

SHERKIN COMMENT

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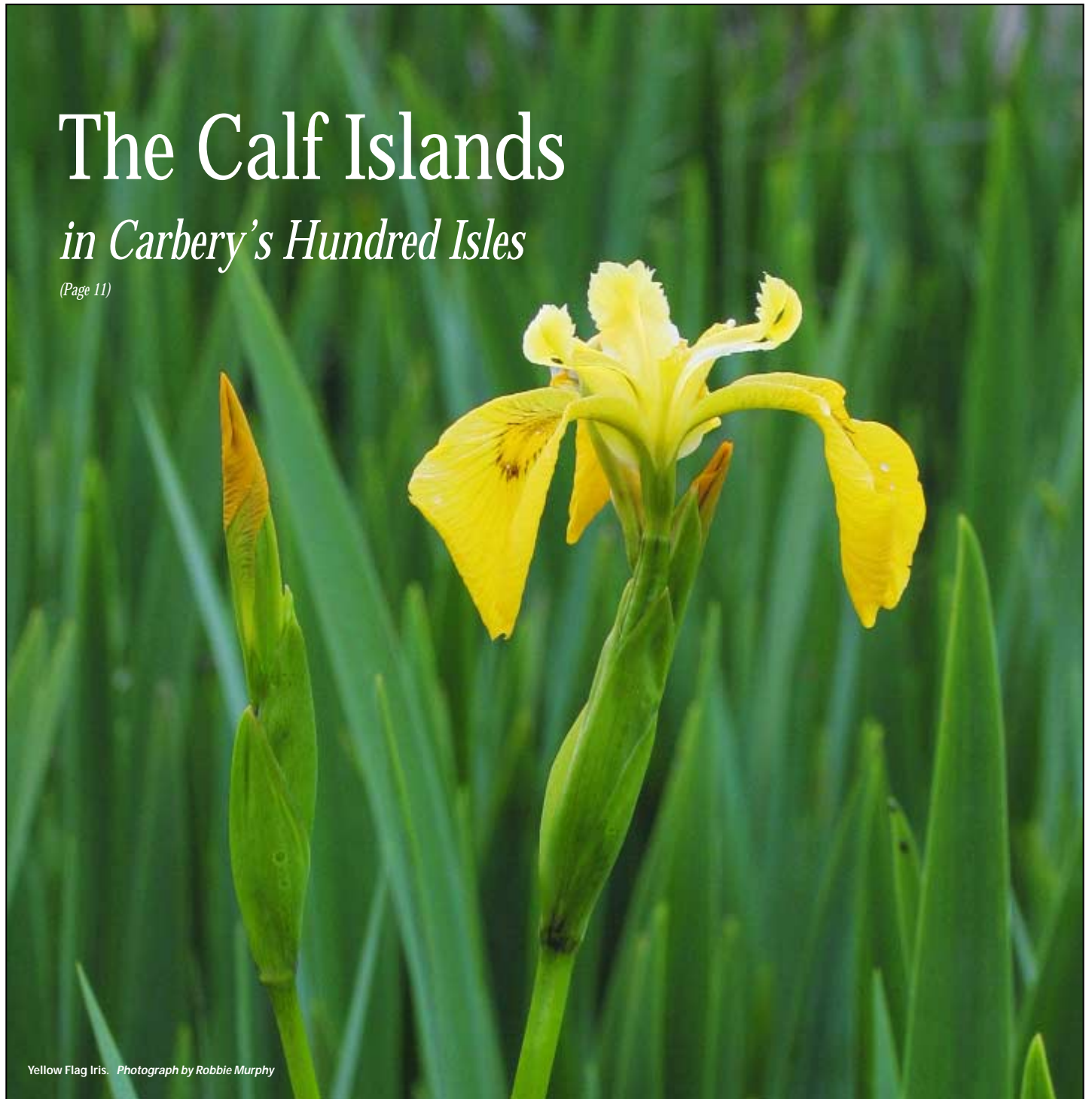
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Editorial

What is the future for Ireland's aquaculture industry?

By Matt Murphy

THE insane overfishing of the world's seas continues unabated. Few countries are prepared to face up to this reality. Indeed, the seas are a free for all and bigger and bigger vessels are being built world-wide with more sophisticated equipment to locate and catch fish. Many of the world's fish stocks are close to being wiped out. The greatest example of this is the cod fishery in the waters off Canada's east coast. Continuous warnings for the need to introduce conservation were sounded from the early 1970s but no one listened until the 1990s and by then stocks were down to a few thousand tonnes which in the 1960s saw catches of around 800,000 tonnes annually.

In its latest report, the FAO (Fish and Agriculture Organisation) in Rome has stated that of the total 90 million tonnes of commercial and aquaculture fish landings in 2005, aquaculture production contributed over 48.1 million tonnes. The FAO estimated that by 2050 aquaculture would need to produce 85 million tonnes, as the world fish catches will decrease from its present tonnage. This leads one to Ireland's aquaculture industry.

The recently published "Status of Irish aquaculture 2006" raises many questions, the chief being why production has declined or is close to static in a number of species. I find this unacceptable as we have wonderful clean waters for producing fin fish and shellfish. In 1994 Sherkin Comment produced a supplement on aquaculture in that we had many articles

which were so positive about the future for aquaculture. New species were then at the developmental stage, two of these abalone and sea urchins. A hatchery on Bere Island, Co. Cork, mastered the techniques but the grow-on in a number of sites around the coast have yet to produce adults in commercial quantities. There has also been hatchery success with sea urchins but again few adults for commercial sale. Turbot development took place on Cape Clear and what a success – it was against all the odds. In 1996, they had an annual production of 33 tonnes whilst the might Norwegians were still researching and developing the same fish. Tragedy hit in 1997 when a disease from the wild (through the sea water) occurred. Under EU regulations any fish with such a disease had to be destroyed. The Department of the Marine at Abbotstown ordered all the fish to be killed – in all 60,000 fish. Compensation was refused by the Department of the Marine (see Sherkin Comment No. 24). The great tragedy is that when the strain was identified, it was a different strain to that which effected salmon and trout, so there was no need to have killed the fish. The Cape project closed down and they were without funds to re-build the stock.

The decline in farmed salmon is the most worrying, only 11,174 tonnes was produced in 2006 less than the 12,368 tonnes in 1993 – over 13 years earlier. The peak year was 2001 with 23,312 tonnes. Something is wrong with the Irish owned section of the industry. The most successful fish farming company in Ireland is the

Norwegian owned Marine Harvest. Their main operation is at Fanad in Donegal. In recent years they have taken over a fish farm at Killary, Co. Mayo and the latest information is they are now taking over the site of Ocean Farms in Donegal Bay. How is it that the Norwegians, the world leaders in salmon production at over 600,000 tonnes annually, want to expand in Ireland – obviously they see the potential of our clean waters. At present there are sufficient licensed sites around the coast to grow up to 40,000 tonnes of salmon. The question must be – what is wrong that these sites are not utilised?

The foreign buy out of salmon sites is now coming to the oyster section. French companies have already bought out Irish-owned sites and Dutch interests have done so with some in the bottom mussel section. Again they obviously see the potential of our coastal waters.

It is interesting to read in the 2006 report, the section on research grants to institutions – 27 projects in all. It is presumed these are being funded to help develop the aquaculture industry. But the question that needs to be asked is, do these projects fulfilling their brief? If the aquaculture industry is to deliver the Government's 2008–2013 National Development Plan for aquaculture we must have practical and progressive research. What good are degrees in aquaculture to young people if there are no jobs in the industry, which is the case today? BIM and Udaras must face the challenge and lead on what development and research is needed if aquaculture is to deliver the government's 2008–2013 plans. What is equally important is that the industry itself needs to carry out an in-depth examination of its role in how it represents the industry.

There is a great future for aquaculture development in Ireland. I have been convinced of this for over 30 years since those great pioneers David and Angela Tonge farmed trout, on a shoestring, in Dunmanus Bay, Co. Cork. We at the Station supported them with monitoring when red tide took most of their stock and which, in the end, made the project financially unviable. We have continued this monitoring work in Roaringwater Bay ever since.

For many years we have heard that the IT industry will be a substitute for the declining fishing industry in coastal villages and towns. It has not and will not. Companies are leaving Ireland for cheap labour in other countries. The future is to use the wonderful seas around our coast. These seas are gold and farming them, whilst continuing to care for the environment, will deliver rich pickings and jobs. We must farm new species, both in the sea and on land (with re-circulation tanks). Aquaculture, if properly lead, can create long-term jobs. Can the challenge be met?

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

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Coastal Birds in West Africa



The Bijol Islands, the only offshore islands in The Gambia.

By Oscar Merne

MY wife and I spent a month (1st November to 1st December 2007) in The Gambia and Senegal, in tropical West Africa, between about 12.30 and 16.30 degrees N. We chose this part of Africa, and this time of year, because the area is renowned for its diversity of birdlife, including Afrotropical species and migrants from Europe. It is possible to visit The Gambia on one- or two-week package holidays, and there are

Reserve and lie about two kilometres off the little fishing centre at Brufut, where we joined two Rangers from the reserve for the motorboat trip out to the islands. The islands, joined together at low tide, are flat rocky reefs covered in most parts by fine, white sand, and with a few small trees and herbaceous vegetation above the storm tide line. We spent a couple of hours walking slowly around the islands and found 28 species of birds, mainly gulls, terns and waders. The former two groups were a mix of European migrants and

Mozambique. The common local terns were the magnificent giant Caspian Terns (as large as Herring Gulls), Royal Terns and Lesser Crested Terns. I had tantalising glimpses of rings on some tern legs and wondered if some might be from the Irish colonies on Rockabill and Lady's Island Lake.

There were also quite a few migrant waders on the shores of the Bijol Islands, notably Oystercatchers, Ringed Plovers, Grey Plovers, Knots, Sanderlings, Bar-tailed Godwits, Whimbrels, Redshanks and Turnstones, and a few Curlews and Greenshanks – all familiar on Irish coasts. The only West African wader species that we saw on the islands was the scarce White-fronted Plover, a small plover similar to the European Kentish Plover.

Clearly the waters around the islands have abundant and varied fishlife, for we counted eighteen Ospreys perched at intervals on the sandbanks and rocks, making occasional short-distance forays to catch their next meals. They seemed to be successful every time!

Also on the Bijol Islands was a nice flock of 65 loafing Great White Pelicans, a separate group of five African Pink-backed Pelicans, a scattering of Grey Herons (the same as ours), and some attractive dark Western Reef Herons, which look like white-chinned, slate-grey Little Egrets, even having yellow feet.

A couple of weeks later, we travelled by road to Dakar, the capital of Senegal, specifically to visit Les Isles de la Madeleine, a small national Park a few kilometres out in the Atlantic Ocean from the city of Dakar. They are actually the most westerly point of the African continent, at about 17.30 degrees west of Greenwich. The Ranger post is tucked in between the fishing centre and the casino on the west side of the Dakar peninsula, and in the evening we arranged a day trip to the islands for the next day. The charge for the two of us was CFA10,000, which converted to €13.33. The Rangers took us out to the islands at 10.00 hrs and picked us up again at 16.00 hrs, and we brought along our picnic lunch, lots of water, and sunblock, as there is little or no shelter on the islands from the relentless tropical sun. There are two main islands, the smaller being a precipitous and jagged black rock, slightly reminiscent of Little Skellig – but without the Gannets. The larger appears to be a volcanic crater, with the landing place located inside and with a narrow gap in the crater rim allowing small boats to sail right in. Much of the main island is a high



A large colony of white-fronted African Great Cormorants (a distinct sub-species of our Cormorants), breeding on one of the islands.



A large flock of Great White Pelicans seen on the Bijol Islands.

many good bird-watching locations within twenty-five kilometres of the main coastal resorts south of Banjul, the capital. However, for longer stays, and the opportunity to travel in the interior of The Gambia and in Senegal, it is best to travel independently. This is what we did, so we were able to visit many of the coastal and inland areas of The Gambia and also the Dakar region of Senegal and the Senegal River delta around St. Louis on the Mauretanean border.

With my own particular interest in coastal birds, we spent much of our time in coastal habitats – sandy beaches, muddy estuaries, mangroves, lagoons, saltmarshes, coastal freshwater marshes and other wetlands, and on a couple of the very few small islands along the c.500 km of the Senegambian coast.

Soon after our arrival in The Gambia we visited the tiny, low Bijol Islands, which are the only offshore islands in The Gambia. These are part of the Tanji River (Karinti) Bird

tropical species. The commonest gulls were the local Grey-headed Gulls, but there were also hundreds of migrant Lesser Black-backed Gulls, and, in decreasing numbers, Yellow-legged Gulls, Kelp Gulls (very like our Great Black-backed Gulls, and here near the northern limit of their range), Audouin's Gulls and Slender-billed Gulls. The last can be found also in the Mediterranean area.

We saw seven species of terns, including a mixed flock of 3,000 European migrant Common and Sandwich Terns, with some Gull-billed Terns and a handful of Roseate Terns – detected mainly by their distinctive calls as they are very difficult to distinguish in their winter plumage. Common Terns and some Sandwich Terns spend the winter in this part of Africa, while the Roseate Terns move on south to the Gulf of Guinea, and many Sandwich Terns continue as far as the Cape of Good Hope, or even around the cape to



Above: The larger of the Les Isles de la Madeleine – a small national park off the coast of Dakar in Senegal – is sparsely vegetated, with a few stunted dwarf Baobab trees. Below: The island is appears to be a volcanic crater.

plateau with sparse vegetation and small numbers of very stunted dwarf Baobab trees. The exposed western rim is mainly bare black basalt, which, like the Giant's Causeway in Northern Ireland, cooled into octagonal columns. On these structures was a large colony (probably 2,000–3,000 pairs) of white-fronted African Great Cormorants, a distinct sub-species of our Cormorants. It seemed to be the beginning of the breeding season as many nests were still being constructed, while others had freshly laid eggs. The other seabird species breeding on Les Isles de la Madeleine, and probably nowhere else on the West African coast, and which had drawn us to the islands, is the beautiful Red-billed Tropicbird, a large, graceful, black-and-white tern-like species with extraordinarily long central tail feathers. Small numbers nest in crevices on the high cliffs on the landward side of the main island, and we were lucky enough to see about twenty individuals flying about.



In my next article I will write about the waterbirds of the Senegal River delta, particularly the UNESCO World Heritage Parc National des Oiseaux de Djoudj.

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



A Spotlight on World Environmental Matters

by Alex Kirby

EU to Cut Carbon Emissions

The European Commission aims to cut 20% from Europe's carbon emissions by 2020 compared with 1990 levels, and hopes to generate 20% of Europe's power from renewable sources by then. As its contribution, the United Kingdom will have to obtain 15% of its energy for heat, electricity and transport from renewables like wind, wave, tidal, solar and biomass. Only 2% of the UK's energy is renewable today, the lowest percentage of any major European country. Biofuels used in the EU must be shown to provide a real saving in emissions of at least one-third compared with fossil fuels, and must not be produced on land of high biodiversity. Nor should they be grown on forest land, wetland – including peat – or permanent grassland.

Biofuels Ineffective & Expensive

British members of Parliament say the EU should abandon its biofuels targets because they are damaging the environment. The Environmental Audit Committee said biofuels were ineffective and sometimes expensive. It also

said the targets were putting up food prices and threatening food supplies for the poor. It wants the EU and the UK to concentrate on using so-called sustainable biofuels like waste vegetable oil, and to develop more efficient biofuel technologies. The RSPB said current biofuels targets were farcical.

Amazon Deforestation on the Rise

Satellite measurements have shown that Amazon deforestation is on the rise again. The loss for the last five months of 2007 was 3,235 sq. kilometres, up on the previous year and surprising because the damage usually tends to drop in the wet months at the end of the year. In a world panicked by its own carbon footprint, the forests of the Amazon are the planet's largest absorber of carbon dioxide. Figures obtained by another Brazilian government agency said the real figure was closer to 7,000 sq. km. The Environment Minister, Marina Silva, said the rise was caused mainly by higher commodity prices. Deforestation and food prices had both fallen in 2005 and 2006, and now both were on the rise.

Ireland 34th on Environmental Performance Index

Ireland came in at number 34 in the World Economic Forum's Environmental Performance Index, after being tenth in 2006. Drinking water pollution and threats of legal action by the European Commission to enforce water standards were particular problems explaining the slippage. Sweden, Norway, Finland, and Costa Rica performed well, while Mali, Mauritania, Sierra Leone, Angola, and Niger brought up the rear. The Index is based on 25 indicators across six categories: environmental health, air pollution, water resources, biodiversity and habitat, productive natural resources, and climate change.

Countries at Risk From Violent Conflict

A report by International Alert, an independent London-based peacebuilding organisation, says 46 countries with 2.7 billion people are experiencing climate change and water-related crises which create "a high risk of violent conflict". And it says 56 more countries, with 1.2 billion people "are at high risk of violent conflict." The UN Secretary-General, Ban Ki-moon, says the growing crisis over water should be at the top of the global agenda in 2008. Speaking at the World Economic Forum, he said shortages of water were helping to cause poverty and social hardship in Somalia, Chad, Israel, the Palestinian territories, Nigeria, Sri Lanka, Haiti, Colombia and Kazakhstan.

Planning Approved for 9th Concrete Storage Bunker

In north-west England Cumbria County Council has approved plans for a ninth concrete storage bunker at a low-level radioactive waste site. It said the bunker, at Drigg, met safety guidelines. The site has stored waste for the last half-century but had been expected to run out of capacity in the next 12 months. The 137m wide, 5.5m high vault will store waste from the nuclear plant at Sellafield, and from hospitals, the oil industry, universities and other government and military sites. The bunker will need more than 185,000 tonnes of construction materials. It will be built and operated by LLW Repository Ltd, previously BNG Sellafield Ltd.

A New Generation of Nuclear Power Stations

The UK Government has given formal backing to the building of a new generation of nuclear power stations. It said they would give a "safe and affordable"

way of securing future energy supplies while fighting climate change. The government will build no plants itself, but says it wants to encourage private operators to build them. Any plants will be built at or near existing reactors, and there are hopes the first could come on-stream by 2017. No nuclear plant has been built anywhere in the world without public money. The government has not decided yet how much new nuclear operators should pay towards the cost of building underground caverns as a permanent storage site for Britain's nuclear waste. Until a suitable site can be found, waste will continue to be stockpiled above ground at what are described as "interim" facilities at Sellafield, in Cumbria. Existing nuclear power stations produce about 20% of the UK's electricity and many existing nuclear and coal-fired power stations are due for closure within 20 years.

World Climate Out of Balance

The American Geophysical Union says the world's climate is "clearly out of balance and is warming". It said changes in temperature, sea level and rainfall were best explained by the increased concentration of greenhouse gases from human activities and urged a cut of more than half in carbon emissions by 2100. The AGU said the world faced a tough challenge: "Even the lower limit of impending climate change – an additional global mean warming of 1.0C above the last decade – is far beyond the range of climate variability experienced during the past 1,000 years. Warming greater than 2.0C above 19th century levels is projected to be disruptive, reducing global agricultural productivity, causing widespread loss of biodiversity, and – if sustained over centuries – melting of much of the Greenland ice sheet." The AGU, the world's largest society of Earth and space scientists, has 50,000 members in 137 countries.

Alaskan wilderness Opened Up to Logging, Mining & Road-building

The US Administration says it will open more than 3m acres (about 5,000 square miles) of Alaska's wilderness, the Tongass National Forest, to logging, mining and road-building. Environmental groups say it will devastate the region. The forest is a refuge for grizzly and black bears, wolves, eagles and wild salmon. But supporters of the plan say it will revive the state's timber industry. The forest, nearly 17m acres in extent, is the largest in the US.

Alex Kirby is a former BBC environment correspondent.

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Clare Island Survey

By Michael Guiry

EVEN the Irish can be forgiven for confusing two of our most famous islands: Cape Clear Island (*Oileán Chléire*), Co. Cork and Clare Island, Co. Mayo. Both are well known to Irish biologists and to naturalists all over the world. *Oileán Chléire* for its Bird Observatory, the source of many unique sightings of rare migratory and storm-blown birds, and Clare Island for the Clare Island Survey, an amazing last hurrah of the Victorian naturalists' taste for surveys, forays and species lists.

Why did an innocent little island at the mouth of Clew Bay become a by-word amongst archaeologists, naturalists, geologists and anthropologists? Schoolchildren are well acquainted with Clare Island as the island fortress of Ireland's pirate queen, Grainne Uí Mháille (Grace O'Malley also known as Gráinne Mhaol and a huge number of variants, c. 1530–1603), who is reputed to have been the seaborne scourge of much of the west and south coast of Ireland in the 16th century. She is said to have visited the first Queen Elizabeth's court and was accorded the courtesy of one formidable woman to another, even though she was found to have secreted a small dagger on her person before entering the royal presence.

Clare Island was chosen essentially by Robert Lloyd Praeger, Ireland's best-known botanist and the prime mover of the first Survey of



Clare Island, Co Mayo, which was first surveyed from 1909–1911.



Above left: Algal growth on the Cistercian Abbey on the island. Above right: The walls were laboriously cleaned.



Above left: The abbey contained some of the best preserved mediaeval wall-paintings in Ireland. Above right: Drawing of the same.

1909–1912. The Blaskets and the Aran Islands were also considered by a survey committee, but Clare Island was chosen because it was neither too near or too far from the mainland, and because it had the physical height and the range of habitats thought to be desirable to produce an extensive and comprehensive list of animals and plants.

That there was easy access from Roonagh Quay south-east of the island and a protected harbour on the island, and that the natives spoke English were other major considerations.

Propelled by Praeger, and enthusiastically supported by the Royal Irish Academy, hordes of eager geologists, anthropologists, archaeologists, botanist, zoologists, and virtually every manner of scientist, some 100 in all, and many from outside Ireland, scoured the island from 1909–1911, collecting and examining every natural production and artifact of Clare Island and the “adjoining district” stretching from Achill in the north to Connemara in the south. The results were published by the Royal Irish

Academy in several volumes from 1910–1912. The biological results of that first Survey were quite extraordinary: nearly 9,000 organisms were recorded (3219 plants and 5629 animals) of which nearly 2000 had not been previously known to occur in Ireland, and 11 plants and 109 animals were completely unknown anywhere in the world. By contrast, the taxonomic might of the Natural History Museum in London was only able to muster 5,280 organism for the much larger, but similar, island of Mull of the west coast of Scotland in the 1970s. This latter survey, it was claimed by the Museum, was the most comprehensive such investigation in the British Isles.

The New Survey of Clare Island was initiated by the Academy in 1991. To date, 6 of an expected 10 volumes have been published. This time, the survey is being carried out at a more leisurely pace and with less focus on lists of species and artifacts and more emphasis on the context, the environment and climate change. Nevertheless, differences have emerged from the first Survey. For example, the archaeology of the island has turned out to be much richer than previously appreciated, partly because time was available for a systematic and comprehensive assessment, and a number of species new to science and new to Britain and Ireland have been discovered. However, most of all, the baseline that was the original Survey has been augmented so that we will be able to assess the



The Ninth Party, Clare Island Survey, June 1910. Robert Lloyd Praeger is seated at the back, dressed in white.

Robert Lloyd Praeger (1865–1953) was born in Belfast of Dutch extraction but spent most of his working life in Dublin. A graduate in engineering from Queen's University Belfast, Librarian in the National Library, and President of the Royal Irish Academy, he dabbled in archaeology initially but went on to become Ireland's foremost botanist, mostly in his spare time. The author of several remarkable books, the one for which he is best remembered, and which is still in print, is *The Way that I Went*, an elegant view of a naturalist's Ireland.

The Royal Irish Academy (Acadamh Ríoga na hÉireann), chartered in 1785, is Ireland's premier learned academy (<http://www.ria.ie>) for sciences and humanities, and is the Irish equivalent of France's *Académie Française* and Britain's Royal Society. Membership, currently about 385, is by election, and about 20 persons, mainly from Ireland, are elected each year by the existing members. Those elected are permitted to use the letters M.R.I.A. after their names. The Academy has been prominent in promoting many scholarly projects since its foundation and maintains a important library in its premises on Dawson Street in Dublin. Many of the prized artifacts currently in the National Museum came from the Academy's collections.

NEW SURVEY OF CLARE ISLAND

Volume 6: The Freshwater and Terrestrial Algae

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effects of climate change. Indeed, the authors of Volume 6, just published, consider that the island's freshwater algal flora may have changed substantially since the first survey, perhaps due to the island becoming drier, perhaps as a result of climate change.

Other very tangible and welcome developments have taken place: the Cistercian Abbey on the island, which contained some of the best-preserved mediaeval wall-paintings in Ireland, has been cleaned laboriously (green algae were a major problem on the painted

surface), re-roofed and renovated in a very sympathetic manner and with the greatest care by the Office of Public Works, and is now open to the public.

The people of Clare Island have been most encouraging and supportive of the New Survey and the workers on the Survey have been made very welcome by all. On the island, one still feels that we are following the way that Praeger went.

*Michael Guiry, Director,
Martin Ryan Institute, NUI Galway.*

The UK's National Trust



Sheep and drowned drumlins at Strangford Lough, Co. Down, in the pink light of the dusk.

By Tony Burton

THE National Trust is a registered charity founded in 1895 to look after places of historic interest and natural beauty permanently for the benefit of everyone across England, Wales and Northern Ireland.

It is over a hundred years since an Act of Parliament set out the National Trust's mission promoting: 'the permanent preservation' of the UK's most beautiful and historic places 'for the benefit of the nation'. This was in response to concerns about the impact of industrialisation and uncontrolled development. The National Trust was set up to act as a guardian to protect threatened coastline, countryside and buildings. Our remit would be to protect valuable public spaces, heritage and habitats, and to manage them for public benefit.

A century on, we are Europe's largest conservation body. We protect and manage over 250,000 hectares of countryside, 300 historic houses

and gardens, and 1,100km of coastline across England, Wales and Northern Ireland on behalf of the nation, together with a significant proportion

of the country's designated sites and buildings of natural and cultural significance. We have 3.5 million members and over 49,000 volunteers.



The Giant's Causeway, Co. Antrim, is a geological phenomenon renowned for its polygonal columns of layered basalt, caused by a volcanic eruption 60 million years ago.

What makes it possible...

- We rely on the membership fees, legacies, donations and the custom of millions of generous people, and thousands of volunteers who give up their time for free.
- A vital income source is our membership – at more than £100 million this is almost one third of our total income.
- Our volunteers contribute 2.96 million hours per year which equates to a notional value of more than £21.3 million.
- The cost of maintaining historic buildings is rising at four times the rate of inflation; £6 million just to repair the roof and make the building watertight at Castle Drogo in Devon. Across the country we face urgent repairs worth £162 million.

We look after forests, woods, fens, beaches, farmland, downs, moorland, islands, archaeological remains, castles, nature reserves and villages. We're committed to maintaining the highest standards possible in the care and conservation of our properties and their assets, and to enable people to be inspired by and enjoy them. Our conservation staff and volunteers care for an astonishing range of structures and contents, everything from 26 sets of samurai armour, and 19 magnificent paintings by Turner, to the Oscar awarded to George Bernard Shaw, the national collection of lawnmowers, 57 meat strainers and a photograph album the size of a postage stamp. And it doesn't stop there!

But in today's consumer culture, do history and the natural environment still matter? I would argue that they are even more important today as we face new challenges in a rapidly changing world. The scale and power of the response we received in our 2006 *History Matters – Pass It On* campaign with other heritage organisations left us confident that a large portion of the public agrees. We set out to ask visitors to our properties and the wider general public why history matters to them. In response 10,000 postcards were sent in, 20,000 people made declarations of support and 46,000 people wrote 'One Day in History' diaries online. More than a million people visited heritage sites in England, Wales and Northern Ireland during the campaign's open weekend.

At a glance...

The National Trust is:

- Independent of the Government and receives no direct state grant or subsidy for our general work
- The UK's largest landowner after the Ministry of Defence and the Forestry Commission
- Responsible for saving and caring for thousands of historic buildings in England, Wales and Northern Ireland dating from the middle ages to modern times; ancient monuments, nature reserves, gardens, landscape parks, woodland and farmland leased to over 1,000 tenants
- A champion of volunteering with 49,000 volunteers
- A major employer with 5,000 staff and training schemes for young people wishing to learn professional skills and embark on careers in horticulture and conservation.

The *History Matters* campaign and our astonishing visitor and membership figures have clearly demonstrated the enthusiasm out there. What we'd like to do now is to turn this into more active support – and to encourage people to get involved in all aspects of our work. We'd like local communities and visitors to have a genuine dialogue with staff and volunteers about our work. This could be at every level – from the hanging of a portrait or planting of a garden, through management of our great landscapes and acquiring places at risk, or choices over how we influence public policy. One current example of this is a debate we've been leading since November 2007 on 'green places'. We've been asking why local green space, such as urban parks, allotments, historic gardens, green

belt and the countryside around towns are important to people and what more we can do to maximise people's enjoyment of them. In response we've been flooded with emails and letters.

One of the biggest challenges we face as an organisation is also an issue which resonates strongly with the daily lives of our visitors and wider society – climate change. We're already seeing the impacts of it on the land and buildings in our care – ranging from coastal erosion, 18th century drainpipes overwhelmed by heavier rainfall, through to dry lawns, and book collections damaged by pests now surviving our warmer winters. We've produced an award winning photography exhibition which documents the impacts on our properties and sites – which is designed to show that climate change is a here and now issue – and shows how we're adapting to it. We have even launched National Trust Green Energy (with npower) helping our members support renewable energy and get advice on making their homes more efficient.

We're working to reduce the environmental footprint of all National Trust sites and organisational activities, and managing our land to conserve carbon, for example by restoring peatlands which have been damaged by years of pollution and erosion. We're also hoping to inspire our supporters to live in more environmentally friendly ways, by promoting energy efficiency, local and seasonal food, and holidaying at home.

Tony Burton is Director of Policy and Strategy at the National Trust. If you'd like to find out more about our work then visit our website at www.nationaltrust.org.uk



History Matters, Little Morton Hall, Cheshire, UK.



Back view of children walking through a meadow holding nets, as they hunt for insects on the 'Bug Safari' activity funday at Wickfen Fen, Cambridgeshire, UK.

ENVision brings maps to EPA website

By Fiona Lawlor

AS part of a complete revamp of their website (www.epa.ie) the Environmental Protection Agency have launched ENvision, an interactive map viewer (similar to sites like Google Earth) that places environmental maps at your fingertips.

ENvision was officially launched at the EPA Environment Ireland conference on the 3rd of September 2007 by Mr John Gormley T.D., Minister for the Environment, Heritage and Local Government, who was very impressed by the speed and user friendliness of the site in a demonstration given by Dr Mary Kelly (Director General, EPA) and Larry Stapleton (Director, EPA Office of Environment Assessment).

The EPA has an important role as a data provider and the delivery of the ENvision system is just one part of an overall strategy towards making data easily accessible to those that require it, in a format that makes it easy to understand. We are all stakeholders in environmental protection but access to current information about the

environment is vital in helping us understand the environment around us. ENvision places environmental data where it belongs: on a local setting, and so acts as a window to the environment. Anyone with an Internet connection can access ENvision from the EPA home page www.epa.ie.

Currently there are forty-one different layers on ENvision. They include water quality data from the regular EPA Water Quality in Ireland and Water Quality Indicators reports presented against the backdrop of very detailed river, lake and catchment boundary maps. ENvision expands on the previous water quality mapping tool available from the EPA by showing the water quality for lakes, estuaries and groundwater, as well as river biological quality results for the last reporting periods (Figure 1). Technological advances in river biological surveying equipment mean that ENvision will soon be showing biological river water quality data the day after it is collected in the field.

ENvision shows all the EPA active IPPC and Waste licenses, each location linked

to the full license information for that facility via the EPA Website Licence Search Facility. ENvision is the new home for the Air Access Maps, with the site locations visible against very detailed orthophotography (provided by the OSI). Each air site links to the live air quality data for the location, or to a full Air Quality Assessment report in the case of sites where the assessment cycle has been completed.

ENvision is home to some more technical "specialist" data such as soil and subsoils maps completed by Teagasc and the European Environment Agency landcover data for Ireland (figure 2). This will have particular relevance to environmental engineers and environmental researchers, making it quicker and easier for them to access the data they need.

ENvision has received more than 5,000 visits since it was launched in September 2007, with Ireland and the UK being the heaviest consumers. The value of ENvision as an envi-

ronmental data tool has become apparent by the number of references to ENvision as an information source that are appearing on a number of other websites: Local Authorities and Universities in particular refer to it as a key information source for environmental data.

The data on ENvision will be constantly updated and improved, and it will act as a complementary source of information to major EPA reports, particularly the upcoming 2008 State of the Environment Report (expected later this year). Other developments will include access to the data for GIS users via web services.

ENvision is instantly accessible on www.epa.ie from the **EPA Maps link** (located in the top right hand corner of the screen).

The GIS Unit in the EPA are responsible for the maintenance and updating of ENvision and welcome your comments and feedback, which should be addressed to the GIS Unit in EPA HQ (053 9160600) or via email to f.lawlor@epa.ie

Fiona Lawlor, Office of Environmental Assessment, Environmental Protection Agency, PO Box 3000, Johnstown Castle Estate, Wexford.



Figure 1: Water Quality data available from the ENvision site.



Figure 2: Teagasc soils map, available from the ENvision site.

ENVision Technical details:

ENvision should be viewed at a screen resolution of 1024x768 or higher. ENvision is supported in Internet Explorer and Firefox, there is no requirement to download software and no user name or password are required. While performance is better on broadband connections, it is possible to access ENvision with a dial-up connection (speed will be somewhat slower and performance can be improved by limiting your view or data queries to a small local area).

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Pomfrets (Bramidae) in Irish and Northern European Waters

By Declan T. Quigley

POMFRETS belong to a relatively small family (Bramidae) comprising 7 genera and c22 species of highly migratory, oceanodromous, pelagic, benthopelagic and bathypelagic marine fishes found in tropical and warm temperate waters of the Atlantic, Indian and Pacific Oceans. Only 6 species (representing 5 genera) are known from the North-eastern Atlantic and only 4 of these (representing 4 genera) have been recorded from Northern European and Irish waters.

Ray's Bream or Atlantic Pomfret (*Brama brama*)

The Ray's Bream is a cosmopolitan and highly migratory oceanic and epipelagic species occurring throughout the North & South Atlantic, Indian and South Pacific Oceans. In the Eastern Atlantic, it ranges from Norway southwards to South Africa. Although it occasionally occurs in inshore waters, it is generally found on the conti-



Photo: © Declan MacGabhann

nental slope (at depths down to 1000m), and appears to undertake daily vertical feeding migrations and temperature-related seasonal migrations to and from temperate waters. The species is known to breed in the Mediterranean during August and September at water temperatures >20°C while the young have been found in the mid-Atlantic but nowhere near

the European coast. Adults appear to be opportunistic feeders with a wide and varied diet, although mainly composed of small mid-water fishes and squids.

In the NE Atlantic, Ray's Bream supports a seasonally important fisheries resource, including a directed long-line fishery for the species off Galicia (NW Spain). Off the SW coast of Portugal, it is the second-most abundant commercial species in the semi-pelagic hake long-line fishery. It is also taken, albeit intermittently, but sometimes in significant quantities, by Spanish long-liners targeting hake at depths of 200–600m off the west coast of Ireland.

Despite its commercial importance, relatively little is known about the species' population dynamics. For example, it is unclear why the occurrence and abundance of Ray's Bream appears to fluctuate widely from year to year throughout its range. Although the species was first recorded from Irish waters in 1843, it was still regarded as scarce up until the late 1950s. During the 1960s and 1970s, relatively large numbers were recorded but rarely during the following two decades. Nevertheless, the species would appear to have made a comeback over the last five years (2003–07), with increasingly significant quantities landed by commercial long-liners off the west coast (Figure 1).

The monthly frequency occurrence of Ray's Bream in Irish waters appears to be strongly seasonal with the vast majority (91.6%) of specimens recorded between July and October. It is thought that the species migrates northwards from the Iberian Peninsula during early summer, reaching the Irish coast

by mid-summer and NW Scotland and Norway by autumn. During the winter months of some years, significant numbers have been found stranded on North Sea coasts, possibly due to disorientation caused by decreasing water temperatures (<13°C).

Although the vast majority (>80%) of Ray's Bream recorded in Irish waters have been taken by commercial trawlers, the species has occasionally (between 1965 and 1979) been captured by anglers off the S, SW & W coasts, from both inshore (e.g. Tramore, 2; Kinsale, 1; Courtmacsherry, 4; Caherciveen, 2; Valentia, 2; Dingle, 1; Kilkee, 1; Galway, 1; and Clifden, 2) and offshore waters (e.g. Porcupine Bank, 3). It is interesting to note that the latter specimens were taken near the surface with feather/mackerel /jigs during the hours of darkness. Although the largest specimen captured on rod & line in Irish waters to date weighed 2.842kg (Valentia, 26.08.1978), an even larger fish, weighing 3.6kg, was taken by a commercial trawler in Dingle Bay during September 1966. The Irish Specimen Fish Committee (ISFC) specifies a minimum qualifying weight of 2.268kg for the species. The weight frequency distribution of all specimens taken in Irish waters is shown in Figure 2. The UK Rod & Line (Shore) Record, weighing 3.621kg, was captured during October 1967 off Crimdon Beach, Hartlepool, Durham, while an even larger fish, weighing 4.5kg, was taken by a commercial trawler off Norfolk during November 1974. The species is thought to achieve a maximum weight of c6.0kg, total length of 70.5cm and age 12 years.

Long-finned Bream or Bigscale Pomfret (*Taractichthys longipinnus*)

The Long-finned Bream is primarily an oceanic pelagic species found in sub-tropical and warm-temperate waters of the N & S Atlantic Ocean but absent from the Mediterranean. Although it is a

Photo: © Richard Lord www.sealordphotography.net



highly-migratory species, it appears to be nowhere common and there are only 4 known records from Northern European waters: the first, from Valentia Island, Co Kerry (May, 1914); the second from Sandvoe, Shetland (October 1961); the third from SW Biscay (March, 1969) and the fourth from NW Biscay (June, 1977). Very little is known about its biology.

Rough Pomfret (*Taractes asper*)

The Rough Pomfret is considered to be a relatively uncommon oceanic bramid which appears to be distributed world-wide in the middle layers of warm and temperate waters. Larvae and young forms have been found in tropical and sub-tropical waters.



Photo: © Declan Quigley

In the NE Atlantic, the species has been found, albeit rarely, from Madeira (both young and adults) northwards (adults only) to N Norway. A total of 27 specimens have been recorded from Northern European waters to date: France, 6; Ireland, 7 (all from

western offshore waters); Faroe Islands, 1; Norway, 10 and Iceland, 3. In Iberian waters, the species is caught occasionally on lines set for Ray's Bream at depths of about 80m, whereas in Northern European waters, specimens have been taken from both inshore (<200m depth) and offshore waters, from near the surface (<5m) down to meso-pelagic and benthic depths of 500–600m. Some recent Irish specimens were taken as a by-catch in mid-water pelagic trawls targeting Blue Whiting (*Micromesistius poutassou*) in offshore waters. However, very little is known about its biology.

Silver Pomfret or Atlantic Fanfish (*Pterycombus brama*)

The Silver Pomfret is an oceanic pelagic species of Bramid which appears to be confined to both sides of the N Atlantic Ocean but absent from the Mediterranean. In the NE Atlantic, the species



Photo: © Declan MacGabhann

extends from N Norway southwards to the Gulf of Guinea, while in the W Atlantic it extends from Newfoundland southwards to the Caribbean and Gulf of Mexico.

Spawning apparently takes place year round near the edge of the continental shelf off E Florida, but young are most abundant in the Gulf Stream during February. Although juveniles have also been found off the coast of Guinea (NE Atlantic), all of the specimens found in Northern European waters have been immature adults: France, 2, UK, 1; Ireland, 19; Scotland, 3; Faroe Islands, 1; Iceland, 5

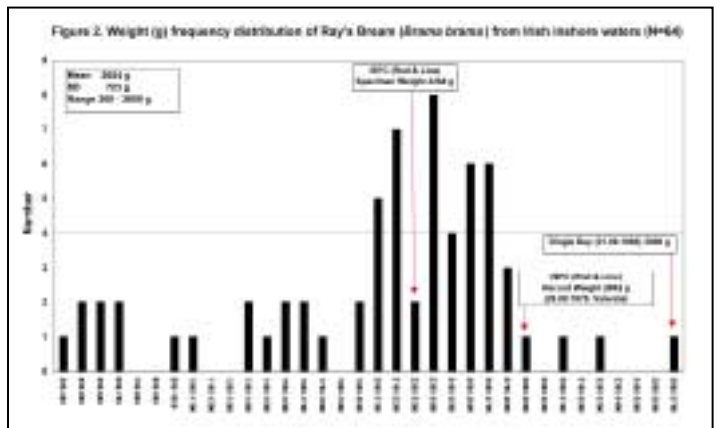
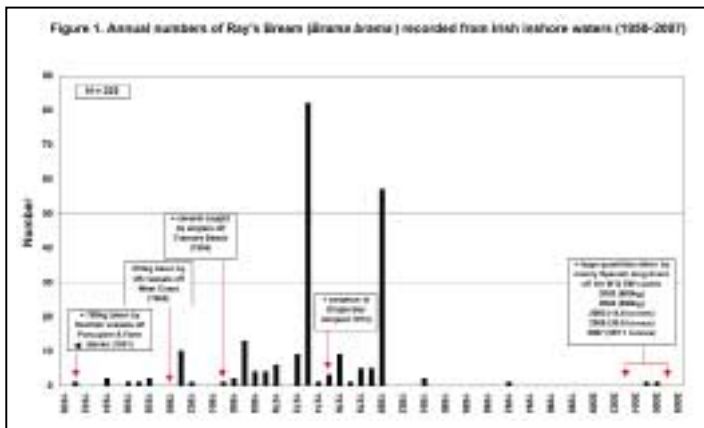
and Norway, 35. It is not known whether or not the latter adults are derived from juveniles carried across the Atlantic in the Gulf Stream & North Atlantic Drift or from stocks in the southern NE Atlantic (e.g. Guinea).

Although the species is occasionally caught by line fishermen off Spain and Portugal at depths of around 128m, most of the specimens recently captured for the first time in Irish waters were taken by mid-water pelagic trawlers targeting Blue Whiting at depths of 500–600m. However, the majority of the specimens recorded from Norwegian waters were found stranded, possibly due to the disorientating effects of decreasing water temperatures.

Conclusions

Until recently, relatively little was known about the biology, distribution and abundance of Bramids in Irish waters. However, in recent years there has been a significant increase in the quantity of Ray's Bream landed by mainly Spanish long-liners. Furthermore, due to increasing quota restrictions on Mackerel during the same period, many large Irish pelagic trawlers have started to specifically target Blue Whiting for human consumption rather than the traditional production of fish meal. This scenario has provided scientists with a valuable opportunity to examine the by-catch associated with this meso-pelagic fish, including Bramids (and other species) previously considered to be rare in Irish waters.

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Food for Thought



A recent survey by WRAP (Waste and Resources Action Programme), in the UK, found that overall around 6.7 million tonnes of food is waste by householders each year.

EACH year in the UK people throw away about one third of all the food they buy and at least half of this is food that could have been eaten. WRAP (Waste and Resources Action Programme) has committed itself to working with retailers, consumers, local authorities, community groups and stakeholders and partners to reduce consumer food waste.

Overall around 6.7 million tonnes of food waste is produced by householders – that is about a fifth of the UK domestic waste. Most of this waste could have been eaten. This wastes good food and adversely impacts on the environment. In the UK, the vast majority of food waste ends up in landfills. As food rots in landfill it can produce methane, one of the most potent greenhouse gases and a significant contributor to cli-

mate change. When food is thrown away people waste all the carbon generated as it was produced, processed, transported and stored. This is particularly important given that the whole food supply chain accounts for around 20% of the UK's greenhouse gas emissions. The carbon savings would be equivalent to taking an estimated 1 in every 5 cars off the road if we avoided throwing away all the food that we could have eaten.

The public is much more sensitive to packaging waste than food waste, with almost three-quarters agreeing that 'discarded food packaging is a greater environmental issue than food thrown away'.

Apart from damage to the environment, throwing away food that could have been eaten is also a considerable waste of money. Research has found evidence of a lack of

awareness and understanding of the environmental implications of food waste. The public does not appear to have made the connection between the food thrown away and the environment.

There is a need to ensure people are more aware of the cost to the environment and the contribution that food waste in landfill makes to the UK's greenhouse gas production. As it is, many people believe that food waste doesn't have any environmental impact at all, as it is 'natural' and 'biodegradable'.

From the same research one in seven (14%) of the people surveyed say they are making a 'a great deal' of effort towards taking personal actions to address climate change and almost a third (32%) claim to be making 'quite a lot' of effort. So if, as is hoped, the environmental messages on food waste come clear and are taken on board, there seems to be a ready audience who

are willing to listen and act.

Research underlines the importance of food management even before leaving home to do the shopping. More thoughtful pre-shop preparation, including menu planning, checking of what ingredients are in stock and compiling – and sticking to – a shopping list are all routes leading towards less food being wasted. This backs up other research that found a lack of planning makes home cooks wasteful. But only about two-thirds make a shopping list most of the time, and almost everyone surveyed – with the notable exception of older consumers – confessed to overshopping.

An Ipsos MORI study for WRAP shows a clear divide between those who plan before going shopping who make a list, and those who make up their minds in the store. Even some who write lists say they use them more as reminders for key items, rather than a definitive plan. Indeed, less than half (48%)



The survey identified more than 30 reasons for food waste in the home.

who do write a list (or make a mental list) stick to it most of the time and only a quarter are never or rarely tempted to stray from the list and buy unplanned items. The figure is higher for those with children, 44% of shoppers with children stray from the list at least

sometimes. Again, those who are older are much more likely to make lists and waste less.

For further information and excellent tips on reducing food waste visit:
www.lovefoodhatewaste.com

Why Do We Waste Food?

The simple answer is we buy more than we need and we throw away food that is still perfectly edible.

The underlying reasons are diverse: from a change of mind to a change of plan; from an unwillingness to eat leftovers to a lack of knowledge of how to use them; from too little storage space to confusion over whether products can be frozen. This is a complex issue, with a major survey by Brook Lyndhurst sought to address. The study identified more than 30 reasons for food waste in the home including:

- Buying too much – particularly being tempted by special offers e.g. 'buy one, get one free';
- Buying more perishable food – often as the result of trying to eat more healthily;
- Poor storage management – not eating food in date order (choosing food on impulse, often driven by 'spontaneous' and 'top up' shopping);
- Ad hoc, rather than methodical, 'spring cleaning' of stored products;
- High sensitivity to food hygiene – 1 in 5 say they won't take a chance with food close to its 'best before' date, even if it looks fine;
- Preparing too much food in general;
- Not liking the food prepared – 22% of families with children stated that not liking a meal was a cause of food waste; and
- Lifestyle factors – not having the time to plan meals, or having fluid work and social patterns – particularly true of young professionals.



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Produced by Sherkin Island Marine Station

A Beginner's Guide to Ireland's Wild Flowers



Written by John Akeroyd
Photography by Robbie Murphy
Published by Sherkin Island Marine Station
208pp ISBN-13: 978-1-870492-23-2
Size 103mm wide x 140mm high

Clockwise from far left: Meadow Vetchling; Greater Stitchwort; Common Poppy; White Water Lily; Bluebells in woodland.



Photos: © Robbie Murphy

WILD FLOWERS are everywhere. They brighten and add colour to waysides, fields, woods and sometimes even towns. They give particular pleasure when we know their names and can find out something about each one. For every wild flower has a story.

The success of our book "A Beginner's Guide to Ireland's Seashore", has prompted us at Sherkin Island Marine Station to produce another guide for beginners. This has given us the opportunity to promote the wild flowers of Ireland, which we feel deserve more recognition.

In "A Beginner's Guide to Ireland's Wild Flowers" we have included only a selection of the 830 or so Irish wild flowers. These are plants you are likely to see around your home or workplace, on a walk or on holiday. We hope this book will help you find and identify some of Ireland's more widespread or common wild flowers – and even some of the scarcer ones!

Available for €7.50 plus €1.00 p&p from:
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THE GUIDE INCLUDES:

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JOHN AKEROYD considers a remote cluster of islands in Roaringwater Bay

THAT well-worn phrase 'Carbery's Hundred Isles' welcomes tourists to West Cork. And for the visitor, especially the naturalist, the indented coasts, rocky islands and white strands are indeed a paradise. Some islands are easy enough to get to, such as Sherkin, Cape Clear and, in recent years, Heir or Inis Uí Drisceoil. Others, such as the smaller Carthys and Calfs (or Na Laonna) at the entrance to Roaringwater Bay, are more remote, unpopulated and seldom visited, with few of us lucky enough to see them. The greatest thrill of the work on the flora of the islands was the chance to land on deserted rocky or sandy strands that other botanists might never have explored.

The Calfs can be clearly viewed from high ground on Cape Clear: West Calf (65 acres, 22 m at its highest point), Middle Calf (78 acres, 11 m) and East Calf (75 acres, 19 m). They look sadly deserted now, with their roofless cottages and outbuildings, but farming communities survived here within living memory. It's easy to forget just how densely populated Western Ireland was before the mid-19th century, and that such small, low-lying, windswept offshore islands frequently supported farms. There was even a school on Middle Calf from 1835. But like so much of rural Ireland, the Calfs never fully recovered from the Great Famine. Potato blight struck the islands in 1846-7. In 1841 there were 19 families on East Calf, in 1851 just eight; in 1861 "one family", although rising to 16 in 1891. Alas, subsequent changes and improvements to



West Calf Island



Middle Calf Island



East Calf Island

The Calf Islands

farm life arrived too late: East Calf was abandoned in the 1920s, West Calf in the '30s and Middle Calf in 1940. Today East Calf has a holiday home, but otherwise the islands provide pasture for cattle from the mainland. Hares have replaced people.

Geologically the Calfs are formed from Devonian rocks of the Castlehaven Formation, purplish mudstones and yellowish sandstones that also outcrop on Heir and Turk Head to the north-east. The soil, derived from eroding rocks and glacial drift, is fertile enough for good cultivation. Politically and ecclesiastically, West and Middle Calf are part of Schull parish; East Calf belongs to Anghadam parish, which includes Heir and the adjacent mainland. East Calf also had different ownership, being for many years the property of the wealthy Townsend family of nearby Whitehall, who for a time cleared the islanders to make way for a summer cottage. In 1876 the O'Re-

gan family purchased East Calf; West and Middle Calf were sold to tenants in 1890.

Life was hard – in winter, Atlantic gales could maroon islanders for weeks – if relatively healthy and self-sufficient. Stone walls provided shelter, as the islands are treeless. The land yielded hay and tillage for potatoes, cereals, roots and cabbage, the sea provided seaweed and beach sand to fertilize potato ridges. Other food came from the eggs of a few hens, milk from a cow or two, and bacon from the pig, with shellfish and carrageen seaweed among seashore rocks for extra protein and minerals. But, as if high winds, salt-spray, poverty, isolation and recurring potato blight were not enough, grasping landlords forever demanded their dues. In 1886, after some islanders had failed to pay rents, a coastguard gunboat landed police to help bailiffs enforce evictions on West and Middle Calf.

The people are all gone but the islands remain an inspiration to botanists. Each of the Calfs has some blown sand, always good for plants, and there are shingle strands on East and Middle Calf – where the nationally rare Sea Kale (*Crambe maritima*) grows. Heathland on higher ground of East Calf, somewhat sheltered to the south-west by the other islands, is home to Spotted Rock-rose (*Tuberaria guttata*), known here since the 1930s but not rediscovered until 1992 by Karen Clarke, an American botanist from the Marine Station. This tiny yellow-flowered annual of bare rocky ground, growing in thin, winter-wet peaty soil, occurs in a few places in Roaringwater Bay and, like Sea Kale, is included in the Irish Red Data Book of threatened species. Another rarity is Bird's-foot Clover (*Trifolium ornithopodioides*), found here only in 2002. A small lough on East Calf has both a reed-bed and water plants that are scarce in the islands, including three pondweeds and three water-crowfoots.



Flower Photos © Robyn Murphy

Elecampane (*Inula helenium*)

Other Calf specialties include two medicinal plants persisting near ruins: Wormwood (*Artemisia vulgaris*) on Middle Calf, and the giant yellow daisy Elecampane (*Inula helenium*) on West Calf. Certainly the Calfs are an Irish national treasure!

Dr John Akeroyd, who has visited Roaringwater Bay since 1986, edited The Wild Plants of Sherkin, Cape Clear and adjacent islands of West Cork (1996). For further information on the Calfs and some other islands, he recommends Heir Island. Its history and people, by Eugene Daly (Heron Press, 2004).

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A True Pioneer

Looking at the life of Prof. Enrique Balech

By Matt Murphy

GOING through life I have always been impressed and influenced by people with humility, kindness and understanding. I have been fortunate in meeting many who fit into that mould. However, there are few that I can say have always been the ultimate master in the field they work. One such person was Professor Enrique Balech from Argentina – the world authority on certain phytoplankton.

In 1987, we organised a workshop at the Marine Station "The Problems of Toxic Dinoflagellate Blooms in Aquaculture" on the island. I invited 12 scientists from around the world who were involved in red tide research. Most were experts in their field. Amongst those was a 79-year-old Argentinean Professor who I was told by Prof. Barrie Dale of Oslo University, who helped organise the workshop that he was a world authority on dinoflagellates (an important group of plankton causing many red-tides). Because of his age, I insisted he stay in my home. Oh, what a wonderful decision on my part as he, like me, was an early riser. We had breakfast together around 6am each morning and he talked to me of his long life as a scientist.

As a student he had decided to study bats but he became enthusiastic about the microscope and this began his life-long love for phytoplankton. This was away back in 1934 in the Museum of National Science in Buenos Aires, Argentina. Freshwater phytoplankton was his first research but he soon moved on to marine research.

At the same time he taught in a high school for a livelihood. In 1941 he began studying marine phytoplankton, especially tintinnids and dinoflagellates.

He returned to teaching in a high school from 1947 to 1961 to earn a salary. All this time he continued with his phytoplankton work. In 1961 he was appointed to the Mar Del Plata Institute which was created for marine researchers by three universities. In 1962 he resigned and was immediately appointed by the



The career of Prof. Enrique Balech (second from left), a world authority on dinoflagellates, spanned nearly 70 years.

President to the National Council of Science as an investigator with full independence and a salary. He retired in 1981 as a principal investigator as he found himself becoming too much of a bureaucrat. As he said, he became an amateur scientist again! Listening to him talk-

ing I wondered was he ever anything but an amateur, given the difficulties he had in earning a salary.

I asked him had he a modern microscope? Smiling, he said: "I still use the same one for over 50 years, but I do need a good typewriter; the one I have is not very good."



Enrique Balech in 2002.

He left Sherkin with a new electric one, with the compliments of some of us at the workshop. He said that when looking at phytoplankton he drew much as drawings gave him time to look at detail; with the photographs one misses a lot. He made his own camera lucida (an optical device used to make accurate drawings from images seen in the microscope) from string, a mirror, a can and pieces of timber. As he spoke I started to think of the other scientists at the workshop who were from major institutes world-wide, and who worked on microscopes costing thousands and thousands of pounds. Yet despite their sophisticated equipment, when we all sat around the table for dinner in the evenings and discussed marine matters, all present let the final word to the man they recognised as the true master.

In our hours of talking this great man never once bemoaned the fact that he had so little of the material things in life. One thing is sure, he had an abundance of contentment and happiness. As he talked I mentally compared him with some of those scientists in his field world-wide who were so convinced of their own greatness and so full of arrogance.

Enrique being the humble man that he was did not tell

me fully of his achievements as a scientist. I found out later that he worked on plankton from many areas of the world. In his Antarctic work based on samples from 12 cruises he discovered 60% of the species accepted today from that region. His studies from the Gulf of Maine and the Caribbean increased the records from 76 to 262 species. From the south-western Atlantic he produced the most important monographic work for the Southern Hemisphere and one of the greatest for any oceanic region, in which 375 species are described, most not mentioned before in the region.

More of Enrique's studies were on plankton from the Mediterranean, the Arctic, Baltic, North Java and Philippines Seas.

In 1980 he was the first to recognise that two men in Argentina who had eaten shellfish had died from the paralyzing shellfish poison (PSP), produced by dinoflagellates and transmitted by mussels. He guided the investigations and from then on he devoted his work to the study of the dinoflagellates which produced the toxins, included in the genus *Alexandrium*. He gathered material from around the world, such as Thailand, Borneo, Sumatra, Kamchatka, New Zealand, Tasmania, Turkey and many other places. Of course as he was the world authority on this work, numerous specialists from South America, Mexico, USA, Canada, Europe and Australia were guided by him.

Another side to Enrique's studies was oceanography. In 1957, he had undertaken oceanographic work on the California coast whilst at the famous Scripps Institute and Hopkins Marine Station. In 1964 he spent time at the Department of Oceanography of Texas University on further oceanographic work.

In his oceanic studies of the seas off Argentina he was able to show that those seas were poor for fish production - much less than the seas off Peru and Africa. He felt that Argentina was at risk of overfishing and that this called for attention. He was a prophet before his time. The above is but the tip of the iceberg of the oceanic studies Enrique carried out.

My great privilege was to publish his monograph on the genus *Alexandrium*. Whilst on Sherkin he mentioned he had finished this work but no one had offered to publish it. I immediately said I would, not of course telling him I had no idea where the money would come from. The manuscript had to be translated into Eng-

lish so I had time to put together the funding. At the back of my mind I hoped the sales would bring back the cost of printing. With such a specialised book, it took a while for the sales to equal the costs but I was so happy I did what I did.

Enrique died on 27th August 2007 at the age of 95. He still had students studying under him almost to the end. Incredible to think he had a career that spanned nearly 70 years. He wrote a number of books and published over 130 scientific papers but his greatest achievement was as a teacher – as Dr Karen Steidinger stated in a tribute to him in the monograph we printed for him: "He is a skilled scientist who willingly shares his knowledge and time to explain how to look for and recognise the smallest detail. He is careful and meticulous in his approach and technique, and most importantly he is a teacher. He recognises that we will always be students and need to continually learn."

Red tide research world-wide has many researchers. No one has replaced this great genius. Sadly a few believe they can but they are more interested in their image and spend little time over the microscope. What is so sad is that some of these seem to be able to command much funding, yet no one questions the results. The worrying thing is that there are some hardworking scientists in institutions world-wide who want to try and follow in the footsteps of Enrique Balech but in the modern world so many funding agencies are taken in by image, and worthy scientists don't receive funding. To them I say, remember Enrique Balech who carried out his work of almost 70 years on not very modern microscopes, which in today's institutes would be museum pieces. To the funding agencies I say that identifying phytoplankton may not have a prestigious image within science, but the fanciest of molecular investigation of phytoplankton is of very limited use unless the species is correctly identified (otherwise the investigators literally don't know what they are talking about!).

He never waved his own flag but in 50 years time his work will still be the reference for scientists needing to identify certain phytoplankton species. The likes of Enrique we will not see again.

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

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It is similar to the Free Trade website initiated by Dublinwaste.ie which has received a great deal of positive publicity.

The aim is to keep waste materials in use so that items can be diverted from landfill. This initiative is in support of the Local Authority Waste Management Strategy – Waste Management Plan 2004 – 2009. Re-use is a step up the waste hierarchy from recycling and will help in decreasing the amount of waste going to landfill.

The initiative works on the premise that many items go to landfill that could, in fact, be

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Rural Settlement in Medieval Ireland



Although Ireland is one of the smallest countries in Europe, examples of medieval archaeology are widely spread throughout the country, from crannógs (which were first constructed in the Neolithic period), to the great defensive castles of the Normans, founded in the late twelfth and thirteen centuries. Throughout Ireland, people live side-by-side by these archaeological gems, which have survived in various states of repair. How often do you climb a mound not realising that this was once a great motte castle; or play among the ruins of what was a thriving religious community; underground passages are great for exploring but once provided space not only storage space, but somewhere for people to hide when under attack. It is important for us to preserve our heritage – it is the heritage of an area that makes it unique and gives it a character all of its own. The first step in protecting our heritage is raising our awareness, understanding and appreciation. This can be achieved by arranging talks or producing leaflets to promote our local heritage. Farmers and those who own land on which there is a protected site or monument should be aware of the level of protection these sites and structures have under national legislation. Schools and third-level institutions could develop local heritage websites and establish links with local authorities to identify these protected structures. This leaflet will identify some of these monuments and structures, many of which can be found in YOUR area. They are part of our heritage and thus, part of us, and should be both admired and protected by us.

Ring-Forts

The ring-fort is a general term applied to circular enclosures, surrounded by one, two or even three banks or earth and stone, with or without ditches. The ditches were up to two metres deep and the banks were made from the earth taken from the ditches – ring-forts had a strong defensive capacity. These enclosures contained houses, of different types, possible outbuildings and even sometimes an underground refuge or Souterrain, which we will look at in more detail below. Ring-forts vary in size from around 15m in diameter to as large as 80m and their function varied. Although in the main they functioned as defended farmsteads of one family grouping, archaeological evidence has shown they were also centres of industrial activity, such as iron working as well as spinning and weaving, with smaller examples serving as pens to protect cattle in pre-Norman Irish society. Ring-forts are numerous throughout Ireland, with 1,300 in County Down alone. There are several examples of ring-forts still being occupied

through-out the middle ages and beyond – in more eastern locations, some ring-forts were re-utilised by the incoming Anglo-Normans, for example in Rathmullen in County Down, which was continuously occupied from the 8th to the 12th century, when it was converted into a motte.

Crannógs

Another form of rural settlement was the crannóg: this was an artificial island constructed by a natural shoal, by timber piling and laying down of brush wood, often with the addition of clay and frequently with plan-flooding – sometimes the name is applied by extension to lakeside occupation sites. Its origins are to be found in the Neolithic period – some of the most important excavated examples originate in the later Bronze Age and occupation of this type of settlement continued until at least the 17th century, where they seem to have been used as defended strongholds in the wars of that period – however, most arch evidence tends to indicate that few crannógs were used in the Anglo-Norman period.

Hill-Forts

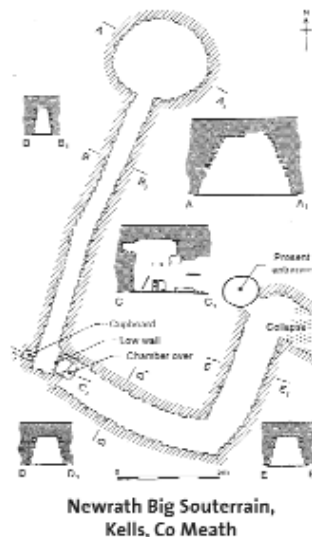
Unlike some of the smaller ringforts, hill-forts were principally built as defensive sites and generally functioned as tribal, rather than family centres – they were a focus for settlement. There are only about 60 probable hillforts in Ireland and excavations have shown that most of them were long abandoned before the start of the eleventh century – because they were so few, it is obvious that they were not an important form of settlement in the immediate pre-Norman period.

Promontory Forts

Promontory forts (the name refers to the point of land that juts into the sea) – were another form of settlement – their most recognisable features were their earth or stone banks and their fosse that cut off access to both the coast and inland.

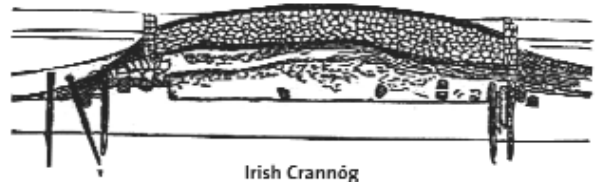
Souterrains

Another feature associated with the pre-Norman rural landscape were the Souterrain and the horizontal mill. The Souterrain refers to an 'artificially built cave' and it is basically an underground passage often found in association with ringforts or promontory forts. Their function was two-fold: firstly for storage and secondly as safe hideaways for the inhabitants of the nearby surface settlements. Excavations have produced evidence of traps or some form of obstruction to confuse the intruder and examples of this can be found at Tyrella in Co Down and Donaghmore in Co Louth.



Newrath Big Souterrain, Kells, Co Meath

Illustration © ENFO



Irish Crannóg

Ecclesiastical Settlement

In essence, many of the monasteries were identical with larger ring-forts, with buildings and huts of wattle and daub (which is a mixture of manure, straw and mud) were crowded within an enclosing wall of earth and stone. However, not all of ecclesiastical settlements comprised small communities in isolated areas where they could easily commune with God. One of the most successful of them was Glendalough, where a large monastery existed. The principal monastic remains consist of a round tower, the ruined cathedral and several stone churches. These ecclesiastical settlements took on urban functions as the centuries progressed and large number of people, both lay and ordained, were attracted both to their thriving religious centres and to the increasing economic activities surrounding them.

Everyday Life within these Structures

For everyone in the early period of medieval Ireland, be they kings, monks or the poorest of farmers, their homes were comparatively cheerless – smoke from the fire on a central hearth could only escape through the roof or through the door – this would have led not only to horrible eye problems, like conjunctivitis but also meant that fire was an ever-present threat for both secular and religious settlements. Once a fire started it spread rapidly – Glendalough was destroyed by fire nine times between 775 and 1071. Within all dwellings in this period, bones and kitchen refuse were not removed but covered over with successive layers of clay – at night, the only light came from rush candles – houses were small and in these conditions, even well-to-do families slept in dormitory fashion on beds of straw and hides: privacy was limited and people lived in constant contact with the rest of the family and with retainers. This was the scene in medieval Ireland in the pre-Norman period – it comprises an image of indigenous settlement, dominated by the dispersed defended farmstead, the ringfort, but also comprising various other features including souterrains, monasteries and crannógs. The rural landscape would soon change under the colonists and the first features we will examine comes the heading of earth and timber castles.

Features on the Landscape after the arrival of the Normans Castles

The great majority of Norman castles built in the first few decades after the invasion were of earth and timber. These were favoured materials because of the speed with which castles could be erected; early castles were of two principal types: mottes and ringworks.

Ring-Work Castles

In 1963 de Bollard defined a ringwork as 'a class of small circular embanked enclosure of apparently medieval date'. Ringwork castles are a real enigma in Ireland – the surface morphology of ringworks is virtually indistinguishable from that of the indigenous ringforts – there are about forty-five examples that we know of. We can't compare this problem in Britain as ring-

forts are an Irish phenomenon – What we can say is that there are far less ringwork castles in Ireland in comparison with Britain

Motte and Bailey Castles

A feature that we know much more about is the motte and bailey castle of the Anglo-Normans. A motte can best be described as a mound of earth, usually artificially constructed, with a fosse (ditch) around its base. The top of the motte was surrounded with a wooden palisade with a platform on the inner side: inside this was a wooden tower, used as a watchtower, storage of weapons, a firing-post and a refuge. At its base the motte was surrounded by a wet or drive ditch, which served both for defensive purposes and as a quarry provided material for the motte. Beyond the ditch was a lower courtyard, the bailey, which was often roughly oval or kidney shaped and was defended by a ditch and an internal bank supporting a timber palisade.



Stone Castles

Soon after the Anglo-Normans consolidated their military position along the eastern seaboard of Ireland at the end of the 12th century, they began to erect permanent stone edifices at important settlement centres. These stone castles would have played a part in the subinfeudation of the areas in which they were built. Defeat of local opposition and the securing of areas by the construction of fortified castles went hand-in-hand with the process of subinfeudation which rewarded supporters and greatly increased the chances that the settlement would be permanent – the use of the world castellaria to define the extent of the area around a castle suggests a type of subinfeudation designed primarily to provide a garrison for the defense of a castle. These imposing structures can be found dominating the landscape all over Ireland: Trim in County Meath is the largest Norman castle built in this country; Carrickfergus in County Antrim is the best preserved early medieval castles in Ireland; Roscommon Castle has one of the most magnificent examples of a powerful gatehouse. These castles played a very important role within our heritage: they are not simply testaments to the architectural genius of the Norman invaders – they also played an important role in the development of settlements within their immediate area.

From the ENFO leaflet "Rural Settlement in Medieval Ireland". ENFO – The Environmental Information Service, 17 St Andrew Street, Dublin 2, Ireland. Tel: (01) 8883911 (01) 8883933 Fax: (01) 888 3946 e-mail: info@enfo.ie web site: <http://www.enfo.ie>.



Photos © Jim Wilson

Jim Wilson spent six weeks on board the cruise ship *Marco Polo*, showing people birds and other wildlife in one of the most amazing places on earth.

By Jim Wilson

ON the 13th December 2007 I joined the cruise ship *Marco Polo* at Buenos Aires in Argentina. I was starting a job as ornithologist with the expedition team coordinating the Antarctic season on the ship. I could hardly believe what was happening. I was being employed to show people birds and other wildlife in one of the most amazing places on earth. Quite a number of cruise ships spend our winter in the southern hemisphere and an increasing number take tourists to Antarctica. The Antarctic peninsula, south of the southern



Chinstrap Penguins heading to sea to hunt for Krill for their hungry chicks.

tip of south America, is the main destination for these cruise liners, mainly because it is the shortest distance to Antarctica from the nearest port and also because the climate there in the

Cruising Antarctica

southern summer is relatively good for cruising.

Tour operators visiting Antarctica are governed by the rules of the International Association of Antarctic Tour Operators (IAATO). Part of these rules state that no ship carrying over 500 passengers can carry out landings on Antarctica and any ship carrying out landings can only have a maximum of 100 passengers ashore at any one time. As our ship was at the upper limit of these rules it meant that landing operations had to be run with military precision to ensure everyone got ashore safely and that we adhered to the rules.

I met with the rest of the team at Buenos Aires. The team comprised our expedition leader Allan Morgan who coordinated all the Antarctic activities on the ship and liaised with the other ships visiting Antarctica to ensure there is no trouble with our landing schedule. Allan was assisted by our assistant expedition leader Rich Kirschner. Both have vast experience in the Antarctic. Dick Taylor, with 25 years experience on Ice Breakers coordinated the landing of passengers on Antarctica. Other members of the team included the Zodiac driver team leader and a group of experts who spent the season giving lectures to the passengers on Antarctica, assisting in the landing operations and interpreting all aspects of the ecology of Antarctica for the passengers. Our team included a geologist, marine biologist, historian, artist, ornithologist, marine mammalogist, a Japanese translator and an Antarctic management expert.

The ship was booked out for the season, so once on board our first cruise took us down the coast of Argentina where we encountered our first albatrosses and paid a visit to the Valdes Peninsula where Charles Darwin spent some time while working on his theory of evolution. The peninsula is the location of the famous scenes of Killer Whales beaching themselves to grab seal pups. It was the moulting season so there were no Killer Whales but there was over a hundred female Elephant Seals hauled out to moult looking like a long row of giant sausages on a pan.

After that memorable, but all too brief stop we cruised south to the Falkland Islands and spent another day in and around Port Stanley. I saw Magellanic Penguins, amazing Long-tailed Meadowlarks and Falkland Streamer Ducks, a species found nowhere else on earth. Then it was on to Westpoint Island on the west side of the Falkland Islands, home to a breeding colony of over 14,000 Black-browed Albatrosses and 5,000 Rockhopper Penguins. Watching the small Rockhopper Penguins climb over 100 meters and walking over half a mile from the sea to their chicks in the colony was fascinating.

We then headed for the Antarctic Peninsula. On the way we crossed the Antarctic Convergence, a border between the relatively warm waters of the temperate South Atlantic Ocean and the much colder water of the Antarctic Ocean. Our arrival in Antarctic waters was always greeted by the appearance of Cape Petrels that would follow the ship and circle it, offering exciting photo opportunities for the passengers. Our first close view of land in the Antarctic Peninsula was at Deception Island, so

called because it looked like a circular island until it was discovered to be a caldera, a sunken volcano big enough for our ship to enter. It is in the Bransfield Strait, named after a Cork man who was a very famous 19th century Antarctic explorer, almost unknown to people in Ireland. Passengers here got their first real look at Antarctic penguins. There are nearly 100,000 Chinstrap Penguins nesting on the island. We then cruised south on the Gerlache Strait, along the Antarctic Peninsula surrounded by jaw dropping scenery. Mountains rising over 1000 meters almost vertically from the sea, massive glaciers slipping slowly into the sea dropping icebergs on the way. One of the hardest things for me to take in was the scale of the place, with only the occasional ship to remind me just how vast the place really is. This area provided us with a memorable show of icebergs of all shapes and sizes and as many as 60 Humpback Whales in a day, some passing within meters of the ship. We then spent the next few days landing at a number of penguin colonies where everyone got close views of the nesting penguins and the ever present Leopard Seals.

Following our last landing at Half Moon Island in the South Shetland Islands group we headed out into Drake Passage passing an armada of giant icebergs, some of which were bigger than the ship and one which we conservatively estimated was over a kilometre long. On the Drake Passage we had amazing views of albatrosses, especially the Wandering Albatross with its outsized wings longer than any other flying bird. They would follow the ship and occasionally glide over the deck like small aeroplanes watching by stunned and amazed passengers.

Ushuaia in Tierra del Fuego is the nearest port to Antarctica and the base for most cruise ships going there. It is a rapidly expanding town set on the shore of the beautiful Beagle Channel under magnificent mountains. I was lucky enough to visit the national park, just outside the town and could not believe my lucky in capturing on film the ridiculously beautiful Magellanic Woodpecker digging out grubs from the many dead trees in the vast forest. Following a day in Ushuaia it was back to the ship, a new batch of passengers and the beginning of another four unbelievable cruises to the Antarctic Peninsula.

Antarctica is a unique place and the last unspoilt continent on earth. It is very vulnerable and while tourism is and will have an increasing impact on it its impact will be nothing compared to the eventual exploitation of its resources. As I write bigger and "better" ships are being designed and launched to explore the white continent for oil, gas and minerals. The continent's remoteness and hostile climate has deterred us from invading it but as we squander the resources we have at present it is only a matter of time before our way of life will provide us with reason to go there. Whether the amazing wildlife that lives there can co-exist with our need to exploit Antarctica resources remains to be seen. I can only hope it will.

Jim Wilson - www.irishwildlife.net

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Ushuaia, Tierra del Fuego, Argentina – the Antarctic cruise centre of South America.



A skull-like 80 metre high iceberg off the Antarctic Peninsula.



A Cape or Pintado (Painted) Petrel following the Marco Polo.

Cruising Antarctica

Photography by Jim Wilson
www.irishwildlife.net



Female and young Elephant Seals hauled out on the Valdes Peninsula, Argentina.



The Falkland Flightless Steamer Duck, found nowhere else in the world.



A Rockhopper Penguin on the Falkland Islands waits patiently for its mate to return from sea.



A Wandering Albatross, the star of any Drake Passage crossing.



A stunning Magellanic Woodpecker, as big as a crow, hunts for grubs in a Southern Beech forest near Ushuaia.



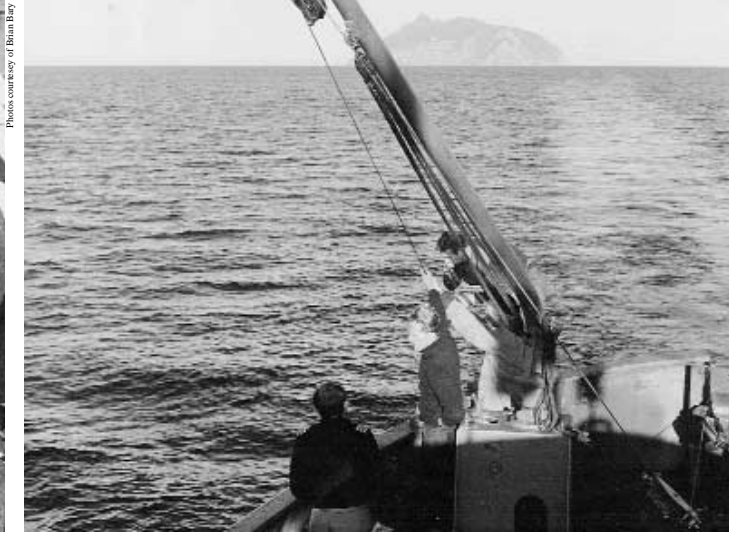
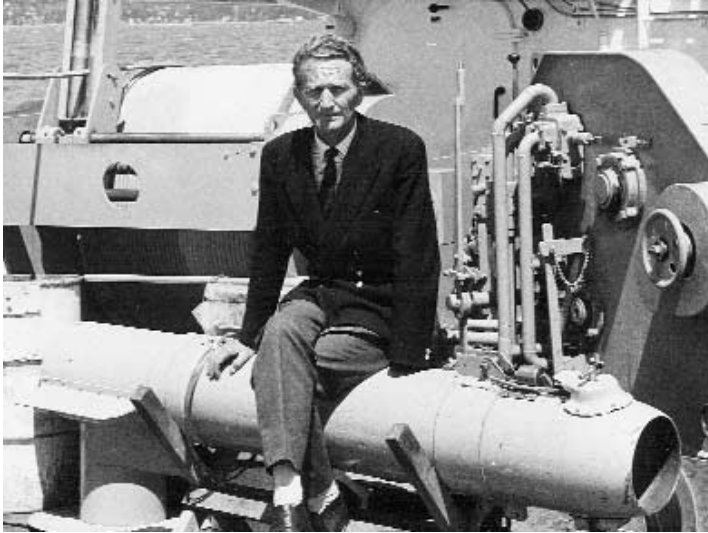
Up to 60 Humpback Whales seen in a day from the Marco Polo while cruising the Antarctic Peninsula.



Young Gentoo penguins begging for food.



A calm sunny day on the Gerlache Strait along the Antarctic Peninsula.



Bary and his plankton-catcher (an early prototype), on board the R.V. Whitethroat, Canada, 1965.

Brian Bary (centre) on a trip to Canada, towing a large plankton net.

A Slow Approach

MATT MURPHY first met **Brian McK Bary** (now retired) in the early 1980s when Brian was Professor of Oceanography at University College Galway. It was to be the beginning of a wonderful friendship. Brian encouraged Matt to continue the plankton monitoring work being carried out by Sherkin Island Marine Station, work which is now in its 31st year. Matt recently spoke with Brian about his life's work.

BRIAN BARY first developed a close interest in matters marine in New Zealand (N.Z.). As a boy, he holidayed often in the Sounds – sea-filled, old river valleys – at northern South Island. Small boats, fishing, sea birds – and sea water – became ingrained in his make-up! However, it took a war, the Korean conflict, to provide the opportunity to promote this early relationship into a full-grown career.

That war encouraged the N.Z. authorities to establish the “Defence Scientific Corps” into which “promising” university science students were competitively recruited. A new recruit

underwent a familiarising course in the force to which he was suited, followed by research in topics relevant to the force's perceived interests or requirements. Bary was accepted into the Corps and his marine interests ensured his assignment to the Royal N.Z. Navy.

After a period at shore-side establishments, he went to sea for 12 months in the hydrographic surveying frigate, H.M.N.Z.S. “Lachlan”. Lachlan's cruises covered mainly east coast areas, primarily of South Island and Stewart Island. During these he sampled, as regularly as feasible, for sea water (temperature, salinity, phosphate), net-

plankton, bottom sediments and observed sea birds, whales, dolphins and weather. Plankton samples were sorted, specimens identified and counted, and water samples analysed, ashore. Data obtained were “worked up” and provided material for a Ph.D. (University of N.Z.).

At this juncture (1952) he was seconded to the National Institute of Oceanography, U.K., to research a topic of defence potential, viz., the effects of pulsed electric fields (d.c.) in sea water on an organism (fish, either mullet or bass). This was a co-operative effort with physics staff at the Institute and R.N. Physiological Lab., Alverstoke, that provided

lab. Space, material, equipment and a full-time assistant.

After three years and the conclusion of the research, Brian returned to N.Z., was seconded to the N.Z. Oceanographic Institute and proceeded to revise and add further data to those of his Ph.D. thesis. Several papers on zooplankton systematics, distribution and ecology resulted.

On completing his naval Commission, an opportunity arose to work with the Hardy Plankton recorder team at the Leith (Edinburgh) lab. Of the Scottish Marine Biological Association; this was accepted. However, the long-established procedures were personally restrictive and when an offer to “head up” a unit of “biological oceanography” at the Institute of Oceanography, Univ. of British Columbia, arose, he

was accepted. It seemed to provide an opportunity in which his experience to date could be used to advantage. And so it proved.

Eleven years that followed included supervising student research, training and teaching. Additionally, he was able to pursue his own research which included underwater scattering of echo-sounder pulses (at 11–200 KHz) by zooplanktonic organisms and/or fish; occurrences of organisms relative to “water bodies” (defined by T and S properties), for eastern North Atlantic waters (Recorder data) and Canadian fjords; design and evaluation of a high-speed plankton sampler and its electronic sensors and control (along with other, orthodox samplers); a world survey of the copepod genus *Calanus*. Obtaining funding, in addition to support from the

Institute, was demanding, often successful, and usually generous.

The biological oceanographic unit was by now well established and Brian (now a Prof.) believed a change of scene was desirable. It was timely, therefore, that the opportunity to inaugurate the Dept. of Oceanography, at Univ. College, Galway, was proposed. Some marine-oriented studies were already being followed at the College and their presence suggested a sympathetic background to the new department. Here was a situation with potential – something to dream about!

Basically there appeared to be two lines of approach for the new department. First could have been a more traditional one wherein individuals followed their own perceived ideas in research and teaching. Or second, it could embrace a



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programme of research and teaching (and training) in which the "traditional" was interleaved with a broader field, with the aim to attack more directly marine problems besetting Ireland – in effect a more "applied" approach.

The second attack became departmental philosophy. The department would formulate a comprehensive "theme" and engender research topics appropriate to the theme in the belief that that this had the potential to lay early foundations for solving problems, not only of scientific merit, but that had practical applications. Integrating observational data from physics, chemistry and biology of the sea was intended to recognise interrelationships amongst the three. For example – would a change in either or both physical or chemical properties affect planktonic species' distributions and abundance or population structure? Such methodology and information would also have immediate application to fish and fisheries.

To adequately process the thematic approach required staff in physical and chemical oceanography and eventually two appointments were made, both in physical aspects. Unfortunately, personal research efforts largely precluded sustained input to the "thematic", although the second appointee confirmed a clockwise circulation about Ireland – information relevant to plankton distributions. Thus, the broadly integrated approach could not be progressed sufficiently to properly attack that wide range of problems evident in Irish marine matters.

Even so, among student research projects, occurrences of species of each of chaetognaths, ctenophores and copepods were related to effects of oceanic intrusions

into and coastal waters out of Galway Bay; current patterns in the Bay; phytoplankton species and distributions in the Bay and along the coast to Shannon estuary; and the distribution and changes therein of species relative to fresh (river) water and oceanic water in the estuary. Rough pre-sorting of samples by "casual" students aided several of the samples by Department's lab. and sea-

Director of the Geological Survey, the Department of Oceanography and promoted by the Council for Scientific and Industrial Research. During its re-fit, the Department specified suitable deck equipment and its layout, and the design of labs. and accommodation. The conversion cost was met by Government, through C.S.I.R., a welcome advance in attitude towards marine science. The ship

only a small proportion of this assessed potential was realised. Universities and technical colleges absorbed a fraction more. Commendable as these efforts are, why did upwards of 30 years have to elapse before a major attack on marine problems was developed. This had to await the advent of the government-funded Marine Institute and its ships. These years were largely wasted whilst data from oceanic and

stemmed, it seems, from a government dominated by an agricultural agenda in research and development. Little interest or support extended to matters marine. Even fisheries investigations struggled, with limited success, to defeat this attitude (if not hostility) to its advancement by adequately supported R. and D. At least now, advances, belatedly, are being made.

The Department of

this was limited to what the College could afford. It included an annual stipend, support for two (on occasion three) technicians and secretary; conversion costs of out-buildings and several rooms of the mostly unoccupied old Grammar School to labs., workshops, library, office and storage space (it was this conversion that enabled the Department to exist); provision of a pick-up for transporting equipment; and a most necessary person – a caretaker.

Additional financial support was obtained via periodic consultant projects, e.g., two topographic surveys (Fenit harbour and inner Galway Bay); several site studies for prospective fish farms; an electronic wave recording buoy in Bantry Bay; a direction-finding system for current studies, and others. Such projects were a drain on the limited manpower and were time consuming. Conversely, they enabled the department to obtain essential equipment and gave scope for additional training at sea for all personnel.

Initially, a sum of IR£50,000 was envisaged to found the Department and develop research facilities, (labs. and equipment for sea- and shore-activities, ship-time), but this did not eventuate. In fact, the first grant was for IR£5,000 pounds – plus a committee to advise on its disbursement! Contrast that with the €50m spent initially on the Marine Institute! An annual one-tenth of one percent of that outlay, i.e., €50,000/annum, would have provided the basis to make worthwhile inroads into what in Ireland, was an almost totally neglected and unknown area of marine understanding.

Where-with the potential of the original dream?



Lieut. B. McK. Bary, R.N.Z.N. (right) when a member of the Defence Scientific Corps, Wellington, New Zealand.



The early years: the first public display from the then Department of Oceanography, University College Galway.

going activities would have halted without the dedicated input by technical staff (particularly Tom Furey, John Coyne and Miriam Pybus).

Other, temporary assistants were hired as stretched finances permitted in attempts to reduce mechanical, technical and analytical backlogs. Much later, a dedicated analysis unit, funded by the College, greatly reduced chemical analyses in the Department.

The advent of the R.V. "Lough Beltra" was a milestone for marine sciences in Ireland, and especially the Department of Oceanography. Acquisition of this Dutch-built, 70-ft trawler was strongly advocated by the

markedly increased the Department's ability for field work and training of all personnel. Although she was "lively", fairly reliable sampling was feasible; it extended between Galway Bay and Shannon Estuary and occasionally further afield, e.g., to Smerwick Harbour and Bantry Bay.

Clearly, progress was made by the Department from its bare beginning. But – what additional progress could have been accomplished? A comprehensive assessment for developing marine research requirements in Ireland was proposed by Brian prior to his appointment. There was no response to this. In the event,

inshore waster were urgently needed – 3 or so years of data relevant to problems in fisheries, fish distributions, abundance and population dynamics; to the potential of sites for fish-farming; to food resources – planktonic species, their distribution and abundance, population dynamics – to mention but a few aspects. Why, again, despite out-of-date navigation charts, is hydrographic surveying only now being addressed? Even such an abbreviated "hind-sight" review underlines a lamentable neglect of a concerted, co-operative effort to attempt to satisfy the urgency of marine research in Ireland.

Much of this situation has

Oceanography certainly made progress over the years, but it could, and should, have been given the opportunity, through government financial support, to develop the broadly-based programme originally proposed. Such could have included research, analyses and interpretations, backed up by adequate sea-going ability (even by the Naval Service, as in England, N.Z., Australia, Canada, etc. etc.) and both ship-borne and shore-side equipment and facilities and a suitable ship.

It must be said, however, that much of the progress made was attributable to continuing support, over the years, by U.C.G. Inevitably,

A Strictly Personal Note

SEVERAL holidays, often lengthy; strong ancestral ties, especially for my wife; and a belief in oceanographical prospects, brought us to Ireland. Despite occasional frustrations, all has proven worthwhile – and is reason enough now to call Ireland home.

For me, however, there is another strongly motivating and, so far, unspoken factor – Valerie, my wife. In 1946 we married at the small, early-colonial, Pro-Cathedral in Wellington, barely out of studentships at Victoria University College. While I continued studies, Valerie took up teaching. This supportive attitude towards my career has continued to be just that, at all times. Although absent "at sea" and frequently at meetings overseas, it was, as she states, "being apart that enabled the marriage to survive" – and even so, it is still strong! "Pack and re-pack" was a serious factor in our lives and it was Valerie who accompanied our goods and family of two girls on the several occasions, to and from various countries, whilst I jetted off "to fulfil career demands". At the time it seemed natural and

necessary – but was it? I wonder, but bless her for willingly acceding to an enforced loneliness.

At times, patience could become strained – as, when the family, weary and almost impecunious, waited in England for me to return from an extended, exciting visit to Russia, the porter of the hotel approached Valerie with a message – from Copenhagen. Turning to the bemused daughters, my wife said, "Will you tell me what is your father doing in Denmark?"

On another occasion, Valerie and our daughters were arriving at Southampton by ship from New Zealand. Either the ship had berthed early or, for unexplainable reasons, I was very late: they and baggage had already landed. After a search and a helpful customs official they were at length traced down to a hotel. I was met, by three-year-old daughter, with a stare, a wagged finger and "Daddy's a naughty boy"! Patience, justifiably, again wearing thin!

However, Valerie has gone beyond being in thrall to her husband. As a child, she had an Irish granny who instilled an "Irish-ness" with her tales (factual, as it turned out) and inspired Valerie to pursue her ancestral background and the history of Ireland's earlier days. She has applied that knowledge to her published works – a book about fast-disappearing important houses of Kerry as well as numerous articles for such at the

Kerry Archaeological and Historical Society, the Kerry Magazine and others.

Despite tribulations, minor or major, that Valerie has perforce handled over the years, whilst tending her husband's career, she has now found her niche; she is at home and happy in it. May it long continue.

Brian Bary



Valerie and Brian Bary outside their home in Co. Kerry.

MADERIA

Portugal's Wild Atlantic Garden

By Anthony Toole

BECAUSE of its richness and diversity of plant life, Madeira has been described as a garden floating in the Atlantic. Its islands, together with those of the Azores, the Canaries and Cape Verde are known collectively as Macaronesia, the Fortunate Isles. According to Greek mythology, it was here that the gods brought the heroes when their adventurous lives were over.

Despite their relative proximity to Europe and Africa, these archipelagos have never been part of the continental mainland. They were formed by volcanic activity during the Tertiary geological period, which began around 65 million years ago, when the tectonic plates moved the thin oceanic crust over hot plumes of the Earth's mantle. The resulting basaltic



The Picos do Madeira from Pico Ruivo (Madeira's highest summit).

islands stand as largely submerged mountains, with only their summits rising above the surrounding deep ocean.

The Earth's climate began to cool some 25 million years ago, leading into the Quaternary period of the last two million years, characterised

by a series of Ice Ages, during which much of the northern hemisphere lay gripped by glaciers. The Macaronesian archipelagos were sufficiently isolated to escape the major effects of glaciation, so that they retained the Tertiary forests that vanished

Photo: © Anthony Toole

from the rest of Europe.

Portuguese sailors first settled the 'Ilha da Madeira', or Isle of Timber, in the fifteenth century. They immediately began to clear the forests, for fuel, building materials and agriculture. However, unlike elsewhere in Macaronesia, Madeira still retains large areas covered by the primeval forest.

The Laurissilva, or laurel forest of Madeira comprises some 15 000 hectares, or one-fifth of the land area, mainly in the northern part of the island. This is well over half of the world's remaining total, 90% of which is confined to Macaronesia. So rich and valuable is the ecology of the Madeiran Laurissilva that it was declared a UNESCO World Heritage Site in 1999.

This unique habitat is home to more than 700 plant

species, the most prominent of which are several members of the evergreen laurel family. These include Tiltree, Vinhatico, Pau Branco, Barbutano and Madeira Mahogany. They are accompanied by two kinds of holly and numerous shrubs, such as Faia, Sanguinho and Folhado. Some plants, such as Bilberry, the heather, Erica arborea and Lily of the Valley have responded to competition from the laurels by evolving into variants that grow as tall as trees. The result is that the steep valleys and mountaintops of much of Madeira are clothed in a largely impenetrable jungle.

The Laurissilva attracts the moisture of Atlantic winds, so that the northern parts of the island are often misty and damp, while the south basks in sunshine. The climate can change over a period of an hour, or from one valley to the next. This moisture is released into a sodden soil, giving life to an almost unbroken carpet of hundreds of varieties of mosses, lichens, liverworts,

ferns, fungi and flowering plants, many of which are found only on Madeira. And crawling through this richness are more than 500 species of insects, spiders and molluscs.

The water absorbed by the forest is harvested and transported by a system of channels, known as levadas, of such low gradient that the water flows as an almost silent trickle rather than a rush. The Levada dos Caldeirão Verde, for example, falls only ninety metres over a distance of 6.5 kilometres. Many levadas follow tunnels or cross precipitous faces, with the maintenance pathways providing often the only means by which walkers can enter the forest. The total length of the levadas exceeds 2000 kilometres, and is more than double the distance covered by all of Madeira's roads.

The Laurissilva forest is only part of the Madeira Natural Park, which occupies two-thirds of the island, including virtually all land above the 300-metre contour. Within the park are several



View over the Laurissilva from a levada tunnel.

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Bird of Paradise flower.



Heather trees - *Erica arborea*.



Crossing a cliff on the Levada dos Calderao Verde.



Lichens on a laurel tree.

contrasting environments. To the west and south, the space left by the cutting of the laurels has been filled with trees from elsewhere: pines from Northern Europe, eucalypts and acacias from Australia and Africa. The climate is such that plants from almost anywhere can thrive here, so that trees and shrubs that are native to China, Madagascar, India and the Americas are found in abundance.

The same applies to the

flowers, for which Madeira is world famous. Though these are best seen during spring and summer, many can be found in bloom throughout the year, and add colour to even the highest and most barren-looking mountain summits. There are Madeiran varieties of foxglove, vetch, geranium, thrift, buttercup and a yellow violet, as well as much rarer orchids. Most of the flowers, however, come from overseas: begonias, bougainvilleas, oleanders,

anthuriums, wisterias. Some, like the blue agapanthus, decorate the roadsides, while the Bird of Paradise flower has become an emblem of Madeira.

As well as a climatic north-south divide, Madeira also shows a more physical east-west separation, marked by the pass at Encumeada. To the west are the rugged central peaks, culminating in the 1800-metre-high Pico Ruivo. Some of these rise like pillars of bare, red rock above deep

valleys, others are tree-covered, giving the scenery something of a Peruvian appearance. To the east is the high moorland of Paul da Serra, flat, misty and windswept, with a sparse covering of bracken, heather, broom and gorse. The plateau was once suggested as the site for Madeira's airport, but the frequent mists and unstable wind conditions precluded this.

The isolation of Madeira is such that there are few land vertebrates. Apart from sheep, goats and cattle, and the rats and cats that arrived on ships, mammals are represented by three endemic species of bat. The only native reptile is a small lizard, which is largely confined to coastal areas, but can be found in the forests and even darting across sun-warmed rocks in the mountains.

Birds, on the other hand, arrived early in Madeira's history, and have had time to evolve into distinct variants of their continental relatives. On his visit to the Galapagos, an archipelago of similar origin and isolation, Darwin noticed variations among finches that must have shared a common ancestor. Similarly, the Madeiran chaffinch has evolved into a distinct subspecies, as have the linnet, rock sparrow, blackbird, spectacled warbler and firecrest. Berthelot's pipit is a species found only on the Madeiran and Canary islands. Birds of prey include subspecies of kestrel, sparrowhawk and buzzard.

The most distinctive of Madeira's native birds is the Trocaz pigeon, a large, blue-grey bird, which lives in the lower reaches of the laurel forest. Though its numbers are in the thousands, it breeds only on Madeira and is classed as vulnerable. It feeds on the fruits of the laurels, so its spreading of seeds is crucial to the forest ecology. Unfortunately, its presence near



Zebra spider

agricultural land can be deleterious, and it has often been illegally shot or poisoned. The Madeiran government allows limited culling, under strict control, a difficult balancing act, as the Trocaz pigeon has a high level of protection under EU regulations.

Some sea birds, such as Bulwer's petrel, Cory's shearwater and Manx shearwater are thriving, if not specifically on Madeira, then elsewhere in Europe. The exclusively Madeiran Zino's petrel, however, is among the rarest seabirds in the world. In fact, until the late 1960s, it was thought to be extinct. As few as 60-75 breeding pairs have been recorded. Despite being a bird of the sea, this petrel breeds on some of the least accessible crags of the central mountains. It is vulnerable to predation by rats and feral cats and to degradation of its habitat by grazing animals. A programme of eradication of predators and removal of sheep and goats from the higher mountains has brought about a small recovery in numbers of this very rare bird.

Madeira is a tiny island, only marginally bigger than the Isle of Man. It has, nevertheless, significant areas of

genuine wilderness into which a person can disappear. As we are now becoming aware of the concept of wilderness, and its indispensability both for our own well-being and the good of the planet, the preservation of this wild garden of the Atlantic must grow ever more important.

Useful information

Berlitz Holiday Map: Madeira. Excellent touring map, but with practical data and much additional information about places of interest. Useful in conjunction with....

Berlitz Pocket Guide: Madeira. Concise, well illustrated and easy to use and slip into the pocket. Madeira in a nutshell.

Madeira: Globetrotter Island Guide by Terry Marsh (New Holland). More detailed guide to all the places to see and visit on Madeira.

Madeira Islands Walking Festival. An excellent introduction to the forests, levadas and mountains of Madeira and the adjacent island of Porto Santo. 13th - 17th January 2009. www.madeiraislandswalkingfestival.com

Birdwatching. For half-day and full-day trips: www.madeirawindbirds.com

M.A. Toole, 65, Cheswick Drive, Gosforth, Newcastle upon Tyne, NE3 5DW, U.K.



Lichen - *Lobaria pulmonaria*.



The western sea cliffs of Madeira.

A Nature Trip with a Difference

By Ian Boler

I WORK as a Biology/Chemistry Teacher at Kolej Yayasan UEM in Peninsula Malaysia. The college is a Malaysian 'science' college teaching the Cambridge A'level syllabus to Malaysians with sponsorships to then study subjects such as Medicine, Pharmacy, Biotechnology and Physical Engineering at top UK (mainly), USA and Australian Universities.

The college is situated in a small village about 60 km north of Kuala Lumpur. It is surrounded by hills covered in Rubber trees, Acacia trees and Oil Palms as well as areas of Virgin Jungle. A short distance away are the central mountains rising to over 2,000 metres which are mostly covered in Virgin Jungle. Peninsula Malaysia has retained much of its Mountain Rainforest and some very large tracts of Lowland Rainforest (e.g. the Taman Negara) which is reputed to be over 300 million years old (the oldest

surviving in the world). Much of lowland Malaysia is developed or agricultural (Oil Palm, Rubber trees, rice paddies, fruit trees, etc), but many rivers traverse the lowlands and much Mangrove and Swamp forest remains in places. The wildlife in these remaining areas is very rich, with elephants, tigers, rhinoceros, tapirs, monkeys and very many species of birds (over 700) and insects (over 1,000 butterflies alone!).

But, in the jungle, wildlife is very hard to see (too many trees!), thus many Malaysian citizens have seen little of their own wildlife, or even know little about Natural History. For these reasons I started a Natural History Club at the college to seek out and learn about Malaysia's wonderful Natural History for our Malaysian students. We meet once a week, with fortnightly outings to see wildlife around the college and bi-monthly trips to other parts of Malaysia to visit special sites for wildlife. The following is a review of one of our trips to a

very special site for Fireflies in Malaysia...

Twelve hardy adventurers departed Kyuem at 1:30pm, taking the newly opened road to Batang Burjantai and on to Kuala Selangor Nature Park. We were greeted by our knowledgeable and enthusiastic Guide, Mr Raz, who gave us a brief introduction to the park. The whole area was once mangrove forest, but a mound was built to stop the sea flooding. This left a thinner area of coastal mangrove and, behind the ditch, brackish lakes and secondary forest.

Our guide then took us through the secondary forest, where we saw Silvered Leaf Monkeys and numerous butterflies, to a tower overlooking the lakes. Here we gained fantastic views of the lakes and forest, watching a pair of majestic Brahminy Kites flying by and Grey Herons and Great Egrets in view. The captive breeding of Milky Storks had been stopped due to raids by Long-tailed Macaques and the large enclosure empty, but four of the birds were still present on the reserve.

Our tour then moved round the lakes to the Mangrove walk, with our guide describing many of the plants ecology and uses on the way. Here we saw two types of Mud Skippers, tiny blue Fiddler Crabs and Water Monitors. Wandering back through the forest to the centre brought us into contact with the Macaques who were quarrelling bitterly as usual and some were trying to get into the van! At the centre we were given a detailed briefing about the fireflies natural history. At the park were non-synchronous species only, *Pteroptyx valida*, but along the rivers is the synchronous species *Pteroptyx tener*, which flashes 3 times a second in unison. They have a lifespan of 9 months but the adult beetles only live for 10 to 20 days.

Dinner at 6:30pm was at a marvelously sited seafood restaurant on the bank of the Selangor River watching the sun set. Then it was on to the highlight, the Fireflies themselves. Arriving, in the dark, around 8:00pm, we boarded three separate boats, each propelled by an oarsman. We were each taken along the bank where many of the bushes were belit by dazzling arrays of simultaneously flashing lights – the fireflies. Each firefly has a light-producing segment (males two, females one) on their abdomen. It was so dark, however, that the fireflies themselves couldn't be seen, only their lights.

It was a fantastically, spectacular and peaceful experience!

Ian Boler works as a biology/chemistry teacher in Kolej Yayasan UEM in Malaysia and was a former volunteer at Sherkin Island Marine Station.



Lakes and mangroves in Kuala Selangor Park.



Much mangrove and swamp forest remains in places on the lowlands of Malaysia.



A mudskipper seen on the Mangrove walk.



A long-tailed Macaque monkey on van!



Members of the Natural History Club relaxing after a day's outing.



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It's easy to make a difference

A Real Insight into CFB Research

By Matt Murphy

SO often annual scientific reports from institutions and semi-state bodies are just a public relations exercise with little or no information for the reader. So many researchers get caught up in their work and forget the broader picture of educating the public on the necessity for such projects.

Recently the Central Fisheries Board (CFB) published

its Research Projects summaries, 2007. It was a breath of fresh air as the 53 projects in its programme are treated individually, with questions and answers on each. This report or, more correctly, this compilation of reports on individual and diverse freshwater projects is for the ordinary man in the street, the angler, the fishery owner, the commercial salmon fisherman, civil servants and other scientists. The reports are

easily readable, interesting – even fascinating and short. One immediately has information on:

- The remit of the project
- Why is the project being undertaken
- Sponsors/people in charge of project
- When is the planned completion date of the project
- Who will benefit from the project
- When will an interim/final report be available to the Board
- What was the cost of the project and the source of funding
- To whom will findings be made available
- What progress has been made to date
- What are the findings of interest and to whom
- What are the next steps?

It is understood the cost of the research for these 53 projects was €3 million. The broad-based research programme shows very important issues are being addressed, such as:

- Atlas of Freshwater fish in Irish lakes
- Lake trout stock surveys
- Dynamics of fish populations in Irish waters - studies of fish stocks in large Irish lakes
- Fisheries development on navigable waterways
- An environmental assessment of the ponds within Phoenix Park, Dublin
- National assessment of attainment of river specific salmon conservation limits (CLs)
- A fish stock survey of River Suir catchment
- Water Framework Directive (WFD) surveillance monitoring - lakes
- Water quality monitoring and pollution abatement programme for inland navigable waterways.

Importantly, the CFB believes it must provide for the long-term environmental sustainability and biodiversity of Ireland's ecosystems and that they must identify sustainable fishing opportunities. Ireland's inland waterways are so important for all its citizens. Most of our drinking water comes from these sources. The CFB and the Regional Fisheries Boards are very much overseers of that heritage.

This report needs a broad circulation, especially to the national and local authorities' elected representatives and to angling clubs. Action is needed to help preserve Ireland's waterways, as many are under severe pressure from pollution and the lack of proper management. Anglers especially can help in influencing government to invest more in the work of Fisheries Boards. This report is available on line at www.cfb.ie.

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



AN EXAMPLE OF A PROJECT SUMMARY

PROJECT TITLE: To investigate the impact of a refurbished weir on the River Nore in Kilkenny city on the standing crop of juvenile salmon in several sub-catchments upstream.

Remit of the project

The remit of this project is to compare the standing crops of juvenile salmon at selected sites upstream and downstream of Kilkenny city and review available historical data in this area.

Why is the project being undertaken?

The Office of Public Works (OPW) requested the Central Fisheries Board (CFB) to carry out this study to establish if the flood relief scheme on the R. Nore main channel in Kilkenny had a negative impact on salmon production further upstream in the catchment by temporarily impeding the upstream movement of adult salmon.

Sponsor/person in charge of the project?

The main sponsors of this project are the Engineering Services Section of the OPW/Dr M. O'Grady, CFB.

When is the project planned to be complete?

Field work was completed by the CFB, with the assistance of Southern Regional Fisheries Board (SRFB) staff, in 2007. A final report will be prepared in the first quarter of 2008.

Who will benefit from the project?

The main beneficiaries will be the OPW, the SRFB and the CFB.

When will interim and/or final reports be available to the Board?

A final report will be available in the first quarter of 2008.

What was the cost of the project and source of funding?

All costs were met by the OPW.

Who will the findings be made available to?

The finding will be made available to the OPW - the agency funding the project. They are also likely to be made available to the Fisheries Boards and angling clubs in the Nore catchment.

What progress has been made to date?

The field work element has been completed. Data processing and report writing will be completed in Q1 2008.

What are the findings of interest and to whom?

Findings will be of interest to all of the parties named above. There was a "public perception" that this drainage scheme, at the works stage (2005/06), seriously impaired the upstream movement of adult salmon.

What are the Next Steps?

To inform all concerned parties of the results of this study.

From Botany Bay to Glasnevin

By Daphne Pochin Mould

Fuchsias are now available in many varieties and are widely grown. I have seen them flourishing in the sun in Reykjavik's botanic garden in Iceland, though they need to be indoors in winter. Orange and lemon trees, bearing fruit are now available at garden centres. Interesting and very ornamental, but you will probably get your main supply from the shops.

"Botany Bay". For 19th century England the name was the usual shorthand for the Australian penal settlements. Convicts and flowers? – no connection, but with Glasnevin and the Botanic Garden, a great deal. For Glasnevin holds a great archive of dried and pressed plants, and drawings and descriptions written with quill pens on heaving sailing ships on the other side of the world. From the mid 18th century on saw the world being mapped, with compass and sextant, sun, moon and star sights and positions – the lead line to plumb the depths and shallows. You could sail round the world, though it would take a couple of years, and all that time no contact with home. Only on return would people know you were still alive. Discoveries would be told

and skins, bones, dried plants and descriptions and drawings displayed – new animals, new birds, new plants and brilliant flowers, new trees and tales of the new taste of exotic fruit. And it came to a Europe eager for science and for the laying out of great gardens. It was when a British ship turned into a bay on the Australian coast, that the vast display of so many and so new plants, almost named itself, "Botany Bay".

It was not a peaceful time – risings in Ireland, the failed "French Armada" off Bantry Bay, Britain at war with France, Napoleon seeking to rule all Europe and the British navy holding them in check. Meantime the Botanic Gardens of Paris and London (Kew) placidly went on corresponding about plants. Jane Austen was writing her novels in which the great houses and their grounds form a background.

It was a time when there were many people with money and land, and labour was cheap, so those great estates could be laid out and planted, with lakes and deer parks (there are still white fallow deer at Mallow). The industrial revolution had made it possible to make big sheets of clear glass, to be set in strong frame works of wrought iron: the big glass houses rose up and were heated, so hot climates could be mimicked. Orangeries



The National Botanic Gardens in Glasnevin holds wonderful records of plants and plant descriptions, many brought back long ago on sailing ships from the other side of the world.

produced a crop: planted against a sunny wall and fronted with glass. Some still survive today – Fota's has been restored, as have some of the great glass houses, such as at Glasnevin. Pineries and vineries were important for the Big House folk – like their hot house grapes and their pineapples – which were grown on a very hot compost of tan yard residues. A learned Dr. Sicker wrote a book in 1815 listing over 70 species of citrus, but those grown by the Big Houses was far shorter

and familiar – the ordinary orange, lemon, citron, lime and shaddock. "Shaddock"? A native of China and Japan, from where one Captain Shaddock brought it to the West Indies. From there it got to England and was first cultivated there in 1789. Its thick skin meant it would stay fresh longer aboard a sailing ship but its taste was too bitter for contemporary palates. Today we enjoy it and call it "grapefruit".

Melons and cucumbers came from the East Indies about 1570. Melons need heat

to ripen but cucumbers were grown in open fields in the south of England for pickling. The person with hot houses could have them any time. In the early 1800's, in March in London, cucumbers were a guinea a dozen, in late summer, one penny. (A guinea is £1, 1 shilling). But except as a curiosity, nobody wanted to grow the tasteless breadfruit. "Five plants were brought to England from Otheite by the unfortunate Captain Bligh in 1788". Equally exotic was the banana, "the fruit is eaten raw, or roasted, in fritters, preserves and marmalades, the fermented juice makes an excellent wine".

The old sailing ships brought treasures of colour, shape, and new tastes – trees, shrubs and flowers, brought in as seeds and rooted saplings. Irish gardeners took them greedily. Palms flapped their leaves in seaside gales, monkey-puzzles rose in suburban gardens (at least one Big House

planted an avenue of them). The last remnant of a now vanished garden or estate may be a solitary, non-native, great tree. Some needed much care to do well, but others became invaders, ready to take over the country. One was the rhododendron from North America and Asia. For the great gardens, its strong growth and enormous, brightly coloured flowers, was a dream come true. Today we are fighting to control it and halt its destruction of our native woods. For rhododendron allows no opposition and forms a dense thicket almost impossible to force a way through.

And then there was a pretty shrub from South America, named for a certain Dr Fuchs. Fuchsia, "from Chile... thrives in light rich soil... cuttings root freely under a hand glass, admitting air occasionally to prevent damping off". The Knight of Kerry, establishing his great garden on Valentia Island in Kerry, was soon writing to the London "Times" of the virtues of the fuchsia as a shelter belt to protect other more delicate plants. The invasion of Ireland by the fuchsia had begun. Irish people named it 'Deora De' ("the tears of God" in Irish). Roadside verges turned deep red from the dropped petals of the fuchsia hedges. The Knight had one enormous bush which he just let alone, and every year, the entire household gathered round it to measure its ever-enlarging circumference. And, unlike other immigrant species, the fuchsia has become a symbol of Ireland – almost a rival to the shamrock. Not bad for a little bush that survived a long sea voyage to get to these parts, barely two hundred years ago.

Quotations are from J.C. Loudon. "Encyclopaedia of Gardening" 2nd Edition, 1824.



Fuchsia – a shrub from South America, which now adorns many hedgerows in Ireland.



The brightly coloured flowers of rhododendron may have been a dream come true for gardens but are now a major threat to native woods.



The Big Houses could afford to build hot houses in which to grow heat-loving fruits such as oranges and lemons.

Photo courtesy of http://flickr.com/photos/9852546@N02/23662272

Photo courtesy of E. Egri

Photo courtesy of Adalton, CC BY-SA 3.0 United States

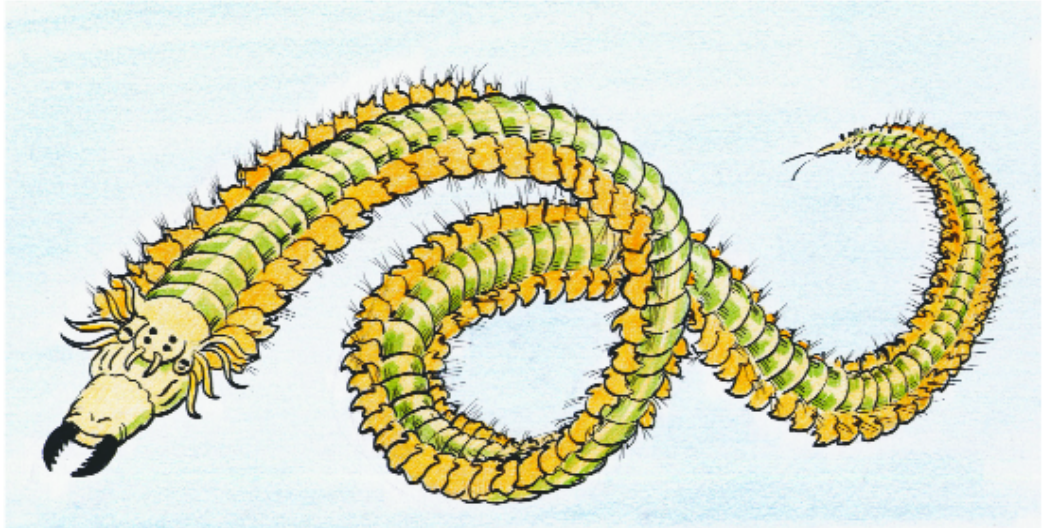
JUNIOR PAGES

The Wonderful World of Worms . . .

The worms you find under rocks on the shoreline or when digging in the sand, are most likely to come from the animal group Polychaeta (pronounced "Polly-keeta"), which means "many hairs".

Worms have no bone and no skeleton, which makes them very flexible, and rely on pumping water through their bodies to make them rigid.

Scientists classify the Polychaeta into two main sub-groups: the "errant" polychaetes - that actively swim about looking for food (just as the "Knights Errant" of old used to ride around looking for adventure - and the "sedentary" polychaetes, which prefer to stay at home and let the food come to them.

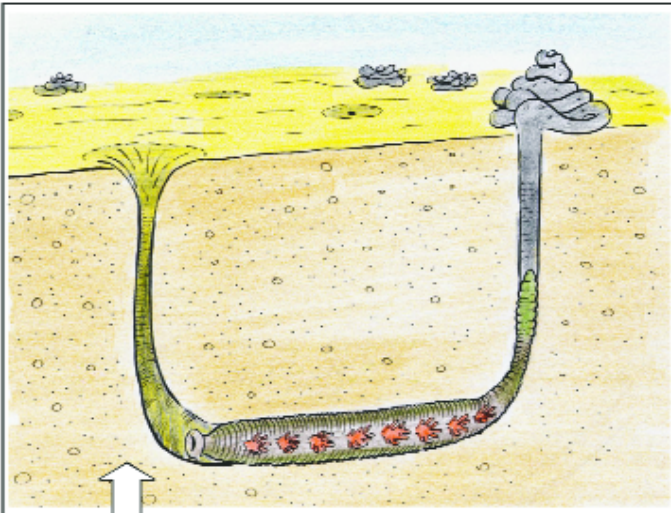


Captain Cockle's Log

Copyright John Joyce 2008
Log onto www.captaincockle.com



Errant polychaete worms, such as the Common Ragworm (*Nereis diversicolor*), shown above have well developed heads with eyes and jaws. They also have paddles - called "parapods" on either side of each segment to allow them to move swiftly through the sand or even to swim in open water (although they prefer to keep under cover to avoid other predators). Ragworms can grow to around six inches long and prefer to live in burrows. Here they spin thin webs with mucous from their mouths, which they use like old-fashioned fly paper to catch tiny floating animals - sucking back the mucous web, animals and all. Be careful if you find them when you are digging in the sand however, because the jaws can give you a nasty bite!



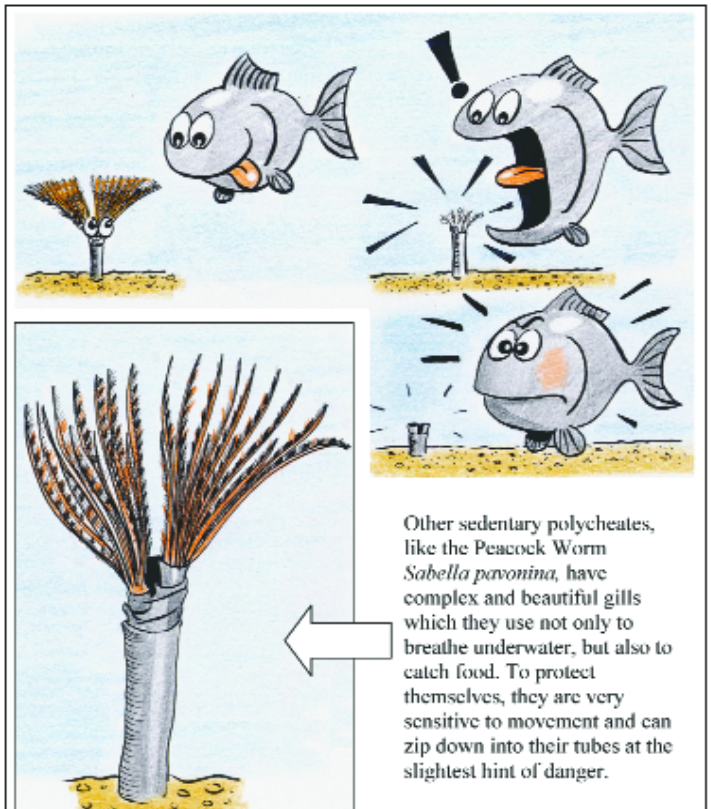
The Common Lugworm (*Arenicola marina*) shown above, is a **sedentary polychaete**. It lives in a U-shaped burrow and can be detected on sandy shores by the little cone shaped burrow at the head end where water is sucked in, and the squiggle of sand it pushes out at the other end, once it has sucked all the tiny animals and other food out of it. Lugworms push out sand every 40-45 minutes. If you stand still on the beach and watch, you may even see it!

Check out these websites for worms:

<http://www.earthlife.net/inverts/polycheata.html>

and great worm pix on:

<http://www.starfish.ch/collection/annelida.html>



Other sedentary polychaetes, like the Peacock Worm *Sabella pavonina*, have complex and beautiful gills which they use not only to breathe underwater, but also to catch food. To protect themselves, they are very sensitive to movement and can zip down into their tubes at the slightest hint of danger.

Reedbed Singers

BY DECLAN MURPHY

During the Spring and early summer our reedbeds are home to a number of birds, including some migrant warblers, which fly from Africa to spend the summer months here in Ireland.



Photo: © John Fox

Sedge Warbler

Arriving in mid-April, Sedge Warblers can be found throughout Ireland wherever there is an abundance of reeds, water and damp willow scrub. They are an extremely vocal species and their presence is made known by their loud song, a mixture of varied fast chattering phrases which often includes mimicry of other species and varies in pitch.

Sedge Warblers are rich brown colour with black streaks on their back and wings and pale underparts. However their most striking feature is a prominent white stripe over the eye contrasting with a darker crown. Except when singing they can be quite skulking, clambering around the reed stems and foraging in the scrub.

The nest is built by the female and is cup shaped, made of grass and located close to the ground. Up to 5 eggs are laid which hatch after about two weeks and the young fly after a further two weeks. Their diet consists almost entirely of insects although they will eat berries in late autumn to help build up fat reserves for their long migration. Sedge Warblers are long distance migrants and fly up to 3,900 km from Ireland to Southern Africa, many returning to the same breeding site each year.



Photo: © Clive Timmins

Grasshopper Warbler

Also arriving in mid-April, Grasshopper Warblers are another secretive brown warbler which also frequents the same type of habitat as Sedge Warblers, although they usually prefer a slightly drier part of the reedbed.

As with Sedge Warbler these are best located by their song as they are very skulking and very hard to see. The song is a remarkable insect like trill which can be sustained for several minutes without a break. Its uniform tone and pitch have been likened to the mechanical sound made by an angler's reel.

The sound appears to change in direction and volume as the bird turns its head from side to side.

When seen they are usually flushed from low down in the scrub or seen moving furtively through the vegetation almost at ground level. They are olive brown in colour, slightly paler below, with dark streaking on the upperparts. The nest and location are the same as the Sedge Warbler and the incubation time for the eggs is also the same. Their diet also consists mostly of insects and occasionally berries.



Photo: © Dick Coombes

Reed Warbler (see main picture)

This is our rarest reedbed warbler with only a handful of pairs breeding each year in Ireland and confined to the largest areas of reedbeds such as those in Wicklow, Wexford and Cork. They are larger than either of the previous species and are plain olive brown in colour. Their song is a series of slow chattering notes on an even pitch and is usually quite low in volume.

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.org

Website: www.birdwatchireland.ie

An ideal gift!

Free DVD

Discover the magic of birds with your DVD Guide to 'Common & Garden Birds' - **FREE** when you join BirdWatch Ireland

Now members will receive their superb DVD (worth £10) free of charge. It's a fantastic bird species, a new DVD (worth £10) free of charge. It's a fantastic bird species, a new DVD (worth £10) free of charge. It's a fantastic bird species, a new DVD (worth £10) free of charge.

Join now

- by post (see form below)
- by telephone - simply call 01-281 9878
- online at www.birdwatchireland.ie

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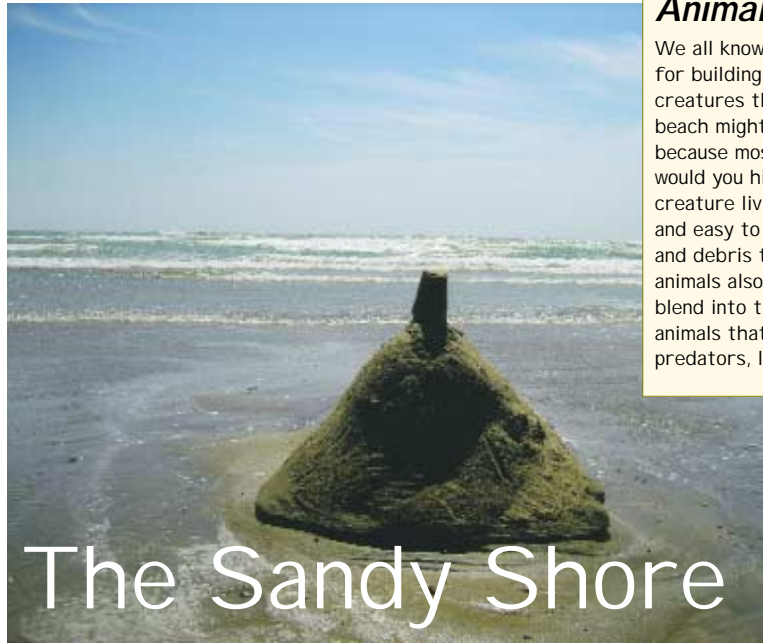
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The Sandy Shore

Animals on the sandy shore

We all know that sandy beaches are a great place for building sand castles but what about the creatures that live there? At first glance, the beach might seem like a barren place, but that's because most of the animals are hiding! Where would you hide from predators if you were a creature living on the sandy shore? Under the sand of course! It's nice and soft and easy to dig a burrow. Another good hiding place is under the dead seaweed and debris that are found up on the beach's high tide mark or strand line. Some animals also use camouflage to avoid their enemies. This means that they can blend into their background, making it difficult for predators to see them. The animals that you see walking around on the sand surface are usually the top predators, like seabirds and humans!



Skeletons on the inside and Skeletons on the outside



Many of the animals living under the sand also have shells to protect themselves. In fact, shells are actually a kind of skeleton! We have our skeletons on the inside to support all our organs. If we didn't, we would just be a blob on the floor. But most of the animals on our planet actually have their skeletons on the outside in the form of a shell. Some marine animals, like jellyfish, don't need any bones because the seawater supports their body and tentacles. These jelly animals collapse when they are out of the water.



Sandy Shore Quiz

Have a look at the seven seashore animals below. See if you can match the animal names with the correct picture. You can use the clues beside each picture to help you. All these animals live in and around the sandy shore.

1. Cockle
2. Oystercatcher
3. Razor Shell
4. Lugworm
5. Flatfish
6. Shrimp



This animal likes to eat cockles and mussels.

A



You have to look very carefully to see these animals in a sand pool because they are masters of camouflage.

B



Go paddling on a sandy beach and you might feel one of these wriggling under your toes.

C



Molly Malone used to sell these animals in Dublin's Fair City.

D



I imagine somebody trying to shave with a shell!

E



This animal lives under the sand in a U-shaped burrow.

F

Photo © Robbin Mughby



Marram Grass

Plants on the sandy shore

It is difficult for plants to live on the sandy shore for all sorts of reasons. Seaweeds that we might see on the rocky shore can't live on the sand because there is nothing for them to attach on to. Land plants also find it hard to live on the sandy beach because the sand doesn't hold enough freshwater and nutrients for them to grow. There are only a few plants, like marram grass, that can live in these conditions. Marram grass is one of the most important plants on the sandy shore because its long roots bind the sand together to form sand dunes. The dunes habitat provides a special place for all sorts of wildlife, including rabbits, mice, foxes, snails, moths and butterflies, birds, insects and flowering plants.

ANSWERS TO QUIZ : 1=D; 2=A; 3=E; 4=F; 5=C; 6=B.

Staying Afloat!

MANY of us will be out in boats and other watersports equipment over the summer months and will be wearing our lifejackets. Lifejackets and buoyancy aids come in all shapes and sizes and sometimes it can be quite confusing to know what level of support they give. *Irish Water Safety* have produced a very helpful guide to Personal Flotation Devices (PFDs) Lifejackets & Buoyancy Aids.

What is a Personal Flotation Device?

This is a generic term used to describe lifejackets and buoyancy aids. The main difference between lifejackets and buoyancy aids is that a lifejacket is designed to turn an unconscious person face up on entering the water. A buoyancy aid is not guaranteed to do this and is as the name describes, an aid to keeping you afloat.

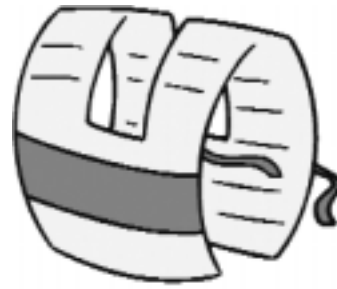
Wearing Personal Flotation Devices

It is vital to wear a buoyancy aid or a lifejacket when afloat or if your activity takes you near the water. You must ensure that it is the correct size, properly fas-

tened and that you understand how to operate it. In sports like jet skiing, water skiing, dinghy sailing, windsurfing and canoeing, wearing the right personal flotation device (PFD) will give you the confidence to enjoy your activity even when you're in the water. For other activities wearing an appropriate PFD can give you extra time for the search and rescue services to find and rescue you.

Caring for your Personal Flotation Device

Your PFD could save your life, so it is important to look after it. You should have it serviced in accordance with the manufac-



turer's recommendations. On a regular basis, you should visually check the PFD for wear and tear especially at the folds, straps and fastenings. On inflatable lifejackets, check to see if the gas bottle is full, fitted correctly and has no signs of corrosion. If used in salt water, you should regularly wash out your PFD with fresh water and allow it to dry fully before repacking. Ensure you disarm any automatic inflation mechanism before washing your PFD to avoid accidental inflation.

Don't use your PFD as a cushion as this may compress, and thus reduce the effectiveness of the buoyancy. Like most things they do not last forever. If your PFD is looking tatty it may not work so get a new one.

The right Personal Flotation Device?

Personal flotation devices are available with foam-only buoyancy, air foam buoyancy or air-only buoyancy. The most suitable type for you will depend on the type of activity and the distance you are likely to be from the shore.

Foam only personal flotation devices provide buoyancy at all times. They may be bulky, but in addition to providing buoyancy, they often provide additional protection against wind and cold.

Air-only lifejackets are likely to be the most compact and comfortable and may be automatically activated on entering the water or inflated manually or orally. Spare gas cylinders and automatic inflation mechanisms should be carried.

The effectiveness of a lifejacket will be affected by the type and amount of clothing worn. If air becomes trapped in clothing, or if a flotation suit is worn in addition to a lifejacket, it may reduce the ability of a lifejacket to roll you face up in the water. Choosing a PFD with more buoyancy may counteract this.

It is recommended that all personal flotation devices are fitted with a whistle. Light and retro-reflective strips and should have crotch straps.

For some sports such as jet skiing, water skiing, dinghy sailing, windsurfing and canoeing, specialised personal flotation devices are available which are specifically designed to suit these sports.

Understanding Personal Flotation Devices

Buoyancy is measured in Newtown - 10 Newton equals 1 kilogramme of flotation. There are 4 European standards for personal flotation devices, which must all carry the CE mark.

The 50 Newtown Personal Flotation Device is commonly called a Buoyancy aid.

It is intended for use by those who are competent swimmers and who are near to the bank or shore, or who have help and means of rescue close at hand. These PFDs have minimum bulk, but they are of limited use in disturbed water, and cannot be expected to keep the user safe for a long period of time. They do not have sufficient buoyancy to protect people who are unable to help themselves. They require active participation by the user. Recommended for Dinghy sailors, windsurfers, water-skiers & Personal Water craft where the user might reasonably expect to end up in the water.

The 100 Newton lifejacket is intended for those who may have to wait for rescue but are likely to do so in sheltered and calm water. Whilst these lifejackets are less bulky than those with more buoyancy, they are only intended for use in relatively sheltered waters. They may not have sufficient buoyancy to protect people who are unable to help themselves and may not roll an unconscious person onto their back particularly if they are wearing heavy clothing.

The 150 Newton lifejacket is intended for general offshore and rough weather use where a high standard of performance is required. It should turn an unconscious person into a safe position and requires no subsequent action by the wearer to keep their face out of the water. Its performance may be affected if the user is wearing heavy and/or waterproof clothing. Recommended for general use on coastal and inshore waters when sailing, fishing etc. where the user would not expect to end up in the water.

The 275 Newton Lifejacket is intended primarily for offshore and extreme conditions and for those wearing heavy protective clothing that may adversely affect the self-righting capacity of the lifejacket. This lifejacket is designed to ensure that the wearer is floating in the correct position with their mouth and nose clear of the surface of the water. Recommended for offshore cruising, fishing and commercial users.

Look for a Lifejacket that is IMO/SOLAS approved. These are mainly carried on certain commercial vessels like passenger boats. They are usually intended only for use when abandoning ship as they tend to be bulky and difficult to use when working.

*Text courtesy of IRISH WATER SAFETY, The Long Walk, Galway, Ireland.
Phone : 091 564400 Lo-Call: 1890-420.202
Fax: 091 564700 E-mail: info@iws.ie*

Visit www.iws.ie for further information on Water Safety



Cara Partners wish continued success to Matt and his team at Sherkin Island Marine Station

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TEL: +353 21 452 0500 FAX: +353 21 452 0510





DR PATRICK HILLERY

Long May His Vision Continue



Dr Hillery at the An Gaisce Golf Classic in June 2006.

By Majella Killeen

DURING the launch of Gaisce – The President's Award, back in 1985 Dr. Patrick Hillery, stated that his "admiration for and faith in the young people of Ireland are unlimited." Now twenty three years on as I reflect on the passing of President Hillery, I still admire his vision to encompass the zest for life of young people with a personal challenge from him to achieve recognition through personal development. As one of the first participants of Gaisce - The President's Award, I am now in the enviable position of reflecting on my involvement in this wonderful organisation that continues the personal challenge, through our Patron Mary McAleese the President of Ireland, to all young people between 15 and 25 years of age.

My involvement with Gaisce goes back to 1985, when John T. Murphy and the Gaisce road show arrived in Galway to promote the award. His mission was to get us to earn a

bronze, silver or gold award by committing "just one hour per week," working on four different sections, personal skill, community involvement physical recreation and a venture activity, this was the challenge then and continues today.

I was representing the Order of Malta at that meeting and so I decided to promote the award through the Order of Malta programme. The consequence of this decision was that the young people concerned challenged me to complete the programme myself. I guess it was a case of "actions speak louder than words." The young people were prepared to participate at bronze award level, if I would participate at gold award level. I completed my gold award in 1987 and it was with great pride that I received my gold medal from the President of Ireland, Dr. Patrick Hillery, on the 10th April 1989. There in lies the vision of Dr. Hillery. As the first group of 19 people received our Gaisce gold awards, Dr Hillery took the time to meet and speak with us, he congratulated us on

our achievement, but he continued with a request – and that request was to stay involved with Gaisce by becoming a P.A.L. (President's Award Leader). His personal commitment during these early years saw the President attend the inaugural bronze and silver award ceremonies in Monaghan, Kilkenny, Cork, Galway and Dublin.

Starting the journey, by setting goals in each section, allowed me to visualise my dream..... Yes, it was attainable, because I was challenging myself. There was no race to the finish, there was no first prize; just a commitment of one hour per week in each section of the award. This was and continues to be the beauty of the Gaisce challenge. Now as a Presidents Award Leader (P.A.L.), I have continued my involvement with Gaisce. I have witnessed at first hand the amazing transformation of the young award participants who are lead through Bronze, guided through Silver and then lead us, the PALs, through their Gold award. By sampling a new skill through the award a young person can then go on to use the activity throughout their adult life. It can sometimes lead to a fantastic career. A gold award participant of mine – who had already completed his bronze and silver award took on first aid as his skill and he has recently qualified as a medical doctor.

Giving time to community is never easy, especially if you're young; we rarely hear or see the work that our young people do in their community. The community involvement section allows the young person to give back to the community and to learn from that experience. In a recent article on the endless possibilities of Gaisce, Clare Walsh a student of St. Dominic's Cabra described her visit to the elderly in her area, as a highlight for both the elderly and the young people, because it has led to the fostering of friendships and the building of strong community relationships.

The physical recreation section focuses the young person on their own personal fitness, a must in these days of academic pressure and the sedentary lifestyle of some of our young people. Finally, the adventure section allows the young person to plan and go on a venture, a hike or a

cycle on a budget. The Aim and Ethos of the Adventure Section is to encourage a spirit of adventure and discovery whilst undertaking a journey in a group. To provide participants with a challenging and memorable achievement. The journey should be undertaken in a group in an unfamiliar environment, requiring determination and perseverance, thus providing a sense of independence, self-sufficiency and discovery. The highlights live long in the memories of the participants.

President Dr. Patrick Hillery instilled in me a vision to stay involved in Gaisce, the aims of which are to get young people working, striving, achieving, quietly, under the radar, bringing out the very best in themselves and building up the essential qualities of human decency, human endeavour that make for healthy individuals and communities.

At a recent Gold award in Dublin the current Patron of Gaisce President Mary McAleese made the following remark, "In a world where there is, on the one hand, a culture of instant celebrity that requires little personal effort and, on the other, so much worry about the way that drugs and alcohol can distract our young from achieving their true potential, here we see Ireland at its absolute best. Here are young people working, striving, achieving, quietly, under the radar, bringing out the very best in themselves and building up the essential qualities of human decency, human endeavour that make for healthy individuals and communities"

Majella Killeen is the first holder of the Gaisce Gold Award and continues to give back to the young people of Ireland by her involvement as a President's Award Leader. The voluntary effort was rewarded when President Mary McAleese presented her with a Civic Merit Award in 2003. This award is presented to President's Award Leader that have voluntary given of their service for a period of five years or more. More information from: GAISCE – THE PRESIDENT'S AWARD, The State Apartments, Dublin Castle, Dublin 2. Web site: www.gaisce.ie

2008 International Blue Flag Beaches in County Cork

The International Blue Flag campaign is a voluntary scheme co-ordinated in Ireland by An Taisce – The National Trust for Ireland, with support from the Department of the Environment, Heritage and Local Government and on behalf of the Foundation for Environmental Education (FEE, www.fee-international.org).

This International award is universally recognised as the benchmark for beach quality. It ensures the following Beach Quality criteria are maintained:

- excellence in water quality and a committed monitoring programme
- Provision of adequate safety and services, safety equipment and warning signals of potential hazards.
- Beach Management programme, Good Infrastructure, accessibility and litter control.
- Provision of environmental information and education

This year Cork has been awarded 9 Blue Flag Beaches. These awards reflect the work carried out and the continued commitment by the Councils local area offices, Environment Department and Voluntary Community Groups.

◆ Youghal	Claycastle
◆ Shanagarry	Garryvoe
◆ Old Head of Kinsale	Garrylucas Garrettstown
◆ Clonakilty	Inchydoney
◆ Rosscarbery	Owenahincha The Warren
◆ Skibbereen	Tragumna
◆ Mizen Head	Barleycove

For further information :

- on issues of beach management and water quality contact the environment section, cork county council 021- 4532700 www.corkcoco.ie or local area office.
- For information on Blue Flag Beaches contact: An Taisce Blue Flag Office, Tailors Hall, Back Lane, Dublin 8. tel 01- 7077068 blueflag@antaisce.org www.blueflag.org
- On issues of information regarding special protection areas, natural heritage areas contact Heritage unit, Cork County Council 021-4818006
- On issues of water safety contact www.iws.ie

IT'S A GREAT DAY TO BE AT THE BEACH!

LEAVE YOUR FOOTPRINTS ON THE SAND AND NOT YOUR WASTE.

The Blue Flag Operators in Ireland urge the public to help retain Blue Flags at beaches by doing some simple things when visiting the beach. On your next beach visit:

- Stay safe. Know your flags. Look at the safety signage and follow your lifeguard's advice.
- Respect the fragile beach habitat, particularly the sand dunes. Sand dunes are a very important natural ecosystem and coastal defence system. Please do not trample the dunes – use footpaths and designated pathways. Driving, motorcycling, scrambling and horseriding destroy the dunes. Please try and prevent these activities.
- Follow the beach code of conduct.
- Use litterbins if provided or better still Bring Your Litter Home with you!
- Recycle at the local facilities provided. Follow the signage.
- Keep dogs on a leash and clean up after your dog.
- Respect other beach users.
- Join in beach clean/activity days or organise your own if you have the initiative.

The Blue Flag award has benefits to the local community, where amenities and environment are enhanced and a shared responsibility for the beach and the local environment is promoted. These awards also have a positive knock on effect for tourism in the County. The local authority depends on the full co-operation of the public in maintaining and progressing the Blue Flag Scheme along our beautiful coastline.

Department of Education Teacher Training Summer Course

'The Child, the School and the Community; SESE in Action'



Date: 7th July – 11th July (9.30 am – 14.30 pm)

Venue: Lifetime Lab, Lee Road, Cork City

Cost: €50

The course is designed to take a practical approach to the SESEG area of the National Curriculum, and if your school is working on An Taisce's Green Schools programme this course will help you integrate the programme into the curriculum. It will also provide you with relevant computing skills to enable optimum exchange of information and best practice examples.

For more information or to register contact **Birgit O'Driscoll**

Tel: 085-1530064 E-mail: b.odriscoll@hotmail.com Web: www.greenschoolsireland.org

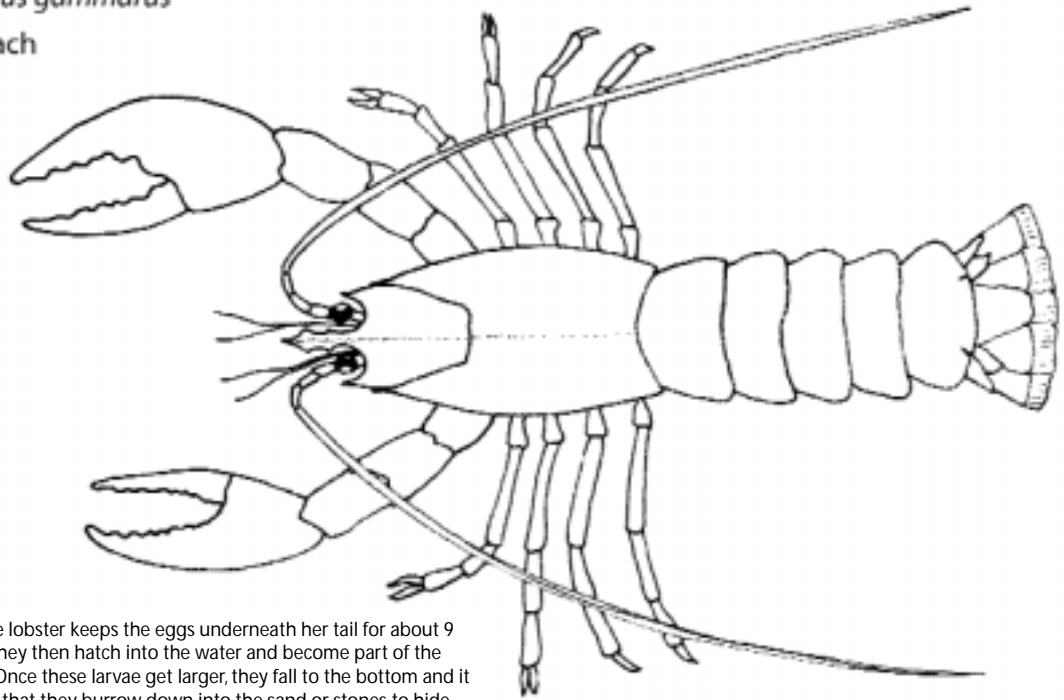
This course is offered to you in coordination with An Taisce's Environmental Education Unit and is part funded by the Environmental Awareness and Research Unit of Cork County Council and Cork City Council

Colour Me

Common Lobster

Homarus gammarus

Gliomach



The female lobster keeps the eggs underneath her tail for about 9 months. They then hatch into the water and become part of the plankton. Once these larvae get larger, they fall to the bottom and it is thought that they burrow down into the sand or stones to hide until they are big enough to come out. The lobster grows by moulting i.e. it sheds its shell and replaces it with a new, larger one.

Produced by Sherrin Ward Martin Baker for the DVD "On the Water's Edge" © 2008



Central Fisheries Board

An Priomh-Bhord Iascaigh

The Water Framework Directive

WHAT IS THE WATER FRAMEWORK?

The Water Framework Directive (WFD) is a European Directive introduced in December 2000 establishing a new framework for the protection and management of water resources throughout the European Union. There is a statutory obligation on each country to monitor fish at selected sites in rivers, lakes and estuaries.

WHO WILL DELIVER THE FISH ELEMENT OF THE WFD?

The Central and Regional Fisheries Boards are delivering the fish element of the WFD and they will compile information about the fish species occurring at certain specified locations, their abundance and age patterns. In addition they will be working closely with all stakeholders including Fishery Owners, Angling Associations, Fisheries Representative Bodies and other Government Agencies to ensure successful delivery of this programme.

WHAT PROGRESS HAS BEEN MADE ON THE WFD IN 2008?

In early 2008 the Fisheries Boards successfully completed a comprehensive recruitment and training programme and now have the team of research scientists in place ready to roll out the fish sampling programme. In addition a significant number of meetings have been held with relevant stakeholders to finalise elements of the sampling schedule.

The spring has also been a very busy time, the research scientists have been processing the fish samples collected during the field sampling programme in 2007, compiling the WFD fishery database and also putting the information into GIS format.

WHEN WILL THE SAMPLING TAKE PLACE?

The monitoring of river, lake and canal sites must take place between July and September when all species of fish are available for sampling. The estuarine sampling programme can continue until October. Some preliminary sampling has already commenced, however the main bulk of the sampling effort will not begin until July.

WHERE CAN I FIND OUT MORE INFORMATION ON THE FISHERIES ELEMENT OF THE WFD?

The preliminary report on the sampling programme undertaken in 2007 can be accessed on the Central Fisheries Board website (www.cfb.ie). Dr Fiona Kelly is the project manager for the WFD. Dr Kelly will be happy to deal with more detailed queries in relation to the fisheries elements of the WFD going forward.

All enquiries to:

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Is Biodiversity a Good Assessment Tool?

By Mike Ludwig

BIODIVERSITY is an important component of sustained life on the earth. Having a good diversity of

species means that there is an increased likelihood of adaptation to change. But, in some arenas biodiversity or biological diversity has gone from a measure of species variety and adaptability to a measure of

environmental health. This shift has left some wondering if the change is wise. The term, biodiversity, is typically defined to mean the variety of life in all its forms, levels and combinations and includes

ecosystem, species, and genetic diversity. Our present day biodiversity is the result of several hundred million years of continued species adaptation to the ever changing environment and ecosystem of

the earth. The new role for biodiversity as a measure of a locale's well-being should be carefully considered. Because, along the redefinition pathway, there has been a corresponding decline in the appreciation that ecosystems, species and genetic makeup all contain limitations on an organism's ability to survive. Without that appreciation, there can be an expectation that systems are stable.

Without getting into who is causing global climate change, it is generally agreed that the earth is in a state of constant change. As a result of the changes, some species are being displaced by environmental conditions and / or the influx of better adapted species. There are other possible reasons for change but the end result is that change is occurring. And, biodiversity is being influenced by the change.

But, biodiversity is driven by chance. What are the chances that all the elements of survival are present at any place or that the elements will remain stable long enough for an organism to adapt to the local conditions? How many coconuts drifted past Hawaii before one floated ashore and how many of those that washed ashore didn't grow and survive? It might take only one, relatively minor, modification of a habitat or species characteristic to preclude or enhance a survival / presence. That modification then triggers a difference in the community structure and an accompanying variation in biodiversity. For instance; most shellfish spawn in the summer because spawning in the winter isn't successful. But, have most shellfish always spawned in summer or did environmental conditions select those with a summer birth date to dominate the population? Without an in-depth assessment of the habitat and species characteristics, the cause(s) of presence or absence might not be recognised. These days, these steps are sometimes skipped and an alarm goes out that there is a biodiversity level change.

All too often the lack of a species can be related to its lifestyle, the habitat, or predator / prey relationships. Take

human agricultural practices for instance, who can afford a biologically diverse corn, wheat or potato field? No farmer wants a field full of biodiversity. But biodiversity is driven by the chance that representatives of a diverse assortment of species can co-exist in a location. And, it is unlikely that the chances will be always positive in their outcome. It is more likely that there are more negative or failed colonisation attempts than there are positive ones. This is reflected by successful colonisers taking advantage of their success and dominating the community.

Habitat functions and values can be influenced by unnatural as well as natural conditions. But without knowing what the influence is, the use of biodiversity to measure ecological health is restricted. Some of the most commonly overlooked examples of this is seen in species restoration / re-introduction efforts. How often have we seen a wetland mitigation site planted with suitable species only to watch them fail or be displaced by other species? Similarly, I once tagged 6,000 Bay scallops, placed them in what we considered to be ideal habitat, only to discover that they didn't agree and swam away. Both cases had failed to appreciate the limits of the species adaptability. They could not be restored to the area even though it may have been well known for the species. The question is: "what are the chances that this location includes this species in its community today or has it become more suitable for other species?" A simple check is to ask: "does Mother Nature allow it to use the area?" If the answer is "yes" she'll provide some clues. We need to find them. Biodiversity is constrained by local conditions and unlikely to be uniform at different sites. Comparing the biodiversity at two or more sites will cause you disappointment and it may mean nothing more than the two sites are different in ways we can't determine. Claiming that a difference or decline in species diversity indicates environmental damage without understanding what is changing the situation, may be premature.

Biodiversity does not lend itself easily to the challenge of contrasting two locations. Using biodiversity as a tool to assess the ecological health of an area is not likely to help advance our understanding or the importance of the diversity.

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