SHERKIN COMMENT

Issue No. 48 Environmental Quarterly of Sherkin Island Marine Station *2009*

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Editorial

Putting a Spotlight on Marine Affairs

By Matt Murphy

THE Celtic Tiger is dead, the property boom is gone, unemployment continues to soar and the prospects for job creation, in the immediate future, seem very remote. Economists and politicians have many and diverse views as to how economic recovery can be attained with so many different solutions being put forward and the finger of accusation being pointed at the sins and actions of the past. The only discussion should not be the futile blame game for what happened. The focus now must change to the creation of sustainable jobs for the future. One area that must be looked and realised is the massive potential of our marine resource, which has been sorely underdeveloped and neglected to our shame.

At present, the future and roles of many state agencies is being examined because of the dire state of the country's finances. In whatever decisions are made about the future of State agencies serving the fishing industry, it must be recognised that there are fundamental differences between the fishing and seafood sector and other food production businesses. Our seafood processing industry is very much underdeveloped, the Cinderella of our economy; it has enormous potential which has never been utilised to the country's economic advantage. It surely calls for a serious dedicated and focused support from the State through whatever agents the State decides to use.

In this issue, we look at BIM's new Seafood Development Centre in Clonakilty, Co. Cork, which provides facilities for developing innovative seafood products, adding value to the primary produce of the sea. This initiative is a very positive step in job creation and this and similar initiatives must be prioritised, fully supported politically, adequately resourced and given full commitment.

This leads me to one person, where the attribute of integrity and commitment was always present, who has done more to highlight the underdeveloped potential of our maritime resources than any of his peers. He is that most principled journalist, Tom MacSweeney, the RTE Marine Correspondent. He has for over 20 years produced an excellent and informative weekly radio programme, covering such matters as shipping, the fishing industry, the marine environment generally and marine leisure activities. His programme, *Seascapes* (www.rte.ie/radio1/seascapes, is the only regular radio or television programme of its kind on Ireland's maritime resources. Not until 1997 did RTE appoint a Marine Correspondent and then only after a sustained campaign by Tom for such a programme. Tom was appointed - one suspects to keep him quiet! It is incredible that it took over 35 years for our national television station to make such an appointment. Tom MacSweeney has been the "old time professional" as regards journalism. He goes out on the road with his recorder to get that critical interview. Too often today the telephone, in the studio or the office, is substituted for the footwork and dedication of the reporter on the ground. Tom reached those people who are not on the easily reached "contact list". The ones who pop up regularly across all the radio stations. Sadly Tom MacSweeney's television era with RTE came to an end this November, as he retired from the organisation. His radio programme, *Seascapes*, of over a 1000 programmes will continue until year-end.

It is to be hoped this great warrior who has never been afraid to ask those awkward questions when interviewing, will find another way to continue his quest to see our maritime assets used to their fullest. He has been the "voice of the marine sector" - that voice must not be quenched in the absence of another voice to replace him. It is perhaps fitting to quote from Tom's book "Seascapes", as it sums up the frustration of the few like Tom who see the huge potential of the seas around our coast: "One of the great failings of Irish people, in my view, is to appreciate, to relish, respect and accept that they are an island people. This is particularly evident amongst those who should give leadership, amongst whom I include leaders of state, business and commerce, church, industry and community. The continuous concentration on the creation of a 'knowledge' economy is irritating when there is no balance in appreciation shown of the maritime resources which those of 'knowledge' should be actively promoting in an island economy."

His book has recalled many of the stories he has covered. They include: "The only submarine commander to survive an entire war" "The fisherman from the city" "Rosslare's proud lifeboat tradition" and "Frightened and uncertain on the Atlantic" to mention but a few.

Tom MacSweeney throughout his career had a nose and appreciation for the story of the "little person"; the person who fought the establishment, who was not doing it for self promotion, but because it needed to be done. He always believed a journalist should remain detached from a story, be independent and above all professional. At times he took flak from politicians, media colleagues and superiors in RTE, sometimes being accused of bias and poor reporting. They surely underestimated Tom MacSweeney because he has a belief that it is his duty to raise the awareness of the marine environment and report the facts, as he sees them, come hell or high water. He loves his country dearly, with pride and passion. This he has proved throughout his career as Marine Correspondent for RTE.

From those of us with an interest in the marine sector we would like to say "thanks" to Tom as we owe him a gratitude for his relentless work and dedication over the years.

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

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The Drake Passage

MV *Ioffe* in Drake Passage.

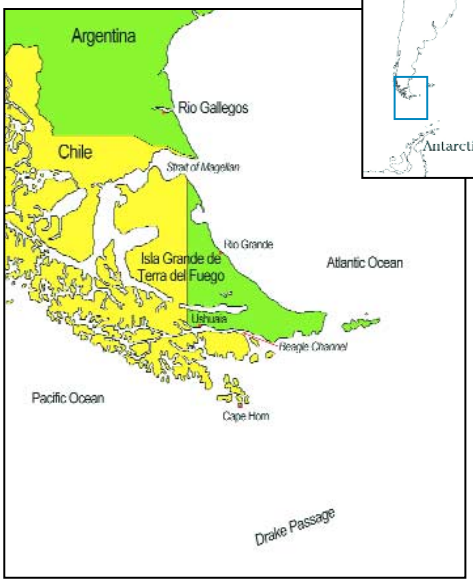
Photos: © Oscar Merne

By Oscar Merne

IN the last issue of *Sherkin Comment* (No. 47) I wrote about the seabirds which I saw in the Beagle Channel (Tierra del Fuego, Argentina) while waiting a few days before joining my ship for a voyage to the Antarctic Peninsula in December 2008. In this article I describe the exciting journey from Tierra del Fuego across the Drake Passage, which separates the two Continents of South America and Antarctica.

The Drake Passage extends from Cape Horn (which is actually on a small island off the tip of Chilean Tierra del Fuego) to the northern end of the Antarctic Peninsula, and is a distance of just over 1,000 km. It is a notoriously stormy stretch of water, with no land mass to slow down the winds which constantly sweep around the bottom of the planet from west to east at those latitudes. And on my voyage south the Drake Passage certainly lived up to its reputation.

As we left Ushuaia on the evening of 6th December the winds in the relatively sheltered waters of the Beagle Channel were coming up to full gale force. As we neared the eastern entrance to the Channel at nightfall we had a force 9-10 storm behind us, with a weather forecast of a hurricane following shortly. Wisely, I thought, the Captain decided to linger a while in the shelter of Tierra del Fuego before sailing southwards into the Drake Passage. This we did for most of the night, while the worst of the hurricane swept through. At dawn we set off into the open ocean and soon were in mountainous seas and with the winds shrieking in the rigging. Instead of pushing south at the normal cruising speed of 15 knots, we were forced by the conditions to take it gently at 5-6 knots. The ship, the 117 m long, ice-strengthened MV *Akademic Ioffe*, built in Finland for the Russian Academy of Science, for oceanographic research in polar regions, was well designed and constructed for such conditions. Because of its operations in ice-strewn seas it could not use traditional stabiliser fins, but instead it had a state-of-the art, computer-controlled ballast water transfer system, whereby tonnes of ballast water were rapidly pumped from one side of the ship to the other in order to counteract severe rolling in heavy seas. But nothing could be done to stop the ship pitching, and each time we dipped into the troughs between 10-15 m waves large volumes of green water surged over the bow and lashed the bridge windows high up at the front of deck 7. These rough conditions lasted for over 60 hours, gradually abating as we spotted the first ice-bergs near Anvers Island, off the west side of the Antarctic Peninsula at Graham Land. The Russian Captain, who had been sailing the Drake Passage for 13 years, said it was the worst summer crossing he had made.



Now, you might think that birdwatching from a ship on the high seas in hurricane conditions would be very difficult, if not impossible. In fact, for most of the journey across the Drake Passage, the area around the *Ioffe* was alive with thousands of pelagic seabirds, and I recorded 32 different species – ranging from tiny Wilson's and Black-bellied Storm-petrels to magnificent and huge Wandering and Royal Albatrosses. As the winds eased and the mountainous seas began to abate towards the end of the open sea voyage, it was possible to watch the seabirds from the warmth and comfort of the bridge as the windows were no longer being lashed by green water and spray. However, at the height of the storm the only way to get good views of the birds was to wrap up well and venture out onto the bridge wing on the port side of the ship. Being on the lee side of the ship's superstructure, this was the only sheltered (and safe!) spot outside. Through the daylight hours I spent much of my time there, taking short breaks for meals and hot drinks in between watches: I didn't want to miss the opportunity to see as much as possible while I had the chance.

Many of the seabirds encountered in the Drake Passage simply crossed our track and passed by. Some went with the wind, but many glided effortlessly into the force 8-12 winds. The albatrosses, in particular, seemed to have no difficulty making headway against the wind, progressing in dynamic soaring mode, with hardly a wing flap. It was wonderful to see Wandering, Royal, Black-browed, Grey-headed and Light-mantled Sooty Albatrosses lazily gliding past close to the ship. On one occasion a pair of Light-mantled Sooty Albatrosses suddenly broke into their graceful and balletic synchronised courtship flight, which, apparently, is very unusual so far from the breeding colonies.

Among the larger seabirds were many Southern Giant Petrels – which I had seen scavenging at a sewage outfall in the Beagle Channel. They seemed more attractive out in the open ocean, and I saw one of the rare white forms too.

Almost constantly around the ship, often in large numbers and wheeling overhead, were attractive black-and-white Pintado or Cape Petrels. Usually there were a few similar Antarctic Petrels mixed in with them. Another attractive species, seen usually in ones or twos, was the Southern Fulmar – very similar to ours but with a pink bill and silvery grey wings.

From top: Black-browed Albatross flying, Drake Passage; Giant Petrel flying, Drake Passage; Cape and Antarctic Petrels, Drake Passage; Gentoo swimming, Antarctica.

I also saw a small group of Gentoo Penguins, c.500 km from the nearest breeding colony. By this time in the Antarctic summer most breeders should have been at or near their colonies, but perhaps these ones were non-breeders. One person I mentioned the sighting to asked me if they were flying or on the sea – forgetting for a moment that penguins can't fly!

A few of the pelagic seabird species present in the Drake Passage occur in Irish waters, notably the Sooty Shearwaters (which were numerous SE of Tierra del Fuego), which are regular in quite large numbers in our northern autumn. Wilson's Petrels and an occasional vagrant Black-browed Albatross also occur off Ireland. From pelagic trips and sea-watching off the Cape in South Africa, and in New Zealand and southern Australia I was familiar with a number of other species which I encountered in the Drake Passage. But quite a few were unfamiliar, and I was very glad to find the *Ioffe* had a resident expert seabird biologist on board – Tony Croker from New Zealand – who helped me sort out some of the more difficult species, such as Fairy and Slender-billed Prions.

In the next issue of *Sherkin Comment* I will conclude this trilogy of articles by writing about the Antarctic Peninsula and its wildlife.

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

Reform of Planning Service Recommended

AN Bord Pleanála (the Irish Planning Board) has recently published its annual report. In his accompanying press statement, the Chairperson, Mr. John O'Connor, has raised many important planning issues, the most important being the need to reduce the number of planning authorities, which at the moment stands at 88. The following are the main points from his statement:

At the publication of An Bord Pleanála's 2008 Annual Report in October 2009, the Chairperson of the Board, John O'Connor, said it would be extremely short-sighted if there was any tendency to relax good planning standards in response to our current economic difficulties. Now, more than ever, we need to embrace the principles of good planning and sustainable development in order to prevent further deterioration of our environment, to respond to climate change, to maximise the return from expensive infrastructure investment, to get the most efficient use of limited land resources and to help restore confidence by producing well located good quality developments. Excessive and unsustainable zoning of land has been a contributor to the property bubble and its aftermath.

There is increasing evidence that many of the current local authority development/ plans are replete with such zonings. If we are to return to realistic development planning some of this land will have to be dezoned and facing up to this has a part to play in deflating the bubble and restoring a sustainable market.

Workload and Timescales

Last year's total intake of 5,800 cases while down on the record intake for 2007 was still very high by historical standards and meant that the Board continued to be under severe workload pressure in 2008. The number of cases of all types on hands peaked at over 3,000 in March 2008. With the continued drop in intake (over 30%) and special measures to maximise output the number of cases on hands has been almost halved to 1550. In September 36% of cases were determined within the 18 week statutory objective and the average time taken across all cases was20.6 weeks. The Board regrets the delays that have occurred and believes that we are approaching the point where routine delays can be eliminated.

General Trends in 2008 Report

The following are some general trends in normal planning appeals contained in the 2008 report:-

- The percentage of local authority decisions appealed to the Board increased from 6.7% to 8.1%. (46% were received from 3rd Parties).
- The proportion of local decisions appealed which were reversed by the Board remained steady at 33%.
- First party appeals against refusal resulted in grants of permission in 28% of cases. (29% in 2007).
- Third party appeals against grants of permission resulted in 39% refusals. (37% in 2007).

Operation of Strategic Infrastructure Act

From the introduction of the Act in 2007, to end September 2009, the Board received 137 requests from project sponsors for pre-application consultation. 211 meetings have been held. In 97 of these cases the consultations have concluded. In 33 of these cases, the Board determined that they were to be regarded as strategic infrastructure cases, 46 were not regarded as strategic infrastructure cases and 18 were withdrawn/otherwise concluded.

Housing Densities

The Chairperson said he was concerned that developers may be tempted, in the present market, to return to lower density development. However, national policies on building more sustainable communities for the future do not favour a return to old-style low density development due to the greater than ever need for the most efficient use of expensive infrastructure, for increased environmental sustainability and for less urban sprawl.

Displacement of Sports Facilities

The Chairperson said that the Board had, over the past couple of years, dealt with a significant number of appeals relating to proposals to move major sporting facilities from their long established locations in the midst of urban communities to remote locations. Permission was refused for some of these proposals because of their poor accessibility, the increased risk to road safety, lack of services and diminution of urban amenities. Sometimes these proposals were facilitated by zoning decisions of local authorities that seem to be based on a rather narrow set of considerations. The Chairperson said that, while each case had to be considered on its own particular merits, he was concerned about the long term effects of this trend. The displacement of sports facilities that were sustainably located in established communities could represent a physical and social loss to the area and could in the long term impact negatively on participation levels in the sports concerned.

Need for Reform of Local Planning Structure

The need for public service reform is widely acknowledged. The structures that deliver the local planning service are a case in point. We have 88 planning authorities for a country with a total population of 4.4 million. While acknowledging the need to retain their local democratic character, many of these authorities have administrative areas that are much too small and fractured to constitute meaningful planning units in terms, for example, of efficient infrastructure provision, the strategic location of future development or the management of water catchments. Equally, they cannot be expected to have at their ready disposal the full range of skills and experience demanded by a modern planning service which must operate under an increasingly complex body of planning and environmental legislation. Sustainable strategic planning is sometimes supplanted by localised short-sighted competition for development. This is particularly evident at the edges of certain cities and large towns.

The Chairperson said he believes strongly that the public service reform agenda must include rationalisation of the planning service in the interests of the quality of the planning and public service efficiency.

EU Environmental Directives

It is an undeniable fact that European Directives have been a major force for good in protecting the environment here in Ireland and across Europe. An Bord Pleanála in its decisions must give effect to the provisions of various EU Directives as transposed into Irish law. Of particular importance in this regard are the EIA, Habitats and Birds Directives. There have been several European Court of Justice decisions in recent years which have given a stringent interpretation of these Directives and have been critical of Ireland and other member states' implementation of them. The Board is conscious of the necessity to carry out its assessments in accordance with the requirements of these Directives and to afford the public full opportunity to participate in the decision making process as required by the Directives. As a result, the assessment of major projects affecting designated habitats in particular has become more complex and resource intensive for the Board, making demands in terms of staff upskilling and training at a time of severe budgetary constraints. It is our experience that developers, their consultants and even local authorities are still not sufficiently cognisant of the demanding nature of the process and the need for detailed information in support of development proposals.

EU Water Quality Directives

In addition to the Directives referred to already, the EU Water Framework Directive together with its Daughter Directives is having and will continue to have major implications for development in the future. The prevention of water pollution and the achievement of good water quality are the fundamental aims of the Directive which will require significant investment in effluent treatment facilities. Proposals which would endanger water quality cannot be permitted.

Budgetary Constraints

As with all other public sector organisations the Board is facing a very challenging budgetary situation at present. Current figures for 2009 show a significant decrease in fee and other income streams relating to casework intake.

It is likely that the situation will become even tighter in 2010. The Board being conscious of the need for expenditure savings has reduced its overall expenditure by a significant proportion in 2009 and further retrenchment will be necessary in 2010 (actual expenditure in 2008 was €23.2m and is currently estimated to be €20.6m in 2009).

An Bord Pleanála, 64 Marlborough Street, Dublin 1. The full report can be downloaded from the web at: www.pleanala.ie

Greening the Built Environment

500 kw solar array at Atlantic City Municipal Utilities Authority sewage treatment plant (Atlantic City, New Jersey)

Five large wind turbines installed on grounds of Atlantic City Municipal Utilities Authority sewage treatment plant (Atlantic City, New Jersey)

MW solar installation on roof of a "Staples" office supply store.

By Walter Mugdan[1]

DURING the past several years, the long overdue awakening of public concern about global warming has sparked a strong interest in "green" construction – finding ways to make the construction, operation and eventual deconstruction of our "built environment" more eco-friendly and sustainable. Among the primary interests of the green construction movement is the reduction of the "carbon footprint" (the total greenhouse gas or GHG emissions) resulting from development. Other objectives include reducing traditional air and water pollutants, conserving water, and minimizing the use of natural resources.

This article focuses on ways to reduce the carbon footprint of buildings. In future articles I will address some of the other green construction approaches being promoted by the U.S. Environmental Protection Agency (EPA) and others.

In the U.S., commercial and residential buildings account for 36% of national energy consumption – more than the entire transportation sector. It is therefore of paramount importance that our built environment uses energy as sparingly as possible. The high price of energy, which is likely to continue to escalate, makes this the only sensible approach to building design, even when considered from a purely economic perspective. A goal of EPA's Energy Star program is to improve energy efficiency in the nation's buildings by 10%, but individual buildings can realize substantially greater reductions. Cushman & Wakefield, one of the world's largest real estate management firms, last year entered into an agreement with EPA committing to reduce energy demand 30% by 2012 across the more than 3,000 buildings it operates.

There are many strategies for reducing energy usage in a building. Some are familiar, such as good insulation, modern heating and ventilation systems, passive solar design, low-E glass, and use of energy-efficient light bulbs. Some are novel– for example, elevators designed with regenerative drives that capture the energy of braking as the elevator descends; Otis Elevator recently exhibited such an elevator that uses 75% less energy than a traditional design.

A large part of a building's carbon footprint comes from its use of electricity, most of which is still generated by burning fossil fuels. However, in most parts of the U.S. residential and commercial consumers can choose to purchase electricity generated from renewable sources – primarily wind and hydro power, but in some locations also geothermal and solar power. All of EPA's buildings across the U.S. purchase renewably generated electricity. The giant firm PepsiCo is the nation's top purchaser of renewable energy, with an annual purchase of 1.1 billion kwhs. Today, electricity from renewable sources costs a little extra – typically 1 to 2 cents per kilowatt. Given the virtual certainty that fossil fuel prices will continue to climb over the long run, and in view of anticipated technological advances, renewably generated electricity is likely to become even more competitive in the future.

An even more ambitious approach is for a development project to make its own green energy. Sun Edison, the largest solar energy service provider in the U.S., has developed an intriguing business model. The company enters into a long-term (typically 20-year) agreement with a "big box" store such as WalMart or Home Depot. Sun Edison installs a photovoltaic array on the roof of the store. The store agrees to purchase the electricity generated at a specified price for the duration of the contract, while Sun Edison operates the system. The store buys electricity from the grid to make up for any shortfall, while any excess electricity is sold back to the grid. Sun Edison gets a long-term purchase contract from a large, well-known entity, which enables it to borrow the necessary capital to build the solar array, while the big box store gets a long-term, predictable supply of electricity at a specified rate. Sun Edison has installations in California, Hawaii and Colorado, unsurprising locations for solar energy facilities. However, the company also has 13 installations in New Jersey, two in Connecticut and one in Rhode Island – states not commonly considered as ideal for photovoltaics. (The world leader in solar electric generation is Germany, also not generally thought of as a sun-drenched locale.)

Solar arrays can also be installed over parking lots at shopping malls and similar locations. A mall under construction in Syracuse, New York is doing that, and is going even further by installing over a dozen 5-kw vertical axis wind turbines on top of 42-foot high light poles around the parking lot, which will generate as much electricity as would be needed to power 6 homes.

Municipal facilities can be an excellent venue for on-site energy development. The Atlantic County Municipal Utilities Authority in New Jersey operates both a solar array and five large wind turbines on the grounds of its sewage treatment plant. Sewage treatment plants and solid waste landfills also generate methane gas – a product of decomposition. Methane is over 21 times as potent a greenhouse gas as carbon dioxide. It's also a potentially valuable fuel, essentially identical to natural gas. The technology for recovering methane and using it for fuel is well understood and widely practiced.

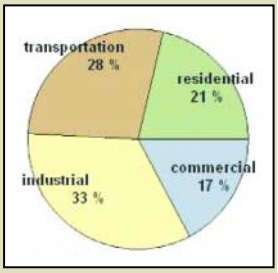
Discussions about how to reduce GHG emissions often focus on large power plants, and on the transportation sector. But every sector must contribute if we are to have a chance of slowing and reversing the dangerous buildup of greenhouse gases in our atmosphere. It is essential that the owners of all buildings, both old and new, play their part by reducing their reliance on non-renewable energy.

[1]Any opinions expressed in this article are the author's own, and do not necessarily reflect the position of the U.S. Environmental Protection Agency

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

Photos courtesy of U.S. EPA

Vertical axis wind turbine of type being installed on lighting fixtures around parking lot at Destiny shopping mall in Syracuse, New York.



US Energy Usage by Sector (2004)

PIPEFISHES and SEAHORSES *(SYNGNATHIDAE)* in IRISH and EUROPEAN WATERS

By Declan T. Quigley

Pipefishes (*Syngnathinae*) and seahorses (*Hippocampinae*) belong to a relatively large family of fishes (Syngnathidae) which includes about 52 genera and at least 232 species known worldwide. Although most *Syngnathids* are confined to shallow inshore marine waters, a few species of pipefish are found in offshore oceanic waters while others occur in brackish water (37) and some are confined to freshwater (18). The 53 currently recognised seahorse species are only found in marine waters. Most *Syngnathids* occur in warm temperate and tropical seas but some pipefish range into relatively cool waters.

Although only 6 species of pipefish and 2 species of seahorse have been recorded from Irish and Northern European waters, an additional 8 species of pipefish and one species of seahorse (which recently migrated from the Red Sea via the Suez Canal) have been recorded from the Mediterranean and Black Seas (Table 1).

The reproductive biology of the *Syngnathidae* is characterized by one of the most specialized forms of parental care – male pregnancy. After fertilization, females *deposit* the developing eggs in a specialized male incubation area located on the abdomen of seahorses or tail of pipefish. The male subsequently cares for the embryos for a more or less long incubation period prior to *giving birth* to the fully formed juveniles.

Snake (Ocean) Pipefish *Entelurus aequoreus* (L.)

Up until the beginning of this century, the Snake Pipefish was considered to be primarily an oceanic species extending from the Azores to Iceland which was rarely recorded from inshore waters. However, since 2002 unprecedented numbers have been recorded from the NE Atlantic, not only from offshore waters as far west as the Mid-Atlantic Ridge but also from inshore waters. Since then, there have been numerous reports of the species blocking vessel cooling water intakes, covering both pelagic and demersal fishing nets, tangling around fishing creels, ropes and salmon cages. Huge numbers have also been observed by SCUBA-divers carpeting the seabed in inshore waters while ornithologists have increasingly noted seabirds attempting rather unsuccessfully to feed on them as well as using them as nesting material. Some scientists suggest that increased sea surface temperatures in the Northern Hemisphere, linked to global warming, may be the likely cause for the phenomenal Snake Pipefish population explosion.

Worm Pipefish *Nerophis lumbriciformis* (Jenyns, 1835)

The Worm Pipefish is found in inshore waters (depths <30m), usually among rocks and algal holdfasts and ranges from Norway (Bergen), excluding Holland, to Morocco. It is one of the smallest (max. 15-17cm TL) species of *Syngnathid* found in NW European waters and probably the most abundant and widely distributed species found in Irish waters.

Straight-nosed Pipefish *Nerophis ophidion* (L.)

The Straight-nosed Pipefish is found in inshore waters (depths <15m), including estuaries and occasionally freshwater, usually in association with long-stranded algae and/or eel-grass (*Zostera*) beds. It has been recorded from Norway (Trondheim) southwards to northern Morocco, including the Mediterranean and Black Seas, but appears to be absent from Danish and Dutch waters. The species is regarded as scarce in Irish waters where there are only a few confirmed records: Youghal & Glandore, Co Cork; Dingle Bay, Co Kerry; Galway Bay (Caherloughlin Sands, Ballyvaughan, Co Clare; Mweenish Bay and Kilkerrin Bay, Connemara, Co Galway); Ballynakill, Elly & Blacksod Bays, Co Mayo; Killinchy, Co Antrim; and Strangford Lough, Co Down. However, its perceived scarcity may be due to either misidentification or lack of recording effort in suitable habitats.

Greater Pipefish *Syngnathus acus* L.

The Greater Pipefish is the largest (max. 47cm TL) species of *Syngnathid* found in NW European waters and is relatively common and widely distributed in Irish waters. The species is generally found in coastal waters (depths <20m, occasionally deeper) and is wide-ranging: from the Faroe Islands and southern Norway southwards to Gambia, including the Azores and Canaries, Mediterranean and Black Seas. It is also found in the South Atlantic from Namibia to SE South Africa.

Nilsson's (Lesser) Pipefish *Syngnathus rostellatus* Nilsson, 1855

Nilsson's Pipefish is found in coastal waters (depths <18m, but commonly <2m), particularly in sandy estuarine areas. The species ranges from Norway (Bergen) southwards to the Bay of Biscay and has recently been discovered in the Mediterranean Sea. Prior to the late 1950s, the species was regarded as rare in both Irish and British waters where it was frequently misidentified as *S. acus*. However, since then, the species has been found to be relatively common and widely distributed.

Broad-nosed Pipefish *Syngnathus typhle* (L.)

The Broad-nosed Pipefish is found in both coastal and estuarine waters (depths 4-20m), particularly amongst seaweed and *Zostera*. It ranges from Norway (Vardo) southwards to Morocco, including the Mediterranean and Black Seas. The species appears to be relatively scarce and only locally abundant in Irish waters. It has only been recorded from Co Cork (Cork Harbour, Glandore, Roaringwater Bay & Bere Island), Dingle Bay, Galway Bay (Ballyvaughan, Mweenish & Bertrabouy Bays), Ballinakill & Blacksod Bays, and Larne Lough, Co Antrim.

Clockwise from top: Greater Pipefish *Syngnathus acus*; Broad-nosed Pipefish *Syngnathus typhle*; Spiny (Long-nosed) Seahorse *Hippocampus guttulatus*; Short-snouted Seahorse *Hippocampus hippocampus* (Images courtesy of Steve Trewhella).

Short-snouted Seahorse *Hippocampus hippocampus* (L.)

The Short-snouted Seahorse is generally found in shallow inshore waters, particularly amongst algae and *Zostera*. The species ranges from the north of Scotland, North Sea and Dutch coast (Wadden Sea) southwards to the African coast (Gulf of Guinea), including the Canaries, Mediterranean and Black Seas.

For many years the species was regarded as exceptionally rare in Northern European waters but in recent decades it has been recorded with increasing frequency in UK waters, particularly in the English Channel. Nevertheless, to date, there is only one confirmed record from Irish waters (Caherdaniel Island, Co Kerry, October 1995).

Spiny (Long-nosed) Seahorse *Hippocampus guttulatus* Cuvier, 1829

The Spiny Seahorse is also found in shallow inshore waters, particularly amongst algae and *Zostera*. The species ranges from the Shetlands southwards to Morocco, including the Azores, Madeira, Mediterranean and Black Seas. For many years this species was also regarded as exceptionally rare in Northern European waters but in recent decades it has been recorded with increasing frequency in UK waters, particularly in the English Channel. Nevertheless, the species has only rarely been recorded from Irish waters (*c.* 15 records) and 60% of these were reported during the 1880s. Indeed, it would appear that most, if not all, of the earlier records were incorrectly identified as *H. hippocampus*.

It seems likely that many of these cryptogenic species are more frequent in their occurrence in Irish waters than the current limited number of records would suggest. The author would be very interested in obtaining information on any additional records.

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Table 1. NE Atlantic & Mediterranean Pipefishes & Seahorses (Syngnathidae)

Common Name	Species Name	Iceland	Scandinavia	Ireland	UK	Holland	Belgium	France	Portugal	Spain	Mediterranean	Black Sea
Snake (Ocean) Pipefish	*Entelurus aequoreus* (L.)	√	√	√	√	√	√	√	√	√	√	
Straight-nosed Pipefish	*Nerophis ophidion* (L.)		√	√	√			√	√	√	√	√
Worm Pipefish	*Nerophis lumbriciformis* (Jenyns, 1835)		√	√	√		√	√	√	√	√	
Greater Pipefish	*Syngnathus acus* L.		√	√	√	√	√	√	√	√	√	√
Nilsson's (Lesser) Pipefish	*Syngnathus rostellatus* Nilsson, 1855		√	√	√	√	√	√	√	√	√	
Broad-nosed Pipefish	*Syngnathus typhle* (L.)		√	√	√	√	√	√	√	√	√	√
Short-snouted Seahorse	*Hippocampus hippocampus* (L.)			√	√	√	√	√	√	√	√	√
Spiny Seahorse	*Hippocampus guttulatus* Cuvier, 1829			√	√	√	√	√	√	√	√	√
Sea Pony	*Hippocampus fuscus* Rüppell, 1838										√	
Black-striped (Shore) Pipefish	*Syngnathus abaster* Risso, 1827							√	√	√	√	√
Spiny Pipefish	*Syngnathus phlegon* Risso, 1827										√	
Ac de mare	*Syngnathus variegatus* Pallas, 1814											√
Syngnathe de Schmidt	*Syngnathus schmidti* Popov, 1927											√
Peace ago	*Syngnathus taenionotus* Canestrini, 1871										√	
Narrow-snouted Pipefish	*Syngnathus tenuirostris* Rathke, 1837										√	√
Spotted Worm Pipefish	*Nerophis maculatus* Rafinesque, 1810								√		√	
Syngnathe nain	*Minyichthys sentus* Dawson, 1982										√	

Photo: © Robbie Murphy

Primrose (*Primula vulgaris*)

Photo: © Robbie Murphy

Cowslip (*Primula veris*)

Darwin's Real Gift to Science

By John Akeroyd

THIS year marks two centuries since the birth of Charles Robert Darwin (1809–82). An astonishingly modern person, he remains a pivotal figure in science and human thought. It is also 150 years since the publication of his great work On the Origin of Species by Means of Natural Selection. Darwin was geologist, zoologist and botanist, and great Victorian man of letters. An inspiration to all naturalists, he wrote lucidly on animal and human behaviour, climbing and insectivorous plants, coral reefs, earthworms, orchid pollination, cross- and self-fertilization, plant responses to light, and the living and fossil barnacles. He was a pioneer of biology, ecology and evolutionary genetics.

One thinks of him cocooned in his study, but Darwin spent much time out in the 18-acre grounds of Down House, his home in Kent, where he settled in 1842 after marrying his cousin Emma Wedgwood. This was a botanic garden, field station and laboratory for his simple but powerful experiments, and also thinking space, especially the secluded boundary path or 'Sandwalk' where he'd stroll each day. Both scholar and family man, he doted on Emma, his eight children (two others died in infancy) and various pets. He possessed a lifelong passion and curiosity for Nature, an inquisitive mind, boundless enthusiasm for careful observation, and repeated flashes of intuition.

Darwin showed little promise at school in his native Shrewsbury. He studied medicine briefly at Edinburgh, leaving to study theology at Cambridge, with a view to joining the Church. Still no conventional scholar, he nevertheless impressed older colleagues, notably botanist John Stevens Henslow, who recommended him to Captain Robert FitzRoy as ship's naturalist on the 5-year round-the-world voyage of the naval survey-ship, HMS Beagle. Darwin's travels, especially in South America and the Galapagos, stimulated a remarkable intellect and launched his scientific career after his return to England in October 1836. A chronic semi-invalid and with substantial financial means, Darwin rarely travelled far again but happily received visitors and wrote thousands of letters. He had several correspondents in Ireland, for example algae expert William Harvey, Professor of Botany at Trinity College, Dublin (none too sympathetic to Darwin's writing on evolution) and James Torbitt, a Belfast grocer trying to breed blight-resistant potatoes. He received one particularly hostile review ("too horrid") from Samuel Haughton, Professor of Geology at Trinity, but generally his work was well received.

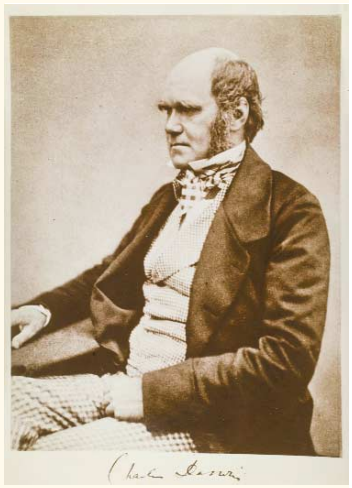
Slowly and meticulously, Darwin worked on evolution, although only a letter from Indonesia from the naturalist Alfred Russel Wallace, proposing a similar theory – and the pleas of botanist Joseph Hooker and geologist Charles Lyell – persuaded him to 'go public'. Darwin wasn't there on 1 July 1858 when a joint Darwin-Wallace paper on evolution was read to the Linnean Society of London. The meeting attracted little interest – but the publication of the Origin in November 1859 caused a public sensation. In June 1860 the British Association met to debate Darwin's work. Darwin, in poor health, wasn't there to hear the Bishop of Oxford ridicule him – to be mightily rebuffed by 'Darwin's Bulldog', the young zoologist Thomas Henry Huxley.

But Darwin wasn't being idle. In early May 1860, he'd shown how primroses and cowslips have 'pin' flowers, with hidden stamens and a stigma filling the mouth of the flower-tube, or 'thrum' flowers with a ring of stamens in the mouth. This heterostyly ensures that insects transfer pollen between plants, promoting outbreeding and increasing variation in the progeny. Darwin had pioneered pollination biology and he'd found another clue to evolution. In late May and June he was probing orchid flowers to imitate insect mouthparts. As his pencil touched the club-shaped pollen masses, they stuck to the tip and he removed them intact and ready to transfer pollen to another flower. Darwin repeated this with several species on a chalk grassland patch he called 'Orchis Bank'. Here was another of what he called his "little discoveries".

Then, in July came another 'eureka moment', one that developed a strong Irish link. He began to work out how Round-leaved Sundew (*Drosera rotundifolia*) and other plants trap and digest insects. He showed that this animal protein helps them overcome low nutrient levels in the peat-bogs where they grow. He later obtained wild and cultivated material from Ireland of other insectivorous plants, his correspondents ranging from David Moore, Director of the Botanic Gardens at Glasnevin, to Thomas Copland, a civil service clerk at the Custom House in Dublin who grew exotic sundews at home. You can still see Large-flowered Butterwort (*Pinguicula grandiflora*), such a feature of the Cork and Kerry mountains, growing in one of the glasshouses at Down House.

Darwin relied on his network of contacts to feed him information, but still did plenty himself at home. For, above all, Darwin showed that science needn't be difficult, and how anybody can do simple research in house or garden – a wonderful message to young people. Alas, few of us have his sheer genius.

Forty years ago, John Akeroyd's zoology teacher introduced him to Charles Darwin and his life and times, by giving impromptu talks (sitting on the rocks waiting for the tide to turn) during marine biology excursions. Darwin remains one of John's chief inspirations.



Charles Darwin

Photo: © Robbie Murphy

Round-leaved Sundew (*Drosera rotundifolia*)

Hay Meadow Restoration in the North Pennines

From top: Hanna Hauxwell's Meadow; Hay meadow in Allendale, Northumberland.

By Anthony Toole

IN the late 1980s, Hannah Hauxwell became an unlikely celebrity as a result of a television documentary, "A Winter Too Far," which depicted her struggle to survive on her lonely farm in Baldersdale, one of the wilder valleys of the North Pennines. This modest, but very remarkable lady had run the farm, single-handedly, for more than fifty years, without the benefits of modern conveniences, such as electricity and running water. Upon Hannah's retirement, the fields were bought by the Durham Wildlife Trust, and are now managed as a nature reserve and a Site of Special Scientific Interest.

Hannah's main legacies are the hay meadow and pasture that lie between the farm and the valley road, and are crossed by a short section of the Pennine Way footpath. These fields have evolved, over centuries of traditional farming practice into a species-rich environment, of a kind that is now rare throughout Europe.

In contrast to fields of monoculture, in which the emphasis is on a high yield of a single crop, a traditional hay meadow may contain thirty-or-more plant species in each square metre. These meadows were once a ubiquitous feature of the countryside, but modern farming methods have led to their rapid decline. The loss of plant diversity has been accompanied by a decrease in the numbers and variety of invertebrates, which has had a knock-on effect on populations of the birds that depend on them for food.

In traditional farming, animals are allowed to graze in springtime. From the end of the lambing season until mid-July, the fields are left for the hay to grow. No fertilizers are added other than farmyard manure, with fields limed sparingly to prevent their becoming too acidic. By late summer, the hay is harvested, and cattle brought in to graze again for a few weeks, during which they trample seeds into the ground, thus aiding germination.

Of the eleven square kilometres of remaining upland hay meadows in the UK, 40% are to be found within the North Pennines Area of Outstanding Natural Beauty (AONB), which includes parts of Northumberland, Durham and Cumbria. Unlike elsewhere in Britain, lead mines occupied the valley floors of the North Pennines. These forced agriculture higher onto the hillsides, with consequent evolution of an ecology that was favoured by cool, damp conditions. The flowers that grow in the high meadows are mostly northern species, and for many, the North Pennines mark the most southerly limit of their range.

To prevent further loss of this now rare and valuable habitat, the AONB Partnership has begun a Hay Time Project, under the leadership of Project Officer, Irishman John O'Reilly. This will encourage and involve farmers in the restoration of 200 hectares of hay meadows in the region.

As John explains, "Not all fields are suitable for regeneration as hay meadows. Where nitrogenous fertilizers have been used, soil fungi that are important for plant growth will have become depleted. Fields containing plants such as cow parsley, docks and thistles are also unsuitable, as these would out-compete most introduced species.

"Suitable donor fields are ones that grow significant quantities of yellow rattle, buttercup, red clover and sweet vernal grass."

Red clover is capable of fixing atmospheric nitrogen. Yellow rattle is a semi-parasitic plant that fastens onto grass roots and so prevents many grasses from thriving. This leaves room for flowers to become established.

"Seed from these donor fields," John adds, "is machine-harvested, by cropping the top one-third of the growth. This is supplemented by seed taken from roadside grass verges.

"When a field is to be restored, its crop is harvested, then the ground bared, either by harrowing or allowing cattle to feed on the remnants. After a week, the seed is scattered. Further species can be introduced by re-seeding over a 5-or-10-year period."

In addition to the species mentioned, upland hay fields, of which Hannah's Meadow is an excellent example, contain a rich and colourful mixture of flowers: ragged robin, wood crane's-bill, pignut, vetches and water avens, as well as grasses like meadow fox-tail, crested dog's-tail and cock's-foot. These attract a wide variety of invertebrates, which in turn become a food source for birds and small mammals such as voles and bats.

The results of an earlier experiment in hay meadow re-generation can be seen at Black Bank, in the Allendale valley, Northumberland. This former corn mill and smithy was built in 1664, and linked two ends of a loop in the River East Allen. It was bought in 1993 by Dr Wendy Nicholson, who has since extensively re-furbished the buildings and grounds.

In 2003, aided by a Government grant, she began restoration of the small, species-poor field enclosed by the loop of the river. Flooding, in the past, had contaminated the soil in this field with heavy metal effluent from the lead and zinc mines. Even now, the riverbanks display clusters of metal-tolerant flowers, such as mountain pansy and alpine pennycress, a few specimens of which survive in the hay field.

More than twenty species of plant are now fully established in the field, and Dr Wendy plans to add more. These include large numbers of buttercups, yellow rattle, red clover and ribwort plantain. Also present are three varieties of vetch, and parsleys such as pignut and sweet cicely. Among the grasses and sedges are sweet vernal, crested dog's-tail, Yorkshire fog and meadow fox-tail. Scattered examples of mouse-ear, ox-eye daisy, sorrel, hawkbit, crosswort and wood crane's-bill add flashes of colour to the field's texture. Indeed, this richness of colour provides strong contrast with the surrounding fields, when observed from the slopes above Black Bank.

"In the first three years of the Hay Time Project," John O'Reilly concludes, with justified satisfaction, "around 70 hectares of meadows were seeded. More than 50 farmers sought advice and almost 200 fields were surveyed."

The main value of hay meadow restoration lies in the preservation of a plant diversity that has now gone from much of Europe. Many birds, such as curlew, yellow wagtail, black grouse, twite and lapwing thrive in the high meadows. The late cutting gives time for chicks to fledge. Scattered seeds are a winter bounty for finches. Grazing after cutting leads to an increase in insect populations.

And to all of this must be added the undeniable enrichment such meadows give to the beauty of the North Pennines.

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From top: Plantains and buttercups; Mountain pansy; Yellow rattle; Wood crane's-bill; Water avens; Ragged robin.

This Island Nation


Image courtesy of NASA

By Tom MacSweeney

"The sea which surrounds us is not a barrier between ourselves and other nations, but a channel of opportunity, which should create pride in the distinction of being an island people, therefore, a maritime nation."

IT was the late Dr.John de Courcy Ireland, a man I was honoured to know as a friend, who wrote, broadcast and campaigned unceasingly for the recognition of the importance of the sea, that turned my mind to the question of why our planet is not called OCEAN instead of EARTH, when so much more of it is covered by water, by the seas, than by land. Perhaps it is called EARTH because it is those solid pieces of land to which we humans cling and spend our lives amongst the heaving, restless, never-ending movements of the oceans.

On one of those small pieces of land, an island on the western periphery of Europe, we Irish live our lives, the first piece of solid earth against which the mighty Atlantic Ocean crashes, having rolled uncontrolled for thousands of miles across the face of the planet. The sea accepts no boundaries upon itself, no matter what humans attempt to impose.

Every minute of every hour of every day, the sea is there, a huge resource, available to a small island nation. But it is not in the forefront of public attention.

The sea which surrounds us is not a barrier between ourselves and other nations, but a channel of opportunity, which should create pride in the distinction of being an island people, therefore, a maritime nation.

It is time for a revival of Irish maritime interest and there are some signs that this is occurring. Irish marine researchers and the quality of their research are respected internationally. Irish research vessels are to the fore in offshore marine exploration. The Marine Institute and the Irish Maritime Development Office are amongst Government commitments. There are commercial shipping companies, thriving ports, there is a strong and growing interest in marine leisure. But more needs to be done, particularly the recognition of the marine sector as a primary Government role.

Most of the GDP of this nation has, for many years, arisen from outside investment in the creation of an industrial fabric which, it now appears, is not rooted, which is without foundation in Ireland. There has been much less investment in one of our greatest natural resources – the sea which surrounds us. Why has this resource been neglected?

At present, our economy is in trouble. We are "in deep"... Our Government is "at sea" … Our banks are "floundering in choppy waters" … Our economy is "holed beneath the waterline"…. There is uncertainty about whether we are "on the right course," if there is a "safe harbour" for our "ship of State" ….. There are concerns about a "rush to the lifeboats" ... Some people are "abandoning ship," leaving the country… A need for "steady hands on the wheel of State," calmness and control "on the tiller".. The storm will pass and, if we're "sailing in the right direction," we will "ride out the storm….."

All of those words, comments and sayings have been used in recent months by politicians, members of the parties which comprise both the present Coalition Government and the Opposition.

Isn't it somewhat ironic that in a country where successive Governments have displayed indifference and disregard for the marine sphere, to the point where the present Government removed the Marine Department from the Cabinet in an island nation and spread its remnants across several Departments, that maritime references and language should be used so liberally by politicians to describe the current economic crisis?

While marine terms may be used in their comments, there has not been a single reference, by any politician, in all of the concern expressed about our economic problems, to the potential existing in the resources of the sea which surrounds us. While unemployment increases, while multi-national companies show they have no loyalty to anything other than the profit motive and move their operations away from Ireland, the sea still rolls incessantly against the Irish coastline, every minute of every day, its full potential still unrealised in this nation.

The Government has laid emphasis on the "knowledge economy" as the way forward, but the basis on which it has built Ireland's industrial, economic fabric is wobbling. The executives of foreign-owned companies have arrived, in pursuit of the interests of their shareholders and left, taking with them jobs from Ireland, to be relocated elsewhere – jobs which had no foundation in Ireland, for which Ireland meant nothing other than the making of profits and when that reason disappeared, so did the jobs.

There is nothing wrong with making profit – they are essential to business survival. But jobs from the sea in Ireland could not be taken away – they would have a foundation in Ireland.

As a people we seem to have forgotten from whence we came. Our ancestors arrived on this island by boat. Should there not be a pride in that heritage? Should our maritime location not be seen, not be supported as a strong contributor to the basis of our economy?

There are people with pride and belief in the maritime sphere and in what it can provide. As I drive to ports and coastal locations, I have in my car a badge on which people have commented. It says: "JOBS FROM THE SEA – IRELAND'S FORGOTTEN RESOURCE" and was given to me by Matt Murphy, who runs the Sherkin Island Marine Station in West Cork. For many, many years he and his family have devoted their efforts to marine research and promotion of the importance of the sea. That badge is a reminder of what the marine sphere should mean to this island nation, but regrettably national policy has ignored the sea, ignored the fact that we are islanders, living on the biggest offshore island in Europe, the most western outpost of Europe. We are not the physical centre of Europe; we are not the most dominant economic force in Europe. But we could and should be at the heart of maritime Europe.

The European Union, working on the creation of a common maritime policy for European waters, produced statistics which showed that there were 22,500 jobs in the marine industry in Ireland – made up of 10,584 in fisheries:

- 3,836 in coastal tourism
- 5,322 in ports and harbours
- 2,800 in short sea shipping
- 800 in recreational boating

It estimated the shipping sector's contribution to the national economy in the region of €2 billion. Add to these aspects the value of our inland waterways and the growing interest in marine leisure, the resources of our ports, harbours, bays, how vibrant our fisheries could and should be and the vision of what we could have as an economic benefit becomes more apparent.

But how much of this is appreciated, realised by the public. The national media, in general, does not give consistent coverage to maritime affairs. The marine is more likely to feature in terms of tragedies and disasters than in positive terms. There is little analysis, regular coverage generally apart from ourselves in RTE and that The Irish Times has a Marine Correspondent. Where is the rest of the national media, where also is the provincial press, the regional papers which are read, supported in the coastal areas, in giving regular, sustained coverage to maritime affairs?

Educationally, where does the marine sphere come? Not high on priorities. Is it explained to children in school, do parents appreciate how dependent Ireland is on its ports, on transport by sea? It has become quickly evident when there have been industrial disputes affecting the ports.

But how much public understanding, realisation, is there that, without ships, seafarers, the ports, there would be no oil, no light, no heat, and no power for our factories. We would have no tea, coffee, oranges, bananas, wine, no cars – even no trains, no buses and so on and so on. How little could get to this island on the western flank of Europe without the sea?

We do need more appreciation of our maritime heritage, our traditions – and pride in them; to be proud of being islanders, which is what we are. In comparison to the offshore islands of this nation, we live on a larger one, but that itself is small in comparison to the European mainland. Appreciating our heritage bestows self-belief and Irish maritime interests have shown over the centuries what can be done: Arklow was a thriving port; Youghal a schooner centre; Dublin and Cork were shipbuilding centres; Galway was once a transAtlantic port, as was Cork; Ports around the country had thriving fleets...

We cannot expect the same today, modern life has changed things. But there have been positive developments:Dublin and Cork have established themselves in the Cruise ship trade – both ports are looking at further development, so are Rosslare and Galway. There is potential in the Shannon Estuary and in Bantry Bay. We have a National Maritime College in Cork, a Coast Guard, a Marine Institute and the Martin Ryan Marine Science Institute in Galway – a national seabed survey is making new discoveries about Irish coastal waters. There are Irish shipping companies – Arklow for example, continues the maritime tradition of that port – and there are several other operators: a Maritime Campus fostering innovation, clustering research and training was announced for Cork, though State investment has been slower than hoped, but the concept is appropriate.

Twenty years of presenting a weekly maritime programme has been an experience of highs and lows, questions and answers and puzzlement about maritime policies at national and EU level. Recently for example, why is a Government Department proposing to close down the national eel fishery and cause the loss of hundreds of jobs at a time of severe employment problems, when there is no need for this? Why is the EU proposing controls on leisure anglers who catch fish for sport? But also in the past months …. An indication that the public is again beginning to appreciate ferry travel and to use it, with more shipping service development. At a time of national economic woes, of concern and worry, I believe that Ireland has a maritime future – in all aspects of the marine sphere. However, there are issues still to be resolved. In a nation which has no more than the population of Birmingham or Manchester, is the policy of several independent ports competing with each other and with several development plans the best national approach? Why is there not a better interfacing between rail transport and the ports? Could, or should, inter-port shipping along the coast be developed? Can we develop a seafood industry with added value through processing and marketing? What is the future of marine leisure? How will young people be introduced to the sea and its importance to this island?

Soon I will be leaving RTE, coming to the end of my term with the station, but I hope to remain a voice for the sea, as some listeners have been kind enough to describe me. I would love to see a Foundation for the Sea, to represent the cause of the sea in national planning. Perhaps that will, some day, be achieved ….

Excerpt from a speech given by Tom MacSweeney, at the annual memorial lecture to the Chartered Institute of Transport at the UCD - Michael Smurfit School of Business in Dublin, March 2009.

Tom MacSweeney retired as Marine Correspondent for RTE this November but continues to present SEASCAPES. SEASCAPES is broadcast at 10.30p.m. each Friday night and repeated at 5.02 a.m. on Monday mornings on RTE Radio 1. The programme is also available as a Podcast and is broadcast twice a week on the Digital Station, RTE Choice, on Wednesday mornings at 7.30 a.m. and Saturday lunchtimes at 12.30 p.m. Call them anytime with your views, news and comments on maritime matters.

Protection of Water Resources from Livestock

THE River Suir Surface Water Working Group established under the aegis of the EPA's Office of Environmental Enforcement has prepared a guidance leaflet for the farming community. Water and habitat quality is being adversely impacted in many areas as a result of livestock access to waters. This has significant potential implications in terms of public health, safety of water supplies and fisheries and wildlife issues. From the farming perspective, it is essential that Ireland's reputation of quality food production from a healthy environment is maintained.

This leaflet describes the problems as a result of livestock access to waters. It identifies benefits to the farming and the wider community. For those agencies and authorities charged with responsibility for environmental and habitat quality protection and improvement and for provision of water supplies, it is intended to assist in delivery of Ireland's obligations under the Water Framework Directive.

Protecting the quality of our water resources and riparian habitat.

When farm animals have free access to streams, rivers, canals, lakes and other water bodies, many things happen:

- Banks become eroded.
- Bank-side vegetation is damaged and sometimes eliminated.
- Large amounts of matter containing animal faeces, soil and nutrients enter and contaminate waters.
- Blanketing or smothering of riverine gravels can totally destroy nursery and spawning areas for fish.
- Aquatic macro-invertebrate and plant life, essential constituents of the food chain are reduced or eliminated.
- Water abstraction facilities are affected, and treatment processes to remove contaminants have to be upsized and upgraded with major cost and other resource implications.

Sheep and cattle, particularly when lambing or calving, are significant sources of *Cryptosporidium*. Deer (also when present at high numbers in the wild) and pigs, particularly if farmed close to water sources, can also be a source of *Cryptosporidium*. The risk is higher when animals have direct access to water. Therefore, it is imperative that access to surface waters used as drinking water supply sources is adequately protected.

Stakeholders and who are affected?

- Group water scheme members who have set up at local level their own water supply arrangements.
- The general public on whose behalf water is abstracted and treated by Local Authorities prior to supply through distribution networks.
- The farming sector for livestock watering and crop irrigation.
- Industry for use as process water.
- Recreational users engaged in boating, swimming, water sports, angling etc., and wildlife, particularly our inland fisheries resource for which Ireland is internationally renowned.

Fencing and bank stabilisation benefits for all stakeholders

There are many benefits from fencing of waters and limiting livestock access, and from maintaining existing natural boundaries such as hedges and stonewalls bordering waters such that these are stock proof.

- Fencing, especially where a narrow strip is left between the fence and river bank, allows for the development of stable bankside vegetation by prohibiting animal access, trampling and grazing.
- Well developed riparian zone vegetation comprising grasses, shrubs and trees help maintain bank stability, mainly due to the binding influence of root structures.
- Fencing allows for a recovery of riparian zones where they have been trampled and overgrazed, and for re-establishment of a wide range of plants and invertebrates which cannot survive on intensively fertilised or heavily grazed lands. (O' Grady, M. F., 2006)
- Fencing ensures that the river corridor is a continuum thereby ensuring mobility of many forms of wildlife along a network of river channels across the countryside, and provides opportunities for ground nesting birds such as mallard. (O'Grady, M. F., 2006)
- Stable bankside vegetation acts as a barrier and filter preventing soil(s), nutrient and pesticide run-off from farmlands gaining direct access to waters.
- Fish stock assessments undertaken by the Central and Regional Fisheries Boards have established that consistently, where fencing and creation of stable riparian zone vegetation has occurred, there are directly associated improvements in fish population numbers.
- Shade and cover is particularly important in terms of the well-being of fisheries resources. Shading due to growth of grasses, trees and shrubs in areas of land fenced off between the actively worked land and waters reduces growth of in-stream vegetation by limiting light penetration. Shading also helps to keep water cool especially during summer conditions when fish might otherwise experience temperature stress. The wide range of insect life inhabiting bank-side cover provides a very useful source of food especially for fish.

Good Farming Practice

Livestock watering should, where possible, take place at drinking troughs which should be located so as to avoid poaching. Drinking troughs should not be located where there is a risk of runoff to surface waters, or where there is fissured limestone, and should be a minimum of 20 metres from boreholes and wells. Livestock should not have direct access to waters where downstream water abstraction for human consumption is taking place.

In constructing drinking access points, emphasis should be on bringing water to the livestock, rather than allowing livestock to walk out in the river or stream channel.

Photos courtesy of CFB/EPA

Livestock watering!!

An example where although partly limited, livestock access is very likely to contaminate water and affect downstream uses.

Limited fenced access to a hard standing area of the stream for livestock watering.

It is preferable that there be a fall created back towards the lands on which the livestock are standing, thereby allowing for contaminated deposits which inevitably will contain urine and faeces to be routinely removed.

Specific benefits to the farming community

Apart from the environmental benefits in terms of habitat and water quality, there are some very obvious benefits to the farming community from good fencing and elimination of animal access to surface waters. These include:

- Protection of farmers own drinking water supplies against potential *Cryptosporidium* contamination.
- Reduced risk of animal lameness, infection and injury.
- Reduced incidence of mud on udders and reduction in risk of contamination to milk.
- Saving in losses of valuable topsoil and nutrients which could otherwise occur during run-off and erosion of land.
- Reduction in the amount of time spent in rounding up livestock.
- Less animal straying leading to improved relationships between farmers and other rural dwellers.

In terms of agri-tourism, a river corridor which is fenced off is a much more valuable asset which will improve potential for conservation and recreation enterprises such as angling and farm walks, with the potential to improve the income and diversity of the farm in question.

Excerpts from the leaflet "Guidance for the farming community on protection of water resources and habitat quality from impacts due to livestock access to waters", prepared by Patrick Kilfeather, Southern Regional Fisheries Board and John Feehan, Office of Environmental Enforcement, Environmental Protection Agency. The full leaflet can be downloaded from: http://www.epa.ie/downloads/advice/water/drinkingwater/name,26792,en.html

New EU Organic Aquaculture Rules

By Dick Bates

IN 2007 the EU agreed a new regulation on organic production and labelling which for the first time includes aquaculture. Organic is a process rather than an end product certification and it is important to state that just as game is excluded from the scope so are wild fish. The regulation lays down objectives, principles and general production rules for organic farming.

In 2009, after extensive discussion with experts, the Commission agreed implementing rules for aquaculture and seaweed and the new regulation was published in August. This has to be read in conjunction with the detailed rules for organic agriculture which were published the previous year[1].

The need for European organic legislation for aquaculture

Up to now organic aquaculture has been regulated through a mixture of private schemes and, in a few Member States, national rules. By mid-2009 some ten approved private schemes were operating in the Community, but only a few of these operate outside a single Member State. Denmark was the first Member State to adopt national rules for organic aquaculture in 2004. France followed suit with very comprehensive rules in 2007; these deal with a large range of species. Ireland had developed draft rules by 2007 but decided to wait for the EU rules to finalise national rules and the Spanish region of Andalucía notified the Commission of its draft rules in 2007.

The situation up to now has been far from satisfactory in terms of the single market as free movement has not been guaranteed. Producers had to undergo multiple certifications to access markets in the various Member States which is costly and time consuming. Even within a single country a processing plant handling fish certified organic under one nationally-approved scheme has not always been permitted to process fish certified under a second nationally-approved scheme, even if no overlap in processing occurs.

The new Commission Regulation aims to achieve a balance between the existing national rules and private schemes so as to give a minimum standard for organic aquaculture and seaweed products on the Community market, from both Community production and imports.

The regulation sets conditions for the aquatic production environment, for impacts on other species, separation of organic and non-organic aquaculture units, and requires animal welfare conditions in husbandry and slaughter to be addressed (including maximum stocking densities). It specifies that biodiversity should be respected, and does not allow induced spawning using hormones. Organic feeds should be used where they are available and there are provisions for fish feeds to be derived from sustainably managed fisheries. Special provisions are made for bivalve mollusc production and for seaweed. The final Annex lists production requirements including maximum density by species grouping and type of farming.

Organic food production: a dynamic sector

Though small in relative terms, organic farming is one of the most dynamic food production sectors in the Community and should expand further now that obligatory EU rules have been completed. It is seen as part of a sustainable farming system and a viable alternative to the more traditional intensive approaches.

According to the publication 'Organic Aquaculture 2009, Production and Markets' by Naturland and Organic Services, there are some 123 certified organic aquaculture operations in Europe (including Norway and Switzerland, and not including producers of seaweed), out of a total of only 225 such farms in the entire world. European organic aquaculture produces 24,500 tonnes of certified fish annually, or a little less than half of total world production, which is currently running at over 50,000 tonnes.

In descending order of production volume, the main European nations for organic aquaculture production are: UK, Ireland, Norway, Hungary, Greece, France, Austria, Spain, Italy, Germany, Denmark and Switzerland. The single most important fish species in European organic production is salmon. The above publication outlines the seminal role of Ireland in the development of organic fish farming in marine waters and states that last year half of Ireland's farmed salmon production of 11,800 tonnes was certified as organic with gutted fish selling for an average €6.09 per kg versus €4.24 for conventional fish.

Photo: © Dick Bates

Dick Bates

The majority of the rules will enter into application as of 1 July 2010. The Member States may permit units already producing under nationally-accepted rules a further three year transition period to adapt to the Community rules.

[1]Council Regulation 834/2007 is the new legal basis and the detailed rules for agriculture are contained in Commission Regulation 889/2008. The latter was amended by Commission Regulation 710/2009 in August 2009 as regards organic aquaculture animal and seaweed production. All texts are available from the European law site: 'http://eur-lex.europa.eu/'.

Richard Bates, Trade and Markets Unit, DG Maritime Affairs and Fisheries, European Commission, 1049 Brussels, Belgium.

THE ANCIENT CURSING STONES OF INISHMURRAY, CO. SLIGO

By Jerry O'Sullivan

INISHMURRAY is a small island off north County Sligo, in Donegal Bay. The island itself is unremarkable – a low, gently-inclined table of sandstone in the Atlantic, rising to sheer sea cliffs on its western aspect. In the modern period it was home to a small community of islanders that subsisted on farming and fishing, but who were evacuated to new homes on the mainland in 1947. In antiquity it was home to a community of monks and the island's fame today derives from its spectacularly well preserved early medieval monastic buildings.

The main monastic enclosure is simply known as the Cashel. It contains Teach Molaise, the tomb shrine of the island's patron saint, as well as one or possibly two other churches, Templemolaise and Templenatinny. The Cashel also contains several clochans or beehive cells, and was the burial ground of the island men in the modern period. The women were buried elsewhere, at the church and graveyard known as Templenaman. A third burial ground at Relickoran has no recorded history, but archaeological investigations in 1999–2000 discovered a mixed cemetery population of men, women and sub-adults, with skeletal remains dating from the eighth to the 17th centuries.

At these burial grounds, and at several other locations about the island's shoreline, there is an enigmatic series of drystone altar cairns or *leachta*. These were the stations of a pilgrimage or *turas* observed each year on 15 August in modern times. The origins of this are certainly medieval, however, though the *leachta* may originally have been erected for liturgical use by the island's clergy, only afterwards becoming incorporated in an annual pilgrimage.

The principal *leacht* is topped by a group of large, rounded, beach cobbles known as the *Clocha Breaca* ('speckled stones'). There are dozens of beach cobbles on this *leacht* and they are all 'speckled' to some degree, by weathering and lichens. But only a dozen of these are the cursing stones. Careful examination in favourable light reveals them. They are the ones delicately carved with crosses in a variety of forms.

The *Clocha Breaca* are also known as the 'cursing stones'. The earliest reference to this strange tradition is on a map of Donegal Bay and its hinterland made in 1603 by an Elizabethan adventurer called Captain John Baxter. The island of Inishmurray is in a prominent central position on the map and is accompanied by this legend.

In this ilande there dwelleth a holye man named Scanlon of whom the contrie people holde a superstitious opinion that if he be angry with anyone, and he doe turne the speckled stones uppon them, which he kepeth for that use, they shall die within that yeare.

Formal liturgical cursing was particularly prevalent in Europe in the 10th and 11th centuries. Liturgical 'clamours' or appeals for justice to God were often pronounced in the presence of the lay population and could involve cursing individuals who were considered responsible for injustices against a church or community. The practice developed in the absence of strong central government. Swearing oaths on altars or over saints' relics – and the corresponding threat of liturgical curses on the oathbreaker – became mechanisms to enforce treaties and stave off military conflict. In the absence of strong government in Ireland during the Merovingian and Carolingian periods, liturgical cursing developed here at an earlier date than on mainland Europe and in all probability influenced later European practice. Cursing by holy men is frequently recorded in Irish saints' lives from the 7th century onwards and is also mentioned in the Irish canons.

Fasting was used to give a curse greater potency and this is paralleled on Inishmurray, as recorded in the tradition of the islanders. Here, a curse was preceded by preparation over a nine-day period: three days of total fasting, three with one meal and three with normal meals. Hence the intensification of the fast was the reverse of what would be expected. The preparation also included a devotional circuit of the island and, again, this was performed in reverse of normal practice, in a *tuathail* (i.e. left-hand or anticlockwise) rather than a *deiseal* direction. During the curse itself, the curser walked *tuathail* around the *clocha breaca* and, while doing so, rotated the cursing stones or turned them upside.

In modern island tradition, turning the speckled stones was not the exclusive prerogative of the clergy. This is unsurprising as Inishmurray is unlikely to have had the benefit of resident clergy for at least 300 years before it finally became uninhabited. For all we know, a 'holye man called Scanlon' was the last of his kind. It is all the more remarkable, therefore, that knowledge of this ancient practice was faithfully preserved in Inishmurray's folklore until the evacuation of the island in 1947.

Jerry O'Sullivan and Tomás Ó Carragáin wrote Inishmurray: Monks and Pilgrims in an Atlantic Landscape. Volume 1: Archaeological Survey and Excavation 1997-2000. Published by Collins Press, Cork, 2008. Price €49.95 (hbk). ISBN 978-19051724.

Images courtesy of Jerry O'Sullivan

Inishmurray, County Sligo. A detail from Captain John Baxter's map (1603) of the north-west part of Ireland (above) records the 'speckled stones' (left), used for ecclesiastical cursing in antiquity and forming part of the modern pilgrimage or *turas* (*National Maritime Museum [UK], Greenwich*).

Inishmurray, County Sligo. Aerial view of the Cashel or main monastic enclosure (*Con Brogan, National Monuments Service*).

Inishmurray, County Sligo. The cursing stones or *clocha breaca* rest on an altar cairn in the monastic enclosure (*Mel Cameron*).

Developing Greater Innovation in the Irish Seafood Sector

By Matt Murphy

Pictured at the official launch of BIM's Seafood Development Centre (SDC) in Clonakilty, Co. Cork is Dr. Susan Steele, BIM Seafood Innovation Coordinator.

Photos: © BIM

BIM's John Fagan at work in the processing room.

THE newly opened BIM Seafood Development Centre (SDC) based in Clonakilty, Co. Cork, aims to help Irish seafood companies exploit and maximise the market potential for Irish seafood.

The SDC is the first dedicated innovation facility for the Irish seafood sector. The impressive 768 square metre facility includes wet fish processing areas, business incubation units, graduate laboratory, product development kitchen and an innovation and a product concept room. Here large and small companies will be able to test new products and processes. BIM see significant potential for value-added produce in terms of seafood health and wellness benefits, consumer friendly packaging and convenient ready meals, organic seafood and optimising by-products from fish processing.

On the day of the official opening John Fagan, the Technical Advisor was on hand to explain how the various facilities can help create new opportunities. He had on display some 60 variety of seafood products, which are on sale in the Irish retail market. This wonderful array had one downside – most were added value products from outside of Ireland. Mr. Fagan said that all of these could be processed here in Ireland. Displayed next to a sauce-making machine were various ingredients for use in such sauces, supplied by a small Irish company in nearby Dunmanway, Spice O'Life Ltd. This company is already supplying a number of seafood companies as well as butchers and meat processors nationwide.

The centre can create wonderful opportunities not only for large companies but also for the "little person". It could lead to seafood cottage industries being established and people should be queuing up to use this facility. As well as being able to test new products, expert staff are on hand to advise on marketing and business management and to get an objective view on the commercial viability of the products.

The Irish Seafood Industry is an important indigenous industry providing vital revenue to the country and providing employment to our coastal communities. The sector generated total seafood sales on both domestic and export markets of €715 million in 2008, which is a strong performance in the midst of recession but BIM believes there is greater potential to increase sales by focusing on greater innovation and a switch to value added produce. According to BIM's CEO Jason Whooley; 'traditional business models need to change for some species if we are to ensure we are best placed to take advantage of the inevitable upturn in the economy'. Currently in Ireland, 85% of fish is made up of bulk commodities or 'exported on the hoof'. Mr. Whooley explains why this model is no longer sustainable; 'Whilst this fits with the market demand for some species, particularly in the pelagic sector, it does not deliver for other species as they can be dependant on fluctuating global markets leaving them open to predatory pricing by larger international trade players. By focusing on delivering value-added seafood relevant to end consumer needs; the sector can develop more stable markets and greater profitability. For every 10% conversion from commodity to value-added seafood, an additional €37 million per annum in sales could be generated.'

During the opening of the centre a most impressive presentation "Changing Consumer Trends in Eating Seafood" was given by Ms. Marie Burke, TNS Worldpanel. If this new centre needed an endorsement that it is an essential new tool for the seafood industry then Ms. Burke's presentation was that endorsement. It highlighted the changing habit of the Irish shopper, with a shift in the market from loose counter fish sales to pre-packed sales; the dominance of the multiples within the fish market, with the specialists fish stores just 1%; and the discount stores, such as Aldi and Lidl, now major players in the frozen fish market. But what is most concerning for the seafood industry is that they have a major challenge to encourage young people to eat fish.

I recently spoke to BIM's new Seafood Innovation Coordinator, Dr. Susan Steele about how she intends working with seafood companies to develop greater innovation. 'I am aware that Innovation is a term that can be used loosely and can sometimes lose its meaning as a result. Our main aim through the SDC is to foster innovation, to facilitate new ideas and to assist companies to develop structured business plans to ascertain if these ideas are the right course of action before they commit to capital investment. Innovation is now recognised as the single most important ingredient in any modern economy and for those working in the seafood sector, new ideas and new ways of doing things is nothing new. Specialised fishing gear, boat designs integrating GPS, different types of fishing equipment are just some examples of how the industry have used innovation to enable their business to operate more effectively. We now need to concentrate on the market and the move from bulk commodity to delivering added value….' Susan understands that innovation is hard work and for some large companies, it can sometimes take 3,000 ideas for one new product to develop successfully.

'In order to change and to facilitate a switch to value added, industry will need assistance and we are looking forward to helping companies to achieve this. With all innovation, there will be ideas that do not succeed and it takes time and a very structured process to follow ideas through to launch'

Susan Steele is someone who always loved working in the industry. 'I still do. I am excited about this new development and I am looking forward to working closely with companies to bring their concepts to fruition. We feel that we can really make a difference and we have ambitious targets in place to drive us forward. The industry is ready for change and it deserves to get the maximum return for the high quality seafood that it produces. In addition to the business development and innovation expertise BIM already delivers, the SDC will provide us with the necessary tools to test new products at the concept stage enabling industry to move with the times and constantly re-invent to stay ahead'

It is vital that those involved in the seafood industry use this centre to its full potential. This, I believe, is one of the most creative initiatives from BIM in many years.

For further information on BIM's Seafood Development Centre, please contact Susan and her team on 01-2144280 or e-mail steele@bim.ie

Aride Island – The Seychelles

Aerial view of Aride Island.

By Ben Sampson

WHEN you think of the Seychelles, stunning beaches and exclusive hotels probably spring to mind, not rugged hills, thick forest and all the scent and sound of a million seabirds.

The Seychelles comprises 115 islands scattered over 500 miles of the tropical Indian Ocean, 1000 miles off the coast of Africa. The granite islands to the north of the archipelago are the world's oldest oceanic islands, dating back to the breakup of Gondwanaland. Given their antiquity and isolation, and only settled by man in the 18th century it is perhaps not surprising that there are many unique plants and animals to be found here. There are more endemic giant tortoises in Seychelles than in the Galapagos and many other comparisons can be made with Darwin's famous islands. Even on the main islands of Mahé, Praslin and la Digue where the vast majority of the human population live there are still many endemic plants, birds and other animals to be found, but it is on the smaller, scarcely inhabited islands where nature truly rules supreme and of these, none more so than Aride.

Barely 1½ miles in length and less than half a mile wide, Aride is a tiny island by any standards, but what it lacks in size it more than makes up for in sheer abundance of life. Nothing can quite prepare you for the experience of your first landing there. Once you have recovered from the beach landing on the island's boat (no other boats are allowed to land in case invasive species are accidentally introduced) you can take in the lush, green forest rising steeply from the back of the beach; above it a cloud of birds swirls in constant motion. The noise during the breeding season is deafening; sooty terns giving their characteristic "wideawake" cry, lesser noddies chattering to each other from their compost heap nests, along with masses of fairy terns, brown noddies, tropicbirds and roseate terns.

Below the canopy small birds flit through the bushes: Seychelles warblers and Seychelles fodies. Aride is home to the world's largest populations of both these endearing, if slightly drab looking little birds. Then you notice the lizards. Everywhere. Aride has possibly the highest density of lizards on earth, and it is easy to believe. Sit still too long and a Seychelles skink or its larger cousin, the Wrights skink (both unique to these islands), will give you a nip to test whether you are carrion yet! Leave a plate of food unguarded for a minute and it will be invaded...

It is not only the island that is protected. The surrounding sea is a marine reserve, with over 500 species of fish recorded, and although the coral reef was damaged by the el Niño event of 1998, it is recovering and important numbers of the critically endangered hawksbill turtle come ashore to nest.

As night falls, the shearwaters start to arrive. More Audubon's shearwaters live on Aride than anywhere on earth and together with wedgetailed shearwaters, the night comes to life with their eerie calls echoing through the trees. These burrow nesting seabirds return to the island to feed their chicks at night. It is a common job to have to remove disorientated shearwaters from your house at night and release them on the beach (hopefully without them vomiting their semi-digested catch of fish and squid).

It could have been very different. For much of its recorded history, Aride's seabirds and eggs were harvested for food and in the 19th and early 20th century much of the native forest was felled to allow coconut palms to be planted. All its endemic landbirds were lost and probably many of its plant species, but the seabirds remained and amazingly rats never colonised. By the 1960s the island was no longer commercially viable as a coconut plantation and in 1973, the great conservationist Christopher Cadbury (of the chocolate family) bought the island and presented it to what is now the Royal Society of Wildlife Trusts as a nature reserve.

Work then started on restoring the vegetation: felling the coconuts and propagating native trees. Two endemic land birds found their own way back – the Seychelles sunbird and Seychelles blue pigeon, and three more were reintroduced – the Seychelles warbler, Seychelles fody and the Seychelles magpie robin (once numbering fewer than 20 birds in the world, now thanks to conservation efforts there are over 200 and rising). In 2004 the island was leased by the Wildlife Trusts to a Seychelles charity specialising in the restoration of island habitats, the Island Conservation Society, giving more local involvement.

This is very much the wild side of Seychelles. Only six people live on Aride (plus two or three volunteers and researchers), all employed to protect, restore, record and promote the wildlife. Research and monitoring are crucial and the island holds the most important environmental dataset in the country. Day visitors come from neighbouring islands bringing vital income to support the conservation work and need landing and guiding. Small but persistent numbers of poachers still try to land unseen to take eggs and birds, requiring night time patrols at key times.

The day to day experiences of just living on Aride are permanently etched into my memory: taking a bucket to the well for a shower; the sound of torrential rain on the tin roof reminding me to start collecting drinking water; fishing trips for bonito and snapper; harvesting cocoyams in the marsh; beach barbecues and creole feasts with all the islanders; digging a new toilet; launching the boat through heavy surf to go shopping; but above all it is the island that I will always remember – wild, beautiful and extraordinarily alive.

Ben Sampson, Warden of Aride 2006 & 2007; Volunteer at Sherkin Island Marine Station 1994.

Aride Seabird factfile:

200,000 pairs of lesser noddies (world's largest colony)

100,000 pairs of Audubon's shearwaters (world's largest colony)

100,000 pairs of sooty terns (largest colony in the granitic islands)

20,000 pairs of wedgetailed shearwaters (Seychelles 2nd largest colony)

8,000 pairs of brown noddies (Seychelles' largest colony)

2,500 pairs of fairy terns (Seychelles' largest colony)

800 pairs of roseate terns (Seychelles' largest colony)

600 pairs of whitetailed tropicbirds

200 pairs of bridled terns

4 pairs of red-tailed tropicbirds (the only ones nesting in the region)

The largest roost of frigatebirds in the granitic islands (up to 5000 birds)

Photographs courtesy of Ben Sampson

The noise from birds on the island during the breeding season can be deafening.

Life on ARIDE ISLAND

By Ben Sampson

ALTHOUGH the wildlife of Aride was stunning and the job completely absorbing, simple day to day living on the remote island nature reserve provided a wealth of unforgettable experiences, something I was fortunate to share, my wife Emma being employed as assistant warden.

Living conditions were pretty basic, but this, if anything, added to the experience and certainly put our western lifestyle into perspective. Water was a constant obsession. There was no running water; water for washing and cooking came from a well and was carried home by bucket. Drinking water was collected from the roofs during heavy rain. It usually took at least half an hour for the bird muck and other debris to be washed off before collection could start, even then, we had to filter the water before it could be used. A 200L barrel lasted about a month for the two of us – our six barrels held enough drinking water for six months without rain and each house had its own supply.

No plumbing meant no flushing toilets either. Without going into too much detail, our loo was a short walk from the house, a corrugated iron hut with a seat set over a pit, with a sack of leaves alongside to flush and aid the composing process. This simple technology worked brilliantly and a new pit needed to be dug only every 10 years or so. Unfortunately this happened to coincide with our time on Aride...

Solar panels provided enough power for a few hours of light after dark, and a telephone and laptop to run during sunny weather. The telephone link had been installed ten years previously and with internet access meant that we were never too isolated from the outside world. Cookers and fridges ran off bottled gas, the fridges in particular were very temperamental and between the six houses there were usually only one or two working. Life was transformed when two large generators were donated to the island – cold drinks, icecream and the ability to store fish at last!

Life on Aride is dominated by two seasons: from November to March the winds are generally light and from the northwest with calm seas and heavy rain showers; from May to September the monsoon winds are stronger and steadier, blowing from the southeast. The only safe landing is on the south facing beach, meaning that for almost half the year, rough seas made sea journeys bumpy and launching tricky, if not impossible. Patience is key; capsizing is a real possibility if the boatman misjudges it. Fortunately the Seychellois are expert mariners, and although we sometimes had to wait in the surf for 30 minutes or more before the cry of Allez! we never had a serious accident.

Photographs courtesy of Ben Sampson

Emma, Assistant Warden (and Ben's wife), outside the Warden's house on the island.

The view from the Warden's house.

It is not only the boat journeys that are affected by the seasons – the monsoon wind carries a haze of salt spray, coating every surface, rotting clothes and books, peeling paint from the walls, rusting metal and causing electrical equipment to fail. The influx of seabirds at this time brings another hazard – droppings. Clothes and bedding all have to be laboriously washed by hand at the well and were often dirty again before they dried! The monsoon wasn't all bad news: the breeze brought a welcome coolness and mosquitoes were generally few and far between. Cool, rich sea currents brought abundant food for the seabirds and meant excellent fishing, if the sea wasn't too rough. This was the time when trolling a lure could mean yellowfin tuna, bonito, dorado or even sailfish for dinner.

The soil, being well fertilised with guano, grew crops at an astonishing rate. Lemons, limes and papaya were always in season as were aubergines and chillies. Pineapples, guavas and custard apples were a seasonal treat (if the fruitbats didn't get to them first). Bananas grew around the edge of the marsh but the developing fruit had to be protected with a sack if the moorhens weren't to get them first. During the wet season these birds behaved as they do in Europe, swimming in pools and snapping up insects. For much of the time on Aride however there was no standing water and the moorhens lived in the forest, climbing trees for fruit, taking birds eggs and raiding the houses, scattering pots and pans looking for scraps. They could be a major garden pest and even took to eating chillies off the plants!

Creole cooking was delicious and we learned a lot from the Seychellois rangers – barbecued fish with a zingy marinade of ginger, garlic and chilli, octopus curry with coconut milk, saltfish stew; bouillon bred – a spicy fish and spinach soup. The staple pudding was ladob – a heavy, sticky concoction made from a starchy vegetable such as yam with coconut milk, sugar and vanilla.

The only real pests were mosquitoes and other biting invertebrates – a nuisance at times but not dangerous. Giant centipedes had a nasty bite and for some reason were particularly attracted to me. They grow up to about 15cm long and three times I was woken in bed by a painful bite to the arm or leg. An even bigger surprise was a robber crab that climbed in through the window one night. These animals can grow to 50cm long and are capable of opening coconuts with their claws. Fortunately this one was a baby – but I was still very careful as I ejected it.

Having a beautiful beach at our doorstep was an enormous privilege, and the lure of the sea was irresistible, with much of our free time spent swimming and snorkelling. Sunset was a particularly special time and we would always try to sit on the beach in front of the house watching day turn to night. As the light rapidly faded the noise intensified, with shearwaters adding their cries to the cacophony. Shoes, rarely worn by day became important after dark as centipedes became active and the thousands of scurrying ghost crabs on the paths were almost impossible to avoid.

Life on Aride was a privilege, a pleasure and at times a challenge but the memories and lessons learned will continue to motivate me for a lifetime.

To find out more about Aride, visit **www.arideisland.net**.

Ben Sampson was Warden on Aride Island, The Seychelles in 2006 and 2007.

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ARIDE ISLAND

The Seychelles

Photographs courtesy of Ben Simpson

Horned Crab

Tagging a Hawksbill Turtle.

The waters around Aride Island are teeming with life.

Launching the boat off the beach.

Day visitors to the island from neighbouring islands bring vital income, which helps support the conservation work.

Blue-fin Jack

A view from the hill.

Carrying out the seabird census.

Sooty Tern with its egg.

Photo courtesy of Trevor Carr

Fairy Tern

The world's only forest-nesting Roseate Terns.

Seychelles Magpie Robin

Lesser Noddy on its nest.

White-tailed Tropicbird

Environmental Issues Around the World

By Alex Kirby

A LEADING UK climate scientist, Dr Richard Betts of the Met Office Hadley Centre, says new research shows that global average temperatures could increase by four degrees Celsius before the end of the century, with some extreme regional implications. This scenario is based on the assumption that no action is taken to reduce greenhouse gas emissions significantly within the next few years. If climate feedback mechanisms are strong, then a 4°C warming could occur even earlier. The Met Office research says regional implications include a warming by 10°C or more in the Arctic, because the melting of snow and ice will cause more of the Sun's radiation to be absorbed. In Africa too, Dr Betts says, the western and southern regions could warm by up to 10°C. He said: "People will say it's an extreme scenario, and it is an extreme scenario, but it's also a plausible scenario." Scientists say a 4°C rise could threaten the water supply of half the world's population, drive up to half of all animal and plant species to extinction, and inundate low-lying coastlines.

With climate change causing the area of Arctic sea ice to shrink, the number of problem polar bears appears to be increasing. Ian Stirling, a zoologist at the University of Alberta in Edmonton, Canada, says this in many cases is bringing them into settlements and hunting camps. His team found that around the town of Churchill on the shores of Hudson Bay the number of bears reported as attacking humans, homes and camps more than tripled between 1970 and 2005, from 20 to 90 per year. The shorter the sea ice season, the more reports of problem bear activity were noted. This increase is occurring despite a 22% decline in the west Hudson Bay polar bear population since the late 1980s. Sea ice in Hudson Bay now melts three weeks earlier than in the 1970s, cutting the time available to bears to hunt seals and build up enough fat to survive the ice-free summer without food. This drives them to search for food in towns. Scientists expect to find evidence that climate change is also causing increases in problem bear numbers in towns on Alaska's north coast and in eastern Russia.

The US Environmental Protection Agency has fined a Los Angeles-based company, Kop Coat, Inc., $126,000 for violating hazardous waste requirements. During a 2007 inspection EPA investigators found that Kop Coat, an industrial coatings manufacturer, had committed a number of hazardous waste violations. The plant is no longer working. The company stored hazardous waste without a permit; failed to meet emission standards for tanks and containers; failed to provide an internal communications or alarm system able to provide immediate emergency instructions; failed to carry out weekly inspections; and failed to properly provide and maintain staff training.

In the UK, the Environment Agency of England and Wales brought a case against a Somerset man who ran an illegal skip business. He was given a two-month prison sentence for dumping waste at two sites near Weston-super-Mare. He is the third rogue skip operator the Agency has prosecuted and put out of business in the Bristol and North Somerset area this year. The court was told that the man ignored advice given by the Agency and continued to flout the law, depositing skip loads of waste without a licence.

An oil trading firm has agreed to pay more than $46m (£28m) in compensation to people in Ivory Coast who say they were made ill by dumped waste in 2006. Trafigura, which has offices in London, Amsterdam and Geneva, said 30,000 people will each receive $1,546 (£950). The money is over and above the nearly $200m which the company paid the Ivorian government in 2007. Trafigura and the plaintiffs' lawyers agreed that a link between the dumped waste and deaths had not been proved. A joint statement by the company and the British lawyers representing the Ivorians said at worst the waste had caused 'flu-like symptoms. Trafigura said it had been completely vindicated by the agreement, but it still faces legal action in the Netherlands over the case. In August 2006 many truckloads of the waste were dumped at 15 sites around Abidjan, the biggest city in Ivory Coast. In the weeks that followed tens of thousands of people reported a range of similar symptoms, including breathing problems, sickness and diarrhoea. A United Nations report has suggested a strong link between at least 15 deaths and toxic waste dumps. Trafigura criticised the report as premature and inaccurate, saying: "We are appalled at the basic lack of balance and analytical rigour reflected in the report." Trafigura has always insisted it was not responsible for the dumping of the waste, as this was carried out by a subcontractor. It also denies that the waste – gasoline residues mixed with caustic washings - could have led to the serious illnesses the residents claim, which include skin burns, bleeding and breathing problems.

Containers of hazardous waste alleged to have been illegally exported from the UK to Brazil have been returned to Britain. The containers, said to include syringes and condoms among their contents, have to be fumigated before they can be examined. The Environment Agency began investigating after the waste was found by Brazilian officials in three of the country's ports over the past few months. The Brazilian authorities said the waste had been exported as recyclable plastic but actually contained hazardous and toxic waste. Waste can be sent abroad for recycling, but not for disposal. The maximum penalty for exporting waste illegally is an unlimited fine or up to two years in prison. Three men were arrested in July in connection with the shipment.

"A World Health Organisation study has said food insecurity in East Africa is expected to increase by 25% by 2015. "

Investigators in Italy examining a shipwreck containing possible radioactive waste say they may have found two bodies on board. An underwater camera also showed pictures of orange barrels, with the word "toxic" on their side. The boat lies in 500m of water off south-western Italy. Officials say they believe the vessel may have been sunk by the Calabrian mafia as part of a racket to make money out of the waste disposal industry. It was discovered after a mafia informant told the authorities he was involved in an operation to destroy vessels at sea containing radioactive and other waste. Local prosecutors say it is possible some of the crew were either unaware of the plan to sink the ship or were deliberately killed by the mafia. The mafia informant says he personally sank two other vessels and that he knew of at least 30 more ships sabotaged by the mafia. The man told his interrogators the waste came from European pharmaceutical companies and the mafia was paid between $2m and $20m to sink the ships.

The Kenyan Government has ordered that 40-50% of livestock bought through a government scheme should be slaughtered where they are bought. The step is aimed at minimising losses the Kenya Meat Commission is incurring from buying animals dying through lack of pasture in the current drought. About 2.5 million people are receiving emergency food aid across Kenya, but the effect of the drought means a further 1.3 million now also need help. The World Food Programme said the drought was being described as the worst since 2000. A World Health Organisation study has said food insecurity in East Africa is expected to increase by 25% by 2015.

Helping farmers and communities in poor countries to adapt to climate change appears to be benefiting them in two ways. By combining environmental farming methods with family planning, the Consortium for Integration of Population, Health and Environment (CIPHE) in Addis Ababa says, farming productivity in the Wichi wetlands in south-western Ethiopia has increased, though it does not yet know how much of this is caused by a reduction in family size. Since 2005, about 14,000 people in Wichi have fed their soil with animal compost and planted vetiver grasses, which trap moisture. At the same time, families are being offered access to contraception and advice.

British conservationists are planning to reintroduce a species of bumblebee declared extinct in the UK nearly a decade ago. The short-haired bumblebee officially died out in 2000, but its descendants survive in small pockets in New Zealand, where they were taken to pollinate red clover in the late 19th century. If the project works it will mark the first time bees have been reintroduced to any country after dying out. Bumblebees and honeybees have been in decline throughout Britain recently. Large areas of bumblebee habitat, including wild flower and hay meadows, have been lost, and disease and parasites have wiped out honeybee colonies. The director of the Bumblebee Conservation Trust said the project would be difficult, and might be the bees' last chance. The insects have been badly affected by changes in agriculture.

For five years Asian predatory hornets have been thriving in south-western France, scaring people with their venomous stings and attacking the local bees.

Continues on page 19

Continues from page 18

French beekeepers say the insects have now been sighted in Paris for the first time, and entomologists fear they could eventually reach Britain. The hornets are thought to have arrived on container ships from China. They are expected ultimately to spread across the whole of France and into other European countries. Biologists say this species of Asian hornet, which can grow to an inch long, is no more ferocious than its European counterpart, although its stings can be very painful and may need hospital attention. In the south west of France one beekeeper said he had lost 30% of his hives in the past two to four years. Neither pesticides nor traps seem to be very effective against the invaders. But a scientist at London's Natural History Museum said they might be defeated by "good, old-fashioned British summers. They wouldn't cope well with heavy rain."

Scottish scientists are to begin a survey to determine how many earthworms there are in Scotland. Researchers hope the results will help them understand how climate change is affecting earthworm numbers. They will visit 100 farms across the country to count the worms and compare the results with a similar survey 18 years ago. The study will also consider what other factors might influence worm numbers. Worms are sometimes called "ecosystem engineers" because of their ability to influence soil structure. The Scottish Crop Research Institute says there are three groups of earthworms - those that stay near the top of the soil, those that burrow horizontally and those that burrow vertically. "The paths of the horizontal and vertical earthworms cross, creating important natural drainage channels in the soil", said a spokesman. "If there is a reduction in the earthworm population there would be less natural drainage, and that combined with increased rainfall caused by climate change could result in more flooding."

The European eel's migration to the Sargasso Sea to spawn has mystified biologists for many years. But now scientists using satellite tags have tracked 22 eels, finding out what they do in the first 1,300km of their 5,000km migration. A report in the journal Science says the study's findings include where and at what depth the eels swim. The eel has a mysterious life cycle, spending its early years in rivers in northwest Europe before heading across the Atlantic to the Sargasso in the western Atlantic near the Bahamas. Here, it is believed, the fish spawn and lay eggs. But no-one has ever seen them do this. The eggs hatch into transparent larvae and return to Europe floating on ocean currents, developing on the way into tiny glass eels that swim against the current into Europe's rivers. There they can grow up to 1m long. In 2006 the team attached miniaturised satellite tags to 22 large adult eels which they released from the coast of Galway. The tags record not only the location of the eel but also its daily activity, recording speed, depth and direction. The tags are designed to detach themselves after six months and float to the surface, sending data via satellite back to the researchers. They found the direction the eels take wasn't a straight line from the west coast of Ireland towards the Sargasso Sea, but to the south of that, as if they were heading toward the Azores. This means they head towards the conveyor belt current which helps to drive them toward the Sargasso, implying some ability to navigate. The data also show that during the night eels swim in shallow warm water before diving steeply at dawn to 1,000m where they stay all day. As they do not feed during their migration this can have nothing to do with foraging, but it may help them to avoid predators.

Using human urine as a fertiliser produces bumper crops of tomatoes that are safe to eat, scientists say. The Journal of Agricultural and Food Chemistry reported that researchers at the University of Kuopio, Finland, gave potted tomato plants one of three treatments: mineral fertiliser, urine and wood ash, urine only, and no fertiliser. Urine is rich in nitrogen, phosphorus and potassium. Yields for plants fertilised with urine quadrupled and matched those of mineral-fertilised plants. The urine-fertilised tomatoes also contained more protein and were safe for human consumption. The researchers think the idea could improve sanitation by encouraging toilet-building. They plan to launch a pilot programme in Nepal before the end of 2009. But the amount of urine that can be collected from a person or a family is fairly small - equivalent to about two bags of fertiliser per year for a west African family. So the idea could help a subsistence farmer but not a medium-sized cash-crop farm.

Alex Kirby is a former BBC environment correspondent.

CHESAPEAKE BAY

Thirty Years On and Still Dying

Courtesy of www.chesapeakebay.net

Chesapeake Bay is the largest estuary in the United States of America, encompassing six states and the entire District of Columbia.

By Mike Ludwig

ALTHOUGH it has been more than thirty years since rescue efforts started, Chesapeake Bay is still dying. Water quality is not improving significantly. The famous Chesapeake Bay oyster population is just two percent of its level in the 1950s. Blue crab numbers are down more than thirty percent and still declining. Sea grasses that once covered the Bay floor have disappeared across much of the Bay along with the community that used them. The only things expanding are the problems. Nutrient discharges to the Bay are increasing, unwanted algae populations are increasing, oyster disease continues to ravage the natural and farmed crops of oysters and we spend more money.

Sadly, the source of the problems causing the Bay's slow but certain demise have been known throughout the entire thirty plus years of effort: too much phosphorous and nitrogen is being carried to the Bay from agriculture, urban and suburban runoff, sewage treatment plants and air pollution. The nutrients stimulate algae growth. In freshwater, the culprit is the phosphorous that stimulates the growth and in saltwater it is the nitrogen. The excess algae as it grows and dies create unnaturally wide swings in oxygen levels in the water. The use of oxygen at night along with the algae's death and decay create low (hypoxic) or worse, no oxygen (anoxic) conditions in the Bay's waters. The result is an annual, oxygen starved, "dead zone" that may cover as much as 40 percent of the 180 mile long estuary during the summer months.

In the mid-1970s, Senator Charles Mathias from Maryland began a fact-finding tour of marine science institutions around Chesapeake Bay to determine why the Bay's resources were declining. That effort led to the formation of the Chesapeake Bay Program, a multi-jurisdictional partnership of State and the Federal Government that began working to restore the Bay and its many resources in 1984. That effort built on restoration efforts that started in 1978 with a $27.5 million dollar (US) grant to the States. The cumulative efforts have now spent more than $9 billion dollars (US) without attaining a single Bay-wide goal. Today, Chesapeake Bay continues to show only marginal improvement or even declines in virtually every targeted recovery parameter. The once touted restoration program that ultimately spawned the U.S. Environmental Protection Agency's National Estuary Program's (NEP) of twenty-eight other attempts to restore estuaries, finds itself sitting near the bottom of the ladder except in cost. While NEPs such as Long Island Sound and Tampa Bay have achieved remarkable success with their water quality problems, the 64,000 square mile watershed of Chesapeake Bay has not.

The Chesapeake Bay Program leadership assembled a Blue Ribbon Finance Panel to look at the entire watershed and provide information on how things were progressing. The findings of the group included a pessimistic review of the efforts to date and the estimate that the total water quality restoration would cost more than $28 billion if nothing changed—more than $200 per year for every watershed resident. More recent estimates now report that more then $36 billion dollars are needed. This recent finding came in the wake of the Chesapeake Bay Foundation's (CBF) annual report card that continues to warn that the Bay is an ecosystem in peril. Although the restoration target date is 2010 they find that instead of seeing significantly improved water quality the Bay is dangerously out of ecological balance and in critical condition. The CBF uses 13 indicators to grade the condition of the Bay: oysters, shad, crabs, striped bass (rockfish), underwater grasses, wetlands, forested buffers, resource lands, toxics, water clarity, dissolved oxygen, as well as phosphorus and nitrogen pollution. CBF scientists examine historical and current information regarding each indicator and assign it an index score and letter grade. Taken together, the indicators provide an assessment of Bay health. (An "A" would mean that the ecosystem was recovered and a grade of 100 would mean that the Chesapeake had returned to conditions described in the early 1600s, when clean water, meadows of sea grasses, vast oyster reefs and abundant fish life was present.) This year they gave the Bay a grade of "D" regarding its present condition and a health index rating of 28 - a long way from the desired goal of 40 by 2010.

The core problem is that no one is accountable for the failure. Goals established in 1983 and 1987 calling for a 40-percent reduction in nutrient pollution by 2000 were extended to 2010. Now the US Environmental Protection Agency and the Bay Program say 2020 is more realistic. The problem arises from the program's collaborative structure and its lack of regulatory authority. They actually impede serious progress on water pollution. The National Oceanic and Atmospheric Administration (NOAA) reports that aggressive management can reverse the trend, citing the Tampa Bay estuary, which has improved due to regulations that required significant reduction of nutrient pollution, thereby cleaning the water and allowing the environment to rebound.

In the Chesapeake, NOAA reports that it has one of the largest dead-zones in the nation, resulting from nutrient pollution from throughout the watershed. The fundamental problem faced by the Chesapeake clean up team is not a lack of technology or solutions. The problem is poor policy and institutional inertia. The Chesapeake needs a policeman to write tickets for violations and a judge to make sure the violations stop. The nation's biggest estuary, sitting at the front door of the capital, deserves restoration.

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

Courtesy of LandSat NASA

A satellite view of Chesapeake Bay.


Common Stinging Nettle

Neantog - Universal Provider

By Daphne Pochin Mould

NEANTOG, *Urtica dioica*, the common stinging nettle, is a most remarkable plant. Few if any other have so many uses. You can eat it, drink it, sleep in it, wear it, and use it to soothe the pain of arthritis. And it will help your garden to blaze forth in a riot of almost oriental colour.

No wonder then that it protects itself with stinging hairs, otherwise it might be entirely devoured by man and beast. For nettle are a tasty vegetable. Pick the young leaves in spring (wear gloves!), wash and cook like spinach. Only much nicer. Don't overcook, and eat with lashings of fresh butter.

Traditionally country folk added young nettle leaves to stews and soups to bring a spring freshness and good food after the monotony of much winter diets. You can prolong the season of fresh nettle leaves by cutting them back, so they grow again. Nettle soup, like all soups, has various recipes (the internet has some of them) and are a pleasant light vegetable broth. In recent years, gourmet restaurants have taken them up and met with diners' approval.

The full grown nettle is a sturdy plant, and you will find it quite hard to break off a stem. (Grasp it firmly and it won't sting you.) It spreads both by its roots, which form a dense mass and by seed. The flowers are small, catkin like, hidden under the leaves and plentiful. Look at them closely for they have their own delicate under-stated beauty. It seeds itself readily.

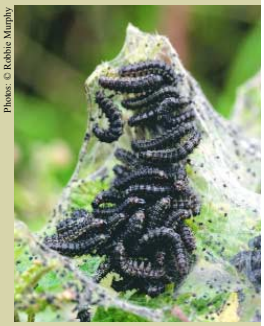
The strong stems depend on very strong fibres, so if you cut your nettles and let them rot down like flax, you have, like flax, material that can be cleaned and spun and woven into cloth. Natural vegetable shirts and pants, and no joke about them. They exist right now. And in World War I provided uniforms for the German Army.

People have slept on nettle sheets with nettle pillows and as soundly as ones made from flax.

No wonder then that the plant protects itself with a sting. The mechanism is delicate and effective. The little hairs on the plant act like a hypodermic syringe, a tiny container of the stinging drug and a sharp point to inject it when touched. Traditional folk medicine uses the stings to ease the pain of arthritis by applying nettles to the joint. Bee keepers claim similar good results from bee stings. Unless you are one of those unfortunate folk who have allergies to various things, the nettle treatment is well worth trying. But don't over do it, or like some of the more ascetic saints, go roll in a bed of nettles, unless you are tough enough to take the consequences!

Nettles thrive in rich soil and so they are often found among the ruins of old houses and their yards and gardens. Nettles on a formless rickle of stones suggest that here people once lived.

Cherish your nettles. Let them grow tall and strong and don't cut them down as summer ends. For let alone they will bring coloured splendour of butterflies. Nettle leaves are one food of some butterfly caterpillars, so look out for them. Butterflies are having a hard time, with so many of the food plants destroyed with intensive farming and weed killers.


Photos: © Robbie Murphy

Food for caterpillars.

In fact, it might be a good plan to know the plants the various butterfly caterpillars eat, and try to encourage their growth, and not needlessly cut them down once they have flowered.

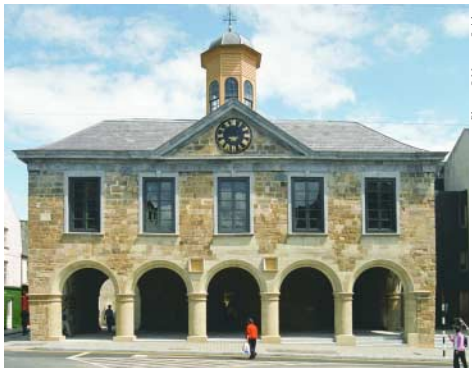
You brushed against it and it stung you? Well, no serious harm and if you have stiff joints, maybe some good. As the old word has it, "worse things happen at sea".

The Main Guard – Clonmel

By Margaret Quinlan

THE Main Guard stands at the centre of the old town of Clonmel, Co. Tipperary, facing along the main street and closing the vista as one approaches under the reconstructed west gate of the old walled town. Until an investigative study in 1990 by the writer, little was known of the building except that it dated from 1675, had once been arcaded, and was converted to shops in the 19th century. Its original features were thought not to have survived, apart from elements of the facades. However, the study revealed that substantial parts of the 17th-century building had survived, concealed within the later 19th-century fabric. As a result, Clonmel Corporation handed the building over to the OPW in 1994 and an extensive programme of works was carried out by the National Monuments Service.

Main Guard, Clonmel, Co Tipperary, in the 1970s.



Main Guard as it is today, with the arcade reinstated.

Photos: © Margaret Quinlan

Hoarding covering the clock tower.

The clock tower following restoration.

The restored arches.

The Building

The building was commissioned as a courthouse for the palatinate of County Tipperary by James Butler, 12th Earl and 1st Duke of Ormond, born in 1610 into one of the most powerful dynasties in the country. The Butlers had been granted the manor of Carrick by Edward II in 1315, and an earldom in November 1328. Within seven days, they had also been granted the 'regalities and liberties of the County of Tipperary', later called the palatinate – effectively a kingdom within a kingdom. James was one of the Butlers of Kilcash, the fabled castle under Slievenamon which gave its name to the great 18th-century lament, "Cad a dheanfaimid feasta gan adhmad..." Two carved stone plaques on the façade bear the Ormond arms, the arms of Clonmel and the date 1675. The architect is unknown. Sir William Robinson has been suggested – he built the Royal Hospital for the Duke of Ormond in the 1680s – and a Captain James Archer is also a candidate. The palatinate was extinguished in 1716 because the 2nd Duke supported the Stuarts over the Hanoverians in their bid for the crown. The palatinate court was suppressed, and from that time the assizes were held in the 'Tholsel', as the building became known. The infamous trial of Father Nicholas Sheehy took place there in 1766. Clonmel's new courthouse was built in 1802 and all court functions were transferred there. An 1820 source describes it as 'devoted to the use of the soldiery' and names it the 'Main Guard'. By 1810, the lower level had already been converted into shops and the building had undergone drastic alteration to suit this new function.

In 1990, the site contained a labyrinth of building, altered and adapted following its conversion in the early 19th century. The original building had been simple, consisting of a single level over an open arcaded ground floor, with a rear return. The 19th-century intervention saw the insertion of five levels where there had been two; the insertion of two full-height dividing walls; the removal of the columns in the arcade; and the cutting through of the centre of the arches to accommodate an additional row of windows for the new intermediate floors. Fortunately, the outer sections of the arches survived in place. The front wall was supported on pairs of beams, re-used from the former principal floor, which in turn supported on the new dividing walls, supplemented by slender cast-iron columns. The result was a highly unstable structure, further weakened by the insertion of several sets of flues through the surviving masonry. Because of its dangerous condition, in the 1980s the Corporation acquired the building from two owners, and erected protective hoarding.

The building stands in a prominent position in the centre of the mediæval town of Clonmel.

The Approach

The principal debate that arose following the discovery of the 17th-century structure centred on how this building and its significance could be conserved into the future. The option of retaining the 19th-century configuration was eventually set aside, as it would have entailed the virtual obliteration of surviving elements of the 17th-century building to preserve a structure which itself needed large-scale intervention due to its deteriorated and unstable state. The diagnosis was that the structural problems of the building could be best solved by re-establishing the original structural form – replacing the removed portions of the arches and floors.

Accordingly, the decision was taken to reinstate the arcade, and to undo the drastic interventions of the nineteenth century. In this process, referral was made to the international codes of conservation practice, among them the Burra and Venice Charters. The aim was to conserve the building and to recover its significance, which was seen to lie principally in the building being at the transition between mediæval and modern. With it, the Renaissance had arrived – a classical building was introduced to the centre of a mediæval town, placed symmetrically on the axis of the main thoroughfare. To add to the rich mix of history, it was discovered during the works that the Main Guard contained much stone from the 12th-century Cistercian abbey of Inislounaght, two miles upriver.

Where evidence existed, the fabric was restored. Where insertion of new elements was necessary, it was ensured that they were clearly identifiable as being of contemporary construction. Care was taken to avoid speculative intervention. As no evidence of internal detailing survives, there has been no attempt to recreate it.

The spacious interior hosts cultural events and exhibitions.

Now

The main chamber takes up the entire first floor and contains a permanent exhibition on the building. The additional ancillary accommodation is a modern construction on the footprint of the rear return and holds a stair hall, lift, escape stairs, offices, toilets and stores. The junctions with the 17th-century front block have been carefully articulated. It is hoped that a structure to the rear, known as the square block – perhaps part of the duke's documented Clonmel house – may be integrated with this accommodation in the future, to provide additional space and a small lecture room. The building is open to the public as an OPW Visitor Centre and also hosts cultural events and exhibitions.

Margaret Quinlan runs a private practice with Grade 1 Conservation accreditation. Loughlin Kealy was part of the design team along with Michael Punch, Consultant Engineer. OPW architect in charge of the project was Aighleann O'Shaughnessy of the National Monuments Service. The Main Guard was awarded the Best Conservation project in the 2004 RIAI Irish Architecture Awards.

Control of Aquatic Invasive Species

Restoring Ireland's Natural Aquatic Communities

IRELAND is currently facing many environmental challenges and we are all accustomed to hearing about the issues relating to global warming and climate change. Less well known perhaps but also of great importance are the challenges facing Ireland's natural aquatic habitats and the serious threats posed to them by the ever increasing numbers of non native invasive species arriving to our shores.

Invasive non native species are plants and animals that have been introduced from outside their natural surroundings and are non-native to an area. They can take over the habitat of native Irish species very quickly, resulting in the decline or total exclusion of our own native species. They can cause economic and environmental harm and in certain circumstances may even adversely affect human health. Their presence can curtail our enjoyment of the great outdoors and disrupt angling, swimming and the pursuit of other water based recreational activities.

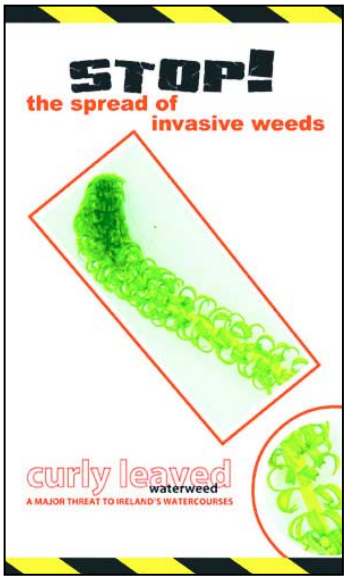
Non-native invasive plants have the capacity to rapidly out-compete native Irish species and damage our natural habitats. They can impact negatively on tourism and damage the recreational and amenity value of the waters which they inhabit. It is vital that all efforts focus on eradicating these aggressive non-native plants if we wish to prevent the ecological and economic devastation caused by them. If invasive species were allowed to spread unchecked throughout Ireland the economic and ecological cost to the country would be too great to contemplate. However, the impacts of many of these non native species can not be fully understood until they are well established.

The most cost-effective means to control non native invasive species is to prevent their initial arrival and measures need to be taken to reduce the risk of introduction. The introduction of legislation to regulate and control the importation, distribution and possession of non native invasive species and surveys and checks for these non native species at ports of entry would help reduce their introduction and afford additional protection to our vulnerable native Irish species and water habitats.

In an attempt to mitigate the effects of existing non native species and prevent further introductions and infestations, a project to control aquatic invasive species was started by the Central and Regional Fisheries Boards in September 2009. The project which has been funded through the European Life+ programme aims to restore natural aquatic communities in Ireland. The project which is being managed by Shireen Sayed of the Central Fisheries Board is due for completion early in 2013.

The broad objective of the project is to reduce and prevent the further loss of native aquatic plants and habitat in Ireland caused by high impact non native aquatic invasive species. This will be achieved by the Boards through the development and demonstration of effective control methods, a programme of stakeholder engagement and awareness raising, the enactment of appropriate robust legislation and policy development and dissemination.

Photos courtesy of www.cfb.ie



The Central and Regional Fisheries Boards are working to prevention the introduction and spread of invasive alien species.

The OSMA weed cutting boat's maiden voyage on Lough Corrib.

Some objectives of the project include the protection of the native biodiversity in Lough Corrib by eradicating, controlling or containing the plant *Lagarosiphon major* (Curly Leaved Waterweed), which has spread rapidly throughout the upper Lough. The huge scale of the job to be done is highlighted in the following example. In 2005, *Lagarosiphon major* was found in nine locations in L. Corrib and occupied circa 12 hectares of the 20 hectare area of Rineroon Bay. In 2006, it was recorded in 24 separate locations and appeared to be spreading towards the shallower lower lake. Currently, it is found in circa 113 locations on L. Corrib. The team will be combining the use of new existing methods in order to achieve this objective.

In addition to this, the project aims to prevent further spread of high impact aquatic invasive species by implementing control measures in a key dispersal corridor (i.e. the canals and Barrow Navigation).

The project team from the Central and Regional Fisheries Boards will also be conducting a detailed desk study and consulting with experts and authorities widely, in order to collect data on the ecology and invasive capacities of the more problematic alien species and on effective control methods. This information will permit the development of informed guidelines for effective aquatic invasive species management.

In addition to the above activities the team will be looking to implement the widest range of containment, control and eradication procedures as is available, in an effort to eliminate non native species from the targeted waters. The success of these methods will be scientifically monitored and the results will be used to inform ongoing control proposals. Specific research focus will be placed on developing new and innovative containment and control methods for use against the range of invasive species present in Irish waters.

During the project key stakeholders groups will also be consulted and an education and awareness programme aimed at preventing new invasions, further spread and reinvasion by existing high impact species will be launched by the Boards.

The team will also exchange and disseminate information on control and management methods with other European invasive species control teams and policy makers leading to more effective control of aquatic invasives in Ireland and across Europe. This will add to the protection of biodiversity in Ireland and contribute to the European target to halt biodiversity loss by 2010 by building capacity on invasive species control.

The Central and Regional Fisheries Boards are working to ensure that the prevention of the introduction and spread of invasive alien species will be addressed through the programmes of stakeholder engagement and education and awareness described above, and via the provision of robust legislation. In order to manage the project, key action plans that tie into the overall project objectives have been identified.

This important national research project which is funded through the EU Life+ programme will inform the control and management of invasive species in Ireland and elsewhere for many years to come.

Central Fisheries Board, Swords Business Campus, Swords, Co. Dublin, Ireland.
www.cfb.ie

NATURA 2000

Life

THROUGH AN EXILE'S EYES

Nature in 16th century Ireland

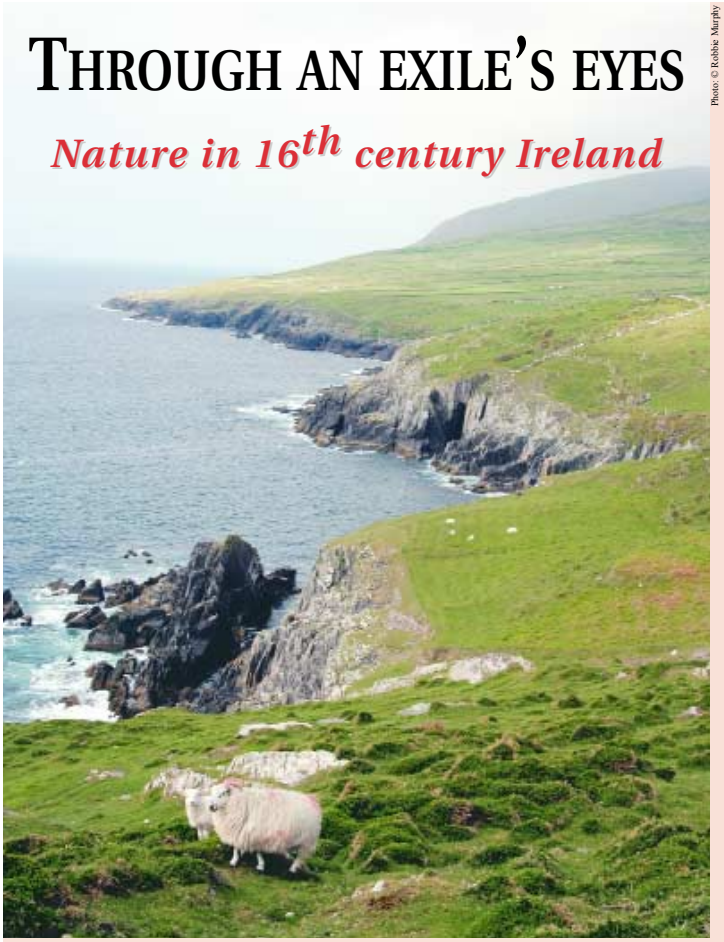


Photo: © Robbie Murphy

Dursey Island – the birthplace of the author Philip O'Sullivan Beare (1590–1636).

By John Akeroyd

A REMARKABLE early account of Ireland's natural history is now available*. This fascinating book derives from a neatly written Latin manuscript from *c.*1626 that turned up in 1932 at the University of Uppsala in Sweden. Its author, Philip O'Sullivan Beare (1590–1636), wrote several books, including a history of Catholic Ireland. Denis O'Sullivan, retired consultant urologist and classics scholar, who has translated and edited the text, now in English for the first time, has revealed a remarkable document shedding new light on the Ireland of the Elizabethan conquest. Naturalists will find all manner of gems here, while those interested in history will discover much on the O'Sullivan Beares.

Born on the island of Dursey at the mouth of Bantry Bay, Philip was the son of Dermot O'Sullivan, chieftain of Dursey, who aided his nephew Donal Cam O'Sullivan Beare during his escape from the Beara peninsula and momentous march to Ulster (Dermot survived to die in bed, aged 100!). Philip was one of 17 siblings, most of whom died young. In February 1602 after the catastrophic Irish defeat at Kinsale, his father sent him to Spain, where he was educated at Santiago de Compostella, later becoming both soldier and scholar. He joined the Spanish navy and in 1618 fought at sea against the Turks.

Photo courtesy of Mike Collins

Once he retired as a consultant urologist, Denis O'Sullivan (with his wife Marie above) went back to University to study the Ancient Classics. Having complete his studies, he heard about the *Zoilomastix* manuscript and decided to start translating it. This is the first book.

O'Sullivan's book is an eccentric, poignant postscript to the eclipse of the old Gaelic Ireland. He himself entitled it *Zoilomastix*, a reference to Zoilos – an ancient critic of renowned Greek poet Homer – and a whip (Greek: *mastix*). He set out to correct information and assertions in *Topographia Hiberna* by Gyraldus Cambrensis (1188), and subsequent writers, which he felt to be the propaganda of the English, whom he saw as evil heretics who had laid waste his country. O'Sullivan was no great naturalist, but an enthusiast who had clearly absorbed much of what he saw around him in boyhood. Perhaps as a work of record the book suffers from his being too long away, but is steeped in the exile's longing for his familiar native home. He can be repetitive and vague – yet packs the text with vivid fragments of observation and description. He concurs with several previous writers, back as far as classical authors and Bede, who alluded to Ireland's temperate climate, her clean waters, pastures full of cattle and sheep, and wealth of fish, bees and metals such as copper. He too is never afraid of a little propaganda – Irish is usually best!

As an educated Renaissance man, O'Sullivan owed a debt to Roman naturalist Pliny the Elder, and he lists animal and plant names in Latin, Greek, Spanish and Irish, the latter language being widely spoken within Spain's Irish community. His knowledge of ancient texts and the Mediterranean world in which he found himself greatly influenced the text. But O'Sullivan's little details are enough to show that his work is based on more than hearsay. He talks of the wagtail, with the "almost constant motion of his rather long tail"; the "frequent plaintive call of the curlew"; coralline algae near Whiddy island; crops such as buckwheat and flax; and two good West Cork plants, Arbutus (still on the Beara) and *Enula Campana* [Elecampane] "near the Leap" and "in plenty on Cape Clear Island", where it survives today as a relic of former medicinal use. He mentions Betony (*Stachys officinalis*) too, a plant of "many uses", which is rare in Ireland but still occurs in several places on Dursey, Bere Island and the Beara peninsula.

He notes how the pilchard "abounds in Ireland", as it certainly did in his native Bantry Bay (these fish mysteriously departed for Cornish waters in the 18th century). In a very Irish detail, he writes of the 'wren boys', who well into the last century would kill and exhibit a wren round villages on St Stephen's Day. He praises hops and some garden flowers, and then apologizes that he is no botanist. He emphasizes the harmlessness of Irish Nature, even spiders – there *are* a few nasty ones in Spain! But he does mention wolves, still about in Co. Cork in those days, alongside genuinely harmless mammals such as marten, fox, badger, hare, weasel (*sic*, presumably stoat) and red squirrel. He records bittern, corncrake, egret and heron, even pheasants. Bee-eaters derive more from Pliny than reality, and Carrion Crow may actually be the commoner Hooded Crow!

Here indeed is a book to enjoy and one packed with tantalizing nuggets of information that fire the imagination. Anybody interested in Irish history, natural history and early literature must be grateful for Denis O'Sullivan's dedication and skill in taking this important manuscript to a wider readership.

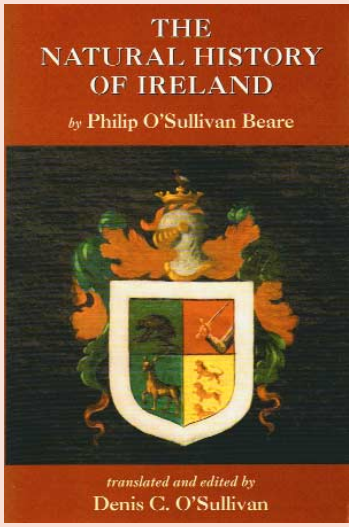
Dr John Akeroyd, who has studied the Irish flora for 30 years, edited The Wild Plants of Sherkin, Cape Clear and adjacent islands of West Cork (1996) *and is author of* A Beginner's Guide to Ireland's Wild Flowers (2008).

Photo: © Robbie Murphy

O'Sullivan's Beare records many birds, including the heron.

Photo: © Audrey Murphy

Fox are mentioned in the manuscript, alongside other mammals such as marten, badger and hare.



***The Natural History of Ireland.* Philip O'Sullivan Beare. Translated and edited by Denis C. O'Sullivan. Cork University Press. 296pp. 2009. ISBN 978-185918-439-4.**

PUBLICATIONS OF INTEREST

Collins Digital Photographer

By Steve Bavister

HarperCollins

www.collins.co.uk

ISBN: 978-0-00728739-0

Price: £12.99stg/2008

The Collins Digital Photographer is a book designed for today's marketplace. With photography now being so accessible to so many people, there is a need for a book which gives straightforward instruction in the basics of photography. Collins Digital Photographer provides guidance in all aspects of photography, from the types of equipment available and the techniques of capturing stunning photographs in different situations, through to the final output on computer or printer. This stylish book is clearly laid out, with colour coded sections, and a rubberised cover makes it ideal for carrying on location. A valuable reference source and an ideal travelling companion.

The World of Lakes
Lakes of the World

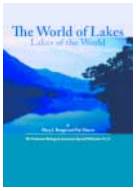
By Mary J Burgis & Pat Morris

The Freshwater Biological Association

www.fba.org.uk

ISBN: 978-0-900386-76-3

Price: £25.00stg/2007



In the preface to this book, the authors state "we have tried above all to make science accessible and readable". They hope the book will be enjoyed by the many that are interested in fishing, birdwatching, sailing, geology, geography and engineering. In eleven chapters, they take the reader through different aspects of lakes, including lakes in landscape, lake water, lake communities, polar and mountain lakes, deepest lakes, manmade lakes, use and abuse of lakes, and the conservation of lakes.

We learn so much from each page. Plant and animal life is explained in layman's language - the plankton, the insects and the many animals that are part of the food chain in almost every lake ecosystem. Africa has over 1500 species of fish in its lakes, in contrast to the 215 species found in Europe and the 687 in N. America. Lake Victoria alone has 500 species of fish, many are endemic to the lake (being found nowhere else). Lake Baikal, in Siberia, is 1620 metres deep and is the home to the Baikal seal (found only in this lake). It contains one fifth of the world's total reserves of freshwater. The River Amazon has over 8,000 discernible lakes, 10% of which are more than 7 km wide and 60 km in length. Most importantly, this book shows how essential healthy catchment areas are for lakes. Highly recommended, especially for secondary school libraries.

Roadless Rules
The Struggle for the Last Wild Forests

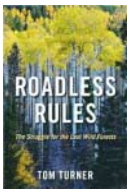
By Tom Turner

Island Press

www.islandpress.org

ISBN-13: 978-1-59726-440-2

Price US$35.00/2009



This is a story about wildlands that have been spared from the road builders. It's an exciting story about how people can come together to fight government. The Roadless Area Conservation Rule was put in place at the end of the Bill Clinton administration in the US to protect vulnerable national forest lands. Subsequently, a substitute rule was issued by the George W Bush administration to replace the Clinton ruling. We read of the legal battles concerning the two rules which raged for over six years. It shows the strength of the environmental organisations in the US who are prepared "to put their money where their mouth is" to protect the national forests. Chapter 1, "Showdown in Cheyenne" describes a court case in Wyoming, where a highly political judge, who had a fierce antipathy to President Clinton and his administration, presided. The details of the case outlined how the State of Wyoming had asked the judge to declare illegal the Roadless Area Conservation Rule, which bans road building on about 50 million acres on the country's national forest. The arguments for and against in this case makes fascinating read. Each of the other 16 chapters which include "Shoot outs in Idaho and Wyoming, Skullduggery in Alaska" and "The Bush Rule is Blocked and the Game Is Up" is a wonderul story of the ordinary person taking on the vested interests, including the Bush administration. This is an inspirational book and highly recommended.

Resiliency of Gadid Stocks to Fishing and Climate Change

Editors G.H. Kruse *et al*

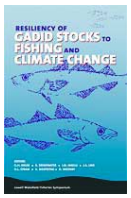
Lowell Wakefield Fisheries Symposium

Alaska Sea Grant College Program

www.seagrant.uaf.edu

ISBN 978-1-56612-126-2

Price US$50.00/2008



These proceedings include eighteen papers presented at a symposium held in Anchorage, Alaska. The family Gadidae include about 30 species of fish, such as cod, haddock, pollock, ling, whiting and hake that inhabit cold water seas of the North Atlantic, North Pacific and Arctic Oceans. Papers focus on gadid populations and fishery dynamics and explore potential biological, ecological and environmental mechanisms underlying these changes. Several key conclusions emerged from the symposium.

For example, participants agreed that conservative catch limits and excellent catch monitoring programs are largely responsible for the generally healthy status of gadid stocks in the northeast Pacific Ocean. On the other hand, in the northeast and northwest Atlantic there are many clear cases of overfishing where the continuing inability to effectively control fishing mortality remains a major resource conservation issue to this day. In some of these areas, catch limits are consistently set above scientific advice and realized catches are higher still. Instances of illegal and unreported catches exacerbate these problems. Second, evidence has emerged that selective fishing practices are associated with shifts in biological attributes, such as growth and maturity schedules, which, in turn, affect stock productivity and the ability to recover, even if fishing mortality is later reduced to conservative levels. A book for fish biologists and managers.

Sustainable Investing
The Art of Long-Term Performance

Edited by Cary Krosinsky & Nick Robins

Earthscan

www.earthscan.co.uk

ISBN 978-1-84407-548-5

Price: £19.99stg/2008

This book arrives at a time when we need to look for alternative investing economies to the current one that relies on the assumption that the Earth can support infinite growth and expansion. Sustainable investing is defined as "an approach to investing driven by the long-term economic, environmental and social risks and opportunities facing the global economy."

Krosinsky and Robins clearly explain the theories and practices behind Sustainable investing, outlining both the positive and negative aspects and how to make it work in the long-term. Useful to both the layman and businesses to show the direction that investment should be heading in the 21st century.

Voluntary Carbon Markets
2nd Edition

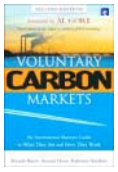
Written & edited by Ricardo Bayon, Amanda Hawn and Katherine Hamilton

Earthscan

www.earthscan.co.uk

ISBN 978-1-84407-561-4

Price: £24.95stg/2009



Voluntary Carbon Markets is a concise yet in depth overview that delves deep into the relatively new area of carbon marketing. Carbon markets, described as the buying and selling of emissions credits, distributed either by regulatory bodies or greenhouse gas emissions reduction bodies can be regulated or voluntary. Voluntary carbon markets are unlike regulated carbon markets as there is no statuary requirement to purchase the emissions credits on offer. Included in this book is a very descriptive guide to the workings of the market and a number of varied opinions from leading professionals involved. For anyone interested in participating in voluntary carbon markets this book is a wealth of easily understood information and ideas, in my opinion a perfect starting point to necessary carbon neutrality in business.

The Business Guide to Sustainability
Practical Strategies and Tools for Organizations

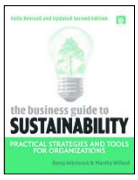
By Darcy Hitchcock & Marsha Willard

www.earthscan.co.uk

ISBN: 978-1-84407-766-3 (sb)

Price: £29.95stg/2009

This is a very unusual book in that it gives a table at the beginning "What chapters should be read?" for whatever position a person holds i.e. finance, human resources, office and board members. There are 13 chapters beginning with "Sustainability as a Strategic Issue" - benefits, risks, explanation and whether your organisation is sustainable.



At the end of each chapter there is a checklist to see how many of the practices discussed you have implemented in the past five years. This is done through a points system. Within each chapter the authors have resource boxes giving details of books for further ready on the specific issue. One might think sustainability is an airy fair issue but there is a very impressive list of companies pursuing sustainability, including energy companies such as Shell and Conoco, and manufacturing companies such as Coca Cola, Ford, Hewlett Packard, Intel and Nike. Many States in the US and countries like New Zealand, Australia and Canada. Ireland is not listed! Universities mostly in the US. Yes, this book is a must for anyone involved in wanting to be sustainable.

Selling Solar
The diffusion of renewable energy in emerging markets

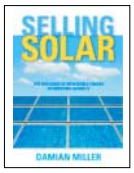
by Damian Miller

Earthscan

www.earthscan.co.uk

ISBN: 978-1-84407-518-8

Price: £49.95stg/2009



Selling Solar is a comprehensive and easily digestible look at the use of solar photovoltaics and their relatively slow diffusion into commonplace usage in developing markets. Miller begins with a brief introduction on life without electricity; reality for an estimated 1.64 billion people, and why solar is a viable option for communities and governments across the globe. Then drawing from case studies from around the world Miller examines some of the barriers to the uptake of solar units into emerging markets. The book finishes with some policy guidance for introducing solar to more homes. Written in an easy-to-read style and full of facts and statistics this book provides anyone interested in international development and renewable energy with a comprehensive background to the diffusion to technology in emerging markets.

LIBRARY EXHIBITION:

'Darwin, Praeger and the Clare Island Surveys'

Celebrating the 200th anniversary of Darwin's birth, the 150th anniversary of the publication of The origin of the species and the 100th anniversary of the 1st Clare Island Survey, the library is presenting an exhibition featuring exhibits from its rich Natural History Collections as well as loans from the National Botanic Gardens and the Natural History Museum. The exhibition aims to explore the work of Irish naturalists both in Ireland and abroad and the influence of Darwin on those whose collections are displayed here.

The exhibit is on display at the Meeting Room in Academy House until 14th December 2009

Royal Irish Academy, 19 Dawson Street, Dublin 2.
Tel: +353-1-6762570, Fax: +353-1-6762346 Web: www.ria.ie

A Field Guide to the MARINE FISHES of WALES

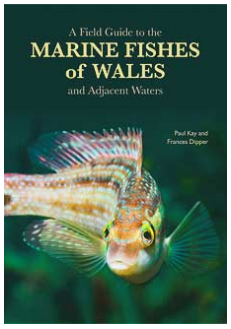
and adjacent waters

By Maurice O'Callaghan

"But having caught, obtained, or photographed a fish which needs identifying how does one go about finding out what it is?

Well, "A fieldguide to the marine fishes of Wales and adjacent waters" may appear at first sight to be a very specialised and localised book but does in fact cover many of the species found not just around the Welsh coast, but also those off the rest of the Britain and Ireland. It is clearly the most comprehensive, photographically illustrated guide to marine fish of Britain and Ireland as yet published, and even provides an appendix with a thorough (although not claimed to be definitive) list of the fish found in these water too.

In the past the majority of identification guides to fish



"A fieldguide to the Marine Fishes of Wales and adjacent waters" by Paul Kay & Frances Dipper is now available at £19.95 + £3.25 P&P. Copies can be ordered by contacting www.marinewildlife.co.uk

have relied on line drawings and descriptions provided by scrutinising dead specimens in order to produce sufficient information to enable identification. The authors of this guide have for the most part taken a different approach and have tried to rely on high quality underwater photographs in order to provide information. This is especially evident for certain fish like the gobies where clear images of the live creatures makes identification far easier (especially from underwater photographs) than traditional fin counts and examination of prepared specimens – the aim of the authors that this book should be a fieldguide has clearly influenced their researches.

Marine fish can be divided up into several categories; those caught by fishermen, those caught by anglers, those seen by divers and those obtained from scientific sampling. There is of course some crossover, but certain fish are only ever seen by certain categories of observer.

For example, an angler may need to be able to identify a silvery member of the cod family by its fin shape, lateral line and barbell (or lack of), whilst to a diver such fish are often seen as they swim quickly past so few identifying observations can be made. On the other hand, divers may well see small fishes such as the smaller gobies which cannot be caught by anglers, are too small to be obtained by commercial fishermen and difficult to obtain even by scientific sampling. Armed with an underwater camera, a diver can record such fish and identify them later at leisure. This book does cater for all these categories and will be useful to anyone who is interested in fish whatever the reason and way of seeing them

Photos: © Paul Kay

A red gurnard 'walking' on modified fins and searching for food by feeling for it with these fins.

The book lists in its appendix some 500 species of fish considered to have been 'found' in British and Irish waters. Of these over 200 are dealt with comprehensively in the main section of the book and for the most part illustrated by clear photographs, or in some cases detailed drawings (of the other 300 many are records of deep water species, pelagics and obscurities). Most of the photographs accompanying the text are of live fish and the excellent line drawings, which make points clear too, are also drawn as if the fish is alive.

The book is not based on a key but explains about the salient features which need to be observed in order to be able to identify fish. It assumes that anyone interested in fish will actually read it and become familiar with the observational details which need to be recorded prior to going out into the field. Given that there are probably only around 200 fish most likely to be encountered by the vast majority of people interested in fish this is not too daunting a task.

The book contains additional information and is especially keen on promoting the use of digital photography to record fish (both above and below water) and has sections on the best ways to photograph them (even the gobies). It is cleanly designed, easy to navigate around and sized to be both readable and carriable (a useful asset in any fieldguide). Physically it appears well covered and bound which, since it is quite likely that it may well get used in damper environments than many books is a good thing.

In addition to the book, a website has been set up to provide additional information not contained within the book – www.welshmarinefish.org.

All in all, this is a book which can be recommended as a very welcome and overdue addition to the library of anyone interested in the marine fish found around all of Britain and Ireland. Copies can be obtained via www.marinewildlife.co.uk or the UK's Marine Conservation Society."

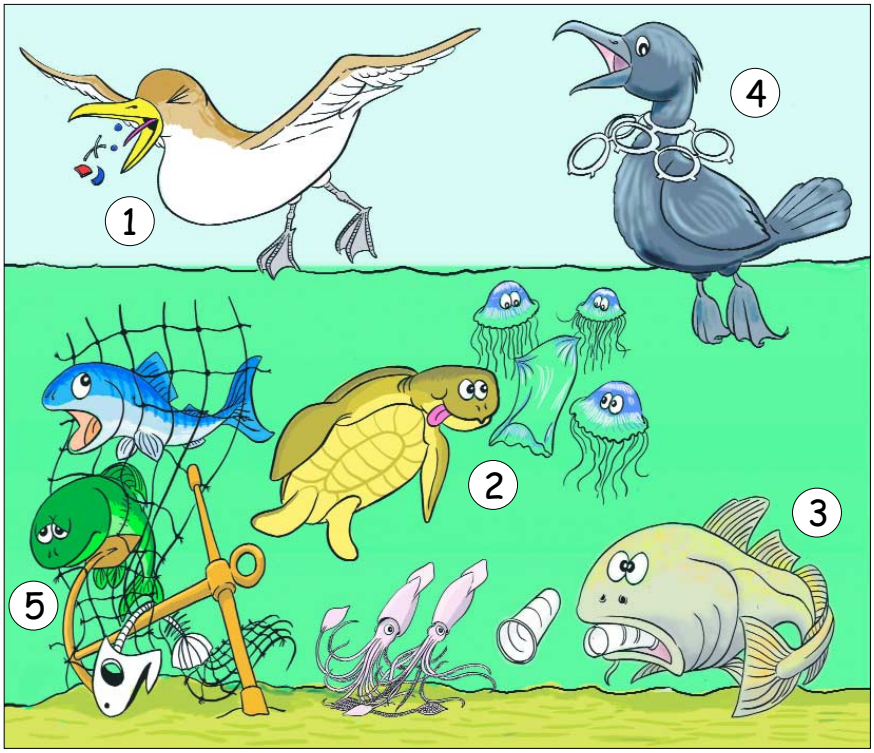
Paul Kay can be contacted at:
paul@marinewildlife.co.uk.
Tel: 0044 (0) 1248 681361
0044 (0) 77 02411614
www.paulkayphotography.co.uk

A solitary pollack swims effortlessly over the kelp in the shallow coastal waters off the cliffs of Lewis.

A two spotted clingfish (or sucker) on a mixed seabed with some fragments of maerl. The yellow fringed purple spot behind pectoral fin indicates that his is a male two spotted clingfish.

JUNIOR PAGES

THE PROBLEM OF PLASTIC



Plastic in the Marine Environment

Floating pieces of plastic have been seen in the oceans since the 1970s and today some 250 species of marine animals show signs of "plastic stress" either from eating plastic, or becoming trapped in plastic fishing nets and packaging.

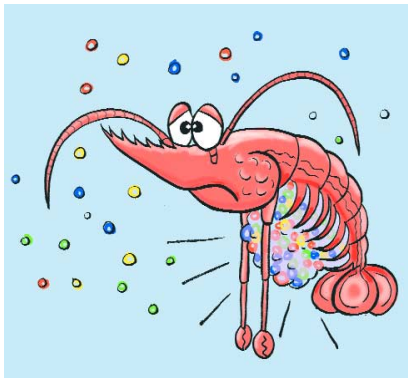
A study carried out in the North Sea showed that 25 out of 27 fulmars had small pieces of plastic in their stomachs[1]. Turtles are known to mistake floating plastic bags for the jellyfish they feed on[2] and cod can choke on plastic cups that they mistake for tasty squid[3].

The plastic rings that hold drink cans together in "six packs" can mean a slow death for fish and diving birds that find their heads trapped inside them[4].

Fishing nets that are abandoned at sea or stuck on the bottom can remain "ghost fishing" for years, catching fish that nobody can ever harvest[5].

Captain Cockle's Log

Log onto www.captaincockle.com



PLASTIC

An Important Part of Our Lives

Because of its flexibility, strength and lightness, plastic is an important part of our lives today - from plastic bottles and bags, to computers, cars and aircraft, with worldwide production growing from 5 million tonnes of plastic in the 1950's to some 230 million tonnes today. But the fact that plastic breaks down so slowly, makes it a real problem when it is discarded at sea.

"Micro-Plastics" - a new threat

But the most serious threat from abandoned plastic in the marine environment recognised by scientists is the presence of "micro pellets" of abandoned plastic, some as small as two microns (two millionths of a metre) in diameter, which can be eaten by mistake by filter feeding animals at the bottom of the food chain.

Not only do these micro pellets provide no food value whatsoever, but scientists fear that because of their extremely small size and relatively large surface area, these pellets might act as magnets for chemical contaminants such as heavy metals. Toxins such as these, suggest the scientists, may poison the ocean's food chain at its very core, with a knock on effect right up to the larger fish we rely on for our food.

How You Can Help ...

In Ireland, the Plastic Bag Environmental Levy which was introduced in 2002, has been recognised by marine scientists as having reduced the amount of plastic litter on Ireland's beaches. Prior to the Levy, some 1.26 BILLION plastic shopping bags were given out each year, which then dropped by 90%. Projects such as DEEPCLEAN, which are designed to locate and recover lost fishing nets, are underway between scientists and the fishing industry.

And you yourself can play an important part in cutting down on plastic pollution of the seas each time you visit the beach, by always disposing of your plastic rubbish sensibly or by bringing it home for recycling in your "Green Bin".

Learn about birds with BirdWatch Ireland

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

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

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

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

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

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

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

Website: www.birdwatchireland.ie

GRUBS UP!

BY DECLAN MURPHY – The best place to start birdwatching is in your own backgarden, no matter how small or large your garden is it is usually possible to attract a wide variety of species, many of which are easier to watch feeding on your birdtable then in the countryside.

HOW TO FEED?

BIRD TABLES

If you have the space you can put up a roofed bird table and hang your feeders from the sides of the table. The advantage of this is that you can locate your feeding station in a suitable part of the garden, close to the kitchen window but away from any shrubbery which might allow cats to hide in. A wide variety of birdtables are now available to cater for all size gardens and courtyards. Large Selection of bird tables, feeders and accessories available online at www.birdwatchireland.ie

FEEDERS

Feeding birds on the ground is generally not encouraged as this tends to attract both vermin and larger birds such as Rooks which may prevent smaller birds from feeding. The simplest and cheapest method is simply to hang up a couple of wire mesh peanut feeders on a convenient tree and fill them with unsalted peanuts. You may also want to hang up a seed feeder to feed wild bird seed.

WHAT TO FEED?

By providing as many different types of food as possible you can be sure that you will attract the maximum amount of species for your area. However as the number of birds visiting your garden increases so will your peanut bill!!

FRUIT

Often overlooked, fruit will attract several species of bird which may not otherwise visit your garden. Apples and pears cut in half and placed on the ground will attract Blackbirds and Song Thrushes, and in particularly hard weather they might bring in Redwing and Fieldfare. Spearing cut apples onto the ends of branches will also attract Blackcaps.

SEEDS

'Mixed Wildbird Seed' is often sold at a seemingly good price in many supermarkets and pet shops but often doesn't attract the smaller birds; much of this mixture is either wheat or corn and, apart from pigeons, few garden birds can digest this food source. Far better is black sunflower seed, a highly nutritious and popular food for birds, especially the tits and finches. It has a higher oil level and energy value than the striped-shell variety of sunflower seed, often sold alongside, which tends not to be as popular with the birds, although they will eat it. Black Sunflower seed is more expensive than 'wild bird seed' but it is better value as there is almost no wastage.

NUTS

Peanuts are the most popular food for garden birds and attract a wide range of species. Be sure to buy from a reputable supplier as mouldy peanuts can kill birds. When feeding during the spring and summer ensure all peanuts are fed from a mesh peanut feeder, as whole peanuts can be harmful to young birds.

FATS

Don't waste any fat! It's a nutritious food for garden birds. Lumps of suet may be hung out, and meat trimmings, bacon rinds and table scraps will also be eaten gratefully. The large 'Fat Balls' which can be bought in pet shops often prove highly popular - you can also make your own homemade version by pouring melted fat over bread or cake scraps to make 'bird cake'. This can be made even more nutritious if some seeds, nuts, oatmeal, grated cheese or dried fruits are added.

WATER

As well as providing food it is also necessary to provide a clean supply of water. This can be provided from a hanging bird bath (available from www.birdwatchireland.ie) or by using an upturned dustbin lid. Be sure to locate this in an open area well away from cats. In cold weather bird baths often freeze – you can help prevent this by using hot water to melt the ice or by placing a light rubber ball in the water; it should move about enough to keep the area immediately around it ice-free.

Counting Garden Birds

Every year BirdWatch Ireland runs a Garden Bird Survey with over 1,000 gardens taking part – all you need to do is count the birds in your garden each week. The Survey starts on 30th November and you can download forms at www.birdwatchireland.ie

What Am I?

Can you name the mystery animals in the circles? Next, try to match the animals with their description. Answers below.

a. I am an insect (which means I have six legs) and I can fly. *What am I?*

b. I have wings, two legs and a beak... but I am not an insect! *What am I?*

c. I have a beak, no legs, swim in the water and have a fin on my back. *What am I?*

d. I have no legs, swim in the water but have no fin on my back. *What am I?*

e. I have no legs, live on land and have a slimy body. *What am I?*

f. I have four legs, eat small animals and fruits such as blackberries. *What am I?*

g. I only eat green food, have four legs and a tail. *What am I?*

h. I will make a huge change to my appearance during my lifetime. I like wet places and am slimy. *What am I?*

i. I will also make a huge change to my appearance during my lifetime. I will soon able to fly, but not yet! *What am I?*

j. I have eight legs, like to spin and love to eat insects. *What am I?*

1

Photos: © Robbie Murphy

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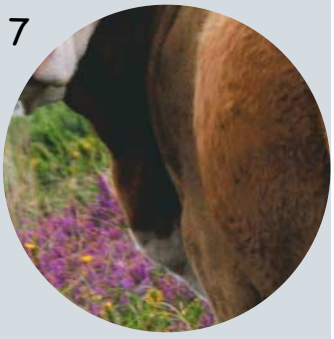

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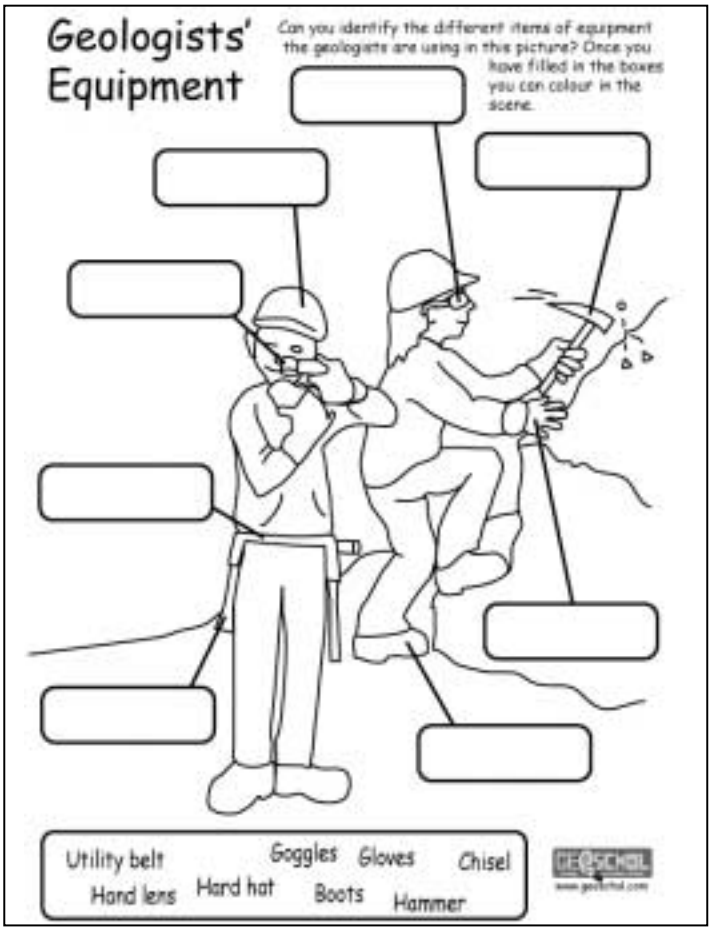
ANSWERS: a = 8 (bee); b = 5 (bird); c = 2 (dolphin); d = 4 (seal); e = 3 (slug); f = 9 (fox); g = 7 (cow); h = 6 (frog); i = 10 (caterpillar); j = 1 (spider).



Discovering Ireland's Rocks and Fossils

Fossil Word Search

Circle the names of **8** different types of fossil.
These can be forwards, backwards, down, or at an angle.

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

CORAL – an animal with tentacles that lived in warm oceans.
CYCAD – a primitive plant with cones.
DEER – a mammal whose males grew large antlers every year .
FERN – a plant that produces spores and no flowers.
GASTROPOD – a snail that lived in a spiral-shaped shell.
SPONGE – a soft animal that lives in the sea.
TETRAPOD – an early animal that walked on land on four legs.
TRILOBITE – a sea animal with an outer shell divided into segments.

'Discovering Ireland's rocks and Fossils – an activity book' by Adam Stuart Smith and Patrick Wyse Jackson is a book filled with fun and educational activities for children, helping them to learn about geology. Visit **www.geoschol.com** to learn more about Geology for Schools in Ireland. There you can also download individual activity pages or even a PDF of the entire book.

Answers to all activities are available online at: http://www.geoschol.com/activities.html

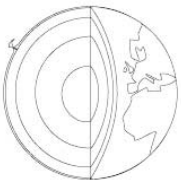
Missing Words

Complete the sentences by identifying the missing words in the box below and filling in the gaps.

Coal is a type of _ _ _ _ _ _ fuel.

The surface of the Earth is called the _ _ _ _ _.

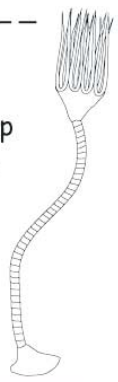
_ _ _ _ _ is a rock used for roof tiles.



Volcanoes produce _ _ _ _ and smoke.

Planet Earth is made up of several _ _ _ _ _ _.

Iron ores contain metallic _ _ _ _.



Fossils are the _ _ _ _ _ _ _ of dead plants and animals.

crust Slate layers
remains iron lava fossil

www.geoschol.com

Gaisce – The President's Awards
A Journey of Learning

By Brid Clesham

I AM a Chaplain in Dunmore Community School in Galway and have been working with Gaisce –The President's Award for the past 2 years. I find my role as President's Award Leader (PAL) both challenging and enjoyable and I am going to share my experience with you.

I am into my 3rd year of Gaisce and enjoying every minute of it. In a way I was somewhat familiar with the award when my son undertook the award while in Transition Year. I heard the many stories of his adventures and an update on what he was doing for his skills.

When I took over as a President's Award Leader I was aware of the many challenges that lay ahead – it was new territory for me and it was very rewarding when it came to discussing the different challenges. It opened up a wealth of possibilities for the young people in my care. It gave me an opportunity to engage more effectively with the young people and plan with them. New horizons were opened. It was so rewarding to see how these young people were gaining confidence and enjoying their experiences. I am reminded of the group of boys who took on Guitar lessons and the evidence of their learning and skills was evident on the night of their Transition Year Graduation – they sang and played music, not alone did their self-esteem improve, their talent shone. It was a new experience for them and they have actually established a band since.

I find the role rewarding in the sense that there is no element of competition involved – the young people set their own pace and their own challenges.

Photographs courtesy of Brid Clesham

From top left: Brid Clesham, President's Award Leader; Gaisce Participants; Climbing Croagh Patrick; Award Presentation.

Imagine my delight when I climbed Croagh Patrick. It was not a journey I took alone, the students kept my spirit going and helped me on that last lap. That trip to Croagh Patrick was a worthwhile experience and the students learned many things such as the importance of planning, training, team spirit and self actualization. A typical adventure journey involves the students preparing and training, making plans and working together in a cooperative spirit and they learn all about determination and perseverance throughout the experience.

The adventure journey has really made me appreciate how much the young people have been challenged by the whole experience. For some it has been their first time together away from home as a group. All sorts of skills come into play, team building, cooking, long walks, in some cases a hike, money management shopping and cooking are all parts of the norm. To see youngsters work as a team and make decisions isn't that what it's all about!

The interaction with people in their community as part of their community involvement reaped enormous rewards. Organising visits to the day centre, carol singing, linking up with St. Vincent De Paul and taking on tasks that will equip them for future life makes us all realise that no man is an island and in reaching out to others we're doing something for our community and getting an insight into how others live. The experience for the students in helping to teach computers to the elderly afforded a strong link with the local community. The whole challenge brought up so many new interests for so many in the different areas. The young people are eager to try new things and this I feel engenders a love for interests in later life. A sense of belonging and community was established. They felt a link with their community, they became more aware of the needs of the community.

What I like most about this National Challenge Award is that it requires persistence and commitment. I get to know the students in a different way. I have been part of their struggle at times and sometimes maybe all a person needs is a few words of encouragement from a Pal to continue on. Some girls as a result of their interest in the physical challenge took part in the Dublin City Marathon.

Looking back on the past two years I find my role as a Pal very enjoyable and indeed during the year when I managed to climb Croagh Patrick I found it so rewarding as I hadn't done so for 20 years! I got to know the students in a different way, way beyond the classroom. It has been very rewarding to meet up with parents during the year and especially on Awards night and see the look of delight when their son/daughter receive their award.

One young person who undertook a correspondence course in law as part of her personal skill found it so rewarding she has decided that is the career she wishes to pursue next year.

I have experienced first hand how many of these young people have matured throughout their experiences and made many new friends and are so eager to take on the next challenge. Relating with elderly people in the community helped to forge many links in the community and with that connection quite a few of the elderly people in the community attended the Transition Year Concert and indeed the Transition Year Graduation. That link is there and there is continuity in that link as the Silver Award challenges them to go that step further.

Gaisce empowers students to go beyond themselves and to achieve their very best. Indeed as a Pal I find participation and engaging with young people enjoyable and satisfying. I will finish with a few lines from Alyssa Rienne that capture the essence of Gaisce –

You know that voice somewhere inside you that says you can do anything?

Listen to it. That voice is your heart, your passion, your destiny speaking.

Believe in yourself. You are destined for great things.

Brid Clesham is a PAL at Dunmore Community School in Galway. 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

National Launch of www.ringbuoys.ie

(www.ringbuoys.ie will let the public report missing or damaged ringbuoys directly to a local authority so that they can be replaced without delay.)

WWW.ringbuoys.ie "is a public service offered by Irish Water Safety that will allow members of the public to report missing, stolen, located or damaged ringbuoys to the relevant local and harbour authorities across Ireland" commented Minister of State, Mr. Michael Finneran, TD, at its recent launch.

"This service will assist in reducing the number of tragic preventable drownings in all Counties. "The highly visible ringbuoys placed at many waterways nationwide not only serve as a warning to passersby of the potential risk associated with aquatic environments but also to deliver a lifeline in an emergency," added Minister Finneran, "the absence of a ringbuoy due to theft or vandalism can have tragic consequences when a member of the public needs to effect a rescue."

Local Authorities on their regular checks, particularly in urban areas, discover that Ringbuoys are often missing. Regrettably, there are also continuing incidents of malicious damage to these lifesaving appliances by irresponsible members of the public and there is a continuing need for the public, particularly late-night revellers under the influence of alcohol, to be made aware that damage or theft of such ringbuoys or the attached rope could result in the loss of life. Any person seen tampering or in possession of this lifesaving equipment should be reported to the Local Authorities and/or the Gardaí, who can enforce a conviction and a fine.

Irish Water Safety appeals to the public to assist in maintaining these vitally important lifesaving appliances in good condition at all times. This new website, www.ringbuoys.ie, developed by Kildare Water Safety Area Committee, has the potential to save

lives and we thank you in advance for any support you can offer to assist us to reduce drownings.

An average of 158 people drown in Ireland each year. Most of these tragic deaths happen inland, in rivers and lakes, on farms and in and around homes and these accidents are preventable.

Further Information: Irish Water Safety, The Long Walk, Galway, Tel 091-564400; Fax 091-564700; info@iws.ie; Leo Mahon, Chairperson, Kildare Water Safety: 086-814 6261; Brenda Wynne, PRO, Kildare Water Safety Area Committee: 085-1405850; Irish Water Safety Head Office: John Leech: 087-6789600; Roger Sweeney: 087-6789601

Arklow's Beautiful Beach & Coastcare Volunteers

By Corey Bateman

SOUTH beach, just outside Arklow Town, is not very big – in fact it is only about 1000 metres long – but it has been the focus of intense activity over the past two years. Arklow Coastcare began as a simple project to clean up a local amenity. And we do that. Every Thursday lunchtime we meet, often in appalling weather to fill black plastic bags with other people's beer cans, fast food wrappers, fishing lines and dog poo.

From the beginning, social inclusion was an important part of our objective. Volunteers from Sunbeam House and the National Learning Network make up the largest part of our enthusiastic pickers.

A year ago, a talk given by Karen Dubsky of Coastwatch inspired us to make a bigger contribution to coastal conservation. One of volunteers began collecting and recording samples of plant life on our beach. If we can encourage other people to caring for their coast to make similar observations the information could be vital to the documentation of climate change and its affects on our coasts. After a visit to the Sherkin Island Marine Station, we decided to enlarge our collection to include marine creatures and other coastal inhabitants.

In August last year we held a photographic competition for the public with the title "Wicklows' Beautiful Beaches". We hoped to encourage people to discover, or perhaps rediscover, the fun they could have on the beach. In spite of the dreadful summer weather and limited opportunity for photos of babies in sunhats and girls in bikinis, the response was terrific. Fifty pictures were chosen and displayed in Wicklow County Buildings during Heritage Week. Next year the competition will be bigger and better and will include a display of "found objects". We are hoping that an installation of driftwood, pebbles, shells and seaweed found on the beach will open people's eyes to the beauty around them – and make them less likely to litter.

We must be doing something right! Last year we received four awards : An Arklow Mayor's Award, The Coca Cola All Ireland Best Coastcare Group Award, The Wicklow Times People of the Year Award, and the beach won a Green Coast Award. Along with several grants, the money has enabled us to buy a large steel container where we keep all our tools safely – and it's a great place to shelter and chat when it rains.

Corey Bateman, Arklow Coastcare, c/o Arklow Town Council, Avoca River House, Northquay, Arklow, Co Wicklow, Ireland. Email: info@arklow-coastcare.com. Check out the the Arklow Coastcare website at: www.arklow-coastcare.com.

Photos courtesy of Corey Bateman

The stretch of coastline, which is the focus of attention of Arklow Coastcare.

Members of the Arklow Coastcare team.