousands.

By Matt Murphy

AS a youngster, over 70 years ago, my great joy every week was to get copies of those wonderfully simple comics *The Hotspur*, *The Rover* and *Adventure*. They had many stories and characters such as Alf Tupper and John Wilson, both wonderful athletes. However, there was one ongoing story which had a lasting impression on me throughout life and in many ways it has been how I have judged people ever since. It was about a man called Johnny Appleseed, who travelled America planting appleseeds wherever he went. By doing this he left a legacy for future generations.

I have known a few Johnny Appleseeds in the past 70 odd years and one such person was the late Noel Hackett, former technical officer with the Inland Fisheries Trust / South Western Regional Fisheries Board. (Ciaran Byrne, Chief Executive of Inland Fisheries Ireland writes about Noel in his article on page 13)

In 1997, I had the honour of unveiling a beautiful sculpture to commemorate Noel's life, on the banks of Inniscarra Lake on the River Lee, Co Cork. Noel had great dedication and single mindedness and because of his vision and activities Inniscarra Lake is now one of the finest bream fisheries in Europe. The enormity of this legacy for future generations is impossible to calculate.

Noel grew up with nature from an early age, spending most of his free time fishing from the banks of the Shannon and the Munster Blackwater. He observed wildlife at close quarters and thus the seed was sown and left to sprout and blossom over the next four decades.

On leaving school he got a job with Clover Meats in Limerick. In 1956 he was interviewed for a post of supervisor with the Inland Fisheries Trust (a precursor to the Regional Fisheries Boards and then Inland Fisheries Ireland). When it was pointed out he would have to live in Macroom, he said he was delighted. However, he told the story that when he came out of the interview he had to look up a map to see where Macroom was!

Noel used Macroom as a base for working around Ireland. His work at the beginning included removing pike from rivers and lakes. He then went on to surveying small lakes nationally in order to assess their development potential. He helped in the successful introduction of carp and tench species into areas of the State where they did not previously exist – such as Inish Boffin Island, off the west coast, Herbert Park Pond in Central Dublin and Kelly's Lake in Clare. His wife Eileen told me that Noel disappeared early each Monday morning and arrived home late Saturday night, having been all over the country. When it came to his job Noel forgot everything else – even eating!

Noel had wonderful interest in wildlife and noticed everything. Eileen said that Noel learned the latin names of hundreds of wild flowers and insects that he noticed when he travelled around the country – and she had to examine him! His companion for a couple of years was Oscar – a greylag goose which he received as a chick. Often the goose took off in the morning and would return when he saw Noel returning in his car. Eventually Oscar returned to the wild.

He never had material values such as new cars and had no interest in clothes. He was a hoarder and a hunter. One of his collections was of old bottles. He loved to hear of car boot sales to see what he could pick up – some more items to hoard.

His family, whom he adored, couldn't but noticed that Noel was always available to help anyone in genuine need. Over the years he never changed. He was prepared, day or night, to solve a fishing matter.

I first met Noel in 1972 when after phoning him he came to Sherkin to put some carp and tench into Lough Ordree – a small lake on the island. I had continuous contact over the years when he organised freshwater fish for our marine station's exhibitions at Connolly Hall, Cork City. I have one fond memory of our one in 1995. We had one tank with an 18" pike and a number of trout. Noel told me that the pike should have eaten the trout and wondered what I had done to the pike. Well, that week I spent more time observing people looking at that tank. Eventually they came up to me and asked if the pike was alive. My answer was always – "Of course he is", though many wondered if we were playing tricks! Believe it or not, he never eat the trout.

In 1991 I was more than delighted when Noel accepted the Sherkin Island Marine Station Environmental Award. When he told me that it was the first award he had received I was over the moon and was even more pleased.

Image courtesy of Patricia O'Connor

On the banks of Inniscarra Lake on the River Lee, Co Cork, a sculpture by Aisling Roche commemorates Noel's life.

To many anglers Noel Hackett was the South Western Regional Fisheries Board. He could relate to the angler, being a naturalist rather than a scientist. Wanting things to work, he avoided major confrontation and had a wonderful way of working around problems. If management had an idea Noel would praise it and point out that he would love to carry it out but did not have the ability. He would then proceed to explain how he would do it and need I add, that was the way it was done!

I was told by his colleagues that Noel could be infuriating to work for. Time meant nothing to him. One would often find him on a lake at 10pm at night. However, Noel was so dedicated they never complained as he never expected anyone to do anything he could not do himself. He always "mucked in".

Noel knew how to bring people with him. He had this wonderful understanding of how rural Ireland worked and he was able at all times to bring people with him. He never restocked any lake or river unless the local angling club was involved – even if he had to form a new club in the area.

Noel Hackett believed that the re-stocking of lakes in Cork and Kerry would be of vital importance in drawing tourists and others into these areas. It would help the local community. Thus he always referred to them as community lakes. His annual reports on "Managing Community Lake Trout Fisheries" shows the immensity of his work. Taking one season 1990 – a total of 6,568 fish permits were sold for the 13 lakes in Cork and Kerry. The reported catch was 19,952 fish, with 49,953 trout released. He reported pollution problems and anglers comments, whether positive or not. But the real gems in the report were the presscuttings and the notes left in the comments box by visiting anglers.

Noel, on hearing of a record catch would organise a photo, if near home he'd get there himself. A note and a photo was then sent to the nearest local paper of the angler. In 1990 he wrote and sent a photo to the "West Australian" newspaper after a Dews Pember caught a 5.8 kilo Rainbow Trout at Barfinnihy Lake, Kenmare.

Yes, Noel Hackett brought immense happiness to thousands of adults and youngsters with his community lakes. Note I say "his" because I know that no one can question that if Noel Hackett had not passed through this life – those lakes would never have been stocked.

When I asked what was the opinion of officialdom in Dublin to Noel Hackett and the stocking of the lakes, with his unorthodox ways – the answer I got was simple. They knew he ran an independent republic and they would rather not get involved. I would add it would have been pointless – Noel Hackett would have found another way! What is important to say is that throughout Noel's many years with the South Western Regional Fisheries Board he had the admiration and support of the managers and the board members. They realised Noel was a unique human being and needed the space to deliver.

As Johnny Appleseed sowed the appleseeds, Noel sowed fish seed, which are now blossoming throughout Cork and Kerry and further afield. He brought happiness to thousands and will continue to bring it to thousands upon thousands of others over the decades ahead.

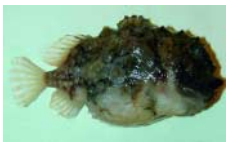
Matt Murphy, Director, Sherkin Island Marine Station, Sherkin Island, Co. Cork.

LUMPFISHES

(Family: *Cyclopteridae*) in Irish & North Atlantic Waters

By Declan T. Quigley

LUMPFISHES belong to a small family of poorly known arctic-boreal marine fishes (*Cyclopteridae*) comprising about 6 genera and 28 species (Nelson, 2006). The actual number of species within the family is uncertain because morphological, meristic and ontogenetic differences between juveniles and adults and between males and females have sometimes led to taxonomic confusion. For example, it has been speculated that the family may contain several "*species pairs*", with counterparts in the Pacific and Atlantic differing in few characteristics, albeit apparently geographically separate e.g. *Eumicrotremus orbis* versus *E. spinosus*, *E. andriashevi* versus *E. terraenovae*, and *Cyclopteropsis brashnikowi* versus *C. mcalpini* (Mecklenburg & Sheiko, 2003; Robins *et al*., 1986). A recent study noted that although *E. spinosus* (Fabricius, 1776) was



Eumicrotremus spinosus
Courtesy of Ingvar Byrkjedal, Univ. of Bergen, Norway

morphologically distinguishable from *E. eggvinii* (Koefoed, 1956) in the Atlantic; both species were actually genetically identical (Byrkjedal *et al*., 2007). Indeed, the authors discovered that the *E. spinosus* specimens were all female, while the *E. eggvinii* specimens were all male. It is interesting that a species described in 1956 should actually represent the males of a species first described in 1776.

Although the majority of species have been described from the North Pacific, 3 genera and 8 species have been recorded from the NW Atlantic, including 5 species from the NE Atlantic (Table 1). However, only one species, *Cyclopterus lumpus*, has been recorded from Irish waters.

Lumpfish or Lumpsucker (*Cyclopterus lumpus* L.)

The Lumpfish or Lumpsucker is the most studied species within the Family *Cyclopteridae*. The species ranges throughout the North Atlantic, in the NW from Hudson Bay (Canada) and Greenland southwards to Chesapeake Bay and in the NE from Novaya Zemlya (Russia) and Spitsbergen (Norway) southwards to the Mediterranean (rarely) [Dulcic & Golani, 2006; Banon *et al*., 2008]. The species is regarded as common in Irish and NW European waters (Went & Kennedy, 1976; Wheeler, 1969).

Lumpfish *(Cyclopterus lumpus)*
Courtesy of Adrienne Patterson, SFPA

Mature lumpfish migrate over considerable distances from offshore pelagic feeding areas to spawn in shallow inshore waters during the spring and early summer (February to May) when water temperatures, depending on latitude, are around 4-8°C. Mature males (25-30cm TL) establish nesting sites amongst kelp beds along subtidal and intertidal rocky coasts prior to the arrival of the females. There are indications that lumpfish may home to the same spawning locality every year.

Mature females (30-40cm TL) produce up to 300k eggs measuring around 2.5mm in diameter and lay them in several individual masses each containing 15-100k eggs. Spent females leave the area immediately after spawning and return to offshore pelagic waters (usually at depths of 50-150m, but occasionally to 400m) while post-spawning males remain inshore for about 1-2 months to aggressively guard and aerate the eggs until the 5mm long larvae emerge. Lumpfish have modified pelvic fins, which form a sucker disc (hence the alternative name Lumpsucker), and along with the absence of a swim-bladder, this enables them to cling on securely to rocks and weed in the strong tidal conditions found in these high-energy intertidal spawning habitats.

During their first year, juveniles stay in coastal waters and are frequently found in tidepools or in pelagic waters, often attached to floating seaweed, but during their second year, the young become exclusively pelagic and are no longer found in association with seaweed. After 2-4 years feeding in the open ocean, adult lumpfish return to inshore waters to spawn (Mitamura *et al*., 2007).

The diet of inshore juveniles consists of polychaetes, crustaceans, molluscs and small fishes, while the diet of offshore pelagic adults and sub-adults consists of slow-moving prey such as medusae and ctenophores. Although it is generally considered that adult lumpfish do not feed during their inshore reproductive phase, at least some do, as evidenced by capture, albeit rarely, of a few exceptionally large specimens by anglers. For example, the current UK Rod-Caught (Shore) Record, weighing 9.347kg, was captured from Weymouth Pier, Dorset during 1987. Another UK specimen, weighing 4.493kg, was captured in the estuary of the River Tyne during 1986. During April 1971, a specimen, weighing 1.365kg (37.2cm TL), was captured on rod & line at Kilfenora Strand, Fenit, Co Kerry (Went, 1972). The maximum recorded length and weight for the species is 61cm and 9.5kg.

In what may be a defensive reaction, lumpfish are able to inflate their bodies by swallowing air or water, similar to puffer fish (Quigley, 2002). Nevertheless, lumpfish are eaten by a wide range of predators in both inshore and offshore habitats, including sperm whales, seals, otters (Kruuk, 2006), cormorants (West *et al*., 1975), anglerfish, halibut, Greenland sharks and blue sharks (Dorman, 1987).

Commercial Exploitation of Lumpfish

The vast majority of Lumpfish species have no commercial value because they are either too small or are rarely captured. However, *C. lumpus* is targeted by several countries in the North Atlantic, particularly for its roe which is used in the production of lumpfish caviar. Male flesh is considered to be a delicatessen product by many people in Iceland where they are traditionally boiled in water and vinegar and served with potatoes and a piece of lumpfish liver. However, female flesh is not considered as good; they are hung up to dry in the open for some time before being consumed and are something of an acquired taste (www.fisheries.is/main-species/other-demersal-fishes/Lumpsucker). During 2009, a total of 279 small inshore vessels targeted the species in Icelandic waters. Approximately half of the roe went to domestic caviar factories and the other half, valued at about €15 million, was exported unprocessed (Einarsson, 2010).

Figure 1 summarizes annual landings of *C. lumpus* from the North Atlantic between 1950 and 2010. Although landings have increased exponentially since the late 1960s, the total catch can vary significantly from one year to the next. During 2010, a total of 20,016 tonnes was landed, mainly by Greenland (43.1%), Iceland (42.4%) and Norway (12.7%) [Figure 2]. In the NE Atlantic, the vast majority are taken by inshore gill-nets in arctic and polar waters, particularly from Iceland (74.4%) and Norway (15.2%) and the Barents Sea (7.1%) [Figure 3].

Over the last few years Norwegian and Shetland salmon farmers have been experimenting with using juvenile lumpfish as a possible means of controlling sea lice (Marter, 2012), particularly as a substitute to using wrasse species (Family *Labridae*) [Quigley, 2009] which do not appear to survive as well in cold-water sites situated in more northerly latitudes. During recent years, thousands of juveniles have been successfully reared at Dingle Oceanworld (www.dingle-oceanworld.ie) and subsequently released to the wild.

Juvenile lumpfish
Courtesy of Fergal Downes

References

Banon, R., Garazo, A. & Fernandez, A. (2008) Note about the presence of the lumpsucker *Cyclopterus lumpus* (Teleostei, Cyclopteridae) in Galician waters (NW Spain). *Journal of Applied Ichthyology* 24: 108-109.

Byrkjedal, I., Rees, D.J. & Willassen, E. (2007) Lumping lumpsuckers: molecular and morphological insights into the taxonomic status of *Eumicrotremus spinosus* (Fabricius, 1776) and *Eumicrotremus eggvinii* Koefoed, 1956 (Teleostei: Cyclopteridae). *Journal of Fish Biology* 71 (Supplement A): 111-131.

Einarsson, G. (2010) Lucrative lumpfish season. *The Irish Skipper* (May, 2010), p25.

Dorman, J. (1987) Notes on the stomach contents of some blue sharks (Prionace glauca, L.) caught in Courtmacsherry Bay, County Cork. *Irish Naturalists Journal* 22 (5): 207.

Dulcic, J. & Golani, D. (2006) First record of *Cyclopterus lumpus* L., 1758 (Osteichthyes: Cyclopteridae) in the Mediterranean Sea. *Journal of Fish Biology* 69: 300-303.

Kruuk, H. (2006) *Otters – ecology, behaviour and conservation*. Oxford University Press.

Marter, H.J. (2012) The latest weapon against sea lice. *Shetland News* (19.12.2012)

Mecklenburg, C.W. & Sheiko, B.A. (2003) Annotated Checklist of Fishes: Family Cyclopteridae Bonaparte 1831 Lumpsuckers. *California Academy of Sciences* No. 6, 17 pp.

Mitamura, H., Thorstad, E.B., Uglem, I.M., Bjorn, P.A., Okland, F., Naesje, T.F., Dempster, T. & Arai., N. (2007) Movements of female lumpsucker *Cyclopterus lumpus* in a Norwegian fjord during the spawning period. Norwegian Institute for Nature Research (NINA) Report 288, 20pp.

Nelson, J.S. (2006) *Fishes of the World* (4th Edition). John Wiley & Sons, Inc., Hoboken, New Jersey, USA.

Quigley, D.T. (2002) Puffer Fish in Irish Waters *Sherkin Comment* 32: 4.

Quigley, D.T. (2009) Wrasse (*Labridae*) in Irish and North-Eastern Atlantic Waters. *Sherkin Comment* 47: 7.

Robins, C.R., Ray, G.C., Douglass, J. & Freund, R. (1986) *A Field Guide to Atlantic Coast Fishes – North America*. Houghton Mifflin Co., Boston & New York.

Went, A.E. J. (1972) Interesting fishes taken in Irish waters in 1971. *Irish Naturalists' Journal* 17 (7): 210-215.

Went, A.E.J. & Kennedy, M. (1976) *List of Irish Fishes* (3rd Edition) Stationery Office, Dublin.

West, B., Cabot, D. & Greer-Walker, M. (1975) The food of the cormorant *Phalacrocorax carbo* at some breeding colonies in Ireland. *Proceedings of the Royal Irish Academy* 75 (Section B): 285-304.

Wheeler, A. (1969) *The Fishes of the British Isles and North-West Europe*. Michigan State University Press.

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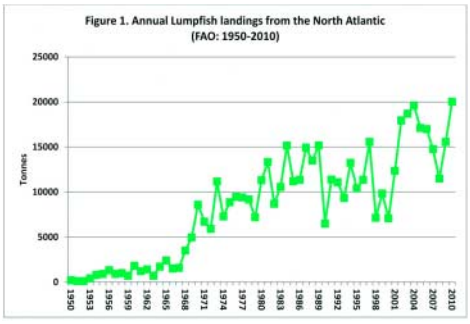


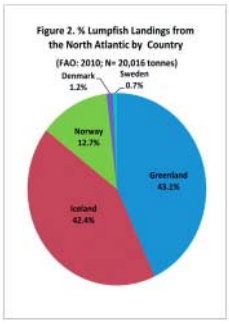
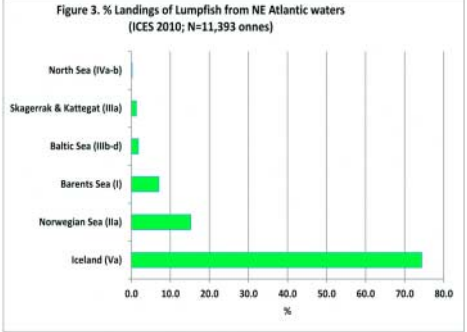


Table 1. Lumpfishes (Family *Cyclopteridae*) recorded from the North Atlantic

Common Name	Scientific Name	North West Atlantic	North East Atlantic
Lumpfish (Lumpsucker)	*Cyclopterus lumpus* L.	Greenland & Hudson Bay to Chesapeake Bay	Novaya Zemlya & Spitsbergen to Mediterranean Sea (Adriatic Sea)
Arctic Lumpsucker	*Cyclopteropsis mcalpini* (Fowler, 1914)	NW Greenland	Barents Sea
Smooth Lumpfish	*Cyclopteropsis jordani* Soldatov, 1929	Baffin Island (Admiralty Inlet)	
Leatherfin Lumpsucker	*Eumicrotremus derjugini* Popov, 1926	Greenland	Spitsbergen, Franz Josef Land to Norwegian Sea
Atlantic Spiny Lumpsucker	*Eumicrotremus spinosus* (Fabricius, 1776)	Greenland to Massachusetts	Spitsbergen & Franz Josef Land to Iceland
As above?	*Eumicrotremus eggvinii* (Koefoed, 1956)	Labrador	Barents Sea
Pimpled Lumpsucker	*Eumicrotremus andriashevi* Perminov, 1936	Newfoundland	
As above?	*Eumicrotremus terraenovae* Myers & Bohlke, 1950	Newfoundland to Gulf of Maine	



Cleaning the Hudson River

By Walter Mugdan

FROM 1946 to 1977 the Hudson River, long fabled for its beauty, became the sewer for more than a million pounds of toxic chemicals. Polychlorinated biphenyls – PCBs, classified by the U.S. EPA as a probable human carcinogen – were manufactured by the General Electric Company at plants located in Fort Edward and Hudson Falls, some 200 miles north of the Hudson's mouth in New York City.

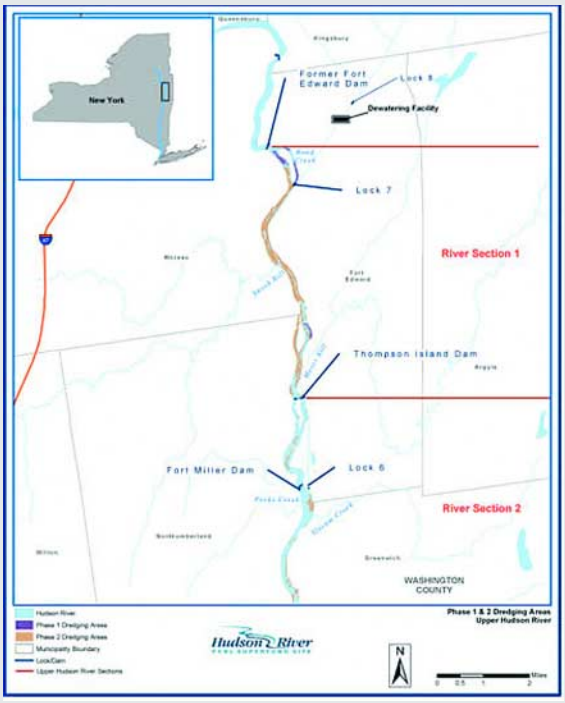
Both plants discharged PCB wastes directly into the river. When a nearby dam was removed in 1973, mud laden with PCBs surged down the river. Most settled in the next downstream reaches of the river, behind three other dams, but some of the chemicals made their way all the way to New York Harbor.

PCBs are taken up by plankton – tiny plants and animals – and "bioaccumulate" all the way up the food chain into worms, shellfish and fish, birds such as ospreys and bald eagles, and mammals like otter, mink and humans. Because of PCBs, the Hudson has for over thirty years been largely closed to fishing for human consumption, including the commercially valuable striped bass fishery. However, many anglers eat the fish they catch despite these restrictions.

Now the damage is being repaired. In 2002 EPA announced its final decision to dredge the toxic sediments out of the river. EPA determined that about 500 acres within a 40-mile stretch north of Albany should be dredged, resulting in the removal of 2.65 million cubic yards of PCB-contaminated mud. Excess water would be squeezed out of the mud and treated. The dried mud would then be shipped by rail to licensed disposal facilities hundreds or even thousands of miles away.

As the source of the pollution, GE – one of the world's largest corporations – is, under the United States landmark "Superfund" law, legally responsible for the costs of cleanup. And those costs are large indeed, estimated at up to $2 billion.

After years of extensive sampling to delineate the precise areas to be dredged, and designing and building the 100-acre water treatment plant and other necessary infrastructure, dredging finally began in 2009. The project, estimated to be completed by around 2016, will result in the removal of some 150,000 pounds of PCBs from the river – about 65% of the PCBs still left in the 40-mile stretch. Of course, the dredging won't be able to get all the PCBs. Enough will be left behind so that some parts of the river will still be unsuitable for non-restricted human consumption of fish for years to come. But EPA projects that after dredging is completed, the fish will be much less contaminated and much safer for people and other animals.



A map of a section of the Project Area.

For many years GE had vigorously opposed the dredging project. GE argued that natural processes are causing older, contaminated sediments to be buried by cleaner sediments, eventually taking the PCBs out of circulation. But EPA gathered strong evidence that widespread, permanent burial of contaminated sediments was not happening: in fact, PCBs are often brought back to the surface and redistributed. In short, the river was *not* cleaning itself.

GE also predicted that the cure would be worse than the disease, because PCB-laden mud would be resuspended during dredging and would therefore recontaminate the river. GE also maintained that it would not be possible to carry out the project on EPA's ambitious time schedule, while also meeting the stringent operational standards set by EPA to avoid unacceptable water and air pollution impacts from the dredging itself.

To assess and address these concerns, EPA agreed to an unprecedented procedural step: after the first year of dredging in 2009, there was a year-long hiatus in 2010 during which an independent, scientific peer-review was carried out. The purpose of the review was to evaluate whether the PCB removal goals of the project could indeed be met while simultaneously adhering to EPA's rigorous time schedule and operational standards. The answer was yes, and dredging resumed in 2011 and continued in 2012.

Although GE was strongly opposed to the project, the company has done a first rate job carrying it out. For example, EPA had set a target of 350,000 cubic yards of sediment to be removed during the 2012 dredging season (mid-May to late October); GE nearly doubled that, removing 663,000 cubic yards. Notwithstanding this blistering pace, all key protective indicators (such as the amount of resuspension of contaminated sediment back into the river) remained well within the stringent limits set by EPA. In fact, recontamination has been minimal and has had negligible impact.

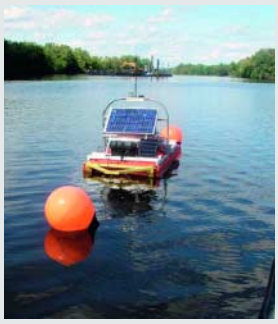
The decision to dredge the Hudson will have implications far beyond the banks of this historic river. Lakes, rivers and harbors throughout the world are similarly contaminated with PCBs, dioxin, organic chemicals and toxic heavy metals. Concerned people everywhere are watching with keen interest to see how the Hudson River cleanup proceeds. And today, with over half the project completed, the answer is that it is proceeding incredibly well.

For more information about this important project, visit EPA's Hudson River web site at http://www.epa.gov/hudson.

Walter Mugdan, Director, Emergency & Remedial Response Division, U.S. Environmental Protection Agency, Region 2, New York, NY, January, 2013

Workers use excavators with environmental clamshell buckets mounted on flat, anchored platforms to dredge the river. The PCB-contaminated sediment is emptied onto 35-foot-wide, 195-foot-long floating barges.

Tugboats are used to move barges of contaminated sediment to an upstream processing facility and clean backfill to the previously dredged areas. The tugboat and barge must navigate through the lock system to get to the processing facility. The barges may make as many as 20 one-way trips to and from the processing facility during a 24-hour period.



The project's effect on water quality is closely monitored in accordance with Engineering Performance Standards. Water monitoring is done around and downstream of the dredges, to determine PCB resuspension levels. This water monitoring buoy is solar powered.

Quality of Life Performance Standards were designed for the dredging project to keep the impacts on people to a minimum. The project's effects on air quality are closely monitored. Air monitors have been placed around all of the dredge operations and in residential and commercial areas, and air quality data is collected daily.

Images courtesy of US EPA

Oversight teams monitor dredging, processing and other project activities for the safety of crews on the River, and to ensure compliance with best management practices.

The Issue of Septic Tanks

Are We Achieving Progress At Last?

By Donal Daly

The Issue?

- There are approximately 500,000 domestic waste water treatment systems (DWWTSs) in Ireland, mostly septic tanks, which discharge about 46 million gallons of effluent per day into the ground. The threat to human health and the environment can be illustrated by two facts: i) effluent contains about 1 million faecal bacteria per litre and each of us produces around 150 litres of effluent each day (the drinking water standard is zero!); and ii) each of us produces 0.5 kg of phosphorus each year and if this gets directly into surface water, it would pollute 14 million litres (3 million gallons).
- DWWTSs located, constructed and installed in accordance with best practice guidance generally provides adequate treatment for disposal of domestic waste water.
- However, a significant proportion of the country – in the range 40-50% – has hydro(geo)logical characteristics that can be problematical, mainly because of inadequate percolation but also because of inadequate purification in the subsoil. Inadequate percolation means ponding, smells and the likelihood of children and pets coming in contact with microbial pathogens. It can also result in pollution due to piping of effluent directly into ditches and streams. Inadequate purification before the effluent enters groundwater can mean that wells, particularly private wells, become polluted with pathogens.
- In addition, many systems were not located or constructed, and have not been maintained, in accordance with the current best practice.
- Many house owners in rural areas were not fully aware of the problems and risks arising from their DWWTSs.
- **Consequence 1:** Potentially, we have significant health and environmental issues, although it should be kept in mind that urban wastewater treatment plants and agriculture produce a far higher pollutant loading than DWWTSs.
- **Consequence 2:** The European Court of Justice (ECJ) ruled against Ireland and imposed fines.

What Have We Done In Response?

- The *Water Services (Amendment) Act, 2012* (S.I. No. 2 of 2012), was passed by the Oireachtas in February 2012. This requires home owners connected to a DWWTS to register and ensure that the system does not constitute a risk to human health or the environment.
- Water Services Authorities (Local Authorities) are required to undertake inspections to regulate the discharges from DWWTSs.
- The Environmental Protection Agency (EPA) has developed a National Inspection Plan (NIP) – this can be downloaded from the EPA website www.epa.ie .
- As a consequence of the progress in producing the NIP, the European Commission has ceased the imposition of fines.

What Does the National Inspection Plan Entail?

- It is based on two strands; i) a citizen engagement strategy, and ii) a risk based approach to inspections, whereby the level of inspection will be proportionate to the risk posed to human health and the environment.
- A national public awareness campaign is commencing to enable householders to understand how their DWWTS functions, how their own DWWTS can pose a threat to human health and water quality, and what they can do about it. Short animated videos on *What you can do to maintain your wastewater treatment system* and *What to expect from an inspection* are available on the EPA website.
- We are fortunate in Ireland that the Geological Survey of Ireland, Teagasc and the EPA have produced geoscientific maps (soils, bedrock, subsoils, vulnerability, etc.) that enable an understanding of ponding, runoff, percolation rates and impacts from DWWTSs. These maps have been used as the basis for an EPA Report *"A Risk Based Methodology to Assist in the Regulation of Domestic Waste Water Treatment Systems"*, which is available on the EPA website. The risk methodology was used to determine the potential risk posed by DWWTSs all over Ireland; four categories are used – low, moderate, high and very high. These are shown on Map 1.
- In evaluating the risk and deciding on the inspection strategy, account is also taken of the catchment areas of sensitive receptors, such as bathing waters and groundwater drinking water supplies.
- The outcome is an allocation of inspections to different areas, based on the level of risk posed to human health and water.

So, Will We Achieve Progress?

Undoubtedly, 'yes' in my view. Why?

- There is now a far greater awareness and knowledge among people in rural Ireland of the health and environmental concerns arising from DWWTSs, and this awareness is increasing. And, as most people feel responsible for their local environment and for their own actions, improvements will be made irrespective of the threat of inspections.
- The inspections are an additional incentive to ensure that, for instance, DWWTSs are desludged regularly and the system is maintained so as not to have detrimental impacts.
- The inspections themselves are based on scientific analysis that ensures that greater numbers occur where the threat to human health and the environment is greatest, thereby helping ensure that problems in these areas are dealt with.
- Undeniably, there are many existing systems that have not been located, designed and maintained to the specifications of current best practices, and dealing with these will be difficult. Mitigation measures will be needed to enable improvements to be made. Currently, the EPA is funding research to help provide solutions.
- Matt Murphy recently reminded me that I gave a paper and presentation at the Sherkin Island Marine Research Station Conference in 1990 on the problems posed by septic tanks and on the need for change, and of a second paper *"Disposal of Wastewater from Houses in Unsewered Areas –Problems and Solutions"* to the 2003 Conference. For the first time in almost 30 years, I feel optimistic that what was, in the past, an untalked of and uncomfortable issue in many people's back gardens, is now being dealt with.

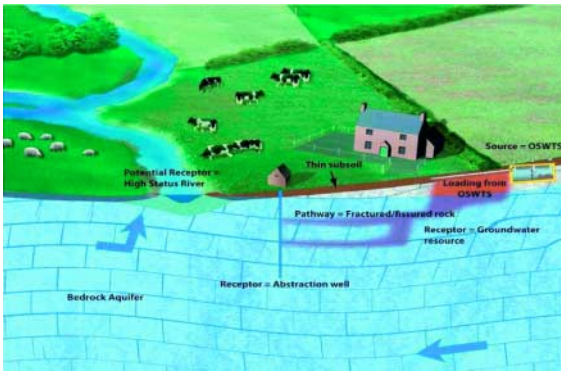
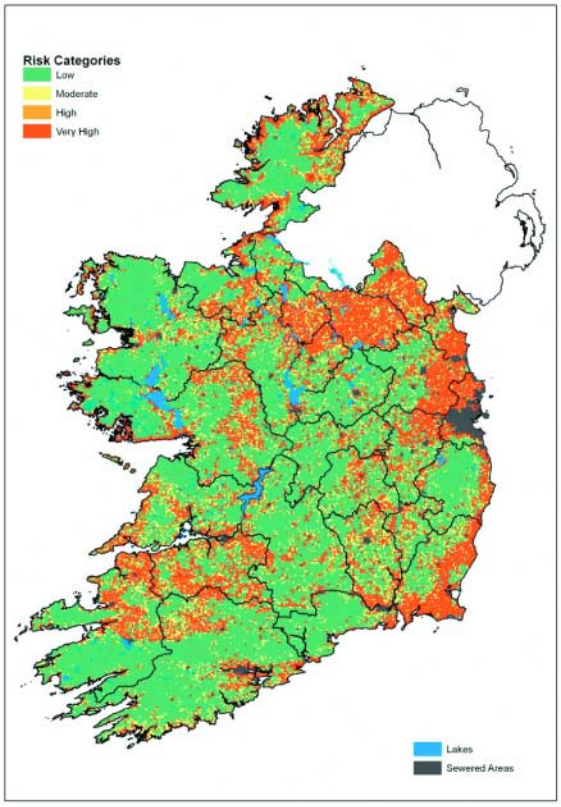


Figure 1: An illustration of how a septic tank can pollute a well (graphic sourced from the WFD Visual website, SNIFFER, 2007)



Images courtesy of EPA

Map 1: Relative risk of pollution of water by phosphate and microbial pathogens.

Donal Daly, Manager, Hydrometric & Groundwater Programme, Environmental Protection Agency, Richview, Clonskeagh, Dublin 14. www.epa.ie

?What is Life?

Images courtesy of National Botanic Gardens

The *?What is Life?* sculpture at the National Botanic Gardens in Dublin. It was inaugurated on the occasion of the 60th anniversary of the publication of Jim Watson's paper, with Francis Crick, on the structure of the DNA Double Helix.

By Matthew Jebb

ON the 28th April 2013, Nobel laureate Jim Watson was at the National Botanic Gardens in Dublin to inaugurate a remarkable piece of sculpture - ?What is Life?. The occasion was the 60th anniversary of the publication of his paper, with Francis Crick, on the structure of the DNA Double Helix. Watson, at the age of 86 is still actively involved in medical research, and in his lifetime he has not only solved what Charles Darwin began, but lived to see it grow into a multi-trillion dollar industry employing tens of millions of people worldwide. The sculpture - a gift to the people of Ireland – is a public celebration of Irish science, and a tour de force of our understanding of the world of nucleic acids as it stands today. The discovery of the double helix can rightfully claim to be one of the most significant scientific breakthroughs of the 20th century, and has a remarkable Irish dimension. All three Nobel laureates – Watson, Crick and Wilkins – credit a small booklet entitled What is Life? published in Dublin in 1944 as one of the most significant influences in sparking their search for the molecule of inheritance. Between them, the three laureates also shared 3 Irish parents, making the Irish strand in the story of DNA even more remarkable. The title of the sculpture firmly roots the work in the Dublin soil from whence the hunt began.

Minister Brian Hayes accepted the sculpture on behalf of the Irish people, saying "I wish to extend my heartfelt thanks, on behalf of the people of Ireland, for the gift of such an inspirational icon." The sculpture was paid for by donations from John Atkins, David and Janet McConnell, Tara Atkins, David Went, The Irish Museums Trust, Senator Feargal Quinn and Jim Watson. It has its own website http://whatislife.ie and will form an integral part of the National Botanic Gardens education programme.

School Prize winners

At the Sunday event, Mary O'Donovan, Director of the West Cork Education Centre, announced the winners of a school essay competition on the roles of RNA and DNA. The J.D. Watson and J.F. Atkins Science Competition had been launched in February, with the challenge to submit an essay/poem illustrating the Story of DNA and RNA. Students from all class levels at Post and Primary level had been received from across the country.

The Post-primary school winners were Niamh Maher of St. Angela's secondary school, Waterford, and Éabha Wall of Coláiste na Toirbhirte, Bandon. The Primary school winner was Milly Smith of Our Lady of Mercy National School, Bantry, while Cormac Farrelly of Rowandale Integrated School Armagh received an Honourable mention. The winners received €500 each, and a copy of J.D. Watson's book "The Annotated and Illustrated Double Helix" from Dr Watson himself. The essay competition will become an annual fixture, and information on the 2014 competition will appear on the website shortly.

The Irish strand in DNA

During his visit to Dublin, Watson acknowledged that between 1953 and 1955 the structure of DNA was a scientific discovery ripe for the picking. He emphasised the importance of the Irish links, notably that of the Tipperary-born physicist John Desmond Bernal (1901-1971). Without Bernal's vital advances in X-ray crystallography, Watson said, it could have taken a further 20 to 30 years before the event took place. What Bernal achieved in the 1920s was none other than the first glimpses of the world of molecular structure that underlies living things. He perfected the means by which diffraction photographs could be taken of molecules, revealing, if you knew how to interpret them, the atomic structure of molecules themselves.

In 1939, the then Taoiseach of Ireland, Éamon de Valera, invited the Austrian physicist and Nobel Prize winner Erwin Schrödinger to Dublin to help establish the Dublin Institute for Advanced Studies in Dublin. Schrödinger became a naturalized Irish citizen, living in Clontarf for the next 17 years. He had won his Nobel prize for his insights into quantum theory, but in Dublin he turned his attention to the phenomenon of life from the point of view of physics. In a series of lectures entitled What is life? he derived, from first principles, the essence of what and how the genetic code might be stored as a molecule. Life, to a physicist at least, appears to defy the second law of thermodynamics – unlike everything else in the universe, life somehow becomes more ordered rather than the other way round. Schrödinger's elucidation of the 'aperiodic crystal' that stored life's information laid the foundation for the hunt for the structure of DNA.

It was another DNA pioneer, Rosalind Franklin, who obtained the first X-ray diffraction photographs of DNA, including the famous photograph number 51, which her supervisor Maurice Wilkins (himself born of Irish parents in New Zealand) showed to Watson in 1953. Franklin died tragically young, before the nobel prize was awarded, and whilst it seems certain she would have been the fourth recipient, many feel the significance of her role has been long overlooked.

From left to right: **Minister of state for the Office of Public Works Brian Hayes TD, Charles Jencks, Jim Watson and Gardens Director Matthew Jebb at the inauguration of the sculpture *?What is Life?***

The Commission

Two molecular geneticists were the prime movers in the project; Professor John Atkins of University College Cork and David McConnell of Trinity College Dublin. Atkins, originally from Dunmanway in Co Cork, has been one of the leading proponents of the RNA world hypothesis, while McConnell has pioneered the development of molecular genetics and genetic engineering in Ireland. They both recognised how important the world of genetics has been, and is set to become. They also wanted to celebrate, in the form of a public sculpture, the remarkable importance of science in Ireland. They had both been influenced by the work of Charles Jencks, a landscape architect and designer, whose several previous DNA pieces they had much admired.

Jencks is the author of many books on the history and criticism of modernist and post-modernist architecture, and is also co-founder of Maggie Cancer Caring Centres. He delights in researching a subject deeply and his art is always an education. Whether it is cell division, cosmology, the history of Scotland or the secret of life, Jencks delves deep into the topic and displays it for everyone else to see what he has learnt. His landforms and sculptures are swirling seascapes of grass, filled with fractals, spirals, helices, dividing cells, sub-atomic particles and inventiveness.

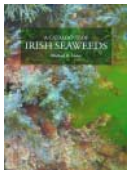
The creation of ?What is life? was a partnership between Charles Jencks and John Atkins whose passion for the RNA world has delivered the most up to date rendition of what we now 'think' we know about the world of Nucleic acids. Their collaboration has produced a melding of art and science that restores the pursuit of 'natural philosophy' so beloved of the Age of Enlightenment.

Matthew Jebb, Director, National Botanic Gardens, Glasnevin, Dublin 9.

The sculpture and earthform – a gift to the people of Ireland and a public celebration of Irish science .

Charles Jencks, Sculptor (left) and Jim Watson, Nobel laureate (right).

Publications of Interest



A Catalogue of Irish Seaweeds

By Michael D. Guiry

A.R.G. Gantner Verlag

Distributed by www.koeltz.com

ISBN: 978-3-905997-10-1

Price: €68.00 / 2012

The book "A Catalogue of Irish Seaweeds" has recently been published. The author Professor Michael Guiry of NUI Galway is Ireland's foremost authority on seaweeds. His AlgaeBase website (http://www.algaebase.org) is used by the international algae (seaweed) taxonomists on a continuous basis, receiving 6.6 million page loads annually. This book is the first ever catalogue of Irish seaweeds. Each entry includes phylum, class, order, family, habitat and distribution and only major works published since 1978 are generally cited. 570 species have been reported for Ireland over a 180-year period, with about 7.5% of the world's known seaweed species occurring in Ireland. The richness of Ireland's seaweed is such that it is 88% of the native British seaweed flora (76 native species less). What is depressing to read is that in Ireland over the last two centuries, we have had so few seaweed taxonomists. It seems we have only had a handful in the past 50 years. The late Prof. Máirín de Valera (daughter of the late President de Valera), the late Maura Scannell, the late Hilda Parkes, John Cullinane, UCC (retired), Prof. Christine Maggs, Queen's University and Osborne Morton, Ulster Museum.

The Historical Background section in the book has brief highlights pertaining to deceased authors of significant works on Irish seaweed. Most were born in the 18th and 19th century and only three in the 20th, and these prior to 1925. This 249-page book is and will be the authoritative reference for seaweeds for many decades to come. I doubt there will ever be another. Seaweed taxonomy has basically disappeared from most courses in Irish Universities and Institutions. It is a great tragedy that Prof. Guiry is presently the only seaweed taxonomist and expert on Irish seaweed in the Republic. In retirement from NUI Galway, he has dedicated his time to the already mentioned AlgaeBase. Recently he was the English language advisor to the 13-volume Korean seaweed flora. At least let us hope that this book will be on the shelves of the nation's marine research institute and consultants. It is an essential reference book for anyone researching Ireland's coastal waters. Above all let us hope it will be an inspiration to young students, encouraging them to specialise in the wonderful world of Irish seaweed. The national biological community owes Prof. Guiry a great debt for his life's commitment to Ireland's marine flora and most especially for "A Catalogue of Irish Seaweed".

Matt Murphy

Wexford Castles

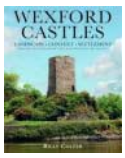
Landscape, context and settlement

By Billy Colfer

www.corkuniversitypress.com

ISBN: 978-185918-493-6

Price: €49.00/2013



The author's interest in castles began when growing up on the Hook Peninsula, where three buildings with medieval origins dominated the flat landscape. His interest broadened to others throughout County Wexford and in the 1980s and 1990s he embarked on a structured approach to the research of medieval Anglo-Norman colonisation in the county. This publication expands on that research to explore political conflicts and settlement in County Wexford through the twin lenses of landscape and castle buildings. The 17 chapters include such topics as Continental Connections, Anglo-Norman Colonisation, Social Turmoil, Tower House Economy, Town House Landscapes, Legacy, and Gazetteers of Town Houses with Surviving Fabric. An abundance of photographs and illustrations throughout the book give a fascinating account in their own right and add to the already informative text.

What a joy to have such a book to understand and appreciate Wexford's built historical past. What a wonderful legacy the late Billy Colfer has left for present and future generations, especially for the people of Wexford.

Matt Murphy

Burren Insight

Issue 4

www.bureenbeo.com

Price: €8.00 / 2012

The Burrenbeo Trust continues its promotion of the uniqueness of the Burren with their latest issue of Burren Insight, Issue 4. The issue is packed with articles, such as: "The Archaeology of the Famine in the Burren, Painting Orchids", "Burren Farmers Lead the Way", "A Photographers Journey Through the Burren" and many more. One that caught my attention was "Looking Back – Change ain't what it used to be". Featuring photographs of shearing sheep and threshing in the 1930s and 1940, the article brings us through the very hard physical life farming families had back then. Cooking and baking was done over open fires, food was boiled for the animals and all washing was done by hand with buckets of water carried from a well or water tank. It was a time when everything was reused and nothing was discarded – clothes were knitted, altered and patched and socks were darned. How many of today's generation would understand reusing a tea chest as a child's playpen? How many would know what a tea chest is? The life of the farmer was equally physical. Out in all weather, when waterproof clothing was practically unknown and rubber boots scarce. It was a time when the horse was king and essential for sowing the crops or collecting seaweed. This article alone really brings home the harshness of farming in those days without modern conveniences.

Another article "Standing the Test of Time" shows examples of traditional and modern walls one might come across if visiting the Burren. Among them are the Caher Wall, the Ha-Ha Wall, the Boulder Wall, the Liscanor/Doolin Wall and the modern JCB wall. Then there is an article on the Burren's Medicine Cabinet, featuring flowers considered to have medicinal value and others that have potential value. This 72 page magazine is jam packed with articles and gives a wonderful account of happenings in the Burren. Highly recommended.

Matt Murphy

Enough is Enough

By Rob Dietz & Dan O'Neill

www.routledge.com

ISBN: 978-0-415-82095-0

Price: £12.99 stg (PB) / 2013

Enough is Enough proves a thought provoking insight into the problems with the world economy. The book is a simplified blue print for a more sustainable economy where our needs are met without draining the world's resources. Dietz and O'Neill's vision is for a steady state economy where sustainable and equitable human well-being is the goal not economic growth. This book is highly informative with opinions and ideas from the leading professionals covering current environmental and social problems escalated by the economy. Surprisingly the authors have managed to maintain an optimistic perspective throughout with a clear structure using personal reflections and comical moments to make it an enjoyable and engaging read.

Caroline Baird

Bankrupting Nature

Denying our planetary boundaries

Anders Wijkman and Johan Rockström

www.routledge.com

ISBN: 978-0415539692

Price: £24.99 stg (HB) / 2012

In *Bankrupting Nature* Anders Wijkman and Johan Rockström address the interplay of environmental and social issues facing the world today. The authors approach the subject of global sustainability from the perspective that ecosystems are the basis for humanity and the economy. They use the concept of Planetary Boundaries; an attempt to define the biophysical processes crucial for stable development on earth.

Assessing the state of the world's natural resources and processes the book's message is that on our current path the future of humanity is untenable. Bankrupting Nature identifies some key actions that would reduce the risk of humanity heading towards catastrophe. Subjects addressed include the world economy, population growth, energy use and poverty.

Clearly written and structured, with useful references and figures this book is persuasive in calling for an interdisciplinary approach to address the issues facing science and society at large.

Cally Harmer

The Water Footprint of Modern Consumer Society

By Arjen Y Hoekstra

www.routledge.com

ISBN: 978-1-84971-427-3

Price: £22.99 stg (PB) / 2013

This book is a refreshing and thought provoking work, taking a modern interpretation on the use of water. Today's society is oblivious to the pressures we put on the world's water resources. Before reading this book you may have assumed that water is replenishable, but reading it may alter your opinion. This book is both informative and surprising. For example, to produce one cup of coffee, 132 litres of water is required and 8000 litres of water is required to make a single pair of jeans. The book is clear and concise and very well researched. It is an excellent read for anyone interested in the impact of our modern lifestyle.

Sarah Morris

Sightlines

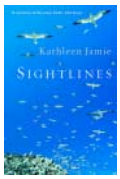
By Kathleen Jamie

www.sortof.co.uk

ISBN: 978-0956308665

Price: £8.99 stg / 2012

Dealing with nature in all its beauty and starkness, this collection of essays explores the intrinsic links between all of us and the natural world. Jamie draws our attention to areas as varied as pathogens, gannets and the aurora borealis to give new perspectives on our surroundings and to examine and understand our place in them.



Each essay is dotted with anecdotes and strikingly clear descriptions and comparisons so that the reader is transported to the scenes. The stories can be taken as stand-alone pieces or read just as easily together to encounter a wider spectrum of the world around us.

This is a thoughtful and refreshing look at nature which is instantly accessible, written from the human perspective rather than from that of the scientist.

Anna Gietl

The Boyne Currach

From beneath the shadows of Newgrange

By Claidhbh Ó Gibne

www.fourcourtspress.ie

ISBN: 978-1-84682-379-4

Price: €17.50/2012

The Boyne Currach from beneath the shadows of Newgrange is a rich and personal account of the traditional skin built boat the Currach.

The book is composed of three distinctive sections, which permits the wealth of historical and practical knowledge of the Currach to be easily interpreted. Although the sections provide structure to the book they admirably do not interrupt the fluidity of the authors personal journey.

After an enjoyable account by the author in the preface, part one of this book is dedicated to the long history of this admirable craft. The traditional feel is brought to life in the second part where the making of a Currach is explained in the finest of details. The book concludes with the author's personal quest to build a 36ft Currach that would have permitted our ancestors to go to sea.

The author's extensive admiration and knowledge of the history, craftsmanship and traditional practises of the Currach is brought to life in this informative and pleasurable read.

Susan Miller

Haulbowline

The Naval Base & Ships of Cork Harbour

By Daire Brunicardi

www.thehistorypress.ie

ISBN: 978-1845887568

Price: €20.00 / 2012

This book on Haulbowline and Cork Harbour is like a treasure trove. With a naval history on the island of over 200 years, firstly under the British Navy and in more recent years the Irish Navy, there is a wealth of stories and information, all brought together in this engaging book.

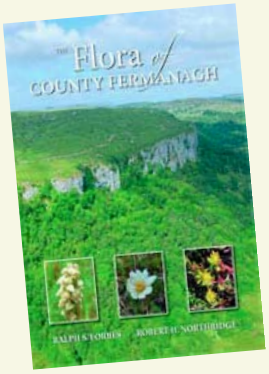
The chapter "Relief of Distress" talks about the famine of the 1840s and how the island was used to store food - biscuits, oats and Indian corn - that arrived from Britain and the US. In 1846, sixty-three voyages were made by "Her Majesty's steam vessels" from Haulbowline to various ports on the West coast. In 1863 and 1880, when there was a lesser scale famine in Ireland, the navy in Haulbowline was again involved in the distribution of food along the west coast and to the islands.

A naval dockyard was established on Haulbowline in 1887 after a long construction period. There is an interesting photo of the bridge connecting the island to Spike Island - now no longer there - and an account of workmen daily rowing the 10 miles from Blackrock (near Cork City) to Haulbowline and back. In the chapter "Our Sea Fisheries in the 1870s and 1880s" we have an insight into the nationalities fishing the south and southwest coast, especially the French fishing boats, very interesting accounts of their aggressive fishing. In the chapter "The First World War", we learn of the German U-boats operating along the south coast and are given an account of the sinking of the Lusitania and the arrival of a flotilla of American destroyers in May 1917 at Queenstown (now Cobh).

The book contains many anecdotes about colourful characters, one especially about a Charlie McGuinness born in 1893. He had been round Cape Horn in a four-masted sailing ship and also with Admiral Byrd in the US expedition to Antarctica in 1925. Mr. McGuinness was in the Marine Service at Haulbowline and when the then Taoiseach Eamon de Valera was visiting the base with other dignitaries, he was working on the bottom of a ship with his trousers rolled up. On seeing the Taoiseach he was reputed to have greeted him with "Ah! How ya Yammon? Haven't seen ya in a long time." Mr. De Valera gave a dignified reply "Hello Charlie" before moving on. This book of 25 chapters is a fascinating read and a real gem. Anyone interested in Irish Maritime history must have this on their bookshelf.

Matt Murphy

The Flora *of* County Fermanagh



A Review by Tony O'Mahony

The Ulster county of Fermanagh is situated in the southwest of Northern Ireland, and the northwest of Ireland. Although landlocked, Fermanagh is positioned close to the western (Atlantic) seaboard of Ireland, its habitats and flora thus mirroring this extreme oceanic influence. Some 30% of the county consists of freshwater habitat (dominated by the stunningly beautiful island-studded ecosystem of Upper Lough Erne and Lower Lough Erne, which form the 'spine' of the county), with a further 10% of habitat given over to commercial, coniferous afforestation. Arable farming (and its associated annual flora) is, today, virtually non-existent in the county, resulting in the fortunate retention of important habitats (such as species-rich hay-meadows, limestone pastures and wetlands) that are now in rapid decline elsewhere in Ireland. Potholers and speleologists have long explored the subterranean wonders of the famous Carboniferous Limestone terrain of Fermanagh (which represents an inland intrusion of the Ben Bulbin limestones further west, in counties Sligo and Leitrim), while its attendant, species-rich, calcicole flora is a lodestone for botanists.

The authors' intensive tetrad-recording (2 x 2 km squares) of the flora during the period 1975-2010 (coupled with comprehensive data derived from a range of ecological studies undertaken by the Department of the Environment, Northern Ireland, within this time period) has established that close to 1,200 plant taxa (species, subspecies, hybrids and varieties) have been recorded in the county to date, though not all are currently present. Moreover, further finds are likely, given that the authors' candidly admit that critical taxa (i.e. certain genera, species-groups, and many interspecific hybrids) have not been recorded, and they extend an open invitation to experts in these critical groups to visit the county, and thus help to redress this situation.

The initial fifteen chapters (pages 17-181) cover such local topics as climate, soils, agriculture, native woodlands & commercial forestry; wetland habitats, and conservation. In stark contrast, Chapter 7: *Vegetation History of Post-Glacial Ireland and the Origin and Immigration of the Flora,* is much more expansive in scope, and provides an all-island botanical-historical overview of intriguing interest. Chapter 10: *A Botanist's Guide to Co. Fermanagh;* and Chapter 11: *Habitat Gallery* (both chapters augmented with beautiful, evocative habitat photographs), serve up a mouth-watering menu of delights for the reader – enough to instil an irresistible urge to visit Fermanagh and experience its habitats and flora firsthand. (Most regrettably, the meagre, remnant, indigenous flora of the denatured pasturelands of Munster (with their large dairy-herds), pales in comparison to the native richness of the Fermanagh Flora, in which latter county there is no history of large-scale industrial development and, consequently, none of the attendant despoliation of the environment.)

The discursive species-accounts (pages 195-786) are solely the work of Ralph Forbes, and represent the 'meat' of the book. (*Note*: In order to accommodate this user-friendly format, the authors' have chosen to publish the mass of individual Fermanagh records – some 243,000 entries – in a supporting website that will be continuously upgraded in the years' ahead.) These species-accounts provide a vast amount of useful and fascinating information: an eclectic mix of distributional data (local, regional, nation, international); etymological, biological, ecological, herbal and plant-toxin notes; as well as speculative debate on the status (i.e. native or adventive) of certain species. All the more baffling, then, to find that the author has either overlooked, or has chosen not to utilise, the considerable body of relevant data (distributional and taxonomic) to be found in the BSBI regional journal, *Irish Botanical News* (volumes 1-20; 1991-2010), which provide far more up-to-date all-Ireland coverage of plant taxa, than is available in the present work!

In conclusion, *The Flora of County Fermanagh* is a mighty tome, a beautiful book, and a magnificent achievement; a flora to be perused on a regular basis, both for sheer enjoyment and for knowledge. All who have helped to bring this wonderful work to fruition are to be heartily congratulated. It has certainly raised the bar for future flora-writers, both in Ireland and further afield.

The Flora of County Fermanagh. Ralph S. Forbes & Robert H. Northridge; 2012. 864 pages, profusely illustrated hardback. National Museums Northern Ireland Publication No. 027. ISBN: 978-1-905989-28-7. Price: Approx. €31.50. (STG £25.00)

Images from *The Flora of County Fermanagh*

One sided wintergreen growing on one of the scarps in Lough Navar Forest.

Braade sandstone scarp in Lough Navar Forest; a habitat for Arctic Alpine plants.

Corraharra Lough, a species-rich, satellite lake of Upper Lough Erne.

The Wild Flowers of Loophead, County Clare, Ireland

By Carmel T. Madigan www.carmelmadigangallery.com

ISBN: 978 0 9572127 0 1 Price: €20.00/2012

Carmel Madigan runs the Loophead Summer Hedge School in the Loophead Peninsula, Co. Clare, during July and August. This book seeks to introduce the nature explorer to the wild flowers of Loophead. Carmel's ancestral home has stood there on the Peninsula for over three hundred years and is the oldest house in the townland of Ross. Her exposure to the wild and raw beauty has therefore existed since birth. In 2007 her recording of the wild flora began in earnest, with camera, magnifying glass and books. Carmel's intimate knowledge of the area is evident in her detailed descriptions of each flower recorded and described in one of its common habitat. Personal anecdotes bring to life each habitat, from rocky and stony shores to the waysides and hedgerows and drains of the region. Readers are encouraged to visit the area and the book will serve as a guide for the flower spotter and tourist as they explore sites and looped walks in the Ross area and Kilballyowen-Rhynvella Loop in the Western Loophead Region. Photography brings the book to life, with each flower photographed in its natural habitat at Loophead, allowing the viewer to easily identify the flowers in the field.

Last, but not least, Carmel's artworks, inspired by her love of flowers and her surroundings, are a beautiful closing chapter in the book. Her inspiration for each painting is explained and is further evidence of Carmel's love of nature, particularly in and around the Loophead Peninsula. It is a love she shares, especially with her youngest son James, who between them developed a deep interest in the flowers of the area, culminating in this beautiful book.

Matt Murphy

The Groundwater Newsletter

By the Geological Survey of Ireland www.gsi.ie

Price: Free / Annual

The Groundwater Newsletter published by the Geological Survey of Ireland (GSI) is primarily for Irish practitioners. However, it is equally of value to the ordinary person. Clean water is vital to all of us so we should be very concerned with the issues effecting any pollution of groundwater. If people were educated in how septic tanks, farm effluent and wastewater discharge could pollute groundwater they would welcome inspections and other regulations.

Issue 50 has over 20 articles outlining Irish, US, Scottish and Australian regulatory and management experiences, as well as insights from a local authority's "coal face" perspective. Donal Daly of the EPA, in his paper "Water/Groundwater – Challenges and Questions for the Future – A Personal View" covers such issues as complacency and ignorance, world population growth, and how water is becoming the New Oil. Donal founded this newsletter in 1986 and was editor for many years when he was at GSI.

In another paper of interest "Progression in groundwater protection and management – A Local Authority Perspective", one learns 40% of Wexford's drinking water comes from groundwater sources in two major aquifers. These are facing pressures from the high-intensity agriculture sector and the large number (27-30,000) one-off houses, each with their own water treatment systems.

This newsletter is available online at http://www.gsi.ie/Programmes/Groundwater/Groundwater+Newsletter.htm. It's a most important newsletter on a vital environmental issue which affects everyone. Do read it.

Matt Murphy

JUNIOR PAGES

Captain Cockle

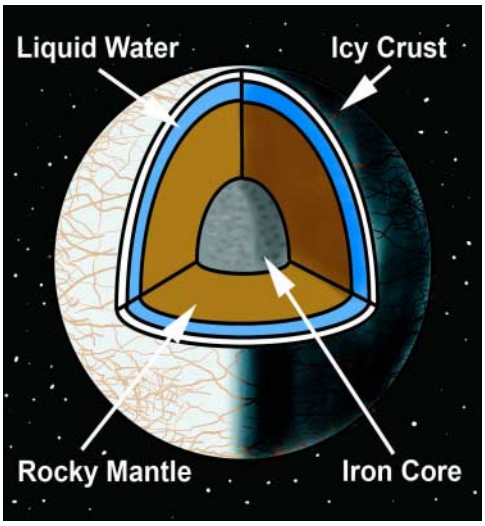
by John Joyce

For more Fun Facts check out www.spindriftpress.com

. . . and Outer Space

In 1989 the space probe *Galileo* surveyed Europa, one of Jupiter's moons, and found it to be covered in a sheet of ice. While the smoothness of the ice surface suggests that an ocean exists below it, nobody knows for sure if it is solid right the way through to the moon's surface or if it is simply a thin sheet covering a hidden sea – just the ice at our planet's own North Pole covers the ocean below.

So far, no probes have actually landed on Europa but in 2022 the European Space Agency plans to launch JUICE – the Jupiter Icy Moon Explorer – to see if an alien ocean exists there.



Could it be, if JUICE is successful, that in some future mission to Europa, a specially adapted remotely operated vehicle like the *Holland 1* will penetrate that moon's ice sheet into the ocean below?

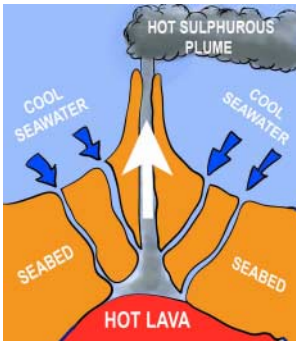
And if it does, and if 'Black Smokers' exist there as they do on Earth, will the first extra-terrestrial life we encounter in 'outer space' be a version of that which already exists in the 'inner space' of our deep oceans back here on our home planet?

Life in Inner Space . . .

In August 2011 the Marine Institute's deepwater remotely operated vehicle (ROV) *Holland 1* descended from the research vessel *RV Celtic Explorer* to a depth of three kilometres to film a field of 'black smokers' along the Mid-Atlantic Ridge. The expedition was led by University College Cork and filmed for the National Geographic Society's TV series *Alien Deep*.

Up until just over a hundred years ago, the view of science was that life could not exist in the deep oceans where sunlight could not penetrate. However, the area around the black smokers was teeming with life – from deepwater crabs and one-eyed shrimps that can 'see' heat in infrared to filter feeding worms and clams – not only in total darkness and tremendous pressure, but also at temperatures close to boiling point.

'Black smokers' are formed when cracks in the seabed around geological faults, such as the Mid-Atlantic Ridge, allow seawater to reach red hot volcanic material from the Earth's core. The resulting hot water, saturated with minerals, boils to the surface of the seabed in black, smoke-like clouds of copper, zinc, gold, iron and other minerals, creating a unique environment of towering 'chimneys' which derives its energy not from sunlight, but from heat. Bacteria, which feed on minerals, form a slime that in turn is food for filter-feeding worms and molluscs. These larger animals in turn are food for deepwater crabs, fish, octopi and squid creating an entire alien ecosystem in super-heated, darkness.



Learn about birds with BirdWatch Ireland

Feeding Wild Birds Leaflet
Download this leaflet from the Learn about Birds section on BirdWatch Ireland's website at www.birdwatchireland.ie

Learn how to identify the birds in your garden with our **Free Garden Bird Charts**. Send a SAE to: *BirdWatch Ireland, P.O. Box 12, Greystones, Co. Wicklow.*

BirdWatch Ireland has over 10,000 members and has branches throughout the country which organise events and outings in your area. Why not get your school to join? Write to us or visit our website for details: www.birdwatchireland.ie

BirdWatch Ireland has two educational web sites, catering for learning about birds in schools.

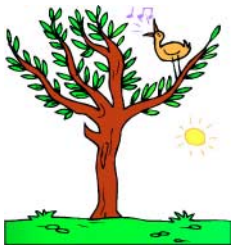
- Visit the Working with Birds web site to learn about watching and feeding birds

Simply go to **www.birdwatchireland.ie** and go to the 'learn about birds' section

BirdWatch Ireland, P.O. Box 12, Greystones, Co. Wicklow.
Tel: 01-2819878 Fax: 01-2819763
Email: info@birdwatchireland.ie

Website: www.birdwatchireland.ie

Birds & Weather



Investigate the effects weather has on how much birds eat.

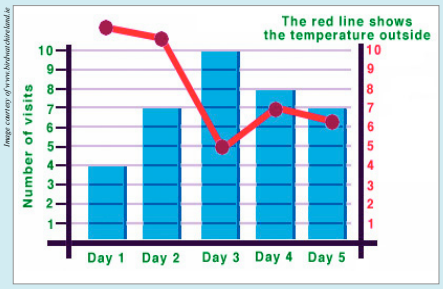
PART 2

By BirdWatch Ireland

Does the temperature outside affect how often birds feed?

What to do:
- Put out the same kind of food regularly, for at least two weeks (You will probably be doing this anyway).
- Count the number of visits that birds make to the food during a particular time (between five and fifteen minutes).
- Do this at the same time each day.
- Each time you count the visits, measure and record the temperature outside.
- Using the information you have gathered, show your observations on a graph.

Here is an example:
How do changes in the temperature affect the number of visits by birds to the food that you have put out?



Conclusions
- Do birds come for food more often in colder weather?
- Can you think of a reason for this?
- Do birds look larger in cold weather because they eat more, or is it for some other reason?
- What have you discovered about the importance of food for their survival?

What do Birds feed on?

Birds eat many sorts of food, but do they like some better than others? Set up an experiment on your bird table to see if this is true.
You will have to design it so that it is a fair test between the foods. How will you do this?
You could give a choice from peanuts, bread, suet or fat, sunflower seeds and grain.

Warning: Avoid giving salted peanuts and dessicated (dried) coconut as these might harm the birds.

Here is an example:
For each bird you will need a separate chart.
These foods are only suggestions... Try your own menu!

Kind of food	Name of bird Tick when the bird eats one of the foods
Peanuts	✓ ✓ ✓ ✓
Bread	✓ ✓ ✓
Birdseed	✓
Suet/fat	✓ ✓

From your results, make up a chart to help you find out what they eat the most.


Great Tit feeding.

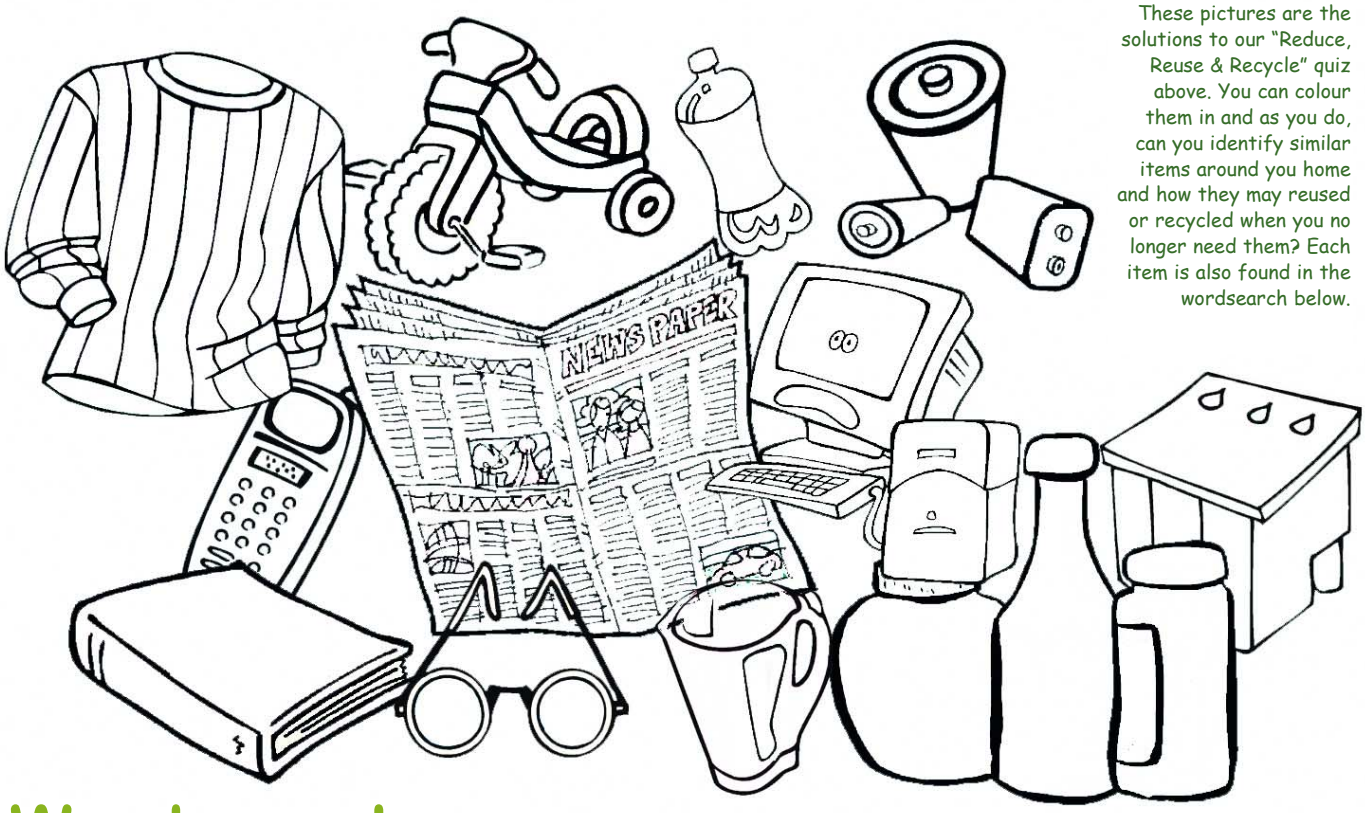
Conclusions
- What food does each bird like most and least?
- Is any food an all-round favourite?
- Is there food that no birds like?
- What must be done to attract a variety of birds to come to feed?


Greenfinch fighting over food.

QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ QUIZ

1. It might be old fashioned, slow to start up and need new programs but someone else might think it's the best thing ever! _ _ _ _ _ _ _ _	4. These might also be old-fashioned but someone else might like the vintage look. _ _ _ _ _ _ _	7. If you printed this page, you might run out of one colour. Many of these can be refilled. _ _ _ _ _ _ _ _ _ _ _	10. You can store food and drink in it and look through it, but when it breaks, it is of no use, until it is recycled. _ _ _ _ _
2. These could help someone else see things as clearly as you. _ _ _ _ _ _ _	5. It is read every day but then it is "old news". Remember it can be changed back into something new. _ _ _ _ _ _ _ _ _	8. Though some are now read digitally, others are printed on paper and keep on the shelf. Can someone else enjoy it after you? _ _ _ _ _	11. It takes hundreds and thousands of years to decompose but if recycled it can be make into such things as bags, bins, bottles and garden furniture. _ _ _ _ _ _ _
3. Anything with a plug can be recycled. This one helps to make your tea. _ _ _ _ _ _	6. They get smarter and smarter every year and we replace them now and then so we can talk and text more often! _ _ _ _ _ _ _ _ _ _ _ _	9. A flat one may prevent the car from starting or stop the clock, but many can be recharged. _ _ _ _ _ _ _ _ _	12. As you get older, you play with them less. Maybe someone else would like to play with them too? _ _ _ _

REDUCE, REUSE, RECYCLE!



These pictures are the solutions to our "Reduce, Reuse & Recycle" quiz above. You can colour them in and as you do, can you identify similar items around you home and how they may reused or recycled when you no longer need them? Each item is also found in the wordsearch below.

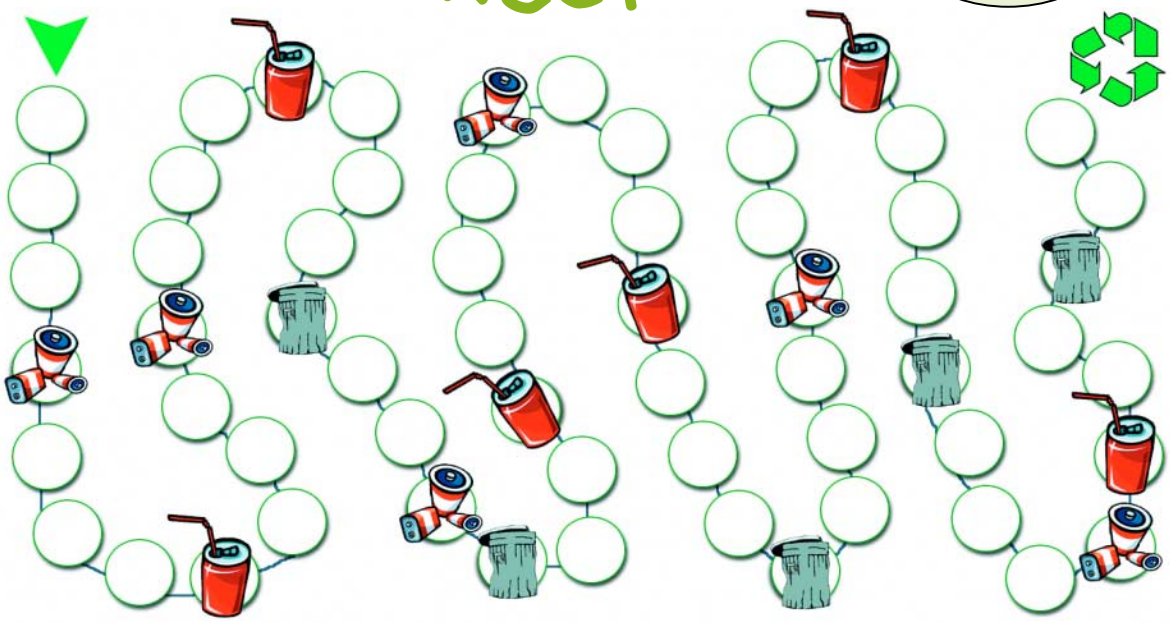
Wordsearch

GLASS
PLASTIC
KETTLE
CLOTHES
MOBILE PHONES
TOYS
BATTERIES
INK CARTRIDGES
NEWSPAPER
COMPUTER
GLASSES
BOOKS

All these "Reduce, Reuse & Recycle" words can be found in the wordsearch. Can you find them? They can read up or down, back to front or diagonally. *Answers on page 29.*

U J M S D U K E M G B B A T T E R I E S W X A P R
C A I Q Y C E Y G L L L V V G T E M H N F C I A E
S K O O B O T W W N L A S E N O H P E L I B O M T
I N K C A R T R I D G E S Z R B C L O T H E S G U
Z Y H Z H B L X J O D F B S X D K I S C B M L W P
M C W D G B E I X W Z W V Q E Y E A S Z I A D P M
G E U H M U R E P A P S W E N S L G G Y S R C M O
D Q Z W Z D K S H D X H N Q F P G O E S X M C Z C

A Race to Reuse & Recycle!



This game is for two players. You will need a marker each and a dice. Decide beforehand who will be the rechargeable batteries and who will be the refillable ink cartridge.
Each of you throws the dice in turn, moving the required number of spaces. If you are the rechargeable batteries and you land on batteries then you move forward 3 spaces. However, if you land on an ink cartridge you go back 2 spaces. If you are the refillable ink cartridge and you land on an ink cartridge then you move forward 3 spaces. However, if you land on batteries you move back 2 spaces. If either of you lands on a rubbish bin, then you miss a turn. The first player to reach the "Reduce, Reuse & Recycle" logo wins!

ANSWERS FROM PAGE 28: *"Reduce, Reuse Recycle Quiz":* 1. computer; 2. glasses; 3. kettle; 4. clothes; 5. newspaper; 6. mobile phones; 7. ink cartridges; 8. books; 9. batteries; 10. glass; 11. plastic; 12. toys. ***WORDSEARCH:*** (Over,Down,Direction) batteries (12,1,E); books (5,3,W); clothes (17,4,E); computer (25,8,N); glass (24,4,SW); glasses (10,1,SE); ink cartridges (1,4,E); kettle (7,1,S); mobile phones (24,3,W); newspaper (15,7,W); plastic (16,8,NE); toys (7,4,NW).

GAISCE - the President's Award

A lesson in food and self-sufficiency

Karl's residential project, as part of his Gold Gaisce Award, taught him about the food he eats and about protecting the world we live in.

Transition Year students attending a course at the cookery school.

By Karl McCabe

IN December 2012 I went down to a small village in Tipperary called Cloughjordan, I am currently taking part in the Gaisce award, of which I am hoping to attain my Gold award by the end of this academic year. One part of the Gold Gaisce award is a 'residential project'. I found out about Cloughjordan Cookery School through my PAL (President's Award Leader). I met with the owners of the beautiful country house as soon as I got off the train from Dublin; I was greeted and introduced to the Cloughjordan team who were all so friendly. As part of this residential project I stayed in the B&B for a week, which was also part of the cookery school, and took part in several activities.

The first day I helped out in the cookery school and as the week went on I started to get a lot more involved in the farming part of the school. In Cloughjordan Cookery School, whether you are taking part in the cookery school or even staying in the B&B, one main aspect that you are immediately shown, is where all your food comes from. I think that was a huge drive within the cookery school – that, not only do you learn how to cook such brilliant dishes, you learn about where all your food comes from by visiting the farm and seeing all of the vegetables and animals in their most natural form.

Half way through the week, I joined one of the many transition year schools that take part in the cookery school to visit a nearby 'Eco–village'. The whole drive of this 'eco-friendly' village was to create a sustainable and self-sufficient village, within a village; all produce and food for the village were grown on their own farms, milk was made from their own cows and even their heating system is all shared through a network of boilers and insulated pipes. The designs of all the houses were monitored by specific requirements of CO_2 emissions and heating needs; a network of farms produced all of the required nutrients for the residents and a 'solar panel' farm stored electricity for the village as well.

Doing my residential project in Cloughjordan Cookery School showed me and taught me so much about the food I eat, how to cook the food and even about what is happening and what can be done to protect the world we live in. I would like to thank Mr and Mrs Baker for their fantastic hospitality in Cloughjordan.

For information on Gaisce - The President's Award see www.gaisce.ie

Images courtesy of Karl McCabe

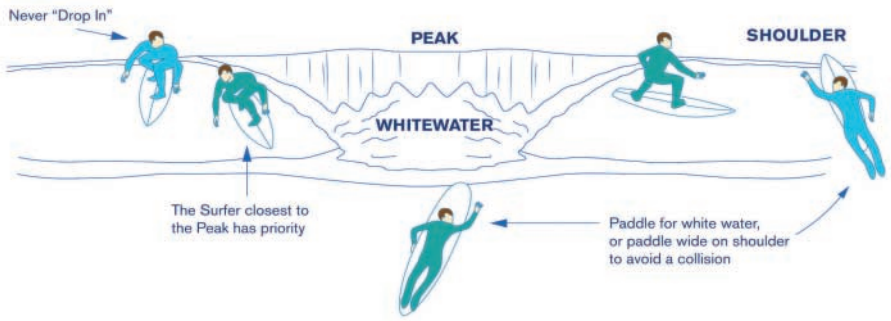
Cloughjordan House, Cloughjordan, Co. Tipperary.

Pictured with Karl are Sarah and Peter Baker, who run Cloughjordan House Cookery School.

Collecting eggs at the local farm, part of creating a sustainable and self-sufficient way of life.

Stay Safe on the Surf

Basic Surfing Etiquette



1

Be able to swim.

2

Get proper instruction at an ISA Approved Surf School or Club.

3

Check local knowledge with lifeguards or experienced surfers.

4

Study the waves and only go out if you are capable in the conditions which prevail. Stick to beaches until you are experienced. Do not be over-confident.

5

Learn to observe the ocean to identify rips, wind changes and other hazards. If caught in a rip always paddle across current to safety.

6

Never go out at night when darkness is approaching.

7

When you "wipeout" do not come to the surface too soon, protect your head with your arms as you come to the surface. Wear a safety helmet.

8

Check your equipment, especially your leash. Remember it is much easier to spot a brightly coloured board and wetsuit at sea in the event of you requiring rescue.

9

Never go out in the surf alone.

10

Check the weather and tides before you paddle out. Spring high tides can make entering and exiting the water dangerous.

11

Advise someone ashore where you are going and when you will be back.

12

Have respect for other surf users and don't be afraid to ask for advice.

13

Don't be a hazard to swimmers or other water users. Always check behind you for other water users before abandoning your surfboard to dive under a wave.

14

If you find yourself in difficulty stay calm, do not discard your board, wave your arms in the air to attract attention and shout for help. Do not panic, help will come.

Irish Water Safety
Sábháilteacht Uisce na hÉireann

IRISH SURFING ASSOCIATION

www.iws.ie www.isasurf.ie

PROMOTING YOUR SAFETY

In an Emergency Dial: 112 or 999

Ocean Warming & Fish Stocks

By Mike Ludwig

GLOBAL Climate Change may still be doubted by a significant sector of the public but fishery resources appear to be feeling it and responding to the changes. The distribution of harvested fish species and the productivity of supporting marine ecosystems are being influenced by ocean warming. Were that the only problem created by Global Climate Change our reliance on the Ocean's bounty would be difficult but ocean warming has an even more dangerous attribute; ocean acidification. Ocean acidification is the on-going increase in the acid level (pH) of the oceans. It is caused by absorption and accumulation of carbon dioxide (CO_2). These two ocean warming attributes may compound each other making resource distribution impacts difficult for aquatic species, particularly those with shells. But, do not blame the climate, solely, for declining fish populations, overfishing, pollution, and habitat degradation remain major problems.

Our problem is that many of the fisheries responses are unlikely to benefit mankind. For instance, about half of 36 Northwest Atlantic commercially or ecologically important fish stocks recently assessed by the National Marine Fisheries Service, including Atlantic cod, haddock, yellowtail and winter flounder are moving northward; into deeper water; or shrinking their range. And, ocean warming is affecting fish survival by altering food availability. In the North Sea, larval cod and other finfish species depend on plankton during their early life stages. Shifts in their food availability are reducing survival and growth to maturity. Research has revealed that plankton communities, including fish larvae, are very sensitive to environmental changes. The hope is that fish and planktonic communities will adapt to the climate changes.

Complicating the problems of adaption to warmer waters is the acidification of those waters. Marine organisms collect calcium for shells and bones from seawater. As the oceans become more acidic, it is harder for species to collect and retain the needed calcium. This results in declining invertebrate populations which provide finfish food sources. Similarly, commercial seafood farming is becoming more difficult as both food sources decline and shell production becomes more difficult. Again, can these species adapt to the change?

These conversions mean managing, hunting and harvesting aquatic species is becoming more complicated. Just the northward movement could deplete US fish stocks under our management. Would Canadians, already suffering from collapsed stocks, entertain American fishing in their waters? Similarly, traditional fisheries around Ireland and the UK are relocating to areas along the Scandinavian coasts. Will the EU respond positively and will coastal fishermen purchase vessels to pursue the relocated stocks? The negative impacts of the changing environment include, also, the redirection of funding away from attempts to restore coastal finfish. After 45 years of effort and millions of dollars, the Connecticut River Atlantic Salmon Restoration Program has been deemed unlikely to achieve its objectives. Fortunately, counteracting these resource losses is the influx of more southern species into the abandoned habitats. The questions are: 1) are the newcomers usable and 2) how large a population will develop?

If that was not enough bad news, Norwegian researchers report that by 2050, global warming will limit the oceans ability to hold oxygen and thus, reduce fish growth potential. The research indicates that for 600 marine species the average maximum body weights could decline fourteen to twenty-four percent as water temperatures increase. (As water warms it holds progressively less oxygen.) Fishing farther from home waters for fewer fish with a smaller size is not a scenario anyone wants to experience. The worst news is that smaller fish produce fewer young!

But not all the findings are negative. There were boosts for fisheries; seabass populations off the coast of the South West UK and Southern Wales have quadrupled since 1985 and squid are becoming more abundant in the northern North Sea. Elsewhere, while Northern (American) lobster is abandoning the waters south of Cape Cod, their population is exploding in the waters off Maine and the Canadian Maritimes. Unfortunately, this had led to a crash in the value of lobster and friction between Canadian and American fishermen as they land more and more lobster and receive less and less money per pound to cover the costs of fishing.

Finally, even Mother Nature is seeing undesirable changes from ocean warming. Studies reveal that global warming contributed to a nine percent decline in the number of seabirds breeding in the UK between 2000 and 2008. This was accompanied by a drop in their breeding success as well. Adults have to hunt farther from nesting sites, obtaining less food, leaving their young underfed and exposed to increased predation from those harvesting the young from unprotected nests.

In the current *Journal of Ecology* a list of pressing ecological questions is presented. Number 82 asks "In the face of rapid environmental change, what determines whether species adapt, shift their ranges or go extinct?" Good question.

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www.ocean-coastal.com