

SHERKIN COMMENT

Issue No. 47

Environmental Quarterly of Sherkin Island Marine Station

2009

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East Coast Nature Reserve

The Realisation of a Dream



*Curlew on the East Coast Nature Reserve.
Photographer John Carey.*

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Editorial

Protecting the Soil

By Matt Murphy

THE recently published Environmental Protection Agency report 2008 provides an integrated assessment of the overall quality of Ireland's environment. It details the pressure on it and the issues necessary to protect it. This is only the fourth State of Environment report since the establishment of the EPA - the last was in 2004. The Director General Dr. Mary Kelly states: "despite successes to date however much more focus and progress is needed to address the pressing environmental challenge that this report has identified for Ireland in the coming years." The report addresses the main issues, which are continuously being debated in the media and elsewhere such as climate change and air quality, the Water Framework Directive and Waste. However one issue that rarely if ever has made "the headlines" is Ireland's soil. Yet on reading this section it is difficult to understand why there has been such gross neglect in understanding the importance of our soil's quality and its essential functions.

In this country, we have failed to give soil the same concern as other environmental issues. It provides the foundation for life in terrestrial ecosystems:

Soil is the growing medium for food, forage crops, fibre, energy crops and timber. It stores nutrients and water for crops and provides anchorage for root growth.

Soil regulates and controls water flow over land and filters rainfall passing through the soil to plants and groundwater. Soil influences river flows, flooding and recharge to groundwater.

Soil provides the first layer of protection from pollutants that arise on the land surface. The micro-organisms and minerals in soil filter, buffer, degrade, utilise, immobilise and detoxify large number of organic and inorganic materials, including slurries, industrial organic wastes and sewage sludge.

Soil stores, transforms and cycles essential nutrients such as carbon, nitrogen, phosphorus, potassium and sulphur.

Soil also takes up, stores and releases atmospheric gases.

Soil provides raw materials and foundation support for buildings and protects our archaeological and cultural remains.

The report lists a number of priority initiatives to protect soils and in doing so, protect water and air quality:

1. Soil data coverage of Ireland is incomplete and exists in many variable and disparate forms. Without a comprehensive national soil map and with all the associated soil physical and chemical data, tackling issues such as quantifying the extent of soil threats in Ireland, producing runoff risk and nutrient loss for soil to water will be extremely difficult.
2. A critical assessment of existing evidence about the state of Irish soil and the pressures that are currently affecting soil functions needs to be undertaken.
3. The requirement for a national soil quality-monitoring network that would take account of soils spatial variability, different land use and future risks needs to be evaluated.
4. A national framework plan for the management and remediation of contaminated

soils in Ireland needs to be developed. Ireland lacks specific legislation for dealing with contaminated soil and the application of existing legislation is often difficult and piecemeal.

5. The regulation of the application of sewage sludge to land needs to be revisited. This must involve the local authorities that are responsible for the generation and treatment of sewage sludge and those at farm level, where sewage sludge is used in agriculture. An overall management system, that records and monitors the quantities produced, is needed.

The report on soil concludes as follows:

"Our soil needs to be afforded the same protection as given to air and water. We need to know the state of our soils, and the pressures placed on them, evaluate the extent of soil degradation and respond to degradation processes in an informed and structured manner. We need to plan for the protection of soils to ensure that they can continue to perform the functions we require of them and to protect against the real risk from climate change. We cannot protect this intrinsically valuable national resource without the appropri-

ate and essential information and understanding. We cannot achieve good water or air quality without knowing our soils and how they behave in relation to pressures placed on them. Our soils are our life... they are intrinsically connected to our water and air, and we must strive to protect them."

One thing clear from this report is that there needs to be improvements in our knowledge of Ireland's soils. The population at large has no concept of how important soil quality is for the sustaining of quality food production and for protection of our environment; we must give priority to changing this situation. The EPA must increase their funding of research in this area and at the same time continue to highlight the damage to our environment. Even this will not be sufficient unless bodies such as local authorities and farming organisations introduce educational programmes to help the general public to understand why care of Ireland's soil is so vital to their future.

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

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STAFF: Editor, Matt Murphy; Editorial Assistant, Susan Murphy Wickens; Typesetting, Susan Murphy Wickens; Publisher, Matt Murphy. ISSN 0791-2447 © 2009 Sherkin Island Marine Station website: www.sherkinmarine.ie



A pair of South American Terns in Beagle Channel.



Magellanic Penguins, adults and young, loafing on beach at Beagle Channel colony.



Chilean Skua on its nest on island in Beagle Channel.



A group of South American Sea Lions hauled out on the rocky islet.

ANTARCTICA

The Last Continent

Photos: © Oscar Merne

While in Ushuaia I made a couple of visits to the islands in the Beagle Channel to see the local wildlife. There are several boats operating in the Beagle Channel out of Ushuaia, most of them quite large and carrying up to 250 passengers. I chose one of the smaller boats, which allowed closer approaches to the islands and rocks for viewing the sealions and seabird colonies, and also landed on one of the larger islands. In cruising the channel I was amazed to see good numbers of Black-browed Albatrosses and Southern Giant Petrels – species I'd associated with the open oceans – flying around and foraging in the confined waters 100 km from the open sea. Indeed, some of the Giant Petrels could be seen scavenging at a sewage outfall in Ushuaia Harbour, just like gulls do in our parts.

By Oscar Merne

ANTARCTICA has held a fascination for me over the last fifty years, and finally I managed to get there in December 2008, albeit on a short trip to the Antarctic Peninsula. This quite narrow and mountainous peninsula extends northwards from Western Antarctica some 1,500 km towards the southern tip of South America and therefore is relatively easy to reach from the world's most southerly city – Ushuaia, on the Beagle Channel, in the Argentinian part of Tierra del Fuego. This is where most visitors to Antarctica start their journey these days.

My wife and I spent three weeks travelling around in Argentina, from the steamy tropical north of the country at the Iguazu National Park and its awesome waterfalls to the cool temperate area around El Calafate, on the western edge of Patagonia and including Los Glaciares National Park and its famous Perito Moreno Glacier. Unfortunately, my wife, who is not a good sailor, could not be persuaded to face the often stormy crossing of the Drake Passage between Cape Horn and the Antarctic Peninsula. She joined an organised group at El Calafate and spent two weeks travelling south and exploring the magnificent landscapes of the southern Argentinian/Chilean Andes. In the meantime, I flew the 1,000 km from El Calafate to Ushuaia, and spent three days exploring the Beagle Channel and the beautiful Tierra del Fuego National Park, just outside Ushuaia, before joining my Antarctic ship on the 6th December.

To start with, this article describes some of the wildlife highlights of the Beagle Channel, with the Drake Passage, and the Antarctic Peninsula itself, covered later.

The islands in the Beagle Channel are uninhabited so make ideal safe and secure breeding places for colonial seabirds and haul-outs for South American Sealions. The most numerous of the nesting seabirds were handsome black and white King Cormorants (also known as Blue-eyed Shags) which formed large, dense colonies on rounded tops or gentle slopes of many of the islands. Where there were low rock cliffs the red-faced, white-eared, black-necked Rock Cormorants nested on ledges, much as our European Shags do. I also saw a few Neotropic (or Olivaceous) Cormorants in the Beagle Channel, but there was no sign of any in the island colonies.

In attendance at the cormorant colonies there were always a few large brown skuas, on the look-out for opportunities to grab an unattended egg. Later in the season they will also take and devour fluffy brown chicks. However, they are not entirely predatory: often they simply scavenge fish discarded by well-fed young cormorants. These skuas look very like the Great Skuas which breed in Iceland and Scotland, and which recently started to colonise an island in the west of Ireland. However, these ones were closely-related Chilean Skuas.

One of the smaller, low-lying rocky islands had a large colony of beautiful and graceful South American Terns, rather similar to our Arctic Terns, but with a paler body and longer red bill. Small numbers of loafing terns were seen elsewhere on the islands, occasionally in Ushuaia Harbour.

Two species of gulls were fairly numerous in the Beagle Channel and had breeding colonies on some of the



An adult Dolphin Gull, in Beagle Channel.



Southern Giant Petrels scavenging in Beagle Channel.

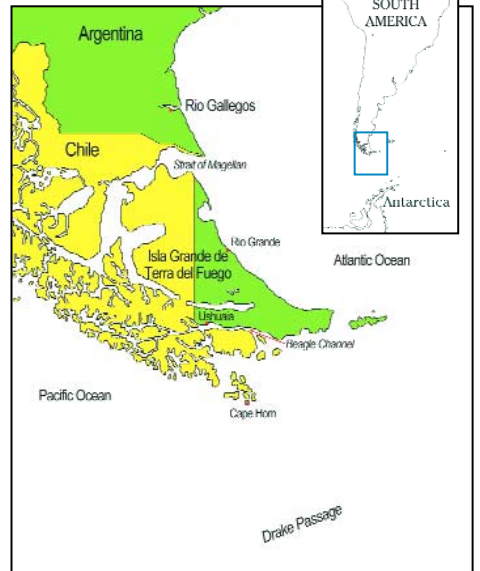
islands. The larger species was the Kelp Gull, known elsewhere as Dominican Gull, which is very similar to our Great Black-backed Gull, but is confined largely to South America, Southern Africa, Australia and New Zealand. The smaller gull was the strange-looking Dolphin Gull, with very dark grey wings and mantle, coral red legs and heavy bill, and unsettling pale grey irises accentuated by red eye-rings. These gulls are confined to the coasts of southern South America.

Finally, the birds which many think of when you mention the Antarctic, are the penguins. On one isolated island about half way down the channel from Ushuaia to the South Atlantic is a fine

colony of Magellanic Penguins. On my half-day trips on the Beagle Channel I did not get as far as this colony, but saw a number of penguins feeding, diving and porpoising closer to Ushuaia, and, in failing light and a brewing storm, we passed the colony on our way to the Antarctic Peninsula.

My next article will concentrate on the Drake Passage crossing and the myriad of pelagic seabirds encountered during a hurricane.

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



MOST concerned citizens feel their hackles rising and their blood pressure soaring at the destruction of some valued part of our physical heritage - the ploughing up of a ringfort, the demolition of a Victorian landmark, even the felling of mature trees. Yet every day, unremarked and unobserved, a little part of our heritage of knowledge slips quietly into oblivion as elderly people take their folkmemories and their local idioms to the grave, as public authorities and private firms discard redundant records, as local landscapes are modified and altered in minor but multitudinous ways to serve the community's changing social and economic needs. Can anything be done? Should anything be done to preserve this perishable transient and irreplaceable inheritance? Is there anything that you can do?

Are you a local historian yet?

The continuing dissipation, with the passage of time, of local historical material, is so widespread and so unremitting that the handful of professional historians in our centres of learning cannot be expected systematically to ensure its preservation. Their work must be complemented by the efforts of an army of local historians in every district, working as individuals and in organised groups, to study, record and interpret the various historical factors which have contributed towards making our towns and rural areas what they are today - customs and attitudes, events and movements, topographical changes and developments, personalities and organisations.

Amateur historians, through their numerical strength, their local background knowledge, and their lifelong interest in their locality are in a unique position to document local history not only as a matter of personal satisfaction but to provide the source material for future historical research by others.

Why not study a particular theme?

Local history is by definition specialised - a specialised study of a particular district. Yet it provides a variety of study topics to suit particular personal preferences. How many of these fields of research would interest you?

Look around you - there's history everywhere!

A study of topographical features can itself produce an awesome array of historical evidence. The historian - more correctly the archaeologist - interested in the pre-Christian period may find (depending on where he or she

Archaeological remains	Religion
Local placenames	Oral History
Old maps and prints	Local bibliographies
Public records	Local folklore
Education	Old photographs
Administrative History	Biographies
Buildings	Heraldry
Architecture	Old Tracks and roads
Military history	Genealogy
Law and order	Boundaries
Land & Agriculture	Trade and Industry
Transport	Social Life
Public Utilities	Population

finds) a variety of court tombs, portal tombs, wedge tombs, passage graves, standing stones, crannogs, ring forts, hill forts, promontory forts. The person concentrating on religious history will study the pre-reformation churches and monastic settlements, the holy wells, the places of pilgrimage the stone crosses, the graveyards, modern churches both Catholic and Protestant and modern religious houses.

Military historians may encounter the remains of military encampments, barracks, scenes of ambush, earthworks, castles, motte and bailey fortifications and so on. The "Big Houses" with their inhabitants are a subject of almost universal interest. Those with an interest in administrative history will track down the story

History Around You



behind the public water supplies and drainage works, the road building schemes and public housing programmes, the public works, the land reform divisions, the hospitals and workhouses, the Courts, the police barracks, the prisons. Others will concentrate on the schools and convents and colleges in their areas. Industrial archaeological remains are everywhere, perhaps requiring a subdivision into remains of mining activity, of manufacturing activity, of agricultural activity, of communications activity - even of "settlement archaeology".

Even the local roads raise many questions. Why was there a seemingly unnecessary change in direction at a given point? Was there a former settlement there? Was there previously a different road pattern? Did its replacement indicate a change in location of habitation? How old is the road? Who built it and why? What traffic did it carry ... and so on.

The basic and simple roadside objects which have survived to the present can often cast light on days gone by. Milestones in Irish miles still exist, half forgotten, half buried in the hedgerows; post-boxes bearing the monograms of English royalty attest their length of public service; village pumps still quench the human thirst; horses no longer use the track beside the local bridge which led them from the roadway down to the refreshing stream; some horse troughs, dry or empty, still remain; stone monuments remain, vainly trying to preserve the memory of landlords now forgotten. Manhole covers like cast iron tombstones, preserve the memory of local authorities and public utilities now defunct. Even some hair salons retain a red-and-white-striped decor on their doorposts raising questions about the history of their trade.

Yes history is all around us - you cannot escape - unless you haven't noticed. Take a walk along a road or street and ask of everything you meet - why? Find the answers and you will already have uncovered some of the secrets of your native place.

How and where to start research

A prospect of "oral enquiry, archival research and field work" might deter any would-be local historian, but rephrased as "talking to local, mainly old, inhabitants, reading up your subject in books and documents and visiting the actual sites of interest", it has a more manageable appearance.

Here are a few signposts to point the apprentice historian in the right direction.

1. Documentary Sources

In listing types of material available, the following come to mind; printed local histories, ordnance sheets, maps and plans, old newspapers, directories, parish records, census returns, estate papers, local government records, the Lawrence photographic collection, title deeds.

Many local librarians are assembling material of interest relating to the localities they serve. But researchers visiting the major archival sources in Dublin should, to limit frustration to a reasonable level, request access in advance. know precisely what they wish to research, and most of all allow plenty, plenty of time - for archival research is unbelievably time consuming.

2. Oral Sources

Here are some basic guidelines to follow.

Research your subject sufficiently in advance to ascertain the questions which should be asked. Secure if possible an introduction from a mutual friend. Have the questions listed precisely on a discreet, small paper - not on a clip-board. When interviewing, do not, except in exceptional cases, record the answers verbatim but tactfully jot down key words from the answers. Before leaving ask for names of other people who have related information. Finally, and most importantly, record the information in full immediately after the interview.

Before leaving ask for names of other people who have related information. Finally, and most importantly, record the information in full immediately after the interview.

3. Field Work

Some field work (e.g. archaeological excavations) must be left to qualified people, but fieldwork projects for the amateur could include seeking evidence on the ground of disused tracks and roads, searching for signs of abandoned habitations and recording information from tombstones.

Are you a member of the club?

While many historians pursue their interest individually, most find it useful to link with others. Research has little end product unless it results in the presentation of the material in lecture, booklet or exhibition form - all of which involve organisation. Personal contact with others affords an opportunity to exchange news of discoveries and to cross-check information. While membership of an historical society authenticates approaches to strangers for information. Most of all, an organisation ensures a pre-agreed direction to its members' activities, affords mutual support and encouragement, ensures a social dimension and provides a contact point for people of similar interests. Not surprising then has been the phenomenal growth in recent years in the number of local historical societies.

Typical functions of an historical society

While activities vary from area to area, most local history societies work on similar lines. Nearly all societies organise lectures and outings, publish a news sheet, journal or series of papers, and hold displays and exhibitions. Some may erect plaques to mark locations of historic interest; some work to preserve historic monuments, buildings, sites and similar features. Many encourage local history projects in schools. Most do local historical research. Some societies, using the help of forfias or other agencies, carry out historical surveys and do restoration work. And some, particularly well organised groups, run a local heritage centre or museum.

All activities seek to promote an interest in local history and an awareness of its importance to the local community.

A role for the non-activist historian

Not everyone aspires to join societies, desires to organise lectures, retires into public archives to pursue research. But any observant person cannot fail to amass a vast store of local knowledge, as years roll by. So if you have memories why not write them down or communicate them to someone who will value them?

But there are other things that an unattached historian can do by, for example, moulding pub-

lic opinion, educating friends and neighbours and in particular urging local Councillors to adopt or continue enlightened policies on preservation of our physical heritage, reviving old placenames when naming new roads, retaining antique street furniture, granite kerbs etc., maintaining Council archives, supporting local museums and so on.

Depending on occupation, an historian may be presented with special opportunities to "promote the cause". A few actual cases come immediately to mind: a teacher who has inculcated a love of their area and its traditions in the younger generation; a librarian who has built up local archives; a public servant who has rescued old documents of local historical interest when redundant records were being destroyed; a plumber who has assembled a collection of antique pumps, pipes and sanitary fittings which would otherwise have been destroyed. Or you could be a "contemporary local historian".

Openings for the contemporary local historian

Much of the valuable source material we use comes from records of local events compiled as they occurred, or from accounts describing conditions which existed at the time of writing. Conversely much of the historian's frustration results when such reports are absent. By becoming a reporter of current events you may well be quoted in learned quarters and scholarly tomes when your name has begun to fade on your weathered tombstone! Here are some ideas. Why not keep a diary of local events and happenings as they occur, together with descriptions of various aspects of community life? Or keep a scrapbook, news cuttings, notices, circulars, election literature, posters and so on. Or again, why not collect local memorabilia products of local (perhaps defunct) industries, local handicrafts, redundant signs etc. Teachers particularly are in an excellent position to play the role of local diarist and may be able to encourage their students to gather the information to be recorded. Camera enthusiasts could record local events and scenes, particularly subjects ignored by professional photographers. The recollections of residents with long memories could be recorded on audio or video equipment.

Notes and records of contemporary life, and indeed records of research carried out into the past, will be of no lasting value if subsequently thrown out, or lost or destroyed. Always make provision therefore, for copying and lodging of all such material in suitable archives.

Where to go for information

For bibliographies related to your own locality or to the study of local history generally consult your local librarian. Your librarian will also be able to supply details of the major depositories of archives in Ireland.

For additional address of value to local historians, visit the "Publications" section of www.enfo.ie and view the leaflet "History Around You".

From the ENFO leaflet "History Around You". 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>. This is a reprint of a Resource Source leaflet prepared by Liam Clare, illustrated by Geoffrey Johnson and produced originally by the Department of Environmental Studies, University College Dublin.

Brown Trout in Ireland

By Maurice O'Callaghan

A RECENT book published by the Central Fisheries Board provides one with a wonderful pictorial insight of one of Ireland's most common indigenous fish, the brown trout. This publication was written by Dr. Martin O'Grady who has been involved for over 30 years in researching the ecology and biology of this species. Dr. O'Grady also draws on the experience of many other researchers, past and present, who have worked in different freshwater research fields in Ireland and elsewhere. Dr. O'Grady was ably assisted by two of his colleagues – Myles Kelly, a very capable wild life artist and Shane O'Reilly, an experienced graphic artist. Together they have produced a terrific book embellished with many photographs of trout in their natural environment, wonderful graphics and many pictures of the trout's environment. This publication will be of particular interest to anglers, environmentalists and teachers.

The book confirms that brown trout is one of very few native Irish freshwater fish species – during the last ice age, some 10,000 years ago, Ireland was frozen over. So when the thaw came and our rivers started to flow again Ireland was an island at this point in time. Consequently the only fishes which could invade our river systems were those that could tolerate salt water as they swam from other European waters to colonise our waters – salmon, trout, eels, shad and pollan.

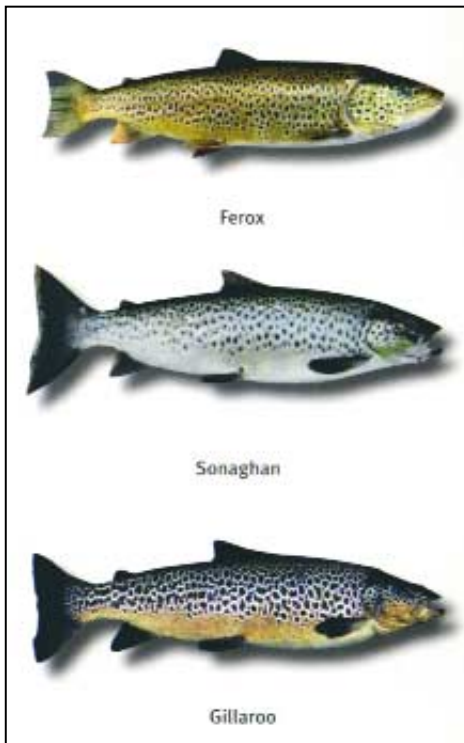
The author points out that trout are found in every catchment in Ireland. At this point in time there are even trout stocks in some parts of our canal systems. The key environmental factors which are required by trout are out-



The book is a must for all environmentalists. It is available from the Central Fisheries Board for €30.00 including postage. Anyone seeking a copy should contact sandra.doyle@cfb.ie

lined and illustrated – clean water, loose gravels for spawning and nutrient rich waters which accommodate large populations of insects, crustaceans and snails, the trout's favourite food items.

There is comprehensive coverage in this publication of the genetic studies of trout which have been carried out at home and abroad. It is noteworthy that the pigmentation (colour) patterns of individual trout reflect, to a significant extent, their



Extensive and detailed genetic studies of Irish brown trout have been pioneered by Professor Andy Ferguson and shows that three types of brown trout in Lough Melvin, which are visually different, are in fact genetically distinct. He suggests that they be re-classified and called *Salmo ferox* (Ferox), *Salmo stomachicus* (Gillaroo) and *Salmo nigripinnis* (Sonaghan).

genetic uniqueness. The author's collection of Irish trout photographs in the book can leave no one in doubt as to the broad genetic base of Irish trout. The author stresses that geneticists in Ireland now regard all our brown trout as a "family of fishes" rather than an individual species.

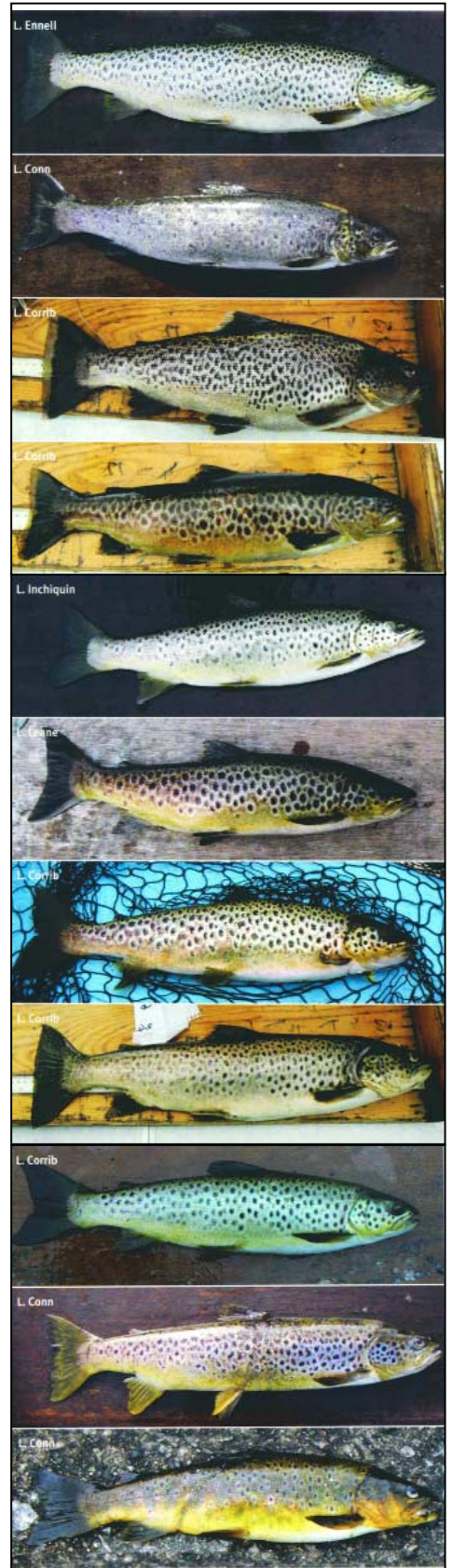
Research clearly shows the "plasticity" of brown trout as a species. Remarkable variation has been recorded in relation to their lifespan, growth patterns, feeding habits and even the extent to which individual fish travel over their lifetime. All of these subjects are clearly documented with examples in this book.

There are hundreds of lakes in Ireland, yet, only a few of these could be regarded as high quality trout fisheries. The combination of ecological and biological factors required to create a quality brown trout lough fishery are outlined in detail.

This book examines the role of fish hatcheries in promoting brown trout stocks. The author's researches clearly show that hatcheries have an important role to play in creating trout fisheries in ponds and lakes where there are few or no natural spawning streams in the catchment. Such waters need to be restocked regularly to maintain a population. Research has also shown that stocking trout into waters which already contain a substantial wild trout population is a waste of resources. This book contains a fascinating and detailed account of research programmes designed to establish these facts.

Over the last sixty years numerous land management practices, an expanding human population and the introduction of non native plant, invertebrate and fish species in Ireland have pressurised brown trout habitats. Detail is provided of how these various factors have impinged on trout stocks.

The role of the Fisheries Boards in managing and conserving wild brown trout stocks is outlined. It is not all "doom and gloom". This book illustrates the positive programmes which are in place to maintain and/or restore wild trout stocks. The reader will be fascinated by the sophisticated nature of current research programmes.



The array of colour patterns displayed by trout (see Lake Trout above), is, in part, a camouflage mechanism with individual fish adopting a specific colour pattern in a particular habitat which affords them some protection from predators. Colour patterns also reflect the genetic origin of the fish. Research has shown that pigmentation patterns on trout can be used to correctly identify 79% of individuals belonging to a particular genetic stock. The array of pigmentation patterns on wild Irish brown trout is very broad and probably, in part reflects the wide genetic variation of these fishes. It is also a reflection of the diverse range of habitats which they have successfully colonised.



Castle Island.

Clear Island. Castle and Horse have a gentler, more softly rounded landscape than these larger islands. The soil, derived from eroding rocks and glacial drift, would have been fertile enough for cultivation, although much of Horse is clayey and waterlogged. The islands both have an extensive cover of scrub of gorse, willow, bramble and bracken, and on the north sides low, gullied cliffs impenetrably covered by ivy, ferns and various taller plants. Castle has some sheep-grazed pasture and, at the western end, heath and open rocky ground. The island's two best plant areas are at the eastern and western ends. The shingle strand to the south of the castle has rare Sea Bindweed, and plants of disturbed or tilled ground, relics of the time when people lived here – Musk Stork's-bill, Small Nettle, both rather scarce and scattered in the islands, and Good King Henry, at its only site in Co. Cork. This clump-forming perennial,



Deptford Pink (*Dianthus armeria*).

Castle & Horse Islands

JOHN AKEROYD
looks at two more islands in Roaringwater Bay

In this series of articles I've described some of 'Carbery's Hundred Isles' in West Cork. Over the last 20 years, with other biologists working at Sherkin Island Marine Station, I've been privileged to explore the remoter, unpopulated and seldom visited islands in Roaringwater Bay. Castle Island has yielded some special plant finds, and has at least one plant found nowhere else in the area. Horse Island has been a particular thrill, always a source of interesting plants, not least on one cold, damp late afternoon at the end of August 1992. In a patch of dry grass on shallow

soil by a rock outcrop was a cluster of bright pink flowers – Deptford Pink (*Dianthus armeria*), a plant never before recorded in Ireland.

With Long Island and the smaller rocky Goat Island to the west, Castle and Horse are the most northerly islands in Roaringwater Bay. In fact they may all have once been one single island, as old chronicles tell of a cataclysmic storm in the 9th century that split apart the three main islands. This part of the Bay adjacent to the Mizen Head peninsula is often called Long Island Bay. Both islands are for the most part low-lying, with Castle rising gently to just 36 m, Horse to 37 m. Castle is uninhabited today but has the ruins of a settlement at the

eastern end, together with the castle, a O'Mahony tower house. By the 1990s Horse, once populous, had only one resident household, and a substantial holiday home on the southern coast, but today supports a summer population in several restored cottages towards the western end. A handsome new pier makes the island accessible (note that the island is under private ownership), whereas Castle is harder to reach and attracts few visitors at all.

Geologically both islands are of Upper Devonian age (350 million years ago), formed of the fine-grained purplish mudstones of the Castlehaven Formation that replaces the harder and slightly older Sherkin Formation of Sherkin and Cape

related to beet and spinach and once widely eaten as a vegetable, also grows among nettles near the buildings. Rocky Atlantic heath at the south-western end of Castle is

home to Spotted Rock-rose, a tiny yellow-flowered annual known on East Calf and Hare Island since the 1930s and found on Long in 1994. Now known from several places in Roaringwater Bay but discovered on Castle only in 1999, it is included in the Red Data Book of the most threatened Irish plants.

For, curiously, we were not the first on its trail. Shortly after we found the plant, I was checking folders of *Dianthus* specimens at the Natural History Museum in London. At the bottom of the pile, in a tatty old folder labelled "Ireland?", was a single specimen of Deptford Pink collected near The Ovens, not far from



Horse Island (above) and Castle Island are the most northerly island in Roaringwater Bay.

Horse has several good areas for plants and is rich in history. Copper was mined at the eastern end in the Bronze Age, and during the mid-19th century the island was again at the centre of a West Cork copper boom. An 1857 map shows extensive settlement and tillage as well as mine shafts (these later a hiding place for illegal poteen). The ruined village, with its stony spoil heaps, is one of the few places in the area where the fleshy, orchid-like parasitic plant Common Broomrape grows. Rare weeds persist nearby: Purple Ramping-fumitory, Sharp-leaved Fluellen and Knotted Hedge-parsley. Grassland at the south-eastern end, disappearing now under bracken and scrub, has Deptford Pink and another West Cork rarity, Slender Centaury, discovered in Roaringwater Bay in 1818 and re-found in 1982 by Lucy Wright, one of the most remarkable botanists to work on Sherkin. Not far away, a seaside gully, too steep for grazing animals to penetrate, is almost hidden by a dense patch of Hazel and Spindle, perhaps relics of former woodland.

Cork City, by botanist Isaac Carroll (1828–80). Since 1993 the plant has persisted on Horse, with anything up to over 100 plants being counted in a season, but Deptford Pink remains among the rarest and most threatened species in Ireland, still not protected by law. We need to keep an eye on these plants and look out for them elsewhere in Co. Cork.

John Akeroyd, who has visited Roaringwater Bay since 1986, edited The Wild Plants of Sherkin, Cape Clear and adjacent islands of West Cork (1996).



Good King Henry.

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Groundwater in Ireland

The Current Situation

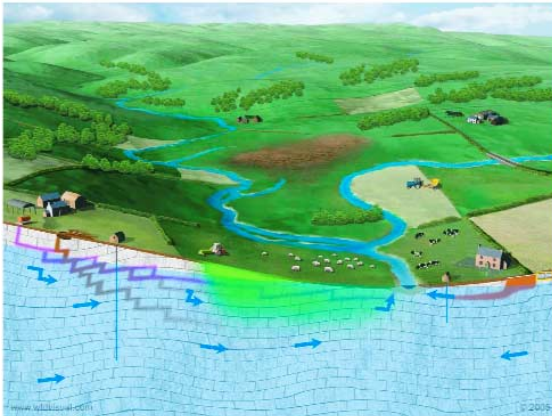


Figure 1 Groundwater provides a significant contribution to wells and rivers in productive aquifers. However, pollution can occur in vulnerable areas if care is not taken to prevent pollutants entering the ground.

By Donal Daly

Context

Groundwater may be hidden underground, but it is an important resource not only supplying one quarter of our drinking water supplies from wells and springs, but also providing a significant contribution to river flow in dry weather and acting as the critical contributor to many terrestrial ecosystems, such as fens and turloughs (see Figure 1). While it is less prone to pollution than surface water due to the protecting filtering layer of soil and subsoil that overlies the water table, it nevertheless is vulnerable in areas where the subsoils are thin, particularly in the karstic limestone areas. Unfortunately, little purification of pollutants occurs in Irish bedrock. Why? Irish rocks are ancient (more than 300 million years old generally); they have lost their original porosity due to the heat and pressure in the earth's crust, and now water can only flow through cracks, joints and, in the case of some limestones, conduits of varying dimensions. (Note the differences between the photos of sand (Figure 2) (which provides, for instance, good filtration of microbial pathogens) and the joints, fractures and conduits in the limestones (Figure 3) (which have virtually no purification potential)).

While the EPA initiated a national groundwater monitoring network in the mid 1990s, the implementation of the EU Water Framework Directive in recent years has necessitated a review of the network, drilling of new wells (50 were installed in 2008 with funding provided by the Department of

Environment, Heritage and Local Government), and increased sampling and analysis. There are now over 250 wells and springs in the network and this will increase to approximately 300 in the coming years. While this network has a lower density than most other EU countries, emphasis was placed on achieving an effective network that is representative of the pressures and hydrogeological settings present in Ireland.

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The Main Issues

Not all groundwater quality problems are caused by human activities! Iron and manganese are often found in muddy limestone areas in counties such as Galway, Offaly (my brother's farm well has high iron!), Westmeath and Meath. Sulphate and fluoride can be a problem in some areas in Cavan and Monaghan. Hydrogen sulphide (giving the distinctive rotten egg smell) is present where certain geological conditions (usually deoxygenated, in the presence of sulphide minerals) are present.

However, undoubtedly we, the people who live on the land surface,

Microbial Pathogens

Microbial pathogens – faecal bacteria in particular, but also, potentially, Cryptosporidium – are the most widespread and significant, from a human health perspective, pollutant in groundwater. Positive faecal coliform counts were detected in 25% of water samples taken at the EPA groundwater monitoring stations. EPA monitoring has shown only a slight improvement in water quality in the last few years. Wells located in extremely vulnerable (i.e. thin subsoils) areas are particularly at risk from pathogens, especially if located close to on-site wastewater treatment systems (mostly septic tanks) or farmyards, or if landspreading of manure or slurry occurs nearby. In addition, wells (particularly private wells) are frequently not constructed such that surface water and shallow groundwater, which are likely to be polluted, cannot enter the well. (If you want good advice on this, see Guidance provided on the Institution of Geologists website – www.igi.ie.). Disinfection of all groundwater supplies in these areas, including domestic supplies, is recommended.

Nitrates

The average nitrate concentration for 2007 at the national EPA groundwater quality monitoring stations (174) was 16.8 mg/l NO₃. The regional variation is shown in Figure 4. Generally the eastern and south-eastern portion of the country has the greatest proportion of monitoring stations with elevated nitrate concentrations. This is attributed largely to the impact of dairy, cattle and tillage farming. However, the situation in Ireland is far better than most other EU countries, as 75% of the monitoring points had average concentrations less than 25 mg/l NO₃, with only 3 having average concentrations above 50 mg/l NO₃ (the EU Maximum Admissible Concentration).

The average nitrate concentrations for 2007 can be compared with the three-year averages for the period 1995 to 2006 in Table 1. This shows an increase in the proportion of wells with nitrates in the range 25-37.5 mg/l.

Period	Average Nitrate (mg/l NO ₃) Concentration (Percentage of monitoring locations within each concentration range)					
	< 5	5 - 10	10 - 25	25 - 37.5	37.5 - 50	> 50
1995-1997	13.3	18.3	50.0	11.7	6.7	0.0
1998-2000	20.7	15.9	45.1	11.0	4.9	2.4
2001-2003	16.2	18.0	44.1	11.8	8.1	1.8
2004-2006	14.6	11.7	46.7	17.5	7.3	2.2
2007	21.3	13.8	39.1	17.2	7.5	1.1

Obtaining Further Information on Groundwater

Useful information on groundwater can be obtained from the EPA website (www.epa.ie) and the Geological Survey of Ireland website (www.gsi.ie). For those interested in education of children, Dundalk IT have produced a booklet on water for 4th Class in Primary schools; this can be obtained from the website www.worldofwater.ie.

Donal Daly, Environmental Protection Agency, Johnstown Castle Estate, Wexford. www.epa.ie

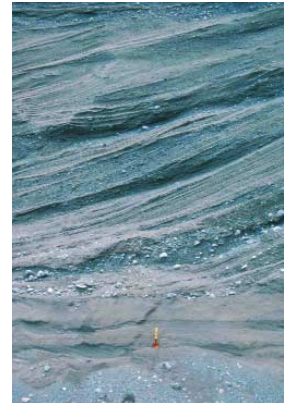


Figure 2 A sand pit in County Offaly.



Figure 3 Fissures in a Limestone Bedrock Aquifer in County Kilkenny.

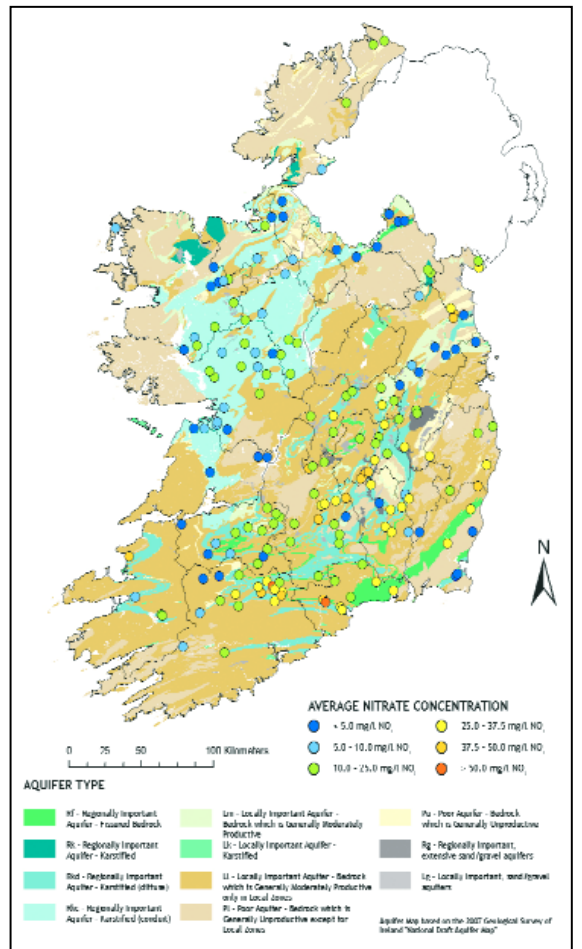


Figure 4 Average nitrate concentration in 2007 at the EPA groundwater monitoring points (data from EPA monitoring network; background aquifer map from GSI).

By Declan T. Quigley

Wrasse (Labridae) in Irish and North-Eastern Atlantic Waters

WRASSE belong to the second largest family of marine fishes (Labridae) comprising about 68 genera and at least 453 known species found worldwide in inshore tropical, warm temperate and temperate seas. Although at least 26 species of wrasse have been recorded from the NE Atlantic and Mediterranean (Table 1), only 8 of these have been reported from Northern European waters and only 7 from Irish waters, two of which are currently regarded as rare. Ballion's Wrasse (*Crenilabrus ballioni*) has only recently been recognised from localised areas of Connemara, Co Galway and there is only one doubtful record of Rainbow Wrasse (*Coris julis*) from the same region (apparently taken during the 1800s).

The Labridae represents one of the most diversified of all fish families in terms of shape, colour and size. Many species are highly colourful and several colour patterns may exist both within and between males and females of the same species. Although most species of wrasse are relatively small, measuring <15cm, the endangered Humphead Wrasse (*Cheilimichthys rupestris*), Rock Cook (*Centrolabrus exoleus*) and Corkwing (*Crenilabrus melops*) as part of their management regimes for controlling sea-lice levels on Atlantic salmon (*Salmo salar*).

Some wrasse species are partially piscivorous and mimic the symbiotic cleaning behaviour of harmless species in order to take a bite out of unsuspecting hosts. Furthermore, some unrelated piscivorous fishes such as juvenile Yellowmouth Grouper (*Mycteroperca interstitialis*), found in tropical waters of the Western Atlantic, mimic the harmless cleaner Clown Wrasse (*Halichoeres maculipinna*) for the same sneaky purpose! Another unrelated species, the False Cleaner Fish (*Apidonotus taeniatus*), a species of Blenny (Family: Blenniidae), mimic the Bluestreak Cleaner Wrasse (*Labroides dimidiatus*) in order to gain immunity and an opportunistic meal from potentially large predators.

Many species of wrasse have the habit of burying themselves in sand or hiding in caves or crevices while "sleeping" at night and appear to be active only during daylight. In Northern European waters, wrasse are generally inactive at temperatures <10°C (i.e. during winter & spring). Ballan (*Labrus bergylta*) and Cuckoo Wrasse (*Labrus mixtus*) appear to be particularly vulnerable to unusually cold conditions; high mortality levels have occasionally been recorded during exceptionally cold winters.



Ballan Wrasse



Cuckoo Wrasse

to swim right inside and pick off the parasites.

In Northern European waters, commercial fish farmers have exploited, with various degrees of success, the cleaning behaviour of several species of wrasse, particularly Goldsinny (*Crenilabrus rupestris*), Rock Cook (*Centrolabrus exoleus*) and Corkwing (*Crenilabrus melops*) as part of their management regimes for controlling sea-lice levels on Atlantic salmon (*Salmo salar*).

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Ballan Wrasse (*Labrus bergylta*)

The Ballan Wrasse is the largest (measuring up to 66cm) and most frequently encountered species in Irish waters; particularly abundant in rocky inshore areas and offshore reefs with dense algal cover, it occurs down to depths of about 1-50m (usually 2-30m). Adults are usually solitary or occur in small variably coloured

groups. The species feeds predominantly on crustaceans (e.g. crabs, squat lobsters, prawns and barnacles) and molluscs (e.g. mussels).

The Ballan Wrasse is one of the few species of fish to build a nest; sex-inverted males construct a loose agglomeration of fine seaweed bound with mucus threads and wedged in a crevice. Spawning takes place between April and August. All Ballan Wrasse are born as females, mature as females when 2 years old (16-18cm) and subsequently undergo sex-inversion to become functional males when they are 4-14 years old (monandric protogynous hermaphrodites). A slow-growing species, the maximum reported age for males and females is 29 and 25 years respectively.

Cuckoo Wrasse (*Labrus mixtus*)

The Cuckoo Wrasse is relatively common in Northern European waters but little is known about its biology. It is one of the most colourful of all the Labrid species found in Irish waters (particularly the males). The species occurs either singly or in pairs in similar habitats to the Ballan Wrasse but usually at deeper depths (2-200m; usually 40-80m); it appears to migrate inshore during the summer and offshore during early winter. The male Cuckoo Wrasse also builds and guards its nest during the breeding season (May to July). While all Cuckoo Wrasse appear to be born as females, only some of these females subsequently undergo sex-inversion to become functional males when they are >4 years old (diandric protogynous hermaphrodites).

The species is slow-growing - the maximum reported length for males and females is 40.0 and 30.0cm respectively - and long-lived (up to 20 years). The diet of the Cuckoo Wrasse is generally thought to be similar to that of the Ballan Wrasse, but in contrast, fish seems to be a significant element.

Specimen Ballan Wrasse & Cuckoo Wrasse in Irish Waters

Because of their larger size, Ballan Wrasse and Cuckoo Wrasse are the only two species generally encountered by anglers in Irish waters. Since 1960, a total of 370 and 366 specimen-size Ballan (>2.154kg) and Cuckoo Wrasse (>0.567kg) have been recorded by the Irish Specimen Fish Committee (ISFC) respectively (Figure 1). Although the annual number of specimens recorded has fluctuated widely from year to year, there appears to have been an overall cyclical trend since the early 1980s which may reflect the general success of individual year classes.

The current Irish record Ballan Wrasse weighing 4.35kg was captured off Clogher Head, Co Kerry during August 1983 (this is also the current International Game Fish Association - IFGA World Record); 96% of the specimens weighed <3.0kg. The current Irish record Cuckoo Wrasse weighing 1.1kg was captured off the Causeway Coast, Co Antrim during September 1998; 97% of the specimens weighed <0.8kg.

The vast majority of specimen Ballan (72%) and Cuckoo Wrasse (81%) were captured during July, August and September which may be indicative of a summertime inshore breeding migration.

Specimen Ballan Wrasse appear to be widely distributed, but the majority have been captured off the west, south-west and south-east coasts, with Counties Kerry (25.9%), Wexford (25.1%), Donegal (10.3%) and Clare (9.2%) accounting for 70% of the total. Specimen Cuckoo Wrasse are also widely distributed but appear to be particularly abundant off the north-east coast, with County Antrim alone accounting for 63% of the specimens. Specimens of both species appear to be relatively rare on the east coast (Irish Sea).

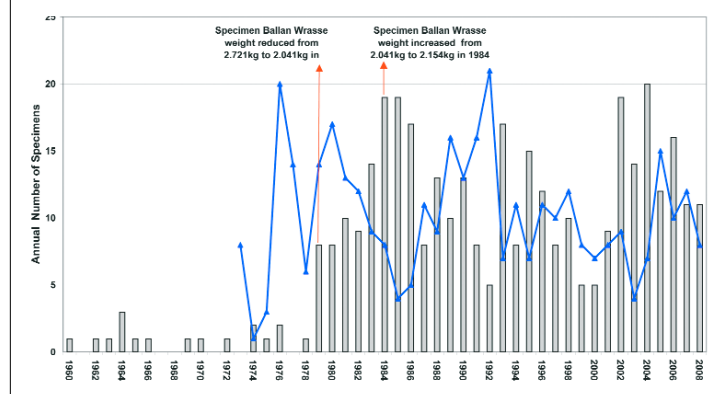
Although a significant number of specimen Ballan and Cuckoo Wrasse were captured on ragworm baits (29.7 & 27.6% respectively), crab baits accounted for the 35.4% of Ballan while mackerel baits accounted for 41.0% of specimen Cuckoo Wrasse.

The British Record (rod-caught) Fish Committee (BRFC) also operates a "mini list" for smaller marine species including records for Scale-rayed Wrasse *Acantholabrus palloni* (418g, Eddystone Reef, Plymouth, Devon, 1992), Corkwing (360g, Portland, Dorset, 2005), Ballion's (226g, Weymouth, Dorset, 2004), Rock Cook (109g, Newquay, Cornwall, 2001) and Goldsinny (102g, Portland, Dorset, 2005).

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Common Name	Species Name	Spain	Portugal	UK	Ireland	Belgium	France	Portugal	Spain	Mediterranean	NW Africa	Madeira	Azores
Clover Wrasse	<i>Spilomus noronhai</i> ()												
Redspotted Wrasse	<i>Acantholabrus salinus</i> (Risso, 1810)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Blue Wrasse	<i>Labrus mixtus</i> (Linnaeus, 1758)												
Rock Cook (Small-Mouth) Wrasse	<i>Centrolabrus exoleus</i> ()												
Parrot Wrasse	<i>Coris julis</i> (L.)												
Sea Percuss	<i>Pagrus auratus</i> (L.)												
Goldsinny	<i>Crenilabrus rupestris</i> ()												
Clown (Males)	<i>Halichoeres maculipinna</i> (Zuiew, 1805)												
Long Faced Wrasse	<i>Centrolabrus ruber</i> (Risso, 1810)												
Rock Tailfin Wrasse	<i>Centrolabrus melanostomus</i> (Risso, 1810)												
Cray Wrasse	<i>Centrolabrus melanostomus</i> (Risso, 1810)												
Sea-Corallid Wrasse	<i>Centrolabrus ruber</i> (Risso, 1810)												
Ballion's Wrasse	<i>Crenilabrus ballioni</i> (Quoy & Gaimard, 1825)												
Antley Wrasse	<i>Centrolabrus mediterraneus</i> ()												
Pearck Wrasse	<i>Centrolabrus fuscus</i> ()												
Corkwing Wrasse	<i>Centrolabrus melops</i> (L.)												
Cuckoo Wrasse	<i>Labrus mixtus</i> (Linnaeus, 1758)												
Clownfish Wrasse	<i>Centrolabrus ruber</i> (Risso, 1810)												
Water Wrasse	<i>Labrus bergylta</i> (Linnaeus, 1758)												
Cuckoo Wrasse	<i>Labrus mixtus</i> L.												
River Wrasse	<i>Labrus motula</i> L.												
Crab Wrasse	<i>Labrus uratus</i> L.												
Sharkin's Wrasse	<i>Platygobius platystus</i> (Pomali, 1881)												

Figure 1. Annual number of Specimen Ballan Wrasse (>2.154kg; N=370) & Cuckoo Wrasse (>0.567kg; N=366)



Codology – The Great Cod Fishery



THE GEORGE'S BANK COD FISHERY.
Dressing cod on deck of fishing schooner. (Sherk. v, vol. 6, pp. 136, 138, 139.)
Drawing by H. W. Elliott and Capt. J. W. Collins.

Courtesy: NOAA National Marine Fisheries Service

seems confined between the latitudes 65 and 50... The great rendezvous of the Cod fish is on the banks of Newfoundland, and the other sand banks that live off the coasts of Cape Breton, Nova Scotia and New England... few are taken north of Iceland, but on the south and west coast they abound; they are also found to swarm on the coasts of Norway, in the Baltic, off the Orkney and Western Isles (Hebrides) which were the grand resort of ships of all the commercial nations; but it seems the greatest fishery was met with near Iceland; for we find Queen Elizabeth condescending to ask permission to fish in those seas from Christian the IV of Denmark, yet afterwards she so far repented her request, as to instruct the Ambassadors to that court, to insist on the right of a free and universal fishery".

a shell fish called Clams". Some 15000 British seamen were engaged in the fishing and many more people dealing with the catch at home. "Providence hath kindly ordained that this fish, so useful to mankind should be so very prolific as to supply more than the deficiencies of the multitude annually taken. Leuwelshock counted nine millions three hundred and eighty four thousand eggs in a cod fish of a middle size, a number sure that will baffle all the efforts of man, or the voracity of the inhabitants of the ocean to extemperate, and which will be, to all ages an inexhaustible supply of grateful provision".

The author of this long account of the cod, does not give his name – at that time many writers gave no "by line".

Big fish, "the largest that we ever heard of taken on our coasts, weighted sixty nine pounds, but the general weight on the Yorkshire seas is from fourteen to forty".

So the fleets set off, year in, year out, till Newfoundland's sole livelihood was wiped out, and Iceland had to win its Cod War in the 1970s to protect its fish stocks.

But let us salute the seamanship of these men, who sailed in small sailing ships, in a time when at best you had a compass, a sextant, a chart, but knew the movements of the sun, moon and stars – and a store of sea-lore, now forgotten. "We have been informed that they fish in the depth of 15 to 60 fathoms according to the inequality of the Bank (of Newfoundland) which is represented as a vast mountain under water about 500 miles long, and near 300 broad, and that seamen know when they approach it, by the great swell

of the sea, and the thick mists that impend over it".

Very many Cork people have seen the topsail schooners that sailed each summer to Iceland. For the French sail trainers, "Etoile" and "Belle Poule" are replicas, of the great fleet, that, after a solemn blessing, set off from Brittany for Iceland. Then silence till autumn and the expected return, when wives would gather at the Widows Cross, to count the sails coming over the horizon and begin to guess how many were missing.

Celebrating the year 2000, families of the men who had fished in Iceland came from Brittany on a visit, to visit the graves of their dead there and see something of the land that had given their ancestors a living.

All these great catches of fish, they had to be processed at once. Until freezing became an option, all meat and fish, not for immediate eating, had to be dried, smoked or salted. In the 1960s Iceland still had acres of wooden frames set in windy spots from which thousands of cod hung to dry. The Spanish call it "bacalao" and relish it when properly cooked. Herrings were mostly salted down in barrels on the quay side by armies of women. Or they could be smoked kippers.

When World War II broke out in 1939, Professor James Ritchie of the Zoology department, in a Zoology lecture to Edinburgh students, remarked how fished out (pre World War I) the North Sea had become. The war years let it recover, but over fishing began again. He hoped we might be wiser after the second conflict hindered the fishing. We have not been.

Dressing cod on deck of fishing schooner (Drawing by H. W. Elliott and Capt. J. W. Collins)

By Daphne Pochin Mould

ON the 23rd October, 1769, Mr William Flynn at the Sign of Shakespeare close to the Exchange, in the small but growing city of Cork, published the first issue of its first newspaper "The Hibernian Chronicle". The first print run of 2000 sold out to subscribers. It was published twice a week, cost 1 penny (later one penny and a half pence), and couriers took it out to the country towns.

Today, when we can hear and see the world's news as it happens, we may wonder how an 18th century Irish printer could get his "copy". He tells us in his first editorial: "The materials shall be collected from the best English, Irish and foreign prints, the most interesting news, and every entertaining and instructive miscellany, or

anecdote that occurs in them." And this he continued to do until he retired in 1802 and the "Chronicle" became the thrice weekly "Cork Mercantile Chronicle", yet fuller of news. From Europe, news papers and letters came in by fast sailing packet (packet) boats – weather permitting. In Ireland there were the first horsedrawn mail coaches and a postal service. In Cork, you could get local news by hunting it out yourself. And until the "copy" was set in the small, close printed type of these old papers, everything was written by hand, with a feather and liquid ink. Printers wrestled with author's handwriting. For everyone wrote with a feather, from the Book of Kells to laundry list, from the love letter to legal decree – a bird's long wing pen feather (Latin, penna wing; in French, la plume) shaped to a nib with a "pen" knife. (Cork shipping brought in loads of quills.)

So Mr. Flynn was able to report the doings of the nations and their kings and queens, of Europe, their wars and Paris fashions, and he recorded every ship coming and going out of Cork: "name", "where from", "where to", "master and cargo". For Cork was alive with shipping (including the British navy), and they bringing in captured prizes to be auctioned off in Cove (now Cobh). Cork's great butter market exported its salted butter world wide packed in barrels. The city was the great cattle killing mart of Munster, and the barrels of salt meat supplied the sailing ships, including the British Navy. The city had its own salt works, to evaporate seawater, but also imported a lot of salt.

In his paper, Mr. Flynn published poems, essays and on Monday, November 5th, 1770, a long scientific account of "The Natural History of the Cod Fish". "It affects cold climates and



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Galápagos Islands



Scenic view from the top of Bartolome Island.

By Aoife O'Donoghue

THE Galápagos Archipelago straddles the equator lying 1000 km off the South

American mainland to the west of Ecuador. The islands have never been attached to the mainland; being actually the tips of huge volcanoes, they arose directly from the sea. The ancestors of animals found on these islands

must have arrived from the distant mainland and went on to evolve in complete isolation, resulting in unique species. This is so why many of the Galápagos species are endemic, meaning they are found nowhere else on earth. But this is not the only reason why these islands are so special; because of a historical lack of large natural predators on the islands the native animals are not fearful of humans.

After years of anticipation I finally got to visit the Galápagos on my honeymoon in July 2008. Having studied zoology in college it was always my dream destination. One of



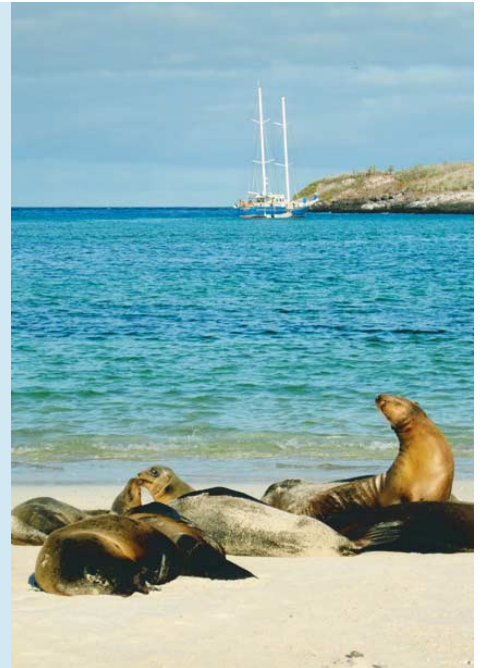
Male land iguana.

my lecturers was a member of the Charles Darwin Foundation, a non profit organisation that supports ongoing conservation and research on the Galápagos Islands. He enthralled us with slideshows of the islands and their wildlife setting the seed for us to visit some day.

As the plane descended, the dark, arid landscape struck me; although I knew what to expect I was still surprised by the apparently stark scene. We were met by our guide at the small airport on Baltra Island who took us to our boat which would be our home for the week along with the 10 other passengers. Our boat, *The Beagle*, was a beautiful 100 ft schooner owned by a Galápagos family, and was named after the boat Charles Darwin visited the islands on 173 years earlier. On the first morning when I arrived on deck huge frigatebirds were flying low overhead. These beautiful birds are the pirates of the skies in the archipelago robbing food from other birds at every opportunity. The males have big red inflatable pouches which they fill with air at breeding time to attract females.

After breakfast we went ashore on South Plaza Island where we were greeted by sea lions hogging the landing area. Our guide had to shoo them away in order for us to make our way on shore! Stepping off onto the black rock gave us our first close encounters with the beautiful sally light-foot crabs. These brightly coloured crabs are red, orange and yellow on top with a light blue underbelly. As we walked on we saw yet more sea lions camouflaged against the dark rock along with the infamous marine iguanas baking in the morning sun. The marine iguanas on Galápagos are the only truly marine lizards in the world and are endemic to the islands. They start their days huddled together heating up in the morning sun before grazing on the seaweed in the surf.

Further inland we came across land iguanas; the males with bright yellow upperparts



Sea lions lazing on the beach with 'The Beagle' in the distance.



Sally lightfoot crab.

are more brightly coloured than the females, as is usually the case in the animal world. Every now and then we spotted a male lava lizard displaying on a rock or trail post by doing a series of push-ups. We also saw some of Darwin's infamous finches – cactus and small ground finches. My eyes honed in on their beaks as I tried to spot the differences which inspired Darwin's theory of evolution through natural selection.

On our approach into the bay around Sante Fé Island

we were treated to a rare sight – Orcas; killer whales within metres of our boat! The waters around the islands are teeming with life and the snorkelling is breathtaking. The visibility is generally very good in the turquoise waters and the variety and colours of the fishes, sea stars and coral is incredible. But the experience of the entire trip for me had to have been snorkelling with sea lions. They seemed to enjoy playing with us; the more I tossed and turned in the water, the more



Inquisitive sea lion pups playing with our guide's tripod.



Giant tortoise in the highlands of Santa Cruz Island.



Blue-footed booby.

they joined in. I have never had such an interaction with a wild animal; it was truly exhilarating!

We also saw endemic rice rats on Sante Fé; these cute little creatures have fat bodies and large ears making them like Disney characters. They are very shy and thus rarely seen so our guide was extremely excited by the find.

Española Island is a bird paradise and we were lucky enough to witness the courting behaviour of a pair of

blue-footed boobies. We watched them hop, call, clash their beaks, flap their wings, and copy each others movements; all within 2 ft of us. They just carried on oblivious to the onlookers. We also spotted masked and red-footed boobies, red-billed tropic birds with their magnificent streamers, swallow-tailed gulls, and waved albatrosses. As it was the breeding season we even saw waved albatross chicks. These giants of the sky breed



Red-footed booby.



Brown pelican basking in the sun.

only on Española, and spend the rest of their time entirely at sea. The cliff edges on the island provide good runways, which are required for their 7 ft wingspan.

On the inhabited island of Santa Cruz we visited the Charles Darwin Research Station where there is a visitor centre and a giant tortoise breeding programme where hatchlings are raised until they can be safely returned to their island homes. The centre is also home to 'Lonesome

George', the sole survivor of the Pinta Island tortoise subspecies.



A rarely seen endemic rice rat.

Santiago Island provided another array of sightings – crested night herons hiding in the crevices, the rarer Galapagos fur sea-lions lounging in the sun, ghost crabs running along the shore and sea-lion pups playing in nursery pools. An even greater treat lay below water however. Snorkelling off the beach we encountered green sea turtles feeding hungrily on the seaweed in the shallows; one actually brushed by me!

On our final morning while we explored Turtle Bay on Santa Cruz Island in a dingy we witnessed the magnificent sight of boobies diving in synchrony. The flock wheel in the air until they are directly above their prey and then plummet downwards

before folding in their wings as they hit the water at the speed of an arrow.

The Galápagos Islands did not disappoint; it was in fact an even more amazing experience than I had built it up to be. What strikes you is not just how abundant the wildlife is but how close you can get to these unique animals. As clichéd as it sounds, visiting these islands really does feel like being in your own wildlife documentary, complete with David Attenborough style commentary from your guide.

Aoife O'Donoghue is Outreach Officer with Tyndall National Institute, UCC, Cork, Ireland.



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Answers That Matter

Fishermen and Scientists Research Society

A Proven Model For Effective Collaboration Between Fishermen and Scientists

By Patty King

ESTABLISHED in January 1994, the Fishermen and Scientists Research Society (FSRS), a non-profit organization based in Halifax, Nova Scotia, Canada, has become recognized internationally as a model for effective collaboration between fishermen and scientists. An active partnership between fishermen and scientists, the FSRS has improved the working relationship and level of trust between fishermen and scientists, and has enabled a wide spectrum of fisheries research to be done. This collaborative approach to fisheries science has led to an increased understanding of the scientific rationale for data collection protocols by fishermen. It has also increased fishermen's understanding of stock assessment procedures and models. In addition, scientists have gained a better understanding of fishermen's knowledge and how it can be incorporated into fisheries science. Fishermen have become more effective participants in the peer review process at Fisheries and Oceans Canada (DFO) Regional Assessment Process (RAP) meetings and scientists are better able to include fishermen's knowledge and experience into stock assessments. This collaborative approach also



Sampling aboard fishing vessel during Fisheries Independent Survey phase of the Inshore Ecosystem Project

creates fishermen that are better able to participate in the resource conservation and management process in a more informed and equitable manner.

The FSRS was developed with the overall objectives to promote effective communication between fishermen, scientists and the general public, and to establish and maintain a network of fishermen and scientists capable of conducting collaborative research and collecting information relevant and necessary to the long-term sustainability of marine fisheries. The current membership consists of 410 members, including 259 fishermen members and 151

scientists/other members. Scientist members have come from both the government (e.g. Department of Fisheries and Oceans) and academic communities, as well as from the private sector.

The early days involved many discussions in kitchens, town halls, church basements, and bait sheds to build initial bridges and trust between fishermen and scientists, to develop some common language, and to negotiate common goals. These early steps were necessary to overcome the significant mistrust that had developed between the two groups. Many fishermen felt that scientists had nothing to offer because they



Fisherman and crew sampling lobster from Lobster Recruitment Project traps

were not fishermen and many scientists felt that fishermen, without formal training, could not participate in scientific discussions about fish stocks. From these humble beginnings, with not much more than a willingness to talk, and a feeling that co-operation was better than confrontation, Department of Fisheries and Oceans scientists and fishermen, among others, worked towards the evolution of the FSRS. It has now developed into an effective organization which brings the knowledge of fishermen into the scientific arena by agreeing on rules of information and educates fisheries scientists by making them realize the wealth of

knowledge about fishes and fishing that fishermen gain by experience. In turn, fishermen gain an increased understanding of the scientific methodologies and processes involved in managing the fisheries resource.

The FSRS was formed out of the recognition by both fishermen and scientists that each had valuable contributions to make to the effective long-term stewardship of living marine resources. A partnership based on effective communication and common goals was a necessary prerequisite to realising the FSRS's objectives. This partnership has enabled valuable joint projects that are important to the advancement of assessment and management of our fisheries resources.

The original intention when the FSRS began was to implement a project to collect catch and effort, oceanographic and spawning information for groundfish species. The enthusiasm of members quickly took the FSRS well beyond the original data collection goal. By the end of the first year, members were collecting information not only on groundfish, but also for pelagic fish species, lobster, and shrimp. Since then, the FSRS has taken on a number of research projects, including:

- Identification and charting sensitive groundfish habitats on the Scotian Shelf;
- Inshore Tagging Project to tag cod, haddock, and halibut in the inshore waters from Country Harbour to Lunenburg, Nova Scotia;
- 4VsW Sentinel (Groundfish) Monitoring Project;

- Condition/Reproduction Study;
- Enhanced Fish Diet Collection Project (Predator/Prey Relationship Study);
- Lobster Recruitment Index Project;
- LFA 33 Commercial Trap Sampling Project;
- Lobster Blood Protein and Moulting Research;
- Artificial Collectors as a Tool to Measure Settlement of Young-of-Year Lobster in Coastal Nova Scotia;
- Lobster Carapace Length Frequency Study;
- Lobster Weight vs. Carapace Length Study;
- LFA 34 Berried Lobster Study;
- Lobster, Snow Crab, Jonah Crab, Rock Crab and Toad Crab At-Sea Sampling;
- Dogfish Sampling Program; and
- Inshore Ecosystem Research On The Scotian Shelf.

As part of their participation in the above projects, fishermen have received training in fisheries science and the collection of scientific data, enabling them to participate in all facets of fisheries research, from identification of research questions, to development of project procedures and protocols, collection of data and peer review of the results. The fishermen have in many ways themselves become scientists on the water.

One of the FSRS's primary objectives is to facilitate and promote effective communication between fishermen, scientists, and the general public. With a view to advancing communication between these stakeholders and increasing fishermen's participation in fisheries science, the FSRS has undertaken a number of initiatives since its inception. These include an annual conference, bi-annual lobster science workshop, a quarterly newsletter, *Hook, Line and Thinker*, and a website, www.fsrs.ns.ca.

Patty King, FSRS General Manager, PO Box 25125, Halifax, Nova Scotia, Canada, B3M 4H4. www.fsrs.ns.ca




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The Return of the Sea Eagle

Ar ais arís An Iolar Mhara

By Allan Mee

WHITE-TAILED Sea Eagles, our largest resident bird of prey, were once apparently widespread in coastal areas in the west of Ireland before being driven to extinction following centuries of human persecution. Look at any of the Ordnance Survey maps of coastal Kerry and Cork and you will find many references to eagles. The prevalence of place-names containing the Irish word for eagle, 'Iolar', or anglicised derivations suggests a long historical association between man and eagles. Examples include place names such as Beenanillar Head (mountain of the eagle) on Valentia, Cloghananillar (stony place of the eagle) near Waterville, and Cooranuller (round/pointed hill of the eagle) near Ballydehob in west Cork. While some sites were undoubtedly the breeding haunts of our other native eagle, the Golden Eagle, most of the coastal sites were once occupied by Sea Eagles. According to Ussher and Warren, by 1894 there were "still one or two pairs in Mayo and Kerry" but by 1900 the species was gone, the last documented nesting being in 1898. Golden Eagles hung on as a breeder for another 14 years, the last pair nesting in Mayo about 1912. For the first time in millennia Irish skies were devoid of eagles.

In 2007-08, the Golden Eagle Trust in collaboration with the National Parks & Wildlife



Photo © Valeria O'Sullivan

Juvenile White-tailed Sea Eagles released in Killarney National Park in 2008.

Service, began efforts to return the Sea Eagle to Ireland. Thirty-five chicks were collected under licence from nests in west-central Norway by ornithologists from the Norwegian Institute of Nature Research and Norwegian Ornithological Society and transported to

Kerry. The eaglets spend a further two months in captivity during which time they hopefully become imprinted on their new surroundings. During this time there is minimal human contact with the birds and every effort is made to mimic nesting in the wild. After release birds are provided with supplementary food at sites in the national park to help maintain survivorship. Because the released birds lack the care and attention of their parents for the first few weeks in the wild it is important that we give them a helping hand at this critical stage!

Since release birds have spent most or all of their first winter in the wild within 20 km of the release area where they are heavily dependent on carrion, mainly dead sheep in upland areas, for survival. Although one exceptional male left the release area in late September 2007 to visit the Blaskets and the Skelligs (Ireland's major gannet colony) the next day, most dispersal did not take place until March-April 2008 when five birds went to east Cork. Others departed in April-June when birds were found on Lough Corrib, Co.

Galway, the Ox Mountains in Sligo, and in Mayo and Waterford. At least two birds spent several months in west Cork in upland areas north of Dunmanway. Two birds spent the summer in Northern Ireland before returning to Kerry in September-October 2008. Most recently a female released in 2007 has been spotted in Glen Garry in the western Highlands of Scotland, 650 km north of Killarney and exactly half-way 'home' to Norway. It is hoped that in time she will return to Kerry, perhaps with a Scottish male in tow!

Although we believe that the project is on course to restore this magnificent eagle, a shadow has been cast over the future of the species. Between November 2007 and May 2008 four Sea Eagles were recovered dead in Kerry. Post-mortem and toxicology tests found that all four had died from ingesting poisons presumably laid on sheep carcasses to kill foxes and crows. However, the death of three birds within one kilometre of each other over a short period suggest that birds may have been deliberately targeted.

The use of poison meat baits remains the greatest threat to the project. In January 2008 Minister John Gormley banned the use of poisons on meat baits for the control of crows. However, the use of poison meat baits for control of foxes was not covered by this legislation. Thus, the threat to eagles and other scavengers such as the Buzzard and Red Kite continues. We hope the government will act soon to end the anachronistic use of poison meat baits. White-tailed Sea Eagles reach maturity at 5-6 years old so we are hopeful that we will see the first breeding in Ireland by 2012. However, it is critical that enough birds survive to breeding age for a viable population to establish. With the support of the public and the communities where eagles settle to breed, we hope that *An Iolar Mhara* will once again take its rightful place on the wild coasts and lakes of Kerry and Cork.



You can help by reporting any sightings of eagles to: Dr. Allan Mee, Dreeen, Black Valley, Beaufort, Co. Kerry. Tel: 087-3117608; Email: kerryeagle@gmail.com. Or visit our website at: www.goldeneagle.ie




It is critical that enough White-tailed Sea Eagles survive to breeding age for a viable population to establish in Ireland.

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Desperate Times But Don't Despair

By Alex Kirby

A SEMINAL conference was held in Copenhagen in early March 2009. Organised by scientists, it was called to review the most recent climate science, in order to update the understanding of the problem which politicians had gleaned from the latest report from the Intergovernmental Panel on Climate Change. That was published in 2007, and was stark enough, talking of the possibility of "abrupt or irreversible" changes ahead. But the report was based on research published only up to the end of 2004 - and climatologists now know much more than they did then. In particular, the most up-to-date findings suggest that sea levels could rise by a metre or more by 2100; that the Arctic summer sea ice could disappear within as little as five years; and that the Greenland and West Antarctic ice sheets may be more vulnerable to melting than had been thought (this remains the subject of much debate). It also heard of rising concern about ocean acidification and the possible disappearance of much of the Amazon rainforest.

The closing press release of the Copenhagen conference is therefore starker even than the 2007 report. In perhaps its key sentence, it

says: "...the worst-case IPCC scenario trajectories (or even worse) are being realised." The findings of the conference will be published in June as a synthesis report: a copy will be given to every participant at the UN climate change conference (COP15) in December in Copenhagen.

A friend of mine, a leading British environmental journalist, wrote to me on his return from Copenhagen, saying he was "shocked at how far the science has advanced and how doomed we all are... The consensus in Copenhagen is that by the end of this century the population of this planet will be heading rapidly down to one billion. That is between six and seven billion people being killed off between 2050 and 2100." He is a sober and responsible man, who has known for years that the world faces a grave crisis. Yet the latest findings unnerved even him.

I suppose if you were an optimist you would think that what is happening to the climate is all we have to bother about. In fact it is only one of a number of problems which will mean inescapable change. The only choice for us is whether or not we try to manage and adapt to those changes. As far back as 2003 the British Astronomer Royal, Sir Martin Rees, published a book called *Our Final Century*, in which he



wrote: "I think the odds are no better than 50/50 that our present civilisation will survive to the end of the present century."

Among the most pressing problems are species loss, water shortage and population growth (from under seven bn today to a projected nine bn by 2050). We are destroying other creatures before we have even realised that they exist, ignorant of their part in the web of life and the degree to which we may depend on their survival. The evolutionary biologist Edward Wilson of Harvard, often called Darwin's true heir, has a telling image for the damage we're doing: "Destroying a rainforest for economic gain is like burning a Renaissance painting to cook a meal."

There is a finite amount of useable water in the world (though yes, you can desalinate it, if you have huge amounts of energy). No water means no food. China is so worried about the rate at which its Himalayan glaciers are melting that it is to build 59 reservoirs in the far western province of Xinjiang. It will also spend an extra £13 bn in 2009 (a 20% increase) on agricultural production because of fears of a possible food crisis.

The facts presented in Copenhagen are enough to induce despair, even without the facts of global trashing compounding them. But if that is what they do, they'd be better left unsaid. Despair is the surest route to the immense population cull my friend foresees. There are other facts too - like the certain existence of the economic and technical answers to

climate change. There is no doubt that, in the most literal sense, it can be solved, though that is far from saying that it will be. And so there must at least be hope that the other interlocking parts of the environmental crisis can also be faced down.

No, the message of Copenhagen is not despair, though it is something very close to it - an adrenaline rush of urgency that comes normally only in wartime. If the facts paralyse their hearers in resignation, then all really will be lost. But if instead they galvanise scientists, and politicians, and journalists and everyone who can pass them on to share the message that this really is 11.59 p.m., then there could be a sea change sufficient to transform the prospects for survival.

James Lovelock is credited with developing the Gaia Hypothesis, the theory that the Earth is a living, self-regulating organism. A couple of years ago he was asked what humanity could do to tackle climate change. He replied cheerfully: "Nothing. So enjoy yourselves while you can."

He has an enviable record for being proved right. Probably the only hope he could be wrong this time is the advice once given by the then chief scientific adviser to the UK Government, Professor Sir David King. Talking about the possibilities of cutting emissions of greenhouse gases, Sir David said: "It's doable - but we'll have to bust a gut to do it."

Alex Kirby is a former BBC environment correspondent.

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Realising a dream of an East Coast Nature Reserve

By Wendy Jones

BIRDWATCH Ireland has restored a wetland nature reserve, close to Dublin, as part of a four-year LIFE-Nature project to protect threatened water birds and rare fen habitats and to provide access to visitors. The 90 hectare East Coast Nature Reserve, located within the Murrough Wetlands, demonstrates at national level the potential for reversing damage to wetlands in Ireland.

Oran O'Sullivan, the project manager and Chief Executive Officer of BirdWatch Ireland, is a man with a mission: his long-held dream of realising a nature reserve along the country's east coast, close to an urban population, is nearing completion thanks to co-funding from the EU LIFE-Nature programme.

The 90-hectare reserve was purchased at the start of the project, to help promote conservation needs across the whole Murrough – a 15 km long, but narrow coastal wetland complex, bounded on its seaward side by a shingle ridge. The reserve, at Blackditch Wood, Newcastle, County Wicklow, harbours three main habitats: Calcareous fen, an EU priority habitat; wet grasslands and birch and alder woodland. The fen is the most important habitat for flora, while the grasslands and pools provide crucial nesting and feeding areas for highly endangered species: Greenland white-fronted goose greylag geese, whooper swan and other bird

species as the kingfisher and little egret.

Ireland has a long history of damage to wetlands caused by drainage and agricultural reclamation. The reserve's wet grasslands had been used for intensive sheep and cattle grazing. Deep drains cut across the land and biodiversity was low overall. The fen was in a degraded state: Drains and planted conifers were drying it out and willow invaded from neighbouring woodland.

O'Sullivan praises the board of BirdWatch Ireland's "far-sighted" decision in 2003, to fund its share of the € 2.1 million project by selling off its prime head-office premises in central Dublin and re-locating to more modest offices, close to the project site. "By cashing-in our Dublin property, we were able to purchase the land and immediately begin the restoration works," he says.

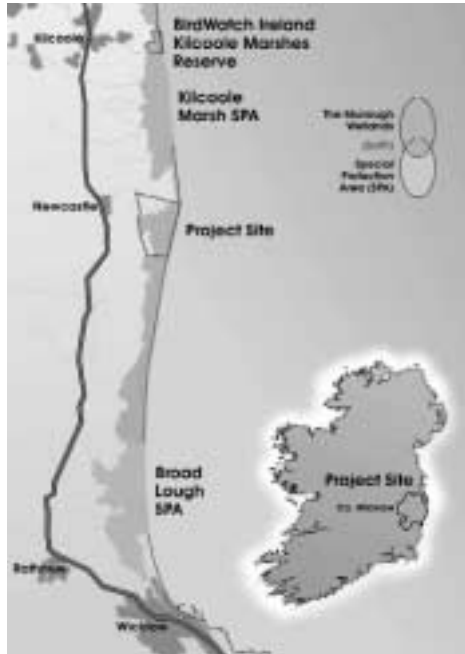
What did LIFE do?

Led by the project officer, Jerry Wray, the main actions have focused on these three main issues:

- Water management
- Restoration grazing
- Tree and scrub removal

Water management

Improved habitat would be delivered through actions to reverse the drying out of the wetlands, by raising water levels and by the control of water flow through the instal-



Amap showing the location of the project site.

lation of sluice gates. The sluices enable the control of water flow between and within the different habitats on the reserve. Water levels are maintained in the fen throughout the year, but are dropped in the grasslands during the summer months to allow cattle grazing.

The existing drainage ditches at Blackditch with steep sides have been re-profiled and cut so that one side is more gently-sloping. This has increased ecological value by promoting emergent insect life and allowed an easier

access to water birds.

Open water areas ('scrapes') have been created, which successfully attract water birds, including the target species: little egret (where, following the actions, up to fourteen birds have been recorded) Greenland white-fronted goose (up to six birds) and whooper swan (up to 16 birds). Monitoring of bird numbers from within and around the scrapes has also recorded numerous mallard, over 290 greylag geese, 91 snipe some 300 teal and 300 wigeon. Wintering waders

include Lapwing, (500 plus), Curlew (181) and smaller numbers of black tailed godwits and redshank.

Restoration grazing

Prior to purchase, intensive cattle (and sheep) grazing on the wet grassland areas had damaged the habitat and was threatening the value of the site for wetland plants and water birds. However, the introduction of 'low intensity' restoration grazing by cattle is proving adequate for habitat restoration and is also providing suitable feeding conditions for both wintering and breeding birds through the creation of 'tussocks' (tufts, or thick clumps of coarse grass or sedge). Says O'Sullivan, this low-level grazing has proven beneficial both to the project and to the grazers (two neighbouring land-owners). Crucially, no money changes hands: "We need to have the wetlands grazed in the summer. In return, they maintain fences and provide machinery, for example, tractors should we need them. It's a kind of barter system and it works."

In the fen, low-intensity grazing by Kerry Bog ponies helps control encroaching coarse, herbaceous species and encourages special fen plants and grasses, such as saw sedge (*Cladium mariscus*). With their hardy pedigree, these diminutive ponies are remarkably well-suited to life in the wet conditions of the fen and are proving their worth in its restoration.

Tree and scrub removal

The removal of a plantation, (which together with the encroachment of scrub had reduced the overall size of the fen) has proved the most time consuming element of the restoration work. Two elements were essential, the removal of a plantation of the American lodgepole pine and the control of a large percentage of the invasive willow and gorse.

Winches were used to minimise the use of heavy machinery in the fen with all the material chipped adjacent to the fen. "We thought we were going to be able to sell on this timber, but because of the difficulty of getting onto the water-logged land, and the stunted nature of the pine, nobody wanted it," says O'Sullivan. The control of the invasive willow on the main body of the fen was only possible using chainsaws. The tussocky nature of the ground made vehicular access impossible, and felled material had to be burnt in situ or extracted and chipped, the chippings

used for access trials.

The removal of trees on the margins of grassland areas of the site has created an open area over part of the reserve. This has encouraged geese, which prefer exposed situations. This has resulted in regular goose usage, including occasional usage by Greenland white-fronted goose, for the first time in over a decade.

What was the outcome?

BirdWatch Ireland has worked hard at informing people of its work at Blackditch – organising, especially at the beginning, a number of public meetings to explain the project's aims, as well as open days for the public. According to O'Sullivan, at the early meetings there were some concerns, particularly among farmers, that they were going to flood the land. Now, he says, there is a clearer understanding and support for what they are doing: "This awareness-raising was needed and has been good for the project and for the environment..."

Traditionally in Ireland, there has been a rather negative impression among land-owners towards Natura site designation. This is changing."

Blackditch is an historic site for wintering whooper swan, the greylag and Greenland white-fronted goose. Prior to purchase of the site these species had only been infrequently recorded. Since BirdWatch Ireland took over the management of the site, they have all been recorded, including increasing numbers of little egret and many other bird species.

Access to the reserve is currently limited to supervised open days and school visits. But by summer 2009, the public will have access via several paths and circular walks to at least one hide.

Life after-LIFE

Looking to the future, as the work on this project draws to a close, O'Sullivan says he would like to work with more local land-owners using this site as a demonstration of good management practices. BirdWatch Ireland is also seeking additional funding to support the on-going maintenance of the reserve after-LIFE. In addition, encouraged by very positive responses to market research, there are plans for a follow-on project to provide an education and visitor centre for the reserve.

Wendy Jones in a journalist with AEIDL, Brussels; this article is based on a piece written for a LIFE Focus Publication.



Above: Visitors to the nature reserve on Open Day.

Right: The greylag goose has increased in numbers each winter season on the reserve occasionally accompanied by a family party or two of Greenland white fronted geese.



Photos courtesy of BirdWatch Ireland



Emperor Dragonflies are recent colonists to the East Coast Nature Reserve.



Summer meadow, rich in buttercups and cuckooflower.



Kingfishers feed in the drainage ditches where they dive from their perches into the water.

East Coast Nature Reserve

(See article "Realising a Dream on East Coast Nature Reserve" on page 15)



A bird hide on the nature reserve.



This all-white heron is regularly seen about the reserve feeding in the drainage ditches and pools. The birds' bright yellow feet act as a lure for fish.



Clearing scrub and conifers from the fen.



Constructing a boardwalk.



The Kerry Bog Pony is a rare breed of horse similar to the Shetland pony in stature. Also referred to as 'Heritage Ponies,' these diminutive horses were originally bred in the 17th Century as workhorses. Their strength and resilience made them ideal for hauling turf from peat lands, seaweed from the shore and even as a mode of travel. Unfortunately, by the late 20th Century the pony population in Ireland was on the brink of extinction, dwindling to only 20 individuals in 1994. Today, under the auspices of the Kerry Bog Pony Co-Operative Society and local breeders, there are approximately 130 individuals in the country. The ponies were donated to the project by the NGO, Genetic Heritage Ireland.

Ignorance in "Paradise"

A letter from Norway



Photo courtesy of Barrie Dale

By Barrie Dale

NORWAY is considered to be one of the best countries on Earth in which to live, according to the international

ranking of nations. As an expatriate Englishman living in Norway for the past thirty years, I fully agree. I travel a fair bit to other countries as part of my work, and I have never been disappointed on

returning to what is now my home. For me this country represents a delightful combination of spectacular natural environment and a humane society founded on good principles of trying to do what is

best for people here and elsewhere in the world. Not least, the ratio of trees to people is about right – recently in Hong Kong I found myself wondering how many people they have per tree, whereas here even without exact data you know there are many thousands of trees for every one of the 4.7 million inhabitants.

The inspiration I find in the natural world is an important motivation for my teaching and research in environmental sciences, and I firmly believe that we humans are most fulfilled when we are in tune with Nature. From this, it follows that wherever I am I try to assess how well the people are looking after their natural heritage; where and in what ways are humans changing the face of the planet, and how much of this is from what can only be called ignorance? History is full of appalling ignorance, and I am not at all convinced that we have escaped it yet, but at least we should be trying to oppose it. That is not to blame the masses of peasants in earlier societies who often had more than enough to do just feeding themselves and their families, while under the constant threat of oppression from a few powerful people ruling their lives – but it allows us to question just how far we have really progressed?

These introductory remarks are not meant to imply that I equate Norway with paradise. That would be going too far, but as of now it has generally retained a magnificent natural environment, and it is known internationally for its well-educated and compassionate people. Everything is relative, and compared with many countries it may be tempting to regard Norway as a sort of "paradise". As such, it is worth probing a bit deeper to find out how well the environment is fairing in this land of plenty. This is of more than local interest – if the Norwegians, a wealthy and well-educated society without large population pressures, cannot take good care of their environment, what are the long-term chances for the planet?

And all is not well in "paradise". As with many other countries, if you counted the number of impressive interna-

tional environmental conferences attended by the ministers, or listened to the multitude of praiseworthy speeches from politicians at all levels concerned about the environment, you might think things are not too bad. Certainly it is safe to say that never before has there been so much stated concern about the environment, but, as with charity, this should begin at home. My worry is that it seems easier for politicians (and increasingly the public, too), to talk about the big global issues such as climate change, than it is to watch out for their own local environment. At home, the same politicians make speeches about international competition and the need for more houses, roads and jobs, but say little about what sort of local "natural environment" the next generation will inherit even though there is clearly a connection.

My interest in a National project to build a motorway through the area where I live prompted me to look closer into "the state of the environment" here, and I will use this as an example even though it is not necessarily typical for Norway. My aim is not to dump on the Norwegians, whom I respect, but to draw attention to how I think Norway and many other countries (including Ireland?) probably are irreversibly destroying the local natural environment, relentlessly, bit by bit, in the name of progress. I am afraid that all the talk about what climate change may do to the environment is diverting our attention from what we ourselves are doing every day? To argue against progress as such is futile – it is here to stay and we all benefit from it to some extent – but there is plenty of room for improvement, especially regarding the protection of local environment. Every generation can look back and see the changes and measure the rate at which the good earth is being paved over with asphalt, concrete and buildings. We should at least be asking how much of this is really essential? And when we think it is we should apply all our best efforts to minimise environmental damage – involving all the science and technology available, but not least using that most steadfast of our human faculties: common sense!

I live in a rural community 70 km NE of Oslo (around 7500 people spread over many square kilometres), in thickly forested country along the valley of Norway's longest river, The Glomma. Central to this community, there is a village of several hundred houses, a few shops, a cluster of

regional schools and playing fields, a nursing home for the elderly, etc., and the valley floor is covered with some of the best growing soil in the land. The impressive river after a sharp bend runs through the middle of the village. The local economy still relies on agriculture (forestry, cereals and potatoes), with an increasing amount of commuters to Oslo and surrounding towns.

As a teacher trying to inspire students to study environmental sciences, my professional interest was aroused when plans were announced eight years ago for a new four-lane motorway through the area. This was an opportunity to see how our science is, or should be, applied. None of the possible transects discussed for the road directly affected our home, we live a few kilometres away, but I listened to the plans at public hearings with growing disbelief at the misuse of science they revealed. The State Roads Dept. presented assessments of three possible corridors in their environmental impact report, meant by law to provide an objective basis for choosing the best route. To my surprise, they recommended the northerly corridor – which is 4 km longer (in a country saying it is trying to cut down energy use and pollution) and the one eating up much more of Norway's best growing soil (in a country with less than 1% arable land and a world needing to feed twice as many people within the next decade or two). In addition, transect North would impinge close to the greatest concentration of homes, schools, etc. At this rate "Paradise" could be lost!

Two things were apparent at this stage: 1) the Roads Dept. wanted to build in the northern corridor, come what may, and 2) their report just happened to support this wish by concluding that North was environmentally best! (it now seems they were influenced by expectations of larger road-toll revenues). In my opinion, their arguments were unscientific and blatantly biased towards North, even stooping to the use of incorrect traffic data. Norwegian law rightly encourages maximum influence by local government in decisions affecting land use, because those who know best tend to be those who live there. In this case, public pressure forced the local council to go in for a southerly alternative. However, the law also allowed the Roads Dept. to appeal against the local government's choice to the Environmental Protection Dept., which supported their appeal against South.

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Remarkably, their justification emphasised cost and availability of North for more traffic (again, read toll revenues), rather than prioritising environmental considerations!

By this time it was clear to me that decisions seriously affecting the environment were being made by government officials with no regard to science, and I, as a sort of government scientist (Norwegian universities are state run), was determined to delve deeper. Little could I guess at the unending web of political intrigue that would be exposed through the struggle of a group of local people outraged at the environmental ignorance of "officialdom". The battle lines were drawn between the road planners and politicians on the one side, insisting they knew what was best for the public, and an active public on the other, refusing to be overridden (after all, this is not the Middle Ages, and your local environment is worth fighting for – it's where most of us will live for the rest of our lives!).

After eight years of countless appeals and two legal actions it seems that "official environmental ignorance" will triumph over "enlightened public" (i.e. the plan is still for North). Nevertheless, before the big machines of "progress" go to work, it is worth examining what lies behind the intention to build the longest road, affecting the local environment of more people, while destroying more agricultural land, when there are environmentally better alternatives on the other side of the river. The answer invites uncomfortable comparisons with bye-gone days when the powerful few imposed their will on the "ignorant" masses, but this time it is the few who are ignorant – environmentally ignorant.

From my (naïve) scientific perspective, I asked, how could the roads department push so hard for the worst possible alternative for the local environment? The answer begins with the universal problem that planners are always planning for someone else's local environment, and therefore lack the benefit of local knowledge and sensitivity. The roads department in Norway is a state monopoly where the same governmental agency that is to build the road, first carries out the environmental impact report, and this allows them to conveniently ignore environmental science if they choose to. And, when challenged by the people whose environment they are threatening, they appealed to another state agency for support...

I was (again naively) sure that once the road department's appeal shifted the decision process to The Environmental Protection Agency, they at least would live up to their name and see through the scientific weaknesses that were clearly pointed out to them. This Department is generally held in high esteem by Norwegians – after all, the minister regularly makes impressive speeches at important international conferences lauding the morals of combating global change, and rightly hauls his British counterpart over the coals regarding Sellafield. However, what these people do not realise is that the Department has two functionally separate sections: a scientifically staffed section of researchers contributing to environmental knowledge, and another staffed by politicians and accompanying bureaucrats – and it is the politicians who decide cases like this!

"This is of more than local interest – if the Norwegians, a wealthy and well-educated society without large population pressures, cannot take good care of their environment, what are the long-term chances for the planet?"

I never feel comfortable writing about politics, though I should try to adapt since I am on record as observing that science itself is becoming more political. However, in this case it was unavoidable – politics in the end determined where the motorway should go. Ideally, having got this far, the professor would like to be able to reassure the students that it is only right, after all, in a democracy, that the elected representatives make such decisions, and to explain how they decided after a rational assessment of the facts, including environmental science. In reality, while it was possible to see the lack of science and to identify the politicians involved, there is no way to follow exactly how they decided. I found that there are limits to our democracy – lobbying leaves no

record, and no records remain of internal meetings once one minister hands over office to the next. Unfortunately, this lack of a paper trail opens the way for speculation, and there is more than enough room for speculation in this case.

Fuelled by uncertainty, many people believe that some politicians, with farms on the south side, influenced the then-Conservative Environmental Minister to support a road on the north side, well away from their properties. However, the motives behind the decisions of these few powerful people have little bearing on the main issues here – the sad truth is, in my opinion, that their decisions were made on the basis of environmental ignorance. Ironically, the opposition to this environmental lunacy came from a very mixed group of "ordinary" members of the public, by no means all with higher education, but united in a basic realisation that their local environment was being unnecessarily threatened by a powerful few who neither heeded them as local residents nor had any respect for the environment.

So what am I supposed to tell the students? Scientists can improve our understanding of the natural world and warn when all is not well, but if society is not listening, what is the point? The main lesson to gain from this case is that at least some "ordinary" members of the public are listening – if nothing else, common sense is beginning to question the validity of politics based on communities competing with each other for "progress" (if we don't get the motorway others will and we will fall behind!). They are realising that from an environmental perspective this so often translates into local communities competing "to ruin their own local environments" and increasingly with globalisation to countries competing to do the same at national level. Sadly, our motorway example suggests that this headlong dash for "progress" may be driven by basic forces of wealth and political prestige – isn't that what the earlier peasants were toiling against?

I am seriously thinking of including Medieval History into my Environmental Studies curriculum – it's not more science the students here in "paradise" need – it's a better understanding of ignorance!

*Professor Barrie Dale,
Department of Geology,
University of Oslo, Oslo,
Norway.*

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

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Birds of East Anglia's Waterland



Windmill - Cley Marshes - North Norfolk coast.

By Anthony Toole

WE huddled in the hide, clapping hands and stamping feet, glad to be out of the November wind. By the dawn light, it was just possible to distinguish between sky and sea. The sky brightened and the horizon sharpened, but only for a few moments. The distant edge of the sea appeared to ripple. At first, we thought it was an illusion, but as we watched, it gathered form. Part of the horizon detached itself from the rest and rose as a distinct line. This in turn began to break into

tiny dots, which grew as the false horizon approached us. Within a minute, the entire sky was filled with a honking cacophony, as thousands of pink-footed geese flew over us from their night roosts in The Wash, hungry for the detritus of the Norfolk sugar beet harvest.

As the laggards of this wave passed by, and the sky quietened, the horizon again rippled, indicating the start of a repeat performance. And while this was happening, the strengthening daylight revealed a similar number of wading birds foraging in the mudflats a few hundred metres from the shoreline.

We left the hide after the

better part of an hour, and walked along the sea wall, past several brackish lagoons. A representative of the Royal Society for the Protection of Birds (RSPB) told us that he had so far estimated the number of geese at 30 000. And they were still coming.

The RSPB bird sanctuary at Snettisham, on the eastern shore of The Wash, is just one of many such sites along the East Anglian coast. The Wash is a huge intertidal basin at the confluence of the major river systems of the Welland, Nene and Great Ouse, which themselves drain the waterlogged fens to the south. No other region of Britain is so dominated by water, and

consequently, few are so rich in bird life throughout the year.

Around 5000 years ago, following the melting of the Ice Age glaciers, this was a region of tidal mudflats, salt marsh and freshwater fen. As the fen vegetation died and sediment built up, parts of the rising land evolved into more acidic sphagnum bog, with patches of open shallow water.

Mesolithic peoples settled the fens, and the Romans attempted some drainage, which was carried on in Anglo-Saxon times by monks of the mediaeval monasteries. These efforts were only partially successful, and in times of neglect, the waters reclaimed the land. The main drainage began in the seventeenth century, with the use of windmills, which were largely replaced, two centuries later, by coal-powered steam pumps. The nineteenth-century drainage of the fens provides the background to Graham Swift's wonderful novel, 'Waterland'.

As the land dried out, the peat shrank, so that much is now below sea level. High banks of earth and shingle guard the coastline, around the Lincolnshire Wash and along North Norfolk.

The vast areas of mudflat are rich in invertebrates, which in winter attract tens of thousands of shelduck, pintail, widgeon and teal, as well as comparable numbers of waders such as oystercatchers, plovers, knot and dunlin. Grazing by cattle keeps the grass on the salt marshes sufficiently low for them to provide summer nesting sites for up to 400 pairs of redshanks. Winter sees the arrival of twite, Lapland bunting and some 5000 Brent geese from Arctic Russia. In spring and autumn, the salt marshes become re-fuelling stops for migrants. Marsh harriers can often be seen hunting here.

Numerous bird sanctuaries dot the coastline, and provide facilities from which the birds can be readily observed. Around the Wash are Gibraltar

Point, at the northern limit, Freiston Shore and Frampton Marsh near Boston, Moulton Marsh and Gedney Drove on the southern shore and Snettisham on the Norfolk side. Along the North Norfolk coast are an almost continuous string of reserves: Holme, Brancaster, Holkham, Morston Marshes and Cley. The National Nature Reserve on Scolt Head Island can only

be reached by boat. Blakeney Point stands at the end of a long sand spit, and is accessible only to keen walkers. It is notable for the colonies of grey and common seals.

In 2003, a project was begun to re-flood areas of the fens and create a series of freshwater nature reserves. These are intended to encourage snipe and lapwing, populations of which have



Lapwing.



Avocet.



Smew - a rare Arctic visitor.



Agricultural land on The Wash, sheltered by the sea wall.



Cley Marshes, backed by the sea wall - North Norfolk coast.



One of the seven lakes at the Natural Centre for Norfolk, Pensthorpe.

seen more than a 50% decline during the last two decades. They should also help increase the numbers of avocets and bitterns, which are found almost nowhere else in Britain.

Farther inland, but equally important as wetland sites for bird life, are the Norfolk Broads. These are large expanses of shallow water, formed during the fourteenth century, when the sea level rose and flooded pits that had been created in earlier centuries by the digging of peat for fuel.

In summer, the Broads are home to nesting terns, coots, moorhens, cormorants and great crested grebes. Extensive reed beds provide shelter for rare birds such as bitterns, water rails and bearded tits. Winter sees them colonised by visiting widgeon, pochard, teal, tufted duck and shoveller. Otters and water voles also live among the reeds.

The edges of the Broads are extremely boggy. Much of the vegetation consists of willow and alder, and the environment is the nearest in Britain to that of a tropical swamp. The characteristic smell that hangs over these margins is of methane, formed by the decomposition of dead vegetation. This carr woodland is a dense jungle of around 250

species of plant, among the most prominent of which are nettles, red campion, herb Robert, honeysuckle and yellow flag iris. Long-eared bats and pipistrelle roost in the alders and feed on the abundant insect life of the swamps. There are numerous dragonflies and damselflies as well as Britain's largest butterfly, the swallowtail, which lays its eggs exclusively on milk parsley, a rare fen plant, found only in East Anglia.

Near Fakenham, to the northwest of Norwich, is the Pensthorpe Natural Centre of Norfolk, where much important conservation work is being carried out. This is a mosaic of habitats, which include flower gardens, woodlands, hay meadows, reed beds and seven lakes.

In one of the lakes is Squirrel Island, on which a thriving population of red squirrels is kept safe from intruding greys. The island will only support a small group, so when breeding has produced a surplus, these have been sent to supplement a population on Anglesey.

The expanses of open water have brought in many wild birds. More than seventy species breed at Pensthorpe. Birds of passage include ospreys, while winter brings hundreds of migrants, including Arctic visitors, such as



Photos © Anthony Boole



barnacle geese, some of which have remained here to breed in the spring.

Above: Brent geese foraging in a winter field - Cley Marshes.

Right: Barnacle goose.

Below: Pintail duck.

The Pensthorpe Conservation Trust was set up in 2003, with the aim of breeding threatened wetland species.

The Eurasian crane was once widespread in Britain, but hunting and drainage of its habitat led to its disappearance during the sixteenth century. The loss of European wetlands led to a similar decline on the continent. Small numbers, however, have recently begun to breed at sites on the Broads. In 2004, the Pensthorpe Trust, in conjunction with the RSPB, began a feasibility study, with a view to breeding cranes prior to their re-introduction to the wild.

Another, once common bird of the British countryside is the corncrake. This bird has been in decline since the nineteenth



century, as a result of changing agricultural practice, and is now largely confined to the western fringes of the British Isles. With help from Natural England (formerly English Nature) and the London Zoological Society a number of corncrakes have been bred and

hand-reared at Pensthorpe then released onto the RSPB reserve at Nene Washes in the Cambridgeshire fens. These released birds have been closely monitored, and during the first years of the project appear to have bred successfully in the wild. It is

anticipated that their distinctive call may once again become a feature of Britain's meadows.

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A GREENER CLEANER



By Arden Miller

FROM the days of indoor plumbing through the Industrial Revolution, cleaning products consisted of simple solutions found around most homes. Baking soda, distilled white vinegar, lemon juice, olive oil, and salt used alone, or in some combination, kept interiors clean and made furniture and hard wood floors gleam. It wasn't until after World War II that chemicals—initially developed for warfare purposes—found their way onto grocers' shelves and into people's homes...

As a popular advertising slogan proclaimed, "Better living through chemistry!" People bought it, and bought the products that promised to make whites whiter than white, floors cleaner than clean, and everything else sparkling and sanitised within an inch of its life.

And if today's cleaning aisles are any indication, we're still buying it. There are literally thousands of synthetic chemical compounds within cleaning products packaged and marketed to grab your attention. Most of us have been exposed at one time or another to these compounds, and it is believed that there is a correlation between chemical exposure

and medical issues. Many compounds can cause people to develop respiratory problems, and since 1980, there has been a 160 percent increase in asthma among children under the age of 4. Breast cancer rates in the United States are 30 percent higher than in less industrialised countries. Ironic, especially considering that U.S. health care is considered by many to be the best overall health care in the world. And, while it would be virtually impossible to pin this all on better living through chemistry, it does make one wonder if these products that are cleaning our homes are hurting our bodies.

And here are a few more things to ponder... Did you

know that dish washing liquid is the #1 cause of children being poisoned? Most are petroleum-based and those pretty colours and scents are not found in nature. Sweet-seeking children have been known to confuse mothballs with candy, resulting in seizures and calls to the poison hotline. Lye and sodium hydroxide, two ingredients commonly found in both oven and drain cleaners, can cause severe corrosion to skin and mucous membranes, and can even be fatal if swallowed. Scouring cleaners designed to quickly clean bathroom and kitchen surfaces often contain crystalline silica, a known carcinogen. And toilet cleaners? Most contain an irritating blend of chlorine and hydrochloric acid; just breathing the fumes is harmful, never mind what happens to the poor fish who have to swim in these things.

But the good news is that if you don't require your whites whiter than white—if a regular white will do—you can get your home and laundry as clean as clean using products that don't harm the environment and don't alter your body's respiratory or endocrine systems. So, instead of hitting the cleaning product aisle in the super market, go to baking goods/condiments... Thousands of synthetic

compounds are found in cleaning products! According to the 2003 U.S. Geological Survey Study, low levels of compounds from 95 different types of chemicals were found in rivers downstream from urban areas. That's naaaaaaasty. I would much rather have lemon than crystalline silica in my water...

What's pH got to do with it?

When it comes to cleaning stains and pH balances, think neutral. Acidity is measured by pH, on a scale of 1 to 14. 7 is the Switzerland of pH; anything above 7 is alkaline, anything below, acidic. When you are cleaning something, you are, in effect, neutralising its pH. Club soda, an alkaline, will remove coffee and wine stains, which are acidic. Acidic vinegar will neutralise water scale, an alkaline stain.

Arden Miller, Editor, "Coastlines 2008: The Blue Green Connection". Printed with permission from Coastal Zone Management, 251 Causeway Street, Suite 800, Boston, MA 02114, USA. <http://www.mass.gov/czml/coastlines/index.htm>

Formulas

Problem	Solution
Dull wood floors, scratched table tops and furniture	1 cup olive oil + juice of one lemon (use soft cloth, rub and polish—keep in a sealed glass jar for re-use, should last 1 month).
Stainless steel lost its shine	Full strength distilled white vinegar on a sponge.
Dirty porcelain	Baking soda on a damp sponge.
Chrome needs polishing	1 part club soda and 1 part distilled white vinegar applied w/a sponge.
Clogged drain	Boil one cup of water, add 1 cup baking soda and 1 cup vinegar to boiling water (mixture will fizz), and pour down clogged drain. Flush with water. Repeat if necessary until water runs freely.
Mould and mildew on surfaces	In a spray bottle, mix 1 drop of tea tree oil with 1 cup of water (or use Ye Olde Thyme Disinfectant, recipe left).
Mould and mildew stains on laundry	Scrub with a paste made with 1 part salt and 1 part lemon juice, let set in sun, wash as usual.
Rust stains on surfaces	Make paste using 2 parts baking soda, 1 part water, scrub with toothbrush. Rinse well with water.
Streaked, dirty windows	Mix 1 part vinegar and 1 part water—use as you would glass cleaner.
Dull brass and copper	Mix 1 part lemon juice and 1 part baking soda; make paste and scrub.
Coffee percolator dull, dirty	Put 4-5 tablespoons of salt where you would ordinarily put coffee, add water, let mixture "brew" as it would if coffee were in it.
Hard water deposits	Cut a lemon in half and sprinkle baking soda on top; rub over deposits until they disappear.
Pet odours in carpets and upholstery	Mix approximately (exact amounts aren't critical) 4 ounces of hydrogen peroxide, 1/4 cup baking soda, and 1 drop of detergent into 1 quart water. Use immediately (once the hydrogen peroxide and soda become inert, it's no longer effective). Spread over area with odour problem; solution should neutralise smell immediately. Discard unused portion. (You may want to do a test patch first. I would.)
Dirty ceramic tiles	Mix 1 part vinegar and 1 part water and use sponge to clean grungy areas. This solution is safe for most commercial tiles. (Do not use on marble as solution is too acidic for porous surfaces.)
Toilet bowl rings	Use undiluted vinegar exactly as you would use a commercial toilet bowl cleaner.
Grass stains	Mix organic enzymes (available at whole food stores) with one tablespoon of water in ceramic or glass bowl, spread paste on the affected area, rubbing it with a toothbrush if seriously soiled. Let sit for an hour, wash as usual. Repeat if necessary.

No Plugs Required

Air fresheners are everywhere—you can spray them or plug them in. Some are time-released, and some provide mini-light shows. They account for millions in sales annually, but at what cost? The chemicals that mimic scents of rose and spring dew, mixed with just the littlest bit of ozone, can create a toxic environment that can cause headaches, depression, and hormonal imbalances in men and women. Forget the plugs and light shows; try one of these simple, non-toxin-producing recipes instead.

Safe Scents

Vanilla, cinnamon, cloves, and mint (fresh, or dried) all safely emit scents. In a small saucepan, boil 2 cups of water with any combination of spices that you like. When the mixture has reached a boil, turn it off. Leave the pan out to scent your home as long as the scent lasts. Vanilla extract can also remove unwanted smells; simply place a tablespoon of vanilla in an open container next to any area that needs a smell neutralized.

Sweet Spray Mist

Using an eyedropper, combine the following essential oils (found in most health food stores, or on-line) in a small glass jar: 20 drops sweet orange, 10 drops lavender, 10 drops eucalyptus. Mix together well and combine 4-8 drops of this mixture with one cup of purified water in a spray bottle. Use spray anywhere you like, anytime. Store in a cool place, away from sunlight and it should last for 1-2 months.

Ye Olde Thyme Disinfectant

According to Days of Yore lore, grave robbers who pilfered plague victim's remains rubbed this on themselves to protect themselves from germs. Hopefully, your household tasks aren't quite as gruesome...

- 2 quarts* organic apple cider vinegar
- 1 tablespoon each of: dried lavender, rosemary, sage, & mint

Mix together in a 2-quart jar with a screw top lid, close tightly. Let sit for 4 weeks, then strain out herbs. Pour into spray bottle. Use as spray disinfectant on countertops, door knobs, telephone receiver, etc.

*1 quart = 946 ml

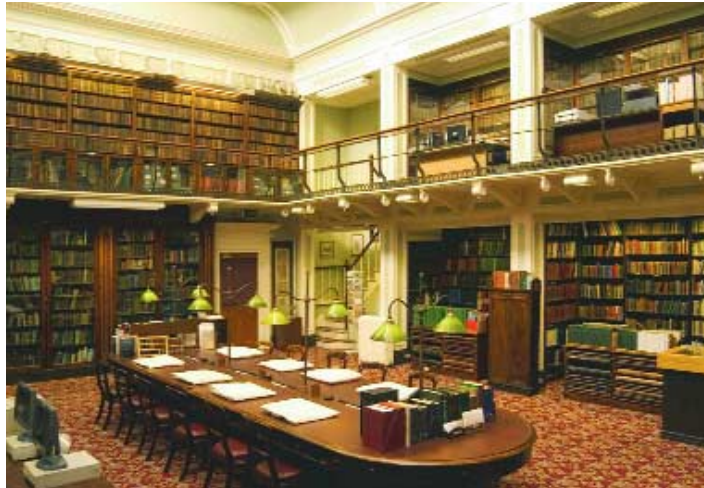
Polite Literature, Antiquities and Science: The Royal Irish Academy

By Michael D. Guiry

THE Royal Irish Academy was generally little known to the public until relatively recently when successive Presidents and Councils of the Academy pursued policies to open up the Academy to the public and to make the Academy more relevant to all aspects of Irish society. Now more people attend public meetings in the Academy and are more aware of the Academy, its publications and its mission.

The Academy was founded in 1785 and was granted a royal charter by George III in the following year. Although it currently has over 400 members from all walks of academic life, at first it was the privilege of the few, mostly the landed gentry, such as the Earl of Charlemont, its first President, and other gentleman scientists. That said, there have been many famous members: Francis Beaufort, Admiralty Hydrographer and originator of the Beaufort Wind scale; Charles Darwin, whose birth we celebrate this year; William Wilde, father of the redoubtable Oliver and accomplished physician and antiquarian; William Rowan Hamilton, world-class mathematician; Henry Grattan, of Grattan's Parliament; Robert Lloyd Praeger, Ireland's most famous botanist and naturalist; Seamus Heaney, Nobel Laureate, and many, many more.

The Academy, known fondly in the universities as the "RIA", is the Irish equivalent of the Royal Society in London and of the Académie Française and the Académie des Sciences (Institut de France) in Paris. One cannot walk in and join any of these learned societies, but when you reach a certain academic eminence you may be quietly approached by a member or a group of members and asked if you would be willing to be "put up" for election. This exhaustive elective procedure involves getting opinions on your academic worth from all over the world, and depends largely on your published work and reputation. You might be elected for 200 published works, or only 20 — a long list does not guarantee entry. If elected, you are permitted to use the letters M.R.I.A. (Member of the



The Library in the Royal Irish Academy.

Royal Irish Academy) after your name, widely regarded as a great academic honour. Members must be resident in the Republic or in Northern Ireland, and are expected to promote and support the Academy once elected. Currently, only 20 members are elected each year: 10 from the sciences and 10 from the humanities (charmingly, if anachronistically, known as the Committee of Science and the Committee of Polite Literature and Antiquities).

So, what use is the RIA to Ireland? Firstly, it is important to recognize the best and the brightest of our academics, and to ensure that they can communicate effectively with one another and influence national policy in relation to academic activities and change. Secondly, the Academy has a plethora of projects of strategic national importance including the comprehensive *Foclóir na Nua-Ghaeilge* (a historical Dictionary of Modern Irish), the *New Survey of Clare Island* (a re-survey of Clare Island in Co. May, first surveyed in 1909-1911), the *Irish Historic Towns Atlas* project (no. 19, Dublin, Part II, 1610-1756 has just appeared), the *Archive of Celtic Latin Literature*, and the *Dictionary of Irish Biography*, to mention but a few. Thirdly, the Academy advises the government on academic policy and has been particularly active in promoting consistent funding of the humanities, which are always underfunded in comparison to the sciences, and the encouragement of North-

South co-operation.

The RIA publishes some journals (learned articles bound together and published at intervals), the most recent of which used to be known as the *Proceedings of the Royal Irish Academy*, Sections A, B and C. Section B was subtitled some years ago as *Biology and Environment* and now includes a whole range of cutting-edge environmental studies. It also publishes monographs, such as the recently published *Our War: Ireland and the Great War* (John Horne, Ed.), which deals most sensitively with the much-misunderstood involvement of the Irish, north and south, in the First World War. It is often forgotten that more than 200,000 of us fought in the trenches, even though conscription was never introduced in Ireland, despite attempts by the British Government in 1918.

Since 1851 the Academy occupies a fine Georgian building on Dawson Street, right by the Mansion House. Its extensive library has a unique collection of ancient Irish manuscripts of incalculable value including the *Cathach*, supposedly the *Psalter of St Columba* (521-597 AD), and dating from about 600 AD. Written in Latin on vellum with some ornamentation of the initial capitals of paragraphs and predating the *Book of Kells*, it is the earliest known example of Irish writing, although it is incomplete and many of the leaves are badly damaged. However, it has been extensively conserved by the

Academy and is regarded as an fine example of early-manuscript conservation. The library also has a superb collection of books and journals widely appreciated and consulted by scholars the world over. The most recent publication of the Academy is a beautiful and detailed book, *Treasures of the Royal Irish Academy Library*.

Many of the Academy's other artifacts, collected by its Members, including a goodly



Seamus Heaney holding the Cunningham medal, which was awarded to him by the Academy in recognition of his outstanding contribution to scholarship.

portion of the nation's Celtic gold ornaments, are on permanent loan to the National Museum, where they are more accessible to the public than they would have been in Dawson Street.

The mission of the Academy is "vigorously [to] promote excellence in scholarship, recognise achievements



RIA House, Dawson Street, Dublin.



Irish Historic Towns Atlas No. 19 - Dublin Part II, 1610 to 1756, produced by the RIA.



The Cathach, which dates from about 600 AD.

in learning, direct research programmes and undertake its own research projects, particularly in areas relating to Ireland and its heritage." In the 224 years of its existence it has done Ireland proud, and in these times of reconciliation of the diverse cultures of our two islands, we should be able to be proud of an Academy chartered by an English king,

despite its royalist title; we should also be proud that the north-south division of this small island has not inhibited the Academy in its mission.

Further information of the RIA, its publications and its activities can be found on its website <http://www.ria.ie>

Michael D. Guiry, Member of the Royal Irish Academy.

Ireland's Ocean A Natural History

by Michael Viney & Ethna Viney
Collins Press www.collinspress.ie
ISBN: 978-1905172665
Price: €29.95/2008



This book gives a wonderful understanding of Ireland's seas, which have remained a mystery to most of the population. The first chapter "Into the Depth" gives a brief history of the fishermen who sailed to Newfoundland, the richness of the seas off Achill in the time of the famine and the work of some of the early marine scientists. In another chapter "Mapping the Blue" the authors make special mention of the role of the charismatic marine geologist Ray Keary, whose vision, stubbornness and determination lead the way to the present-day mapping of Ireland's waters by the GSI and Marine Institute. The chapter "Life on the Seabed" brings us through the kelp forests and many animals, such as sponges, hydroids, sea anemones, Dead-man's fingers and other corals. The photography of marine life is stunning, especially the feather stars (or sea lilies). The chapter "Under the microscope" gives wonderful descriptions (with photographs) of the jellyfish species in our waters. The other eight chapters are equally informative as the above. They include "Fish and Fisheries", "Marine Menageries" and "The great Change - Climate and Oceans". This is a book that has been needed for a long time and highlights the richness of the seas around our coast. It is a must for secondary school libraries.

Inishmurray

*Monks and Pilgrims
in an Atlantic Landscape
Volume 1: Archaeological Survey and
Excavations 1997-2000*

By Jerry O'Sullivan
and Tomás Ó Carragáin
Collins Press www.collinspress.ie
ISBN: 9781905172474
Price: €49.95/2008



Inishmurray is an uninhabited island in Donegal Bay, off the coast of County Sligo. The island is very small, only 1.7 km long by 0.7 km wide and was evacuated in 1948 when only 46 people remained in six households. The island enjoys a reputation as one of the best-preserved early Christian Church sites in Ireland or Europe.

The National Monuments Service commissioned an archaeological survey and condition report of all of the island's monuments. This work was done in 1998 when the survey team identified several new monuments, compiled a preliminary gazetteer of all the medieval carved stones and recorded the condition of any of the upstanding remains. The survey also recommended conservation measures that were urgently required and effectively set an agenda of work for the following three years.

This book is the first of four volumes (others to follow will include the vernacular buildings, social history and the flora and fauna) and has hundreds of photographs of the many ancient treasures on this unique island. The introduction includes its landscape, geology, pre-history, modern settlement and place names. The survey inventory alone is fascinating because of the care taken in recording each item, and the ten pages of drawings of the carved stones are thoroughly beautiful. There are wonderful photographs of exte-

PUBLICATIONS OF INTEREST



rior and interior of the Clochaun (beehive cell) at Toorybrenell. Constructed in dry-stone, many centuries ago, it shows how gifted its builders were. This book shows us that in Ireland we had a wonderful past, which must be preserved for generations to come.

Ireland's Garden Birds How to Identify, Attract and Garden for Birds

By Oran O'Sullivan and Jim Wilson
Collins Press www.collinspress.ie
ISBN 978-1-905172-73-3
Price: €16.99/2008



This is a great wee book, and one which should have come out a long time ago. Dealing solely with birds which are regularly seen in Irish gardens, it is perfect for those who love their birds but would prefer not to spend their mornings staring out over an estuary or chasing after elusive migrants. Part one gives useful information on wildlife gardening, with sections on what to plant and how to best attract birds to them, and including a month by month guide of when to do what and what to expect. Part two covers the 56 species most likely to be seen, each of which is illustrated with good identification tips. Diet and breeding habits are also given, along with a brief but informative general information section. All in all an excellent book for the kitchen windowsill, as well as one which should be in every school in the country.

Bill Oddie's How to Watch Wildlife

By Bill Oddie, Stephen Moss
& Fiona Pitcher
Collins www.collins.co.uk
ISBN: 978 0 00 723623 7
Price: €12.99/stg/2008



Bill Oddie is the great communicator, whether it be the books he writes or the programmes he presents on television. He has that rare gift of being able to explain the wonderful world of wildlife in an entertaining and informative way. Through this book he wants to tell us "how to watch wildlife - even more importantly - I hope it will help you to enjoy it". He tells us how to start and what basic equipment and books are needed. He begins with watching wildlife in your own garden and then going beyond the garden gate.

The main section of the book is the wildlife year and what to see and do each month. April is the month when everything is happening at once with birds singing, flowers blooming and insects beginning to emerge. Every page is a delight, explaining what you can see in nature. He has answers to many questions, such as "how do I see a kingfisher", "why did the dragon fly" and "how do I see a badger", as well as teaching us about photographing seabirds, nature's predators and pond dipping. A note for

Irish readers: the sections on "Where to go..." to see specific wildlife is very much geared to places in Britain, however this does not take from the book. Every page or two the author gives wonderful "Top tips" or "Stuff to take". This book would be a present to be treasured, whether one is 10 or 80 years old.

How can I stop climate change?

By Helen Burley and Chris Haslam
Collins/Friends of the Earth
www.collins.co.uk/www.foe.co.uk
ISBN: 9780007261635
Price: £14.99/2008



This is a new handbook from Friends of the Earth. It explains what climate change is and the reader will find that there are so many simple and easy ways to increase one's awareness of what can be done to help the environment and our own health. Tips include slowing down when driving to improve fuel efficiency by up to 30%; shifting to a higher gear at the right time (a vehicle travelling at 60 kph in third gear uses 25% more fuel than it would at the same speed in fifth gear); and that walking is good for you - it's free and easy, reducing blood pressure, body fat, high cholesterol and of course doesn't use fossil fuels! The chapter "Using Cleaner Energy" states that clean energy is vital if we want to clean up our act. Cleaner sources and how much energy they can supply is discussed, including wind power (with five myths about wind turbines), power from the sea, tidal barrage, wave power and underwater windmills. The chapter "In the Home" makes fascinating reading, covering such items as dishwashers, fridges, freezers, electric kettles and computers. There are excellent case studies throughout the book on money saving projects undertaken by individuals and businesses. This book will get one thinking and set one on the road to environmental care.

The Living Farmland - a guide to farming with nature in Clare

Rural Resource Development Ltd
& Clare County Council
www.rrd.ie
ISBN: 0-9547353-1-9
Price: €5.00/2008



This book is primarily intended as a practical guide to "farming with nature" in Clare. Its purpose is to provide simple advice on nature conservation and protection of important habitats in the context of practical farming. The book includes eight profiles of Clare farmers who tell their stories of how they farmed and successfully incorporated environmental management into their farming enterprises. There are three sections in the book, the first an introduction to County Clare, including its archaeology, geology and soils. The second section is Farming the Living farmland - its agriculture, water and waste. Section

three, enhancing the living farmland - its nature conservation, habitats, wildlife corridors. This is a wonderful book with 500 magnificent colour nature photographs. It is a book for farmers throughout the country who want to farm with nature. But above all it is a wonderful book for schools and the non-farmers, as it gives such an understanding of nature. It is a steal at €5.00, which is donated to Bothár by Clare County Council.

From Tide to Table

Everything You Ever Wanted to
Know About Seafood
By Georgina Campbell
Epicure Press
Available from
www.ireland-guide.com
ISBN: 978-1-903164-27-3
Price: €25.00/2008



As a nation we have never been great fish eaters, yet we have the finest seafood in Europe around our shores. Most of us of the older generation have memories of having to eat fish on a Friday instead of meat, which we as Catholics had to "endure". Fortunately fish is now a much more welcome meal in today's Ireland. Still we eat less fish than any of our European neighbours. There is no doubt that this "neglect" is due to people being unable to cook seafood in a proper and enticing way. This book is described by the author as Ireland's first ever "seafood bible". We learn how to buy and store seafood and cook it using simple methods. There is a gem of a section on "Getting kids to eat fish". Top tips include offering fish to children as early as possible and getting older children involved in cooking and preparing food.

The preparation of fish and seafood have photographic descriptions of how to skin and de-bone round fish, to fillet flat fish, prepare salmon and squid, to shell prawns and to open oysters and scallops. The book has 64 step by step recipes. They include Soups and Starters: garlic stuffed mussels, smoked mackerel pate, oysters, chowder. Light Bits & Salads: smoked haddock, baked crab hotpot, warm mustard tuna, aromatic prawns. Quick & Easy: brill, plaice, monkfish, ling. Family Mid-Week Meals: smoked haddock fish cakes, cheesy-grilled pollock, baked cod.

This book takes the mystery out of cooking seafood, which has always been the Achilles heel for many of us.

Heritage Landscapes of the Irish Midlands and selected itineraries

By PJ Gibson
Geography Publications
www.geographypublications.com
ISBN: 978-0-906602-287
Price: €25.00/2007

The Irish Midlands represent a relatively unknown part of Ireland to many people and is so often viewed as flat areas of little interest. This book shows the Midlands contains unique physical, archaeological and historical heritage. Section 1 - the Physical Landscape of the Irish Mid-

lands begins with its Geological framework and Glaciation leading to the formation of the bogs and their exploration, the Water and the Soils and the climate each is so informative. Section II - Archaeological and Historical Landscape, deals with Prehistoric Settlement, Arrival and Development of Christianity, Viking Ireland, 16th and 17th Plantation, the Famine and Modern Times.

Section III: Nine separate driving itineraries are described. Collectively they cover c. 1000 kilometres and each includes a range of physical, archaeological and historical features in the landscape. These are so detailed and the author makes each of the itineraries so alive. He guides one step by step around the Midlands, visiting many villages and towns, historic buildings, old cemeteries and of course places like Clonmacnoise with its Round Tower and its 10th century High Cross. Every page has wonderful photographs of its archaeological and historical heritage, such as the Spire of Loyd (Lloyd) "Lighthouse" built in 1791 near Kells, St. Flannan's Oratory (c. 12th century) at Killaloe, and the 16th century Cailin book shrine housed in St. Mel's Cathedral, Longford. The Midlands is a tourist paradise with such a wealth of hidden jewels.

Kildare's Natural Heritage

Edited by Juanita Browne
KELT Kildare European Leader
Teoranta
Kildare County Council
www.kildare.ie/countycouncil
ISBN: 978-0-9552459-2-3
Price: Free from Kildare Co Co/2008



This publication is a guide to County Kildare's habitats and it aims to provide an introduction to the range of habitats in the country. These are coming under

serious pressure through intensive agriculture, construction, peat extraction and pollution. The various chapters give brief summaries of the various habitat, the woodlands to visit among these - Donadea Forest Park, Killea Forest with a ringfort, the old oaks of Rahan. We learn that the total length of hedgerows in the county is 10,305 km. In most parts of the country many were destroyed in the 1950s and 60s and at last their importance to wildlife and shelter is being recognised. The Curragh covers over 2000 hectares and is a unique national heritage, with a diversity of habitats. Underground is the Curragh Aquifer, an area of underground water, which is a major source of water supply. This aquifer stretches to the Hills of Allen and is one of the most extensive in Ireland. Three main rivers - the Liffey, the Boyne and the Barrow, together with the Grand and Royal Canals - flow through the county. There are other chapters on Kildare wetlands, wildlife habitats and town and villages. This is an excellent guide to the heritage of County Kildare.

Waterford now has its own County Flora

By John Akeroyd

A NEW County Flora* has filled a major gap in the knowledge of Ireland's wild plants. It is not only an exemplary local Flora, but also an

illuminating look at a botanically neglected Irish county. That's not to say that botanists have completely ignored County Waterford, although few visited after the 1970s, heading off instead further west and north. Paul Green

follows in the illustrious 19th century footsteps of Isaac Carroll, H.C. Hart, Richard M. Barrington and Robert Lloyd Praeger, from an era Professor David Webb called Ireland's "botanical heyday". He has also absorbed the valuable

contribution in more recent decades of Keith Ferguson, Kew botanist but native of Tramore, who generously and perceptively handed over his own records to an able younger enthusiast. Through dint of hard work and an astonishing nose for plants, Paul has made his own considerable mark and unique contribution. In short he has delivered the goods and done an absolutely superb job.

Here is a Flora that doesn't digress on plant ecology or geography but gets right to the point. The author thoroughly covers the ground; he wanders far and wide; he returns to sites again and again; and he is out in the field throughout the year. He brings in friends to help and consults widely, though the final product is very much his own masterpiece. This is no committee Flora and is all the better for that – it is a special snapshot by a true expert. And an expert who's mastered his adopted county in less than the twelve years since he began the project in 1997! Paul has used his particular skills as a field botanist with an almost magical eye for plants, and as a careful compiler and sifter of information. Thus full and accurate data are now available for future botanical and ecological work in Co. Waterford. He has provided both an inventory of rare or botanically exciting species and with data on common plants so often sidelined in such studies.

Paul leaves no stone unturned. He has really explored his county: woods, loughs, marshes, reed-beds, farmland, roadsides, walls, rubbish tips, around pubs and supermarkets and, of course, the cliffs and sand-dunes of the coast, and the mysterious marshes and woods along the tidal reaches of the Rivers Suir and Blackwater. He has even gone high up into the Comeragh Mountains, miles of Old Red sandstone moors and crags for the most part botanically poor and long ignored – and has been amply rewarded. He hasn't just found scarce, under-recorded mountain plants in rocky coombs hardly explored since H.C. Hart was there in the 1880s, but has discovered Recurved Sandwort, a plant of the mountains of south and central Europe otherwise



Sea Campion (*Silene uniflora*), a plant of coasts and a few cliffs in the Comeragh Mountains.

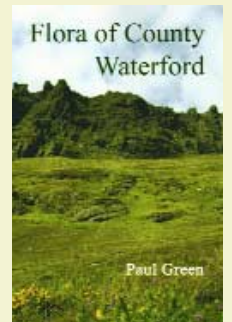


Left: Bog Asphodel (*Narthecium ossifragum*) brightens bogs in summer.

Below: Ling or Heather (*Calluna vulgaris*) colours higher ground in late summer.

known in Ireland only from the Caha Mountains of the Cork-Kerry border. Sadly, "the empty red-brown bareness" of the Knockmealdown Mountains, to steal a nice phrase from literary Republican Ernie O'Malley, yielded Paul little of interest, but doubtless time will tell! And back at sea-level, he's added Long-stalked Orache and Taschereau's Orache, its hybrid with Babington's Orache, from the muddy banks of the Suir, to the Irish flora. Both plants are hard to find and harder still to identify correctly.

All the tens of thousands of records are computerized and many species are mapped on the basis of these data. But this Flora is no soul-less electronic database. Paul's notes on ecology and distribution are an important source of information and a fascinating read. He includes subspecies, varieties, forms, even an early-flowering Goldenrod and flower colour variants such as white Heather. He includes obscure groups of plants such as the numerous bramble (*Rubus*) micro-species and provides full coverage of the garden escapes – with their correct names – that are an inevitably increasing element of the Irish flora. In the Introduction he provides useful notes on favourite botanical sites, where to go and what to look out for. He admits to what he's not done (little) and follows up and catalogues his own errors (few)!



Here is a model County Flora, showing what enthusiasm, ability and application can achieve. The publisher, the National Botanic Gardens of Ireland, should be congratulated for backing a winner. And Paul Green should be proud of his substantial contribution to the study of the Irish flora. I hope his studies now take him eastward, to the even more interesting County Wexford.

**Flora of County Waterford*. Paul Green. National Botanic Gardens of Ireland. 401pp. 2008. ISBN 0-7557-7607-0. Softback €25. Hardback €45. Postage within Ireland €7.50. Postage to UK €10.75. Order from: Matthew Jebb, National Botanic Gardens, Glasnevin, Dublin 9, Ireland.

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



Cork County Council

Environmental Awareness & Research Unit

established 2005

Youth



Business



Community -NGO's



Corporate



Research

RESEARCH PROJECT

Waste prevention initiative at Local Authority owned swimming pools in County Cork. Objective behavioural change through educational and awareness programmes



JUNIOR PAGES

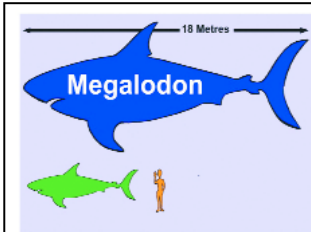
Prehistoric Super-Shark

Imagine a Great White Shark as long as a single-decker bus!

That was the prehistoric shark *Carcharodon megalodon* - the biggest predatory fish that ever lived. *Megalodon* is thought to have lived as long ago as 18 million years and to have become extinct during the Pleistocene epoch some 1.5 million years ago.

Scientists believe that *Megalodon* became extinct due to an abrupt cooling of the Earth's climate, together with changing ocean circulation and shortage of food, which are also thought to have brought about the extinction of another large-bodied marine predator *Basilosaurus* (seen right battling with *Megalodon*) at around the same time.

"*Megalodon*" (which means 'big teeth') could grow up to 18 metres long - three times longer than today's Great White Shark (shown left in green) and weighed up to 70 metric tonnes. It is likely to have fed on prehistoric whales.



The probable size of *Megalodon* has been estimated from the size of fossil teeth at around 47 metric tonnes.

Teeth from this ancient shark have been found all over the world - from Europe, North America and Japan in the north, to South America, Australia, New Zealand, South Africa and India in the south.

Captain Cockle's Log

Copyright John Joyce 2009
Log onto www.captaincockle.com



Smart Sharks?

Sharks are far more than the dumb "eating machines" shown in books and films, recent studies have indicated that many shark species possess powerful problem-solving skills, similar to dolphins and whales. Indeed their brain-mass-to-body-mass ratio is similar to those of mammals and other higher vertebrate species.

Whale biologist Peter Best reported as many as seven White Sharks apparently working in concert to move the carcass of a partially beached Pygmy Right Whale (*Caprea marginata*) into deeper water in 1987 at Smitswinkel Bay, South Africa to make it easier to eat.

Sharks have even been known to engage in play (a trait also observed in dolphins and monkeys). Porbeagle sharks have been seen repeatedly rolling in seaweed and have even been observed chasing a playmate trailing a piece behind them.



Man Bites Shark . . . !

According to Joe Borg, the EU Fisheries Commissioner, "The latest information we have confirms that human beings are now a far bigger threat to sharks than sharks ever were to us." It is estimated that an average of 38 million sharks are killed every year.

Due to demand for shark products such as shark's fin soup on the Asian market, along with the cosmetics industry for shark liver oil, world catches of sharks grew from 600,000 to 810,000 metric tons a year between 1984 and 2004.



These huge catches, combined with the fact that sharks are relatively slow-growing compared to other fish species and produce small numbers of young, make them very vulnerable to overfishing, with at least a third of shark species now being overfished.

The practice of cutting off sharks' fins to make shark fin soup and throwing the rest of the shark back into the sea is already illegal in European waters. Now, to give even greater protection to sharks in European waters, the European Commission is drawing up an action plan that will limit fishing in areas where shark populations may be under threat.

TWO SUCCESS STORIES

By Declan Murphy

NOWADAYS, with all the destruction of habitat, it is not unusual to read that many species of birds are declining and becoming scarce. These include, amongst others, formerly common species such as the Corncrake.

Despite these worrying trends there are some species which have actually increased their European range and have colonised Ireland where previously they only occurred as vagrants. Two of our recent success stories are the Little Egret and the Great-spotted Woodpecker.

Little Egret

A common species in the Mediterranean this is a distinctive member of the Heron family. Considerably smaller than a Grey Heron, it is pure white in colour with a black bill. The legs are also black but the feet, easily seen in flight, are a bright yellow.

Until the mid 1990's Little Egrets occurred as a vagrant, chiefly in the spring but also in the autumn and less regularly in the winter. In the spring and early summer breeding adults develop plumes on their head and chests which were much sought after for the Victorian fashion industry. The first breeding records occurred in the mid 1990's when several pairs bred in a mixed heronry in Co. Cork.

Little Egrets can be seen all around the Irish coastline but are especially common on the southern coast. They can be seen in a variety of habitats including estuaries, rivers and marshland and can be seen singly or in small groups. They feed on small fish and crustaceans and are very active feeders, chasing their prey through shallow water unlike the Grey Heron which hunts by stealth.

The nest is usually located amongst Grey Heron colonies and is made of a platform of sticks located at the top of a tree. They usually lay 4-5 eggs which hatch after 21 days. The young are fed on regurgitated food and leave the nest after 30 days. They then clamber around the trees for another 10-15 days before finally leaving the nest to forage alongside their parents.



Photos courtesy of BirdWatch Ireland

Great-spotted Woodpecker

Although widespread throughout the UK Great-spotted Woodpeckers were extremely rare in Ireland until the past few years. Usually only one or two sightings were reported each year from a wide variety of locations throughout Ireland. It was generally thought that these birds were of Scandinavian origin rather than from the UK, as the Scandinavian birds are migratory unlike the sedentary birds in the UK.

In the past 2-3 years there have been several reports of woodpeckers across a wide area of County Wicklow and last year several pairs were heard drumming and the first young were seen.

In Ireland Great-spotted Woodpeckers are usually found in oak woodland with coniferous woodland either nearby or mixed in with the oaks. Both sexes can be heard drumming in the springtime and their loud 'PIK' 'PIK' calls are often the first indication of their presence.

They are often reported at peanut feeders during winter months and the first young bird seen was actually at a peanut feeder alongside a Great Tit.



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 this superb 130 minute DVD featuring 80 different bird species; a free Garden Bird Information Pack; Wings, our quarterly magazine (only available to members); free participation in BirdWatch Ireland branch events all around the country; and a chance to take part in our popular Garden BirdWatch Survey.

BirdWatch Ireland is the largest and most active conservation organisation in Ireland, with over 10,000 members and supporters; a nationwide network of more than 20 local branches and a growing number of nature reserves around the country. Our primary objective is the conservation of Irish wild birds and their habitats.

Join now

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

To join, simply complete and cut out this Membership Form and send it along with your membership payment to:

BirdWatch Ireland DVD Order, P.O. Box 12, Greystones, Co. Wicklow

Yes, I wish to join BirdWatch Ireland. Please send me my gift of a FREE DVD. I enclose a cheque/postal order (made payable to BirdWatch Ireland) for:

€40 - One year's Individual Membership
 €50 - One year's Family Membership
 €10 - One year's School/Group Membership

The DVD only option costs €20.

Or Please deduct this sum from MasterCard/Visa/Amex Card no.:

Expiry Date: / / - This is a gift for someone else: Yes No

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Member's Name: _____

Address: _____

An A to Z of GEOLOGY



The newly published "An A to Z of Geology", explores the fascinating world of rocks and geology - a world of volcanoes, tsunamis, earthquakes, diamonds, gold and even dinosaurs! Here are some excerpts...

Geology is the study of the Earth, what it is made of and what has happened to make it the way it is today.

Geology mainly involves the study of rocks, as well as making maps of what lies beneath the ground. Geologists are people who study the rocks that make up the Earth. This study allows the geologist to trace the history of the Earth, to understand how it is now and how it will be in the future.

If you don't know what 'geology' means, consider for a moment how it impacts on your life. Here are just a few examples:

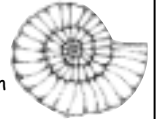
- Your home is probably made from concrete, stone and slate;
- The heating in your home and school probably comes from oil or gas, turf or coal;
- Some of the water you drink comes out of the ground;
- The roads you travel each day are made from concrete, stone and tar; and the car you travel in is usually powered by oil.
- The factory machines that make the clothes you wear run on oil and are made from substances drawn from the Earth's resources, such as steel (which comes from iron ore).
- The jewellery people wear contains natural resources, such as gemstones and gold, for sparkle and beauty!

So you see, the rocks and geology all around you enable you to live, and geologists can make your life better because of their knowledge of the Earth.

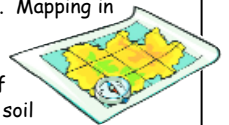
Rocks are the building blocks of Planet Earth. They are literally all around us, important in every element of our lives. The mountains that make Ireland so beautiful are made of rock, the homes we live in are often made of rock, indeed the very ground we walk on is mainly rock - this is the Earth's crust.



Fossils are the remains of plants and animals preserved in rock. Fossils are very important because they help us understand animal and plant life that existed millions of years ago. Geologists also use fossils to date rocks (and the Earth), as certain fossils can be associated with rocks of a particular time.



Maps have been around since early humans. It is thought that people made maps before they wrote down their languages. Mapping in Ireland is carried out on behalf of the Irish State by the Ordnance Survey of Ireland (OSI) and the Geological Survey of Ireland (GSI). In simple terms, OSI maps the ground relief and man-made features, and GSI maps the rocks beneath the soil and glacial deposits.



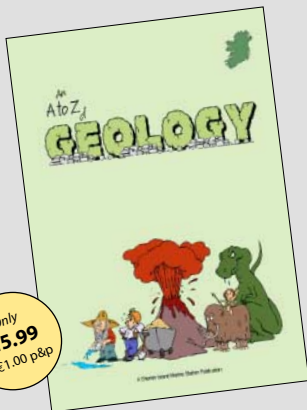
A cave is a natural hollow in rock through which a human can step. Caves can occur both underground or over the ground. Some caves are created by the constant battering of the sea against rocks and some are created as a result of volcanic activity. Mostly however, caves are formed underground by the action of water on soft rock such as limestone.



Heritage is anything that was valued by generations before us and which we, in our lifetime, must protect for future generations. This could be anything from places to languages to objects. Ireland's geological heritage is very important. It gives us an idea of how Ireland was formed and what happened before we came along. Different rock types also support many special plant and animal habitats. Geological areas like these need to be protected so that they are preserved for future generations.



An A to Z of GEOLOGY



Produced in association with the Geological Survey of Ireland, the book aims to highlight the importance of geology in our everyday lives.



Caves
A cave is a natural hollow through which a human can step. Caves can occur both underground or over the ground. Some caves are created by the constant battering of the sea against rocks and some are created as a result of volcanic activity. Mostly however, caves are formed underground by the action of water on soft rock such as limestone.

Ice Ages
The world has been in the freezing grip of an ice age several times. The last ice age was the last glacial period, which ended about 11,700 years ago. During this time, much of the world was covered in ice. In Ireland, the last ice age was the last glacial period, which ended about 11,700 years ago. During this time, much of the world was covered in ice. In Ireland, the last ice age was the last glacial period, which ended about 11,700 years ago.

Navigating Ireland
The map of Ireland shows the different geological features of the country. It highlights the various rock types and geological formations that make up the landscape. This is a key resource for understanding the geology of Ireland.

There are a remarkable variety of rock types found in Ireland. These rocks impact on our lives every single day, in ways that you might never have imagined.

This book explores the fascinating world of rocks and geology - a world of volcanoes, tsunamis, earthquakes, diamonds, gold and even dinosaurs!

Contains information specific to Ireland.

Order from: Matt Murphy, Sherkin Island Marine Station, Sherkin Island, Co. Cork, Ireland. Tel. 028-20187 Fax: 028-20407 Email: sherkinmarine@eircom.net Website: www.sherkinmarine.ie

ISBN-13: 978-1-870492-33-1 A4 Softback 24pp
Published by Sherkin Island Marine Station

Navigating Ireland

Using only each letter of the alphabet once, fill in the missing letters below and then match up the names with the locations on the map. The remaining six letters will spell the name of the most common mineral found in rocks.

E _ P L O R I N G G E O L O G _ _ O N A _ _ O U R N E Y A R O U N D I R E _ _ A N D

- | | |
|--------------------------------------|--------------------------|
| 1. _ I A N T ' S C A U S E _ A Y | 6. C O _ P E R C O A _ T |
| 2. A R G _ N A M I N _ _ | 7. D U N M _ R E C A _ E |
| 3. _ L I F F S O F _ _ O H E R | 8. S U G A R L O A _ _ |
| 4. T _ E _ U R R E N | 9. B O G O F A L L E _ _ |
| 5. T E T R A P O _ _ T R A C _ W A Y | _____ |



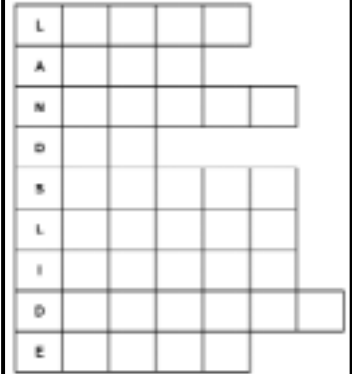
Answers below.

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

It's a Landslide!

Can you fill in the answers in the grid below? The first letters of all the answers spell out the word "LANDSLIDE".

Answers below.



1. Large inland bodies of water.
2. Very long periods of time.
3. A small solid lump of gold.
4. Something an archaeologist would do.
5. The bottom of the sea or ocean.
6. Flowing water is in this state.
7. An extremely cold period in time.
8. A very hard gemstone.
9. The planet on which we live.

GEOLOGY WORDSEARCH

Find the following page titles from "An A to Z of Geology" in the wordsearch below:

- | | | | | |
|------------------|------------------|--------------------|-----------------|-----------------|
| Age of the Earth | Explain Your Job | Jurassic | Oil | Under Your Feet |
| Bogs | Fossils | Know Your Geology | Plate Tectonics | Volcanoes |
| Caves | Gas | Landslides | Quarries | Water |
| Coal | Gold | Maps | Rocks | Zinc |
| Diamonds | Heritage | Mines | Seabed Survey | |
| Earthquakes | Ice Ages | Navigating Ireland | Tsunamis | |

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

ANSWERS:

NAVIGATING IRELAND: Exploring geology on a journey around Ireland; 1. Giant's Causeway; 2. Antrim Mine; 3. Cliffs of Moher; 4. The Burren; 5. Tetrapod Trackway; 6. Copper Coast; 7. Dunmore Coast; 8. Sugar Loaf; 9. Bog of Allen; Word: Quartz.
IT'S A LANDSLIDE: 1. Lakes; 2. Ages; 3. Nugget; 4. Dig; 5. Seabed; 6. Liquid; 7. Ice Age; 8. Diamond; 9. Earth.
GEOLOGY WORDSEARCH: Age of the Earth (17,17.N); Caves (17,7.S); Coal (18,4.N); Diamonds (14,15.W); Earthquakes (2,4.S); Explain Your Job (14,18.W); Fossils (12,1.S); Gas (6,3.E); Gold (18,1.S); Heritage (9,8.N); Ice Ages (7,13.W); Jurassic (1,1.E); Know Your Geology (1,4.S); Landslides (15,8.S); Maps (4,10.W); Mines (11,10.N); Navigating Ireland (2,5.E); Oil (16,18.N); Plate Tectonics (14,1.S); Quarries (1,6.S); Rocks (1,2.E); Seabed Survey (1,17.E); Tsunami (12,12.N); Under Your Feet (5,16.N); Volcanoes (9,14.W); Water (6,4.S); Zinc (18,17.N).



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Gaisce – The President's Awards

Working with the Niall Mellon Township Trust

By Seoighe Kearney

THE adventure of a life time always seems to begin with an early rise and a lot of travelling. For me and over 2,000 other volunteers our story is no different. Cape Town, South Africa was waiting. The BLITZ starts here.

In November of 2008 I travelled to Cape Town with the Niall Mellon Township Trust. This adventure was tied in with Gaisce – The President's Award, where you undertake a challenge in four areas; Skill, Community, Physical and Adventure. This escapade was my adventure for the silver award.

I got involved with the Niall Mellon Township Trust through my father who had been the year before. He returned with pictures of the conditions that children and adults alike were living in and I was stirred by the horrendous environment. This encouraged me to raise the

€10,000 to return the next year with him. This was one of the most difficult parts of my mission. However after six months of continuous fundraising, the generous donations of the public made it possible for me to bring my deepest dream to life.

The Kick Off

After a thirteen hour flight we landed in Cape Town airport, to be individually greeted by the man himself, Niall Mellon. In a pioneering venture, Niall met with community leaders and undertook the extraordinary task of replacing 450 corrugated iron shacks with proper brick houses. In 2003, he organised 150 volunteers from overseas each raising €3500, to travel 6000 miles to Imizamo Yethu, to build 25 houses in 9 days. And after six years the charity is growing in an enormous rate, building 5,000 homes in 2008.

In the Beginning

My second morning in

South Africa began at 6 a.m. Shuttle buses left the hotel at 6:30 a.m. beginning the 45 minute journey to Khayelitsha. On either side of the motor way, during this journey, the horizon was littered with thousands and thousands of shacks. Khayelitsha itself has a population of 1 million people, only one of the townships in South Africa.

My first two days in South Africa were spent working on site. Anything from block laying to assisting in roofing were my duties. This was exceedingly physically draining and often by ten o'clock I would be ready to drop. Scorching sun + no wind + strenuous labour is no ideal equation to be working in and yet of the hundreds of people around me not once did I see someone take it easy or layabout. We were on a mission.

Midway Through

After a slight injury my foreman appointed me to a new position. As each team were requiring materials and

equipment, I now had the responsibility of ensuring that if something was needed I already had it there. It may seem to be a straight forward job but I ensuring you it is a difficult position to hold. This was the arrangement for the remainder of the week. It was by far the most exhilarating experience of my life.

Shack Visit

On one of the days the group had the option of going to see the homes of the residences of Khayelitsha. There only one child out of three can afford to go to school. The environment in which these children are being brought up is giving them no hope for the future. Can we justify and allow this treatment of children to continue? Their innocence is being stripped of them at a very young age. However, by committing myself to the Niall Mellon Township Trust I can honestly say that I am giving these children a fair chance at life. A family's stability begins with



Seoighe, Tom Kearney (Seoighe's dad) and Niall Mellon in Cape Town.

having a safe place to call home.

The Niall Mellon Township Trust has given me the opportunity to experience a life-changing encounter with the people of South Africa. I would like to thank all those who donated, helping to make this possibly for me and I would also like to congratulate the charity on its success. If you would like to make a donation to this charity and help me on my way again please contact Seoighe at

seoighe@inbox.com. Thank you.

Seoighe's PAL (President's Award Leader) is Helen Carey. If you are interested in entering for a Gaisce Award please contact: Gaisce – The President's Award, The State Apartments, Dublin Castle, Dublin 2. Tel: 01 4758746. Email: mail@gaisce.ie or check out their website: www.gaisce.ie

THE CENTRAL AND REGIONAL FISHERIES BOARDS ARE MONITORING FISH FOR THE WATER FRAMEWORK DIRECTIVE

Additional information from:
The Central Fisheries Board,
Swords Business Campus,
Swords,
Co. Dublin.
Website: www.wfdfish.ie

The Central and Regional Fisheries Boards

The RNLI Fleet

The RNLI has an active fleet of more than 300 lifeboats, ranging from 5m to 17m in length, and a relief fleet of about 100 boats. The current fleet also includes four active and one relief hovercraft.

RNLI lifeboats can be divided into two categories: all weather lifeboats and inshore lifeboats. Different kinds of lifeboat are needed for different places. The class of lifeboat at a particular station depends on the geography of the location and the rescues it carries out.

(All text and photographs courtesy of www.rnli.co.uk)

RNLI & Education

In the RNLI, raising awareness, particularly among young people, is vital, as they will be the crews, fundraisers and supporters of the future. The RNLI educates children and young people about its work, how they can help and how to stay safe on or by the sea. Regional education managers work with teams of volunteers to run a variety of educational initiatives. For more information visit:

www.rnli.org.uk/shorething

TAMAR



Category	All weather
Introduced	2005
Length	16m
Range	250 nautical miles
Speed	25 knots
Weight	30 tonnes
Crew	6
Construction	Fibre reinforced plastic (FRP)
Launch type	Slipway or afloat

The Tamar class lifeboat is the RNLI's latest design and will gradually replace the Tyne class. It is bigger and faster than the Tyne and can be launched from a slipway or lie afloat. The Tamar includes the computerised Systems and Information Management System (SIMS) that enables crew to control many of the lifeboat's functions remotely from the safety of their seats. Other features include advanced ergonomics, that reduce the impact on the crew as the lifeboat crashes through waves, and a powered Y boat stored behind a transom door to allow immediate deployment. The first Tamar went on station at Tenby in Wales in 2006.


TYNE



Category	All-weather
Introduced	1982
Length	14m
Range	240 nautical miles
Speed	17 knots
Weight	25 tonnes
Crew	6
Construction	Steel
Launch type	Slipway or afloat

The Tyne class lifeboat was the first 'fast' slipway lifeboat. It is the RNLI's main slipway launched lifeboat but can also lie afloat. Features include a low-profile wheelhouse and a separate cabin behind the upper steering position. The propellers are protected by substantial bilge keels. The last Tyne was built in 1990 and the class will be gradually replaced by the Tamar class.

TRENT



Category	All-weather
Introduced	1994
Length	14m
Range	250 nautical miles
Speed	25 knots
Weight	27.5 tonnes
Crew	6
Construction	Fibre reinforced composite
Launch type	Moored afloat

The Trent class lifeboat is designed to lie afloat, either at deep-water moorings or at a berth. Introduced in 1994, it shares the same hull shape as the Severn class but is a smaller version. The sheerline sweeps down for ease of survivor recovery. As with the Severn, its propellers are protected so it can take ground without damage.

SEVERN



Category	All-weather
Introduced	1995
Length	17m
Range	250 nautical miles
Speed	25 knots
Weight	41 tonnes
Crew	6
Construction	Fibre reinforced composite
Launch type	Moored afloat

The Severn class lifeboat was introduced in 1995 and shares the same hull shape as the Trent class. It carries a powered Y boat that can be launched and recovered by a lightweight crane to enable rescues close to shore. Its propellers are protected so it can take ground without damage.


MERSEY



Category	All-weather
Introduced	1988
Length	12m
Range	140 nautical miles
Speed	17 knots
Weight	13 tonnes
Crew	6
Construction	Aluminium or Fibre Reinforced Composite (FRC)
Launch type	Carriage, afloat or slipway

The Mersey class lifeboat was introduced in 1988 and was the RNLI's first 'fast' carriage lifeboat. It was designed to be launched from a carriage but can also lie afloat or be launched from a slipway. Propellers are protected by partial tunnels and substantial bilge keels. The last Mersey was built in 1993.


B CLASS (ATLANTIC)



Category	Inshore
Introduced	1972 (latest version in 2005)
Length	8.5m
Range	3 hours at maximum speed
Speed	35 knots
Weight	1.8 tonnes
Crew	3/4
Construction	Fibre Reinforced Composite (FRC) hull with inflatable sponsons
Launch type	Trolley, floating boathouse or davit

The Atlantic 85 is a rigid inflatable lifeboat, introduced in the latter half of 2005 as the latest development of the B class. It has a manually operated self-righting mechanism and is capable of being beached in an emergency without sustaining damage to engines or steering gear. The Atlantic 85 is fitted with radar and VHF direction finding equipment and can be operated safely in daylight in a force 6/7 and at night in a force 5/6. The details given are for the Atlantic 85 that was introduced in 2005.


D CLASS



Category	Inshore
Introduced	1963 (latest version in 2003)
Length	5m
Range	3 hours at maximum speed
Speed	25 knots
Weight	436kg
Crew	2/3
Construction	Hypalon coated polyester
Launch type	Trolley or davit

The D class has been the workhorse of the service for 40 years. It is small and highly manoeuvrable, making it ideal for rescues close to shore in fair to moderate conditions. It has a single outboard engine and can be righted manually by the crew following a capsizing. The design of the D class has continued to evolve since its introduction. The details given are for the latest version that was introduced in 2003.


E CLASS



Category	Inshore
Introduced	2002
Length	9m
Range	4 hours at maximum speed
Speed	40 knots
Weight	3.5 tonnes
Crew	3
Construction	Aluminium alloy with closed cell polythene foam collar
Launch type	Moored afloat

The E class lifeboat was introduced in 2002 and is the fastest lifeboat in the RNLI fleet. It is a fast response craft, developed for use with waterjets, and is used at three stations on the River Thames. The E class can operate in both daylight and darkness and has an assisted righting capacity similar to the B class.

HOVERCRAFT



Category	Hovercraft
Introduced	2002
Length	8m
Range	3 hours at maximum speed
Speed	30 knots
Weight	2.4 tonnes
Crew	2-4
Construction	Marine grade aluminium with moulded fibre reinforced composites
Launch type	Bespoke transporter

Hovercraft were introduced into the fleet in 2002. They are able to operate in mud, sand and very shallow water and are particularly useful for shoreline searches. Lift is provided by a build up of air pressure under the craft and thrust by two large fans mounted on the back that act in the same way as aeroplane propellers. Steering is provided by aerofoil-shaped rudders located behind the propellers.

ARGANIA



Category	Inshore
Introduced	2001
Length	3.9m
Range	20 nautical miles
Speed	22 knots
Weight	165 kg
Crew	2
Construction	Bonded dupont hypalon polyester 1100 duratex
Launch type	Trailer / trolley

First approved for surf lifesaving in 1979 in New Zealand, IRBs are now in use worldwide. Brought into the RNLI in 2001, IRBs are hand-built at the Inshore lifeboat centre in Cowes. Sturdy enough for heavy surf conditions, IRBs are still light enough for two people to launch.

Seafood and the Global Community

By Mike Ludwig

THE world's ocean resources are experiencing both major impacts and some modest, potential benefits from the unfolding events caused by human activities. Global climate change is beginning to be visible as sea level rise, changes in coastal water temperatures and water acidity alter life in the oceans.

Meanwhile, the recent roller-coaster ride of the economy is causing people to realize that our world of separate nations has become intertwined and events in one sector can have profound impacts on many others. Curiously, our situation is comparable to the events occurring in the ocean. The consequences of overharvesting fishery stocks and, more recently, the changing climate are significant events.

Now we are facing economic challenges that are influencing the ability to study these events even though all three situations are not fully realized and only partially understood.

Climate change is causing some species to relocate making them harder to capture. Last year the price of fuel went through the roof and supplying seafood became more costly. Now, as the

world economy is struck by job loss, declines in income and spending, seafood is becoming more expensive and consumption is declining. Hardest hit by these wild swings in costs, supply and demand are the fish farmers that must compete with traditional fishing practices in a shrinking market. Farmers pay to raise a crop. Fishermen can target the more valuable species but that can mean

more discarding of less valuable or smaller fish and more effort. Aquaculture can reduce the need to harvest wild fish and create the opportunity to increase population size. But what if the places where we grow or capture fish are no longer able to support their survival? Fish are losing their homes, finding it harder to feed themselves and having to move to places where conditions could be worse than what they left.

Heavy harvesting of ocean fish continues even as global climate change is occurring. The impacts of overfishing, the evolving changes in fish habitat and habitat use patterns are causing researchers to conclude that some species may not be available in coming years. Studies are revealing that species appear to be relocating but the moves can create problems as well as benefits. In some cases, the habitat functions and values that support a community food web may no longer be available. Sediment characteristics and current patterns at new locations may preclude needed benthic communities. And, the species that have not or can not relocate can suffer as well. For instance, winter flounder populations have been declining. The species generally return to their place of birth to spawn. The affinity for their place of birth may preclude the ability to relocate as conditions change. But, the species spawns in winter relying on cold water to protect the young from most of their predators. By not moving they are losing the protection afforded them by the winter. Warmer water on spawning grounds has enabled predators like shrimp to be active and feed on flounder eggs and larvae. Fewer young fish means there are fewer to grow, spawn and be harvested. We're overfishing the adults and the number of replacements is

declining. It is a tough time to be a winter flounder.

Fishermen and resource managers alike need to collect information to understand what is happening and what might be done to better manage fishery stocks. Now, just as we are beginning to see changes occurring in the natural world, obtaining the funding to study them is declining. From Universities to Government Agencies and throughout the private sector, the sources that provide financial support for this vital research are shrinking in number and the amount of money they can provide. How can the funding levels be sustained? We need fish and, it appears, they may need us. That's a global economy!

All this bad news seems to overwhelm the occasional piece of potentially good news. It is hard times but the times may provide opportunities for natural renewal of some resources. Less fishing means more fish can grow to larger sizes. Larger fish produce more eggs and it takes fewer large fish to maintain or increase a population. The recovery of the fisheries during World War II is an example. Other benefits may occur from placing alternative energy generation systems in the ocean. The structures needed for those systems can provide habitat and shelter creating conditions similar to those in a marine protected area or sanctuary. Studies of offshore oil rigs have provided good evidence that putting a structure in the ocean can not only concentrate fishery resources but create new places where fish can live, grow and add members to a population.

Mike Ludwig, Ocean & Coastal Consultants, 35 Corporate Drive, Trumbull CT 06611, USA.

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