SHERKIN COMMENT

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Facing the Camera

Mike Brown's Wildlife Photography

Little Egret
Photograph by Mike Brown

Contents

Editorial

"Deepnet" Survey Makes Stark Findings

By Matt Murphy

On August 17 2005, the European Commission introduced emergency measures to prohibit deepwater bottom-set gillnet fisheries to the north and west of Ireland and Scotland. This followed the publishing of results of a report, Deepnet I, on ghost gill net fishing i.e. nets that fishing vessels loose or discard overboard in waters below 200 metres in the above areas. It must be understood no Irish vessels were involved in these fisheries for monkfish, shark and crab. In the main, the vessels were Spanish owned and numbered about 25, which is said to be a conservative figure. In reality, no one, not even the EU, knows the true figure.

The Norwegian Fisheries Directorate funded the Deepnet I report. A team of 13 scientists, from Britain, Ireland and Norway were involved. Unlike any other European fisheries there were no management systems, information on catch composition, discard rates or gear lengths used, available to them. The group thus had to collect information directly from the fishing industry and related businesses such as net makers, fish buyers etc. in order to get an overview of the current status of gear being used, number of vessels and level of effort. The study showed that:

- There were large amounts of gear lost and also suspected widespread dumping of netting in this fishery.
- There is a need for retrieved surveys and mitigation measures to reduce the efforts of ghost fishing and
- Excessive soak times and gear lengths have been shown to lead to high discarding so that the lack of effective management measures is reflected in declining catch rates and the poor stock status of the species being targeted.

"Imagine 10,000 kilometres of that net fishing over 30,000 tonnes of fish per annum."

Following the above report technical staff from BIM completed an extensive retrieval survey on board the trawler "India Rose" during August – September 2005. The fishing grounds surveyed were at Rockall and areas around the Porcupine Bank. The survey recovered 648 nets with an estimated total length of 35-40 km. The state of the nets retrieved was generally poor and would suggest they had been in the water for quite sometime, yet they still contained huge catches of mainly crabs and assorted fish species. A total of 14,400 kgs of fish and crustacean species were caught in the recovered nets, of which 50% of monkfish and 70% of leafscale gulper shark were unfit for human consumption because of their condition.

The most disturbing aspect of this survey is that the nets that contained such tonnage of fish would have ghost fished on an ongoing basis. Each year they did so, they could have destroyed 100 tonnes of fish. It is said that these nets have a three-year life span but it is hard to believe that as they are plastic they rot in that time. They could fish for many years. In the USA it is assumed such nets ghost fish for 10-15 years and longer.

The Deepnet report suggests that each vessel fishing in the areas discards or loses up to 30km of net per trip and undertakes 4-5 trips annually.

Using this basis for the 25 vessels that fished annually, there could be many thousands of kilometres of nets ghost fishing. Imagine 10,000 kilometres of that net fishing over 30,000 tonnes of fish per annum. These figures show that ghost netting could be having a horrendous effect on the fish stocks.

The EU accepts that ghost netting is a problem because on 1st February 2006 they introduced a temporary ban on gillnet fishing. However since then the EU has excluded monkfish and shark from this ban in waters of 200 metres plus. This dilutes the effectiveness of the ban. Again the Spaniards seem to have got their way and politics has become more important than conservation. How can fishing nets used by the vessels differentiate between hake, monkfish and shark? It is essential that independent observers be placed onboard fishing vessels involved in these fisheries to get the facts.

Photo: ©

Lost or discarded nets can continue to "ghost" fish for three years or more, contributing to a decline in fish stocks.

Another major problem found during the BIM retrieval exercise, was the considerable quantity of gear left to fish on, estimated in one small area in the South-east of Rockall alone to be in excess of 300km. According to the Naval Service, who assisted the "India Rose" throughout the survey, and regularly patrol this area, this gear has been effectively fishing for up to 4 months without being hauled by the vessel in question. What one must ask is what tonnage of fish has been destroyed in that time?

Irish fishermen along the south coast also have a problem. They continue to bring in much discarded gear left by foreign vessels. At the moment, EU fisheries legislation has every kind of constraint on kilowatts, horsepower and towed gear etc. However, there are no constraints on passive gear.

BIM are to be congratulated on highlighting the horrendous issue of ghost netting. It is hoped they will continue to investigate this problem off the west coast and also include waters off the south coast. If the issue of ghost nets can be tackled there would be a major increase in fish stocks which would in time mean increased fish quotas for fishermen.

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

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SEABIRDS DOWN UNDER

Photos © Oscar Merne

Fairy or Little Blue Penguin.

By Oscar Merne

REGULAR readers of my articles in Sherkin Comment over the last sixteen years may have noticed that the great majority of these have been about coastal birds and their habitats in Ireland. This reflects my own particular interest in breeding seabirds and migratory waterfowl. Well, for this issue I've decided to write about seabirds again, but this time about southern hemisphere species.

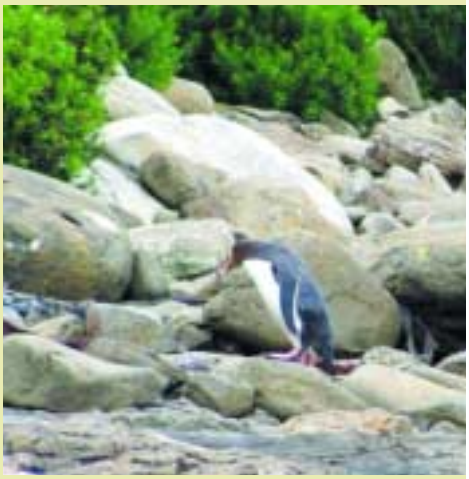
My wife and I spent the month of November travelling around the North and South Islands of New Zealand, and, among other things, we spent time looking at the many species of seabirds, for which New Zealand is renowned. Some 125 seabirds are recorded from the main islands, the seas around them, and the small outlying islands such as Chatham, Kermadec, Antipodes, Aukland and Campbell Islands.

The New Zealand seabirds are broken down into a number of groups, including albatrosses and mollymawks (smaller albatrosses), giant petrels, shearwaters, diving petrels, gadfly petrels, storm petrels, prions, penguins, tropicbirds, frigatebirds, gannets and boobies, cormorants and shags, skuas, gulls, terns and noddies. Finding all these seabirds during a relatively short visit to New Zealand is problematical. Many of them spend their time far out in the Pacific Ocean or the Tasman Sea, coming ashore only to nest, and many are restricted to the remote and inaccessible small islands. Others, like the Manx Shearwaters and Storm Petrels we have in Ireland, come ashore only on the darkest nights. One abundant but highly localised species, Hutton's Shearwater, breeds only at the snow line on the rugged Seaward Kaikoura Range, on the north-east side of South Island. Others are wanderers from the tropics or the sub-Antarctic, such as Bridled Terns and King and Gentoo Penguins. Others are migrants from the northern hemisphere, such as Arctic and Pomarine Skuas, Common and Arctic Terns. These last species enjoy two summers, in the northern and southern hemisphere, much as we did by visiting New Zealand in November!

With such a richness of seabirds it's hard to know where to begin, so I'll start with our penguin quest and then describe some of our other encounters in the next issue of Sherkin Comment.

From Christchurch on South Island, where we arrived in New Zealand from the Cook Islands, we set off south along the east coast, in search of two species of penguins, the little Blue and the Yellow-eyed Penguins. The former is quite common and has colonies around both main islands of New Zealand, as well as in southern Australia where we had seen them in Victoria and Tasmania last year. The latter are rare New Zealand endemics and are confined to Aukland and Campbell Islands and a few locations on the south-east coast of South Island. We headed for Oamaru, where both species are found close together. The Blue Penguins are nocturnal, so in daylight we went to the cliff-fringed headland south of the town, where there's a small Yellow-eyed Penguin colony, which is carefully managed by the Department of Conservation (New Zealand's equivalent to our National Parks & Wildlife Service). The Yellow-eyes tend to come ashore from their feeding trips late in the afternoon, and, sure enough, after some patient waiting, a few waddled out of the breaking surf and up the shingle beach to their nesting places in dense native shrubs growing on the steep cliffs. We were surprised at how well the birds could climb the very steep escarpment. The DoC had made it easy for human observers by putting a good boardwalk in place along the cliff top, leading to a well-placed observation hide. The Yellow-eyed Penguins are shy and easily disturbed, so no access to the beach and lower cliff is allowed. We found most of the visitors were equipped only with small digital cameras and no binoculars or telescopes. I set up my telescope and soon had a queue of people waiting for a closer view of the penguins!

After sunset we went down to the harbour at Oamaru, where there is an excellent visitor centre in the main Blue Penguin colony. Here one can learn all about the biology and ecology of penguins, and the work which is being done to conserve the various species. Outside there's a small "grandstand" where visitors can sit and watch the Blue Penguins coming ashore, aided by subdued floodlighting. Up to about 200 birds can be seen on a good night. The Oamaru colony was established as recently as 1993 and is flourishing, thanks to the local conservation efforts. Away from the visitor centre we pottered about in the dark and found quite a few Blue Penguins coming up slipways and harbour beaches, crossing the road (and even a railway track) to their nesting places in the bushes. We found other Blue and Yellow-eyed Penguin colonies at various other locations in South Island.



Yellow-eyed Penguin making its way to its nest in the bushes.

Sign asking people to avoid disturbing Yellow-eyed Penguins at the nesting places.

The third penguin species on South Island is the Fiordland Crested Penguin – a more typical penguin than the other two, with contrasting black and white plumage, and a fine yellow crest similar to that of Rockhopper and Macaroni Penguins from the sub-Antarctic. Like the Yellow-eyed Penguin, this is a rare endemic, which is found only in the dense rain forests on the coast of south-west South Island. We encountered them in two locations. First while on a half-day cruise in Milford Sound, a magnificent inlet in Fiordland National Park, where the snow-capped mountains plunge 1,700 metres almost vertically into the sea. Several birds were loafing about in the sunshine on some rocks along the shore. Further north on the west coast of South Island, 30 km NE of Haast, we trekked through dense coastal forest to Monro Beach, where we found another small colony and enjoyed the antics of the penguins as they surfed onto the sandy beach and waddled into the trees.

To be continued….

Yellow-eyed Penguin observation hide at Bushy Point, Oamaru, South Island, New Zealand.

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

Platinum Group Metals

By Anthony Toole

METALS such as iron, cobalt and nickel have many common uses and are familiar to nearly everyone. Cobalt, for example, is used extensively in magnets, nickel in cutlery and most coinage, while iron has been the dominant metal in society for millennia. These metals, which typify most people's idea of what a metal is, are relatively plentiful in the earth's crust, and much more abundant in the molten core, where they are responsible for the planet's magnetic field. Because of the structure of their atoms and their resulting positions in the Periodic Table, they are examples of what are often referred to as transition elements.

Closely related to these three metals are a group of six others, which though similar in atomic structure, are among the most rare. Taking their name from the best-known member, and the first to be discovered, they are collectively known as the platinum group.

Platinum has a very high melting point and is extremely unreactive, even when heated.

The natives of South America used it for many centuries before the coming of the conquistadors. The Spaniards, however, being interested only in gold, failed to appreciate its value. An older example, and the only one known from the ancient Mediterranean world, consists of an Egyptian casket dating from the seventh century BC. Its scarcity is such that it carries a price tag normally twice that of gold. About 150 tonnes are produced each year, half of which finds its way into jewellery. Most of the rest is employed as a catalyst, either in industry or in the exhaust pipes of cars.

A typical catalytic converter uses about two grammes of platinum supported on a ceramic base. This is finely powdered to give it an effective surface area of about the size of a football pitch. The exhaust gases are adsorbed onto the surface, where the pollutants, such as carbon monoxide, unburned hydrocarbons and nitrogen oxides, are converted into the less harmful products, carbon dioxide, nitrogen and water vapour.

About 10% of platinum is used, along with cobalt, as a magnetic alloy, in the hard disc drives of computers. The fuel cells now being developed, which should eventually power the cars of the 21st century, and so lower this source of pollution, have electrodes made from platinum alloys.

The catalytic properties of platinum are shared with the other metals in the group. Palladium is also present in catalytic converters. In fact it is now used to a greater extent than platinum, as it has proved better at removing unburned hydrocarbon gases that are expelled from cold engines. In recent years, tiny capacitors made from Palladium have been used in increasing quantities in televisions, mobile phones and computers. Recycling of these devices after use is a major source of this rare metal.

One of the most unusual properties of palladium is its ability to absorb something like 900 times its own volume of hydrogen gas. This enables it to be used to purify hydrogen and also suggests potential for storage of the gas in a future hydrogen-based economy.

Rhodium is particularly good at converting the acidic nitrogen oxides from car engines into harmless nitrogen. 80% of the 16 tonnes of rhodium manufactured each year is used in catalytic converters, with most of the rest going into industrial catalysts.

Ruthenium is used, along with iron, the common metal it most closely resembles, to speed up the production of ammonia. It can withstand highly corrosive conditions and is alloyed with titanium to make electrodes for the manufacture of chlorine and for use in undersea pipes.

Like the other platinum group metals, ruthenium is non-toxic. However, traces of a radioactive isotope, produced by nuclear reactors in normally insignificant quantities, have been found to concentrate in certain edible seaweeds. In particular, a seaweed harvested for food in South Wales has been contaminated by radioactive ruthenium from Sellafield. Among the many known dangers of the nuclear industry, this problem was not foreseen.

The least abundant of the elements of the platinum group, osmium and iridium, are also the densest of all metals. Their densities are nearly three times that of iron, with osmium having marginally the higher of the two.

Osmium is extremely hard, and has in the past been used to make clock bearings, record player needles and fountain pen nibs. Changes in technology have led to a decrease in demand for osmium in these fields, with the result that less than 100 kilograms of the metal are now extracted each year. Osmium oxide, however, has found its way into forensic science as a staining agent for fingerprints and DNA.

Iridium is the least abundant of the platinum metals, and is among the ten most rare elements on earth. It is the most corrosion-resistant of all metals, and like ruthenium, is alloyed with titanium for use in corrosive environments and in aircraft engine parts.

Perhaps the most interesting fact about iridium lies in its high concentration in a thin layer of rocks, found worldwide, marking what geologists refer to as the Cretaceous-Tertiary boundary. The time the layer was formed coincides with the period during which the dinosaurs became extinct. As iridium is found in high abundance in meteorites, this lends support to the theory that the dinosaurs died out, at least partly as a result of a meteor impact with the earth about 65 million years ago.

The unreactive natures of the platinum group metals mean that they can be found in rocks in a pure form, uncombined with other elements. They are present in such tiny quantities, however, that their extraction from these sources is uneconomic. They are mostly obtained, therefore, as by-products of the extraction of nickel from its ores.

So good are these metals as catalysts that approximately one-quarter of all industrial products employ one or more of them at some stage in their manufacture. An important characteristic of catalysts is that they are not used up during a chemical reaction. They can therefore be removed after use, cleaned up and re-cycled. This is extremely important when one considers their initial cost and scarcity.

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

ANGELSHARK

(Squatina squatina) in Irish Waters

A juvenile angelshark.

By Declan T. Quigley

ANGELSHARKS belong to a small family of sharks (Squatinidae) which is represented by a single genus (*Squatina*) presently containing about 20 known species. They are all benthic sharks mainly found on mud and sand in cool temperate seas, ranging from the shallow intertidal zone (5m) down to the continental shelf (>150m). Poorly known outside Europe and the northeast Pacific, they appear to be absent from most of the Indian Ocean and central Pacific. Only one species of angelshark (*Squatina squatina*), also commonly called "monkfish" (not be confused with the commercially important monkfish species *Lophius piscatorius* & *L. budegassa*), is known from Irish waters. *S. squatina* ranges from Norway to Mauritania, including the Mediterranean and Black Seas. Two more species are also known from the Mediterranean Sea and northwest Africa (southwards to Angola): Sawback Angelshark (*S. aculeata*) and Smoothback Angelshark (*S. oculata*).

Photos: © Dingle Oceanworld

The general body form of angelsharks is that of fishes midway between sharks and rays.

The general body form of angelsharks is that of fishes midway between sharks and rays. However, they are distinguished from both of these elasmobranch groups by their laterally sited gill slits and terminal mouths. Usually found partially concealed in sand or mud during the day, they swim strongly off the bottom at night. They are ambush feeders, snapping up unsuspecting prey (crustaceans, molluscs & flatfish) in their cavernous mouths with lightening speed.

Angelsharks are ovoviparous (aplacental viviparous – obtaining all nourishment from a yolk sac before birth). In the western Mediterranean (Tunisia) female *S. squatina* reach maturity at 128-169cm T.L. and males at 80-132cm. Following an estimated minimum gestation period of one year, *S. squatina* produces litters of 7-25 pups (20-30cm T.L.) during December to February in the Mediterranean and later in the eastern North Atlantic. Although it is thought that the pups are probably born during the summer (June to July) in northern European waters, there is, as yet, no incontrovertible evidence that *S. squatina* actually breeds in Irish waters. However, there are a few recorded incidents of adults giving birth after being captured by anglers and recently during captivity at Dingle Oceanworld. Research suggests that Squatinids probably only reproduce biannually (due to a phenomenon called semi-delayed vitellogenesis), and this hypothesis along with their long gestation period and low fecundity makes them (in common with many other elasmobranch species) extremely vulnerable to overexploitation. Indeed, the distribution and abundance of *S. squatina* is considered to have declined severely throughout its range and there are proposals for its legal protection in Britain. In 2005, the Irish Specimen Fish Committee (ISFC) suspended the angelshark from its list of eligible species following a significant decline in rod & line-caught specimens (weighing >22.68kg) over the last half century (Figure 1). Although the ISFC blames commercial fishing pressure, the species is not commercially targeted in Ireland and there is no evidence that it constitutes a significant proportion of either by-catch or discards. Notwithstanding the fact that most anglers now return their catch "alive", perhaps ironically, the limited areas where the species appears to be found (primarily Tralee Bay & Clew Bay - Table 1) seem to receive significant angling pressure.

Since 1970, the Central Fishery Board (CFB) has been co-ordinating a marine sport fish tagging programme in Irish waters. Up to 2001, a total of 1,107 angelsharks have been tagged (939 in Tralee Bay & 70 from Clew Bay). To-date, a total of 187 recaptures has been recorded, representing a return rate of 18.3% which is regarded as extremely high for any tagged fish. Significantly, nearly half of the recaptures have been taken by anglers (47.6%); followed by commercial trawlers (19.3%), tangle nets (16%) and gill nets (5%). Only 5 tags were found washed up on the shore, indicating very good tag retention rates. Nearly 96% (179) of the recaptures were taken in Irish coastal waters and only 4% (8) from abroad. Tralee Bay accounted for 51% (96) of the total recaptures, reflecting the localised distribution of the species. The significant decline in catches in Tralee Bay is reflected in the numbers of fish tagged between the five-year periods 1987-91 (320) and 1997-01 (16) despite the fact that angling (and presumably commercial fishing) effort was relatively constant. It is unclear what happened between 1992-96.

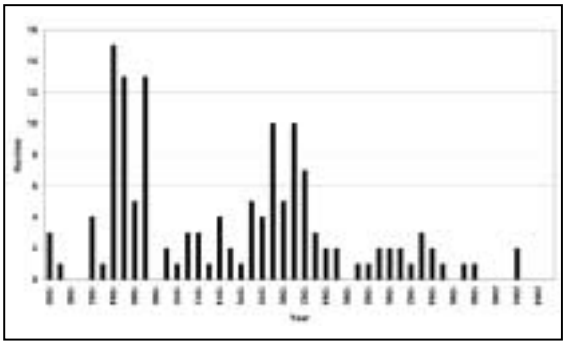


Figure 1. Annual numbers of specimen angel shark (1958-2005)

Table 1. Capture locations & maximum weight (kg) recorded.

Location	Number	%	Max. Wt. (kg)
Tralee Bay	99	71.2	33.18
Clew Bay	32	23.0	31.36
Kilrush, Co Clare	1	0.7	28.97
Galway Bay	1	0.7	26.36
Hassins, Co Donegal	1	0.7	25.45
Lough Swilly	1	0.7	25.00
Kenmare Bay	1	0.7	23.41
Broadhaven Bay	1	0.7	23.18
Newcastle, Co Wicklow	1	0.7	27.05
Cahore, Co Wexford	1	0.7	23.07
Total	139	100.0	

The longest number of days at liberty of a tagged angelshark was 4,352 days (almost 12 years). This fish which was originally tagged in Tralee Bay, was recaptured only 3km north of Kerry Head, and following release, was recaptured again 27 days later off Bunmahon, Co Waterford, some 345km away. At least 3 further fish were at liberty for over 10 years. These 3 fish had been tagged in Tralee Bay and were recaptured in the same general area.

The longest distance travelled by a tagged angelshark was 1,160km. This fish was tagged in Tralee Bay and was recaptured by a trawler off San Sebastian (Spain) in the Bay of Biscay. It is evident from the recapture data that the species is long-lived and is capable of long migrations. However, in general, it seems that most fish remain in Irish waters and indeed, relatively close to their initial tagging location.

The angelshark tagging programme also revealed a significantly skewed sex ratio of males to females (3.75:1 in Tralee Bay) and that relatively few very small fish were being taken (Table 2), suggesting that the juvenile nursery area may be located elsewhere. It has been hypothesised that the species may undertake a summer-time northward migration into UK and Irish waters, supplementing a shoreward movement from deeper offshore waters, but there is, as yet, little evidence to confirm this. In the Mediterranean, there is evidence that female angelsharks (*S. oculata*) migrate inshore during their gestation period.

Table 2. Size frequency distribution

Size Group (kg)	Number	%
22-23	21	15.1
23-24	34	24.5
24-25	29	20.9
25-26	22	15.8
26-27	12	8.6
27-28	8	5.8
28-29	5	3.6
29-30	1	0.7
30-31	5	3.6
31-32	1	0.7
32-33	0	0.0
33-34	1	0.7
Total	139	100.0

The maximum authenticated T.L. of *S. squatina* is 183cm (for males) and 244cm (for females) and a maximum weight of 80kg. The Irish rod & line caught record weighing 33.2kg, was captured in Tralee Bay (Fenit) during June 1980.

Declan T. Quigley,
Dingle Oceanworld
(Mara Beo Teo), The Wood, Dingle,
Co Kerry. Mobile: 087-9080521;
Email: declanquigley@eircom.net

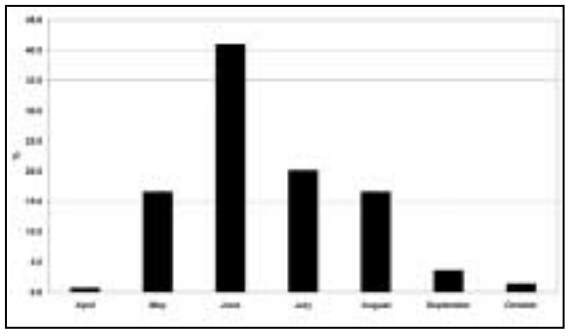
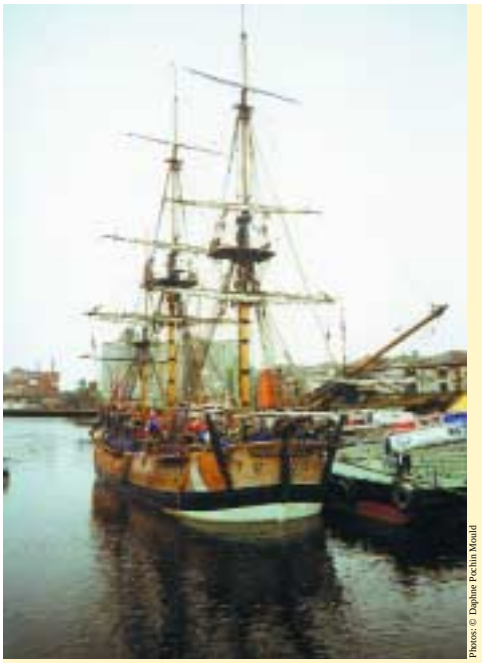


Figure 2. % monthly catch of specimen angle shark (1958-2005)



Photos: © Daphne Pochin Mould

Sailing has had a great influence on the English language, with many words and phrases. Replica of Captain Cook's "Endeavour" in which he explored the world of the Pacific and Australia in the 1770s.

A Sea Salted Tongue

By Daphne Pochin Mould

Let us recall the thousands of men who sailed the oceans and gave so much to the English language.

"So they fought, explored, discovered, so they sailed from day to day;
When the Lizard dipped behind them there was none might bid them stay
With Marconi yet undreamed of, none to call, or heed their prayers
They had none of our good fortune: we, alas! have none of theirs"

"In an age of swift invention it is frequently believed
That the pressure of a button is as good as word achieved;
But the optimist inventor should remember, if he can,
Though instrument be perfect, there are limits to the man.

From "The Old Way", R.A. Hopwood R.N. 1916

THE pilot enters the day's flying in a personal log book, the geologist logs a sequence of rock strata, the enquirer logs onto the internet, the bloger adds to a web log; do any of these users of this forest of phantom logs, think of the old, real log of a tree? Welcome aboard the ship. Tie a long rope, knotted at regular intervals, to the big branch of a nearby oak which you have cut and trimmed and take it to sea with you. When the vessel is moving, heave the log overboard and let the rope run through your hands. Count the knots over a given period of time and you have the ship's speed in knots. Speed, not distance. When some one on board was able to write, the speeds, distance run, weather, sails, anything of interest was written down in a log book. Whence all our present day "logs" derive.

The "knot", as known today, is a speed of one nautical mile per hour. Nautical miles are longer than statute ones, 6080 ft as against 5280. The nautical mile is equivalent to one degree of latitude. Both ships and aircraft use nautical miles for distance and knots for speed.

Apart from being in a snug harbour, a ship is safest out at sea. Nearing land there are problems, hidden rocks and reefs, and dangerous sandbanks. To find out how much water is under your keel, you must go forward to the bow of the ship and start "swinging the lead". This is a heavy lead weight attached to a long rope, marked in fathoms – the mariners measure of depth (1 fathom = six feet). Swing the lead so that it falls well ahead of the ship. As the ship comes up to where the lead entered the water, the rope will be vertical over the sea bottom and you can sing out the depth.

The much-loved American author, Samuel Langhorne Clemens (1835–1910) spent a happy period as a pilot on a big Mississippi steamboat. Big rivers in flood or drought, with shifting bars of sand and gravel, are tricky to navigate, and the lead line was kept in constant use. The calling out of the different depths became a background to daily life, including "Mark Twain", two fathoms under the keel (12 feet). So when he turned to writing, it was not as Samuel L. Clemens that we got to know him (and Tom Sawyer and Huckleberry Finn) but as Mark Twain.

Ships must be steered to destinations, and it wasn't so long ago that the rudder came into use. Bronze Age people in these islands could and did build wooden seaworthy ships but they were steered by a steering oar on the right hand side (looking forward). Thus we have steering board "starboard". The other, left, side used to be called larboard, but is now called port. The starboard side shows a green light, the port, a red one. In darkness, you can judge whether another ship is coming or going. Aircraft use the same terminology. To work out the starboard side of an aircraft, visualise a Viking ship and its right hand steering oar. Those who have sailed such craft transAtlantic tell me that they work perfectly well.

For thousands of years, ships have gone about their business by oar and sail, so nearly all our sea words are about sails. It is only 200 years ago that the first engines were tried out in ships. So we still talk of "setting sail" when we mean "start engines" and of "sailing" when we are actually motoring over the ocean. But look at an old square rigger and her network of rigging. How could you ever get to "know the ropes"? There are two sorts of rigging – standing rigging, which is part of the supports of the masts and is fixed, and running rigging, which controls the sails. A crew must know the ropes so as to haul on the right ones in storm and darkness. The square sails are hung from spars called yards: "sun's over the yardarm" midday, time for the meridian dram (drink), "To be taken aback" can be violent and damaging, when, for whatever reason, the wind strikes the sails violently from the front – similar to knocking somebody backwards. "Taking the wind out of a persons sails" is gentler. The ships glide to a halt when the wind drops or is masked by, for stance, a very large freighter up wind and close to you. Sailing ships cannot go dead against a head wind, though some can sail very close to the wind and get away with it. But progress can be made by tacking, following a zig-zag course angled across the wind, and gaining a little forward with each zig and zag. So we often speak of "trying a new tack".

Small boats are steered by a tiller, a bar directly attached to the rudder, and bigger boats have the familiar wheel. Lately I heard a man speaking of someone "taking the tiller" of a sporting, land-based club, and we often hear of some one "taking the helm" of a multinational company, never having touched a ship's wheel, which is what it means. Some early motor cars had tiller steering before they went over to the easier wheel. The English adage "Don't talk to the man at the wheel" is about a ship's wheel but even more important in these days of mobile phones and chatty passengers.

Ships carry anchors so they can ride to a secure mooring, and we have "anchormen" (and women) of talk and TV shows to hold all the various items together. Gay Byrne is the supreme example of an anchorman in radio and TV.

Ever "clear the decks for action"? The old wooden ships of Nelson's day were floating gun platforms. In ordinary life, the ship was partitioned off into various cabins and what-have-you. At action stations all the partitions were quickly taken down, leaving the whole deck clear for great muzzle-loading cannons. A lucky hit from the enemy could smash into one and set it rolling, a "loose cannon" – a deadly monster.

And it was Nelson who turned a "blind eye". The signal flags on the commander's ship ordered him to break off the action, but he put the telescope to his blind eye, saying "I see no signal" and went on to score a victory.

Aviation has uplifted marine terms into the oceans of the air. Whence "aeronautical", from the Greek for a sailor, coming to us from Latin. An "astronaut" is a sailor of the stars, a "cosmonaut" a sailor of the cosmos, the universe. This salty old language is now the official, international language of the air. "Ship shape and Bristol fashion".

But never "plain sailing". It does not exist. The word is "plane", not "plain" and it means flat earth sailing, using a map based on the idea that the round earth could be shown on a flat, plane drawing. Not till Mercator (1512-1594) devised a projection, a way of drawing a map that allowed for the earth's curvature, could the user plot an accurate course to where one might wish to arrive.

"Starboard": Details of the steering oar of the "Icelander", during an overhaul.

"Swinging the Lead": Lead line for measuring depth of water under ship.

"Getting to know the ropes": Each one has its own special function Danish sail trainer "Danmark".

Met Eireann's Voluntary Observers

By Joe Lyons

SINCE the early 19th century hundreds of voluntary observers have been measuring temperatures, rainfall and other meteorological variables on a daily basis in Ireland. From the start, this data has been analysed by the relevant authorities to produce descriptions of the various aspects of Irish climate for use by a wide variety of people and organisations to contribute to improvements in the economy and to the safety of the Irish people. In more recent times, the importance of good climatological records has increased with the concerns regarding global climate change introduced by man himself. With the establishment of the Irish Meteorological Service in 1936 a new era of hourly so-called synoptic observations began. However, the daily readings (of rainfall and temperature especially) from the much more dense observational network of voluntary observers has continued to be the backbone of climatological work within the Meteorological Service (now called Met Éireann)

Met Éireann maintains a network of synoptic weather stations throughout the country – some are manned 24 hours a day, some are automatic while others implement a combination of manned and automatic operations, which record hourly values of pressure, wind, temperature etc. These are sufficient for normal weather forecasting purposes. But a much higher density of observations is needed to define the long term climatology of the country – the detailed, localized variation of parameters such as temperature and rainfall over periods of many years.

This need is met by the climatological network. The stations in the climatological network are divided into two categories – (a) rainfall stations, numbering about 500 at which daily falls of precipitation are measured, and (b) about 75 'full' climatological stations, which in addition to daily precipitation also record maximum and minimum temperatures, sunshine duration, and various other parameters. The weather station established at Sherkin Island Marine Station in July 1972 falls into the latter category. Sherkin Island entered a new era in 2004 when the station was further enhanced with the installation of a Met Éireann AWS (automatic weather station) called TUCSON (The Unified Climatological & Synoptic Observing Network) (see *Sherkin Comment No. 38*).

Photo: © Robbie Murphy

Of the stations in the climatological network, 75 of them are 'full' climatological stations, which in addition to daily precipitation also record maximum and minimum temperatures, sunshine duration (see above), and various other parameters.

The TUCSON stations will enhance both the climatological and synoptic network of stations. They will cater for the needs of those working in the area of environmental protection, forecasting, and climate studies for many years to come. In the areas which make use of long time series of data (including planners and climate change researchers) it will help ensure the continuation of the observations begun long before the electronic era and which have been sustained to date by a sizeable band of dedicated volunteers, for which Met Éireann and the country will be forever indebted.

However, despite such technological advances, for the foreseeable future the voluntary observers will remain an indispensable element in monitoring Ireland's weather and climate. Only through their efforts can Met Éireann continue to obtain the localized weather information.

Met Éireann are always looking for new locations and dedicated observers to measure the various meteorological parameters. The actual task requires a certain commitment although it is neither time consuming nor difficult. Ideally, we would prefer if a climatological station could provide long term records for a particular area. The four most important requirements, which must be met, are set out below:

- Observations must be made each day at 0900 Greenwich Mean Time (9a.m. in Winter and 10a.m. during Summer);
- The instruments in use must be of a standard design and where applicable, must be certified by the appropriate body (instruments will normally be supplied by Met Éireann);
- The instruments must be correctly set up on a grass plot which is on generally level ground away from the immediate influence of obstructions such as fences, plants, trees or buildings;
- All data recorded should be returned to Met Éireann on the appropriate forms following the end of each month.

Met Éireann would prefer if data could be provided over a *long-term* period. For a weather record to be of full value it must have been maintained over a very considerable period. When, for instance, reference is made to mean values of meteorological elements for a particular area the mean is an average calculated over a period of thirty years, and for the study of climatic change successive means for successive thirty year periods are required. Sherkin Island completed its first thirty years in 2002, but some of our stations have been in operation far longer than that. The Ordnance Survey Office at Phoenix Park in Dublin, for example, which when the Irish Meteorological Service was established in 1936 had already been keeping records for 100 years. Markree Castle in Co. Sligo is another notable weather station. In the 1830s the Cooper family had established at Markree one of the best equipped astronomical observatories in Europe and with it, a weather station. Up until recently this station continued to be operated by the Cooper family, and in April 2005 this station was replaced by a TUCSON AWS ensuring the continuation of one of the most valuable meteorological records in the country.

If you know anybody who may be interested in becoming a climatological observer or who may be willing to 'host' one of our TUCSON Automatic Weather stations, please contact Joe Lyons on (01) 8064279 or Gerard Griffith on (01) 8064256.

Mr. Joe Lyons, Met Éireann, Glasnevin Hill, Dublin 9, Ireland.
www.met.ie

CLIMATOLOGICAL & SYNOPTIC STATIONS

LUNDY

Another Special Island

By Ben Sampson

LUNDY ISLAND lies about 11 miles north of Hartland Point off the north Devon coast and is surrounded by England's only statutory Marine Nature Reserve (MNR). Designated in 1986 under the Wildlife and Countryside Act (1981), the 14km^2 reserve contains the finest example of rocky reefs in Britain, with an amazing diversity of sea life including some very rare and fragile species. Above the tide line, the granite island rises steeply to a plateau at about 100m altitude. Heathland is the dominant habitat and the western cliffs are home to the largest seabird colony in southern England.

The greatest diversity of plant life is found on the east side of the Island, sheltered from the prevailing winds. It is here that you can find Lundy Cabbage and an associated insect, the Bronze Lundy Cabbage Flea Beetle, both unique to this small island as well as numerous other scarce plants.

Although plant life on the west coast is battered by fierce Atlantic storms, lichens thrive in the clean air, so much so that we have more golden hair lichen here than can be found in the rest of the world combined. In the spring and early summer the cliffs come to life with guillemots, razorbills, kittiwakes and larger gulls, fulmars, shags, manx shearwaters and puffins, all setting up temporary home. The latter two species have been in serious decline for at least 50 years and were looking like they might be lost from Lundy altogether. Being burrow nesting species, their eggs and chicks are vulnerable to attack from land based predators, especially rats which were accidentally introduced to Lundy at least 200 years ago. A massive conservation project has successfully removed all the rats with the last being seen in February last year, allowing the puffins and shearwaters to raise their first chicks for over 30 years – seeing these fledglings has been the highlight of my time on Lundy.

Photos: © Lundy Marine Nature Reserve

The 14km^2 of England's only statutory Marine Nature Reserve contains the finest example of rocky reefs in Britain, with an amazing diversity sea life, including the Common Lobster.

Why Lundy?

Underwater, geography accounts for much of the diversity, with the Gulf Stream stabilizing the sea temperature and warm water from the Mediterranean reaching the surface in the area. Indeed, many of the species found here such as the sunset cup coral are more typical of the Mediterranean, and are right at their northern limit of distribution.

The physical presence of a 3 mile long lump of granite sticking out of the sea also results in the MNR (and Island alike) being exposed to a very wide range of physical conditions, something that you can't help but notice when living in such a dramatic place. The west side is exposed to the full force of Atlantic waves while in the lee of the Island, the east side is considerably more sheltered. Likewise, headlands and outlying reefs are subject to very strong tidal currents as water surges in and out of the Bristol Channel. This range of physical conditions has a direct impact on the distribution of species, with only the most robust being able to survive the harsh environment of the west coast. Here barnacles and limpets dominate the steep rocky shores, with a short turf of sea squirts, bryozoans and sponges below the low tide mark.

It is on the east side of the Island that the marine life is at its most spectacular. The shores are covered in a thick carpet of seaweeds leading down to a kelp forest around the extreme low tide mark. All five British species of cup coral are found here and delicate soft corals, pink sea fans and a variety of erect branching sponges can be found in the deep, sheltered conditions. Sea caves and rocky overhangs add to the diversity of habitats and grey seals use the remote caves and beaches for pupping. Rocky pinnacles off the east side of the Island plunge to a sandy seabed perforated by burrows of the bizarre red band fish.

Why warden nature?

With a largely natural environment, the aim of my job is to minimise human impact, in the main part by informing and educating users as well as enforcing byelaws and zoning rules. Carelessly placed lobster pots and anchors can easily destroy slow growing, long-lived species such as sea fans, as can careless divers and in the past, souvenir collecting was a problem. Speaking to all visiting dive groups and maintaining a regular presence on the water in my patrol boat have overcome many of the potential problems and in January 2003 a "no take zone" was designated, the first in the UK for conservation purposes, preventing all fishing in a 3.3km^2 area off Lundy's east coast to protect the most diverse and sensitive marine communities. Although many of the animals we are protecting are slow growing we have already seen a threefold increase in the number of large lobsters within the no take zone.

With human impact minimised as much as is practicable, the MNR provides an excellent area to study natural environmental change and it is evident that many of the species have declined since the area was first 'discovered' by divers in the late 1960s. Sea fans in particular were shown to be in a poor condition 5 years ago, with many dead and dying although a repeat survey this summer has shown some recovery. The rare sunset cup coral has also suffered a decline in recent years. Given the distance from the mainland, it is unlikely that anthropogenic contamination is to blame and hopefully natural environmental cycles will lead to their recovery in the future – with continued research we hope to learn more about this small patch of sea, the life it contains and in the process reveal a little more of the bigger picture.

Lundy Cabbage is unique to this small island, as are numerous other scarce plants.

A Lundy seal moulting its soft woolly fur which has kept it warm in its early months. The fur, called lungo, is replaced it with tough hair.

Ben Sampson is a former Lundy Marine Nature Reserve Warden, Lundy Island, Devon, UK and Sherkin Island Marine Station volunteer (1994).

A Spotlight on World Environmental Matters

by Alex Kirby

Wind Turbines Harming Birds

Between August and December 2005, four white-tailed eagles were found dead on Smøla, a remote Norwegian island group, killed by wind turbines: two of the eagles had been cut in half, apparently by a turbine blade. Almost 30 other eagles did not return to nesting sites within the wind farm area. Conservationists fear UK wind farms could be similarly harmful to native wild birds and migrants. The RSPB says much of the wind park is rarely visited, so other deaths may have gone undetected. The species, Europe's largest eagle, is found in significant numbers on Smøla, one of a set of islands about six miles off north-west Norway. It is also starting to thrive in the Western Isles of Scotland after a 30-year reintroduction project. Wind farm construction there is thought likely too.

Rating Our Environmental Performance

Ireland is the tenth best country in the world at tackling domestic and global environmental problems, US-based researchers say. The team, from Yale and Columbia universities, rated 133 countries on how they coped with 16 global and domestic problems and met domestic and world targets. New Zealand was the winner, followed by Sweden, Finland and the Czech Republic. The poorest countries, mainly in Africa, came last mainly because their governments were too poor to do anything about drinking water, indoor air pollution, sanitation and loss of forests. The UK was fifth overall, the US twenty-eighth.

Stopping Research to Save Money

Four leading wildlife research centres in the UK face closure in an attempt to save public funds — a cost-cutting measure which has dismayed many conservationists. The expertise of 200 wildlife scientists is being jettisoned to save a little more than £1m a year. The Natural Environment Research Council plans to shut four of the laboratories which make up its Centre for Ecology and Hydrology. One is the Monks Wood research centre in Cambridgeshire, internationally renowned as a centre of excellence in ecological research. The other three are in Scotland, Dorset and Oxford.

Coming Off the "Extinct" List

Comeback kid or what? The world's last wild horse is (probably) less extinct than we thought. An international working group coordinated by scientists from the Zoological Society of London has recommended reclassifying the Mongolian Przewalski's horses, previously categorised as "extinct" in the wild, to "endangered" on the IUCN-World Conservation Union Red List of threatened species. From 31 horses in captivity in 1945, by the early 1990's there were more than 1,500 — enough for reintroductions to Mongolia to start. Now there are 248 free-ranging Przewalski's horses in the wild. The ZSL says: "If the recommendation is accepted by IUCN, this reclassification will be a milestone for large mammal conservation."

Wave & Tidal Power

A report by the Carbon Trust, an independent company backed by the UK Government, says Britain could lead the world in the exploitation of marine energy, provided it is prepared to invest. The report says wave and tide power could provide up to one-fifth of the UK's current electricity consumption. Energy from the ocean could ultimately become as cheap as conventional power. Apart from producing cheap energy, the Trust says, wave and tidal power could make a significant contribution to tackling climate change by reducing greenhouse gas emissions.

Calls for Plans to Dispose of Radioactive Waste

Nirex, the company with the job of working out how the UK can manage its radioactive waste, is calling for plans to dispose of it. The company believes 241,000 cubic metres of intermediate-level waste and 1,340 cu mt of high-level waste are awaiting disposal. Using figures from 2004, it says high-level waste has fallen by 11% from the 1,510 cu mt found in 2001. Anyone directly exposed to high-level waste would die within days. Intermediate-level waste rose by 1.7% over the same period, Nirex says, and low-level waste by 35% — because of recent declarations of suspect contaminated land, according to the company. No disposal route has been developed yet for disposal of intermediate and the very long-lived high-level waste.

Garden Pesticide & Male Fertility

US researchers say a widely-used garden pesticide may damage male fertility by suppressing levels of the sex hormone testosterone. The chemical, chlorpyrifos, is allowed under EU regulations for use in agriculture and garden insecticides. But it has been strictly controlled in the US for five years, because scientists are worried that it could affect brain function. Measurements of by-products of chlorpyrifos in males undergoing fertility treatment showed those with the lowest testosterone levels had the most pesticide by-product in their systems.

Shrinking Sharks!

More evidence of the remorseless battering we are inflicting on marine life comes with the news that the world's biggest fish is shrinking. Whale sharks spotted off the coast of Australia are getting smaller, researchers say, with the average size recorded by observers falling from 7m to 5m within a single decade. Mark Meekan, of the Australian Institute of Marine Science, said: "If you consider that the sharks probably aren't sexually reproductive or mature until they're 6 or 7m long - that's a very worrying sign." The sharks are still the world's largest fish, but their supremacy appears to be in jeopardy. Caught for food in parts of East Asia, it looks as if the species is losing some of its largest representatives.

Environment Beyond Rescuing

The renowned scientist and environmental writer James Lovelock says he fears climate change has passed the point of no return, and the environment is beyond rescuing. Professor Lovelock is probably best known for the Gaia Hypothesis, the theory that the Earth is a self-regulating organism. His latest book, *The Revenge of Gaia*, speaks apocalyptically of the changing climate making the planet seriously ill, "soon to pass into a morbid fever that may last as long as 100,000 years". We must realise how little time is left, Lovelock says. "And then each community and nation must find the best use of the resources they have to sustain civilisation for as long as they can", before we descend into a future where we are "a broken rabble led by brutal warlords".

Stranded Whale SW 2006/40

The last resting-place of the northern bottlenose whale which captivated Londoners when it swam in its confusion up the Thames to Chelsea is the city's Natural History Museum, where it will be known as SW (for stranded whale) 2006/40. It hardly seems an improvement on the anonymous bed of the North Atlantic.

Alex Kirby is a former BBC environment correspondent, now writing and broadcasting on environment and development.

I WAS THERE

By Philip Brady

I was there when the cuckoo called
And an old man said
"Thank God"
And raised his hat
In a silent prayer
To greet another year.

I was there when the swallows came
And they brushed the grass
That was almost hay
And he said "They're low,
It's a sign for rain",
As he hurried down the swarth.

I was there when the wild rose paled
And the hedge grew bare
Where the hips appeared,
And he showed me how
Their fruit had won
Their secrets from the summer sun.

I was there when the wild geese cried
In a wedge that pierced
The northern sky,
And he pointed out
"When you see them come
The winter's here and the year is done".

I was there when he took my hand
And pressed it hard
So I'd understand,
How the seasons came
And the seasons fade,
And he felt their change...
But was not afraid.

Philip Brady is a native of Edgeworthstown, Co. Longford. He lives in Edenderry, working as a General Practioner. "I was there" appears in "Sunlight and Shadows" his second collection of poems. Its themes are life's vicissitudes and emotions treated with sensitiviy and sincerity.
ISBN: 0-9525027-1-2

Photo: © Robbie Murphy

ON THE ROAD TO CORK

By Diarmuid Ó Críodáin

In the morning early,
Speeding to make time
I saw a bird beat frantic wings,
But it died and the deed was mine.
Then all at once my thoughts went back
To twenty years ago –
To a morn when I was cycling
On the road beyond Cloghroe...

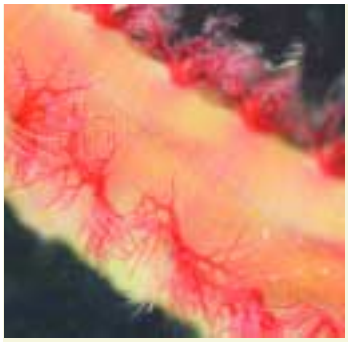
A speeding van passed by me,
I saw a bird dart out;
Saw the battered little body
With feathers all about.

I held it gently in my hand
And felt the beating hearts;
Saw the perfect blend of colours
And admired the Master's art.

It died; I placed it in the hedge
And sadly went my way.
The years have passed, now I in turn
Have killed a bird to-day.

In this crazy, speed-mad world
I pray as I pass by
That never, never, never more
Will I cause a bird to die.

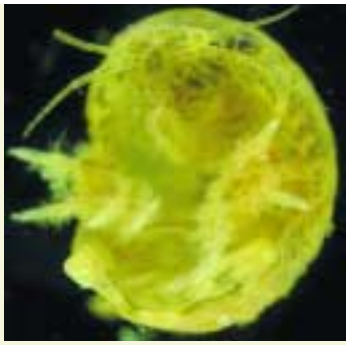
Diarmuid Ó Críodáin was born in the townland of Leacht, near Rathcoole in North Cork, in 1925. He worked as a manager in Kilcorney Creamery and later as Area Manager with Ballyclough Co-op. "Leacht" is the collections of his poems – his inspirations and thoughts. He began his poetic writing as a student in St. Brendan's College in Killarney and continued to write until his death in November 1990. In the Foreward, Rev. Robert Forde PP says of Diarmuid "He never failed to be impressed by the beauty and mystery of nature and it was a constant source of inspiration to him in his poetry."


Arenicola marina


Corophium volutator

Photos: © Charlie Perfect


Hydrobia ulvae


Sphaeroma serratum

Natural History of Sherkin Mud

By Charlie Perfect

LIFT a few stones on one of Sherkin's muddy shores and you will almost certainly find the shore crab (*Carcinus maenas*) hunting or hiding in the mud. It is easily recognised by its mottled green carapace with five sharp teeth down each side. Mature females may be found carrying up to 185,000 eggs during the summer.

Also abundant on the mid-shore is the Cockle (*Cerastoderma edule*) which burrows in the muddy gravel, filtering seawater though two siphons sometimes visible at the surface. A little more patience and you might see *Sphaeroma serratum* a marine cousin of the wood louse, which has retained the ability to roll up into a perfect ball as a form of defence. It is sometimes found sheltering in shells or amongst the brown seaweed (*Fucus* spp) attached to large rocks on the upper-shore.

The most diverse group found on the muddy shore must be the Bristle Worms, so called because of the bristles or chaetae they have down each side. A common species is the Estuary Rag Worm (*Hediste diversicolor*) which have a distinctive red line down their back. Despite their diminutive size (up to 12cm but usually smaller) they are voracious predators, hunting and burrowing amongst the stones.

A common feature of the more muddy places are the casts and depressions created by another Bristle worm, the Blow Lug (*Arenicola marina*). It spends most of its time in an L-shaped burrow deep under the surface ingesting the mud and leaving the remains as a sandy cast on to the surface.

Also visible on the mud, in the form of small holes, are the burrows of *Corophium volutator* a small crustacean easily caught by scooping up a handful of mud. Those with a very sharp eye might also see the tiny mud snail (*Hydrobia ulvae*) which crawls across the surface of the mud feeding on bacteria.

Deeper in the mud a whole host of animals are to be found, mostly adapted to feed on the sediment, filter out food from the water or hunt other animals

The smaller animals don't look much to the naked eye, but given even a low powered microscope and you'll find a huge diversity of creatures. To make finding them easier, the sediment is best sifted to remove the finer muddy particles.

One family you're guaranteed to find are the spinids. They are easily recognisable by the two long mobile palps which come out of the head like long rabbit ears and their tendency to coil up at the slightest touch. Different species can be distinguished by the position and shape of the spiky gills down their back.

Another bristle worm family with striking gills is Cirratulidae. The most common *Cirratulus cirratus* and *Tharyx marioni*. The first is a deep pink with a mass of yellow tentacles and long bright red gills. The four eyes on either side of its head merge, making it look like it is wearing sunglasses.

Capitella capitata is another species you will undoubtedly find. It can be very common in areas of suffering organic enrichment but it is a misconception that it necessarily indicates the presence of such pollution. It is the most worm-looking of the bristle worms with the notable exception of its bright pink colour. There are a number of very similar species, known collectively as the *Capitella* complex.

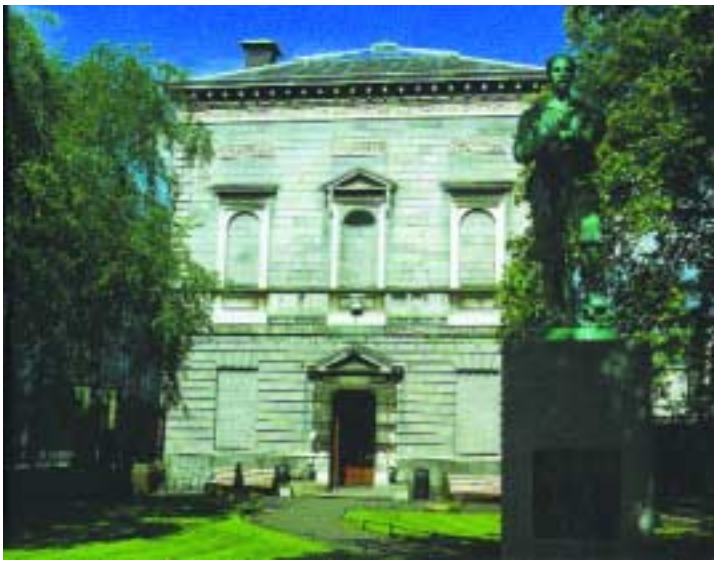
Out at the low water mark, where the mud is deeper and less gravelly, you will be able to find a number of bivalve species. The name comes from Latin and describes the two sections of shell that protect the animal. There are a number of species you would be likely to come across. Identification is difficult. *Abra alba* is small with a very thin almost see-through white shell. It can be easily confused with small Peppery Furrow Shells which are rounder, or the Pullet Carpet Shell which has a more angular shape, both of which grow to become far more distinctive. Evidence of the Peppery Furrow Shell can sometimes be seen on the surface of the mud. Star shaped marks are left by their siphons which reach over the surface of the mud in search of food but which can quickly be withdrawn back into the shell at the first hint of danger.

The tiny fast moving creatures you may have in your sample are likely to be crustaceans. A common one on the mid to upper shore is *Jaera albifrons*, a small yellowish isopod only 5mm in length. They have a round woodlouse like body with two tail like appendages protruding slightly from a small notch in the back of the carapace. Another strange looking Isopod is *Cyathura carinata* which is long, thin and pale coloured. It looks remarkably like a twig when it tucks its legs away.

These are a few examples of the wealth of life in the muddy shores of Shekin Island. There is so much to discover if one had the time.

Charlie Perfect was formerly a volunteer biologist at Sherkin Island Marine Station.

NATURAL HISTORY MUSEUM DUBLIN



The National Museum of Ireland is a 'museum of a museum' and has change little since it opened in 1857.

Biodiversity in a single building

By Nigel Monaghan

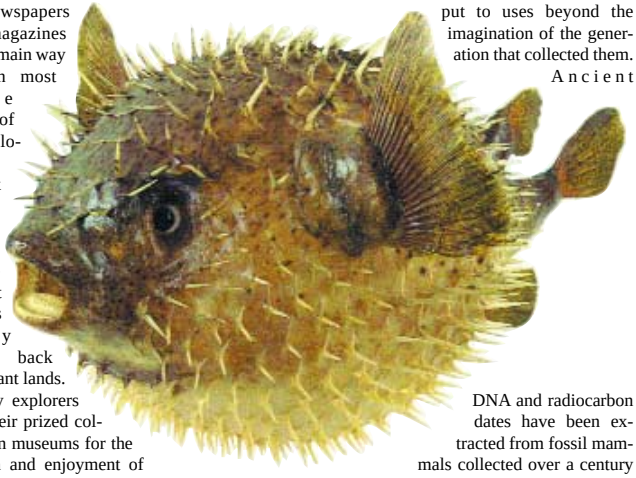
BIODIVERSITY is the current buzzword of natural sciences but long before it was coined the concept was well understood and represented in natural history museums. Ireland is fortunate in having a classic example of a 19th century museum surviving on the edge of Merrion Square, the square itself a classic of Georgian architecture, steeped in history. The exhibition, because of its vintage, is the biggest indoor display of biodiversity in Ireland.

Museums have a long history but many would regard their heyday as being the late 1800s when the discoveries of science were being brought on a weekly basis to a fascinated audience. This was a "time before television" when newspapers and magazines were the main way in which most people learned of the explorations of Cook and Darwin and marvelled at the things they brought back from distant lands. The early explorers placed their prized collections in museums for the education and enjoyment of the public. One of our oldest exhibits is a polar bear, shot in 1851 by Leopold McClintock of Dundalk while exploring the Northwest Passage.

The Natural History Museum was built in 1856 to house the Royal Dublin Society's growing collections, which had expanded continually since the late eighteenth century. The building opened in 1857 and remains a 'cabinet-style' museum designed to showcase a wide-ranging and comprehensive zoological collection. It has changed little in over a century. Often described as a 'museum of a museum', it provides a glimpse of the natural world that has delighted many generations of visitors. The exhibition houses 10,000 animals from a large collection of two million specimens.

The building and its exhibits reflect many aspects of the history and development of the collections. The museum was originally built as an extension to Leinster House, where the Royal Dublin Society was based for much of the nineteenth century. In 1877 ownership of the museum and its collections was transferred to the state. New funding was provided for the building, and new animals were added from an expanding British empire during the great days of exploration. Today, the Natural History Museum is one of four branches of the National Museum of Ireland.

Behind the Victorian splendour of the public face of the museum there are significant collections used by researchers involved in 21st century science. The specialists who sample Ireland's fauna today deposit examples from their collections as the proof behind their scientific publications and so that others can check their findings. In addition to acting as the evidence behind research articles, the collections are often put to uses beyond the imagination of the generation that collected them. Ancient DNA and radiocarbon dates have been extracted from fossil mammals collected over a century ago. This has helped to understand Ireland's ice age fauna and establish genetic links between extinct giant deer and the living fallow deer.



Photos: © Natural History Museum

Spoticus, a male giraffe, installed in January 2003 by Dutch taxidermists. Taxidermists fitting giraffe sking over a form (top). Pins hold the skin in place while glue dries (above).

Photos: © Natural History Museum

Group of badgers *Meles meles* prepared by Williams & Son in 1911.

We are all well aware that the environment is changing in Ireland. Much of this will be reflected in the future distribution of our fauna. The museum's collections of insects can be used as a barometer of these changes. With over a million specimens, there is a significant resource built up over two centuries that is accessed on a daily basis by entomologists. One of the key tasks of the curator is to develop checklists of all insect species known from Ireland, this is one of the central tools used by any scientist interested in their distribution. Before you know where animals live, you must be able to identify each species. With about 16,000 species of insect in Ireland, the museum is also the national centre for taxonomy. Our collections are used to store samples that may be studied by researchers, and with the assistance of our staff and library they continually develop their knowledge and expertise in identifying our diverse fauna.

"The museum's collections of insects can be used as a barometer of these changes. With over a million specimens, there is a significant resource built up over two centuries that is accessed on a daily basis by entomologists."

The whales hanging from the roof of our exhibition building are a reminder that a significant share of Ireland's biodiversity is in the oceans that surround us. While we may limit the enthusiasm to collect whole whales for space reasons, we work with marine scientists to develop our collections of marine biota. If you want to check the baseline survey by BioMar – we hold the relevant collections. Museum staff have also made their own systematic collections in the west Cork area over the last 20 years. Fish stored in alcohol have been used in projects on historic distribution and genetic diversity of cod stocks. The use of our collections is limited only by the questions that scientists dream up.

The exhibitions and the lessons of nature are combined with a summary of our history and the work we do behind the scenes in a new booklet. Why not visit us and learn a little more – admission is free!

Guide to the National Museum of Ireland - Natural History, published in 2005 by the National Museum of Ireland €5.99 (ISBN 0-901777-43-9)

Nigel Monaghan, Keeper, Natural History Division, National Museum of Ireland, Merrion Street, Dublin 2. Tel: +353-1-6777444 Web: www.museum.ie Email: naturalhistory@museum.ie

The museum exhibits more than ten thousand specimens in its galleries. These represent only a fraction of a collection that is estimated at about two million scientific specimens.

Admission is FREE to the National Museum of Ireland, Merrion Street, Dublin 2.

Opening Hours: Tuesday to Saturday 10am to 5pm. Sunday 2pm to 5pm. Closed Mondays (inc Bank Holidays).


Photo: Robbie Murphy

EPA Report Highlights 2005

By Matt Murphy

IRELAND'S Environmental Protection Agency continues to make excellent progress in overseeing our environment. It has recently published an annual Highlights Report 2005, which offers a snapshot of key activities and results over the past year. We summarise some of the important issues in the report.

Environmental Enforcement Activities

A major investigation into unauthorised waste activities in Ireland in 2005 found that illegal cross border movement of waste had reduced significantly as a result of increased vigilance and cross border co-operation. The large scale dumping of the type that occurred in Co. Wicklow, during the period 1997-2002, was no longer taking place.

- Unauthorised collection of waste is a significant problem with over 50% of local authorities reporting problems.
- Backyard burning contributed over 50% of all dioxin emissions. This is more prevalent in rural areas.
- Over 80% of the waste found in unauthorised landfills was construction and demolition waste.
- During 2005 illegal trafficking of waste to mainland Europe and beyond was reduced through tight procedures and inspections at ports.

Licence Enforcement

A significant amount of resources are expended by the EPA on the enforcement of the licences issued under the Waste Management Act and the Environmental Protection Agency Act.

They availed of a range of enforcement options to prevent or remedy pollution. These included inspectors, audits, legal notices and prosecutions. (See Table 1)

Environmental Assessment

- Air quality has maintained a good status throughout the country.
- Increasing traffic emissions remain a key challenge to Ireland's ability to comply with more stringent EU regulations.
- Strict limits have been set by the EU for acidifying gases which arise mainly from power stations; road traffic, solvent use and aquaculture (ammonia). Fundamental changes, entailing substantial costs are needed in the above sectors to meet these limits.
- Dioxin levels in Ireland remain among the lowest in Europe. Levels in 2004 were 33% lower than in 1995 and 20% lower than in 2000.
- 131 bathing areas, both seawater and freshwater, were monitored in 2004. 115 of these (88%) complied with the strict guideline standards specified by the EU and a further 16 complied with the minimum standard.

Integrated Pollution Prevention and Control (IPPC) Licensing

The IPPC licensing system has an increased emphasis on prevention with the aim of reducing emissions to air, water and land, reducing waste and using energy efficiently. Large-scale or complex industrial processes with significant polluting potential require an IPPC licence. Work completed under IPPC licensing in 2005 includes the following:

- Since July 2005, the EPA licensing regime has been updated and strengthened to meet the requirements of the EU Directive on Integrated Pollution Prevention and Control (IPPC).
- All current licences have been reviewed for compliance with the IPPC Directive requirements and a total of 122 have been amended in 2005 to bring them into compliance. A further 64 will be subjected to a more detailed review commencing in 2006.
- During the course of the year, 29 licences were granted while 3 applications were either withdrawn or abandoned. In addition 28 Proposed Decisions were issued.

In 2005, comprehensive oral hearings were held in relation to applications for the incineration of municipal and hazardous waste. These oral hearings related to proposed facilities in Carranstown, Duleek, Co. Meath and Ringaskiddy, Co. Cork. Having considered the recommendations in the Chairpersons' reports of the oral hearings, the EPA granted licences for these two facilities. The licences provide for incineration with energy recovery of non-hazardous waste in Duleek and incineration with energy recovery of both hazardous and non-hazardous waste in Ringaskiddy.

In addition to the above licences, the EPA granted new and revised licences for 9 landfills, 8 waste transfer stations, 2 hazardous waste disposal facilities, 4 compost facilities and 1 materials recovery facility. An application in respect of a compost facility in Co. Tipperary was refused at proposed decision stage and subsequently abandoned. An application for a revised licence in respect of the storage of dredged sand and gravel in the Boyne Estuary was also refused. There were 3 other licence applications withdrawn or abandoned. In addition, 29 proposed decisions were issued.

Enforcing Electrical and Electronic Waste Regulations

New regulations applicable to electrical and electronic waste were introduced in August and resulted in the collection of approximately 5,000 tonnes of such waste at recycling centres countrywide before year-end, a four-fold increase on the total figure for 2004. The EPA is responsible for enforcing the regulations and legal action has already been instigated in three instances.

Communications and Public Awareness

This year, as in the past, the EPA has been working to improve public awareness of issues of critical environmental importance. This work included continued involvement in, and sponsorship of the EcoEye TV programme, the launch of educational resource packs consistent with primary and second level curricula, as well as ongoing association with schools' science projects. Every year the EPA participate in a number of exhibitions and this year was the first time that the Agency hosted a stand at the National Ploughing Championships.

Following a series of incidents in the Ringaskiddy area the EPA reviewed its mechanisms for informing the public of notified incidents. The EPA now publishes details on its website of any significant incidents reported to them and requiring investigation. The feedback received regarding this decision has been positive and the information has been well received. In 2006 the EPA is endeavouring to make further progress in building trust with communities.

Matt Murphy, Editor, Sherkin Comment, Sherkin Island, Co. Cork, Ireland.

Table 1: Licence Enforcement Activities in 2005

	IPPC*	Waste	Total
Inspections	417	286	703
Audits	113	60	173
Monitoring visits	561	114	675
Statutory notices	7	1	8
Notifications of non-compliance	426	193	619
Complaints	466	657	1123
Prosecutions	10	10	20

** Integrated Pollution Prevention and Control Licence*

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Facing the Camera

By Mike Brown

"SITTING in a hide near a fox's den, waiting for the vixen to come back and tend to her cubs, I suddenly noticed her arriving from an unexpected direction. She was only about 30 metres from the den but the wind was not in my favour and she caught my scent. She turned tail and headed away. I was disappointed and knew that I wouldn't get any pictures that day. Having sensed an intruder, the vixen would keep the cubs hidden, but I decided to stay put and see what happened next. Watching from the small hole in the side of my hide, I caught sight of her again heading away. Crossing a small stream she went into a grain field and stayed low and stuck close to the ditch, almost invisible. Travelling right around the perimeter of the large field, she arrived at the stream again but now she was at the other side of the den from my position. Crossing the stream again she followed the ditch to the corner of a field behind the den and then disappeared into the undergrowth – she was with her cubs, out of sight and would stay that way probably until nightfall to make sure the intruder had left. She had made a round trip of about three quarters of a mile instead of taking the quickest route to the cubs, in an effort to fool any possible observers as to their location".

This story is probably a good example of why I photograph wildlife. Every time I go out into the countryside to take pictures I learn something new or have a new wild experience. I feel it is a special privilege to enjoy and observe nature at such close quarters. The images I make with the camera are the icing on the cake.

I have been interested and enthralled by nature since I was very young. My late grandfather was a keen nature lover who had a great interest in all nature and an excellent knowledge of birds, butterflies and plants. I was born in west Yorkshire in England and spent a lot of time in his company in my early years. There is some beautiful countryside in that part of the world and plenty of wildlife too. There were squirrels and woodpeckers in the woods next to his house, rabbits in the garden and his flower beds would attract a mass of butterflies in the warmer months.

My whole family, guided by my grandfather and his love of Ireland, moved to west Cork to live in 1974. In my first summer here I spent a week on Sherkin Island at what is now the Marine station. At the time there were camps for children and as a nature loving 13 year old I remember it vividly. We were shown all the wonderful life in the rock pools, spent all day every day out in the open and went on walks learning about our environment as we went. It was a simply wonderful experience. At the time I had no idea that I would start photographing nature with a passion but knew I loved the nature and the outdoors.

I came to photography comparatively late. In my mid to late twenties I picked up a camera belonging to a friend and looked through its viewfinder. I was hooked immediately and purchased my first real camera a week later. I set about teaching myself through reading voraciously and looking at the work of great photographers of the time. When I came across some superb nature photos in a magazine it clicked – this is what I wanted to do.

Probably the most appealing thing to me about my nature photography is that I am constantly learning and constantly looking for new opportunities. Like the vixen and her long way round, it is great to experience nature and see how it operates at close quarters. Being out there is what counts to me. With my images I try to show the true beauty of my subjects and their surroundings. I will often actually not photograph an animal but simply observe to see if I can work out a better way of getting a more interesting and more beautiful image of something that may have been photographed a million times. I try not to be content with a simple recording shot but to look for something that makes us connect with the subject and to look in awe at its beauty. To do this I concentrate on using the best light and finding the best locations when I work.

Photos: © Mike Browne

"I came to photography comparatively late. In my mid to late twenties I picked up a camera belonging to a friend and looked through its viewfinder. I was hooked immediately and purchased my first real camera a week later."

Having had a great response to my book "Ireland's Wildlife – A Photographic Essay", which I published in 2002, I am now working on a new book of nature images. All being well it will be available in the autumn this year. In the new collection of images I am trying to explore new ways of photographing nature with an eye on the abstract and looking at motion also. Whatever I do however, I will as always try to make my subjects look their best.

One the fulfilling things about my nature photography in the last few years, is the response to my images from children. When they see how beautiful our wildlife is they seem genuinely interested and often enthralled. This can only be good for the future of wildlife in our country.

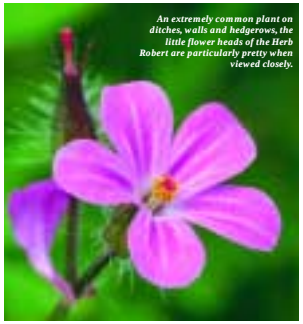
Mike Brown, Mike Brown Photography, Clonakilty, Co. Cork, Ireland.

Mike has his own Gallery selling his wildlife and landscape photographs in Clonakilty, Co Cork. Prints will also be available on his website in the very near future.
"Ireland's Wildlife – A Photographic Essay" is currently out of print but should be available again in the latter part of this year.
His new book "Images of Irish Nature" is expected in October this year. Check his website for details soon.
Contact Mike on 023 35782 or 086 8295039
Email mike@mikebrownphotography.com Web site www.mikebrownphotography.com

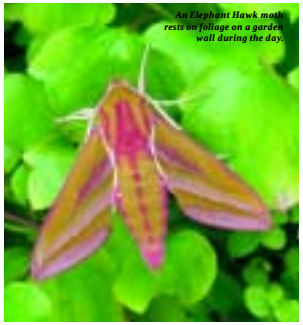
Facing the Camera

An Arctic tern arrives to feed its waiting chick on a beach in County Wexford. The birds nest on small islands on the lake at Lady's Island nearby.

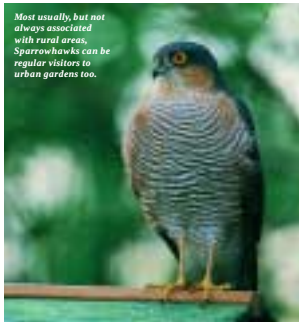
The beautiful colour of the common blue butterfly always catches the eye as they flit across a meadow. Here, a male and a female found copulating, show the underside of their wings with their intricate patterns.



An extremely common plant on ditches, walls and hedgerows, the little flower heads of the Herb Robert are particularly pretty when viewed closely.



An Elephant Hawk moth rests on foliage on a garden wall during the day.



Most usually, but not always associated with rural areas, Sparrowhawks can be regular visitors to urban gardens too.

Bluebells covering a woodland floor in springtime is one of the great colour spectacles in Irish nature.

Photography by Mike Brown

(Read his article on the previous page)

A pair of Common Dolphins surge through the water as they bow-ride a fishing boat.

Rabbits are common and widespread in Ireland and are often a pest to farmers. However I do like to watch them on a bright evening like this and see them all go on full alert with ears held high as I approach quietly.

Canada's Maritimes Fishery

Here for Tomorrow

By Neil A. Bellefontaine

Neil A. Bellefontaine has recently retired as Regional Director-General of the Maritimes Region, Fisheries and Oceans Canada, after 16 years. The Maritimes Region covers the waters off the Atlantic coast of Nova Scotia, the Scotian Shelf, the Bay of Fundy, Gulf of Maine, and all the freshwater running into these waters.

Photo: © Fish & Oceans Canada

Neil A. Bellefontaine, recently retired Regional Director-General of the Maritimes Region, Fisheries and Oceans Canada

FEW parts of the world can match the variety and value of Canada's Maritimes Region fishery. One of six fishery zones in the country under the management of the federal department of Fisheries and Oceans Canada (DFO), the Maritimes Region runs from northern Cape Breton through Nova Scotia, the Bay of Fundy, and southwest New Brunswick to the border of Maine.

Diversity and Dollars

With its hundreds of coves and bays, and productive offshore fishing banks, the region holds a tremendous diversity of finfish and shellfish. The fishery was worth an estimated $627 million last year and represents a third of the country's total landed value.

Home to fully a quarter of the world's supply of lobster, southwest Nova Scotia generates some $270 million (about 80%) of the region's lobster revenues. Lobster landings began to rise rapidly in the 1980s, due to a number of factors. Changes in the marine environment have gradually shifted predator-prey relationships, such as those between groundfish and lobster.

Additionally, conservation measures begun some 10 years ago are said to have improved the shellfish stock. Among these were a move to increase the minimum acceptable carapace lengths (the lobster body) by 1/16 of an inch for a five-year period, permanently marking and returning to the water proven reproductive females; incorporating hatches in cages to allow smaller lobsters to escape; and introducing biodegradable netting in pots. Lobster pots that become separated from their markers attract lobsters, but if left unattended will attract other prey, which in turn become trapped and become prey themselves. The new netting breaks down over time, reducing the phenomenon known as ghost fishing. Fishermen themselves were the driving force behind these conservation measures.

The shellfish bounty doesn't end there. Scallops, a long-time favourite with Maritimers, bring in the second highest shellfish revenues, at a healthy $80 million last year. Many of these bi-valves are harvested in the famed Bay of Fundy, and a small fleet also dredges for the deep-sea variety in Nova Scotia's offshore fishing grounds. Northern and inshore Scotian Shelf shrimp also fuel the region's fishery economy – generating as much as $40 million last year. Historically, shrimp trawls – open-mouthed nets towed along the bottom – took other species such as cod, so regulations cramped their use. The more recent introduction of a separator grate in the mouth of the trawl has addressed this by-catch concern by trapping the shrimp while allowing larger species to escape.

The Atlantic snow crab has risen in popularity, and the province's eastern shore is the place to be when this catch is hauled in. Although the species is subject to cyclical fluctuations, the industry remains a vibrant one, and a conservation-based management plan founded on those resource cycles ensures the sustainability of this important species.

Moving from shellfish to finfish, the Maritimes Region is home to a range of pelagics (mainly darker fleshed species that swim close to the surface), from the diminutive herring to swordfish and tuna that can weigh in at 700 lbs. It is not unusual to see large bluefin tuna packed in ice and flown to Japan, where a single fish can fetch thousands of dollars.

But the main pelagic revenue has always come from the herring fishery. About 1,900 enterprises hold licences. On the New Brunswick side of the Bay of Fundy, herring weirs – large pole and twine structures – catch juveniles by the millions for New Brunswick's renowned canned sardine industry. Fishermen take larger herring with purse seines, circling them with a net, then cinching up the bottom to trap the silver harvest. Products include fillets, roe, and salted and smoked herring for tropical climes.

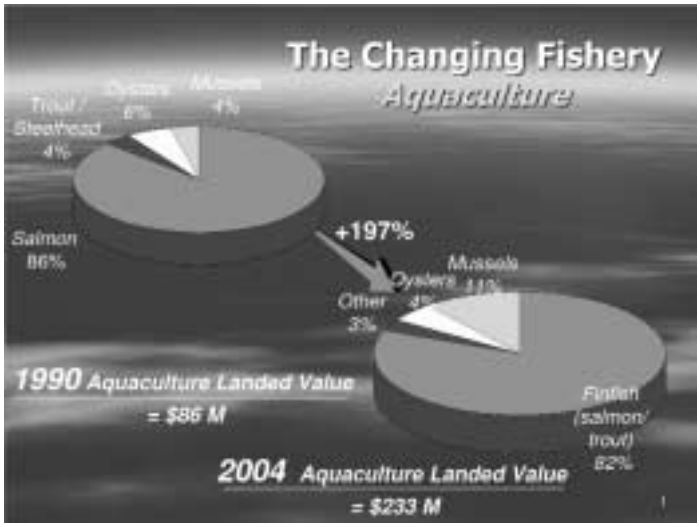
The rise in haddock landings last year came as no surprise to DFO's scientists. They have been monitoring groundfish stocks on Georges Bank since 2003 and projections for a significant rebuilding of haddock stocks began to materialize in 2005, when some 23,400 tonnes were harvested. A banner year is expected in 2007, when the adult haddock biomass is projected to be the largest ever recorded. This is good news for the groundfish fishery in Atlantic Canada, where cod stocks collapsed in the 1990s.

Cod – A Recovery Strategy

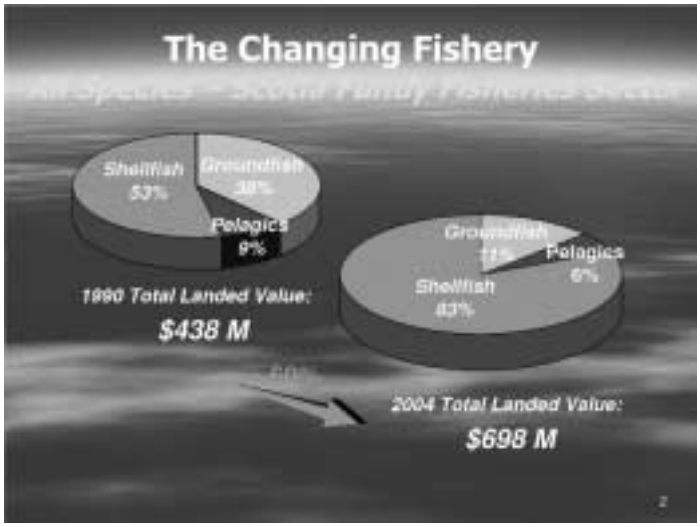
It is known that cod stocks are affected by a number of major factors, including their own physical condition, a tendency to mature early, poor reproduction rates, and shifts in environmental conditions. For example, the Eastern Scotian Shelf, where stocks appear to have declined dramatically, experienced colder than normal temperatures from the mid-1980s to the late 1990s. These types of conditions are not conducive to healthy spawning numbers. In addition, an increase in the area's populations of snow crab, shrimp and herring occurring over the same period have contributed to ecological changes for the cod.

Stocks are at various stages of recovery across Atlantic Canada. With the exception of one limited directed cod fishery off southwestern Nova Scotia and the Bay of Fundy, commercial fishing of the species is prohibited. In order to allow fisheries targetting other groundfish species to continue, DFO does allow some by-catch of cod. Those numbers are kept as low as possible by requiring licence holders to use mobile gear that allows greater numbers of cod to escape while the fishing effort is directed at another species. In fact, cod by-catch levels are a key component of fishermen's Conservation Harvesting Plans and are strictly enforced. Other measures taken by DFO include limiting harvesting seasons and, in areas where a high percentage of cod by-catch is recorded, the department may close the fishery.

Some time after a moratorium on cod was



The Changing Fishery (1990-2000) – Aquaculture



The Changing Fishery (1990-2000) – All Species – Scotia Fundy Fisheries Sector

put in place in the 1990s, recognition of the significant economic, cultural and historic importance of cod for Atlantic Canadians prompted the federal and provincial governments to develop strategies to rebuild the cod stocks.

A multilateral approach was seen as the only way to successfully pursue this objective. A series of Cod Action Teams emerged in 2003, each with representation from federal and provincial fisheries departments, government officials in the fields of science, resource management, and policy. Consultations with a wide range of stakeholders, including industry, academia, Aboriginal communities, environmental groups, and local interests, have taken place. The resulting strategies for rebuilding cod stocks in each of three distinct areas are not only realistic, but they are conservation-minded and socially, culturally and economically informed as well.

Variously suggested are such measures as discontinuing commercial index fisheries to minimize incidental mortality of cod; inviting resource users to share stewardship by taking a bigger role in decision-making at the operational level and greater accountability and responsibility toward projects related to rebuilding cod stocks; reducing seismic noise in spawning areas; factoring potentially important juvenile cod habitat into fish management decisions; implementing a well-defined cautious harvesting approach; examining the potential for reduction in natural mortality of cod; and maintaining the research capacity on both the species and the marine ecosystem to address gaps in information, with industry assisting in data collection.

Seals

The impact of a growing seal population in Atlantic Canada on cod is the subject of frequent debate. Again, DFO stresses that no single culprit appears responsible for the lack of a cod recovery. Seals certainly do eat cod, but they also eat species recognized as cod predators, such as herring that dine on cod eggs.

The commercial quota for the harp seal hunt is established on sound conservation principles, not as a response to cod predation. Canada's seal population is healthy and abundant. The harp seal herd – the most important seal herd for this industry – is estimated at around 5.8 million animals, nearly the highest level ever recorded, and almost triple what it was in the 1970s. Canada takes a precautionary approach when establishing harvest limits. Key components of the precautionary approach include conservation considerations, precautionary and target reference points, as well as specific management actions to guide managers in managing the resource. In the case of the seal hunt, warning reference points are set at 70%, 50% and 30% of the maximum observed population size.

DFO's management plan for the annual seal hunt is based on solid science reviewed by scientists from Canada, the United States and Europe. The seal population is monitored yearly, and an intensive survey is conducted every five years.

Scientists from around the world participate in the review of results. In addition, scientists from the International Fund for Animal Welfare (IFAW) and the World Wildlife Federation (WWF) were invited to participate in the most recent review.

With this scientific data in hand, DFO develops a management plan, based on sound conservation principles. It establishes a healthy baseline for the hunt that ensures a seal herd of 70 per cent of its highest known abundance. The goal is simple: to maintain a healthy, strong, sustainable population for years to come.

Conservation Today for a Fishery Tomorrow

Proper fisheries management is a challenge for many countries. The power of modern technology and the competitive instincts of fishermen increase the challenge of protecting fish resources for future generations. DFO fulfills its conservation mandate through a wide range of regulations, including licence restrictions and controls on fish size, fishing seasons, and types of gear. Many fisheries have both overall quotas as well as limits on individual catches. Fishery officers patrol sea and shore. Catches are weighed at dockside by monitoring companies.

"As with its approach to rebuilding cod stocks, DFO has also engaged the fishing industry in shared stewardship of the region's marine resources. Fishermen contribute to setting many of the rules that govern them by participating in industry advisory committees, and they often help pay for research."

As with its approach to rebuilding cod stocks, DFO has also engaged the fishing industry in shared stewardship of the region's marine resources. Fishermen contribute to setting many of the rules that govern them by participating in industry advisory committees, and they often help pay for research. In fact, through the Fishermen and Scientists Research Society, hundreds of fishermen collaborate with DFO scientists. Co-management is becoming the watchword of the modern fishery. The department's At-Sea Observer Program, in place since the late 1970s, has been highly successful in gathering information vital to both science and fish management sectors. Depending on the time of year, DFO places large numbers of observers on vessels, who collect data such as the composition of catches, sampling, and vessel position.

In 2004, the predicted boom in haddock stocks off Georges Bank prompted the federal department to strike a multi-sector task group to advise both on local capacity to harvest the additional stock and any measures needed to fill the gap. Representatives from the harvesting and processing industries have joined government officials at the federal and provincial levels to develop a long-term manageable approach to this expanded stock.

That manageable approach includes a recommendation that no additional entrants be permitted to the fishery, because the existing level of participation in the harvest of the groundfish is low. It also includes a recommendation for a science management quota to support fisheries research, adjustments to fishing seasons, and measures to minimize by-catches of other species.

The once-abundant Atlantic salmon has not been fished commercially in the Maritime Provinces since 1986. The low numbers returning to spawn in the rivers and streams of the region are inadequate to sustain the species unaided, so the species is now assisted through live gene-banking efforts led by DFO. Departmental scientists are aided extensively in these projects by a range of outside organizations, including Maliseet and Mi'kmaq First Nations bands, for whom the salmon is a culturally significant fish.

As with the cod, changes in marine environmental conditions are suspected of having the greatest impact on salmon. With more than 500 distinct river populations within Atlantic Canada and Quebec, varying vulnerabilities to habitat disruption, pollutants, acid rain and climate change, the challenge is real.

However, DFO has been developing a federal conservation policy for broad public comment, including key stakeholders, provinces, and Aboriginal groups. Its overarching goal is to restore and sustainably manage diverse salmon populations and their habitat. In addition to this broad approach, the department last year announced one-time funding of $30 million to establish the Atlantic Salmon Endowment Fund. Interest generated from the investment will be used to fund the work of watershed and community groups engaged in habitat enhancement, monitoring and salmon conservation initiatives. These would include such projects as restoring fish access to critical habitat and adequate water flows, improving fish survival, and public education.

Again, the federal department views shared stewardship as a winning component of this approach.

Aquaculture Growth in Growing Fish

When compared with the fishery, the region's aquaculture industry is young indeed. Carried out predominantly in the Bay of Fundy off the southwest coast of New Brunswick, aquaculture plays a vital role in the local coastal economy. In fact, the industry generated over $175 million in that province in 2004 (the latest figures available), and some $58 million in Nova Scotia, employing more than 2000 people.

DFO's science sector has supported the development of aquaculture. Groundbreaking research on Atlantic salmon, haddock, and halibut conducted at the department's St. Andrews Biological Station in the past few decades has played a major role in its success. Continued research on these species and others such as sea urchins and scallops is leading to more business ventures. Research on potential interactions between aquaculture, fisheries and the aquatic environment is ongoing to ensure the impacts of aquaculture are minimal.

Increasing populations and worldwide demand for seafood is fueling the need to provide high quality products year round. As a result, commercial aquaculture is one of the fastest growing food production activities in the world.

A Maritimes Fishery for Tomorrow

Management of the fishery can be a challenge. Rivalries exist between gear sectors, fishermen of different regions; commercial, recreational and Aboriginal fishermen sometimes compete for similar resources. Environmental changes, harvesting, and habitat alterations all impact the resource. Although scientists have been estimating fish stocks for decades, the processes themselves – and our understanding – continue to evolve.

Our ocean resources support a diverse and growing range of economic activities that include aquaculture, offshore oil and gas development, shipping, and technology development in addition to traditional commercial and recreational fisheries.

However, fortunate both in the strength of its resources and the commitment of the fishing industry, the Maritimes Region today is managing the harvest for tomorrow.

Neil A. Bellefontaine has recently retired as Regional Director-General of the Maritimes Region, Fisheries and Oceans Canada

A "Green" Solution for Car Parks

By Matt Murphy

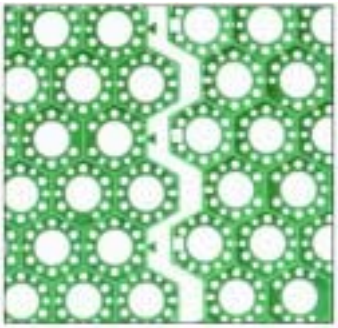
FOLLOWING a recent article in *Sherkin Comment* regarding flooding, I came across this product which seems to be a possible solution to some of the problems.

One of the issues arising from new and existing housing development is that the use of tarmac or concrete for drives and access roads is likely to increase flooding risk during heavy rain by reducing/preventing soil absorbency. A new product "Pre-grown Golpla" is a "green" answer to the problem and combines hard standing car parking with a drainable base and yet is a grass surface which looks like a lawn and can be kept mown closely or left longer.

The material is heavy duty green blocks made from recycled polypropylene 620mm x 300mm and 38mm in depth. Viewed from above each block has 60 hexagons with about 35% of the base area as holes, which allow water to percolate away and grass to root into the soil. All round the block sides are tongues and grooves which, when laid, hold the material rigidly together. At the producer's site, soil-less compost and seed are added to part fill the blocks. The part filling is vital so that when the seed grows the growing point of the grass is protected from tyre pressure and wear as this weight is taken on the plastic honeycomb. The grass leaf doesn't mind being run on and can be mown with conventional mowers if required to maintain a lawn. The 50% solid area of plastic base carries the load on a polymer mesh laid over the soil base. This mesh specification varies according to likely vehicle/pedestrian use. The finished result looks just like a lawn, yet allows cars and smaller lorries to travel freely whatever the weather. The cost is far less than concrete or tarmac.

The material is delivered to a customer's site palletized so it requires unstacking and laying as soon as possible, as it is very perishable, especially in hot weather. It will have been mown before dispatch. Watering, once laid, is important to get the roots to drawn down. The customer must have his site fully prepared to the specification required before arranging delivery.

Increasingly Local Authorities in Britain are specifying this type of material as a way of reducing water run-off and because it looks much more attractive. One high profile use was at the new Scottish Houses of Parliament where a large area has been laid for reserve car parking. Another use was for a security patrol vehicle track round a large Ministry of Defence establishment. Among other users are the National Trust, English Heritage, Derbyshire County Council, Tynedale County Council. Typical applications are for car parks, fire access roads, bridleways, footpaths, grass verges, canal towpaths, helicopter landing pads, caravan site access roads, wheelchair access, and bank stabilization.

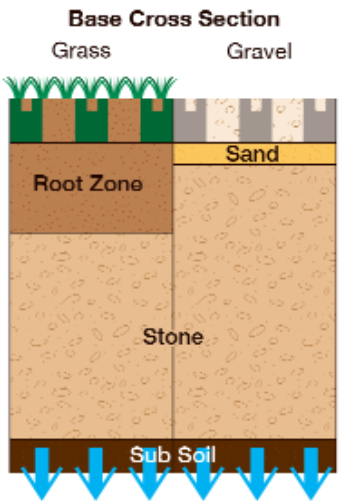


Each paver is an integral unit with no incomplete cells. This ensures that there is a double wall at each joint, giving maximum strength at potentially the weakest point, which, together with the unique patented interlocking system, permits and even spread of load and assists the installer to maintain line and level. The pavers are made from 100% recycled plastic and the hexagonal cellular construction ensures the pavers can support loads in excess of 1000KN/m.

Photos: © Coronet-turf

Successful grass growth

Grown prior to delivery



For more information contact: Coronet Turf, Ashe Warren Farm, Overton, Nr. Basingstoke, Hants, RG25 3AW, UK. Tel. 01256 771222 Email: jhewetson-brown@btconnect.com Web: www.coronet-turf.co.uk

Pre-grown Golpla can combine a hard surface for car parks with a drainable base.

Greener Living Month by Month

MAKING the change to a more environmentally-friendly lifestyle can seem a bit overwhelming at times – there are so many things that we can do, it can be difficult to know exactly where to start and how to find the time. That's why we at ENFO have produced this leaflet to help you to make the move towards a greener and more sustainable way of living in a manageable and fun way. Tips and information are provided on a monthly basis and focus on four key topics – Water, Waste, Shopping and Air & Energy – so you can introduce changes as you go through the year. We know it takes time to change our habits and get used to doing things in a different way, but the effort will be worth it!

It's also important that we can see how much of a difference our actions are making, so we have included information on the savings that you can achieve by undertaking the actions outlined below. Some of the actions only need to be done once or just a few times a year; others need to become a regular habit. You may also find that you actually do some of the actions already – if so, congratulations, you're already on you way to a healthier way of living, for both you and the planet.

APRIL

Week 1: Water

The water we use in our homes has to go through an expensive treatment process before it reaches our taps. However, many household cleaners, paints, etc. contain chemicals that can pollute our water supply if disposed in sinks or drains, making even more water treatment necessary. It is important that we dispose of these liquids in the correct way and help to keep our rivers, lakes and seas clean.

Action: Avoid pouring waste liquids such as household cleaners, paints or weedkillers down drains. Instead, read the instructions on the containers for information on how to dispose of them safely. Many local authorities have facilities where you can bring these waste liquids for safe disposal or recycling. When buying new paints, cleaners and pesticides, see if you can find a more environmentally-friendly version – many paints, for example, are now water-based.

Week 2: Waste

Recent figures/statistics show that paper makes up 22.3% of all household waste generated in Ireland. While recycling rates for paper are the highest for any type of waste and most local authorities now provide paper collection/recycling facilities for many residents, it is also important to ensure that we use paper as efficiently as possible before sending it for recycling. Valuable resources such as trees, water and energy are needed to make paper and the manufacturing process also produces certain amounts of waste-water and air pollution.

Action: Make the most of the paper you use by ensuring you use both sides of a piece of paper before disposing of it. It can be handy to keep a box by your desk to collect used paper, some of which can be reused in your computer printer. Also, make a note pad for lists, telephone messages, etc. from scrap or leftover paper. Finally, shred any fully used paper and dispose of in your compost bin; alternatively leave it out with other recyclables for collection or bring to your local recycling facility.

Week 3: Air /Energy

Household appliances such as fridges have become essential in the modern home but they are a source of energy use. How we position and use our fridge can, however, help it to work as efficiently as possible, so it consumes the minimum amount of energy required while keeping our food fresh.

Action: When installing your fridge, don't position it in direct sunlight or in close contact with hot appliances such as ovens or boilers, as it will have to work harder to keep cool. The most economic temperature settings for your fridge are 3-4°C for the fresh food compartment and minus 15/18°C for the freezer section. Always allow hot food to cool before putting it in the fridge and cover foods and liquids stored in the fridge to prevent moisture release, which makes the fridge's compressor have to work harder. The coils at the back of the fridge should also be cleaned regularly, with adequate ventilation space left between the fridge and the wall behind.

Week 4: Shopping

Increasingly, the clothes we buy cannot be washed in a washing machine but have to be dry-cleaned. However, most dry-cleaning facilities use a solvent called perchloroethylene (perc) and short- term exposure to this chemical can affect our nervous systems, causing dizziness, fatigue, headaches and sweating. Long-term exposure can cause liver and kidney damage. There is legislation in place to limit the levels of perc used in the dry-cleaning industry but a certain amount can linger on clothes after we bring them home.

Action: When buying new clothes, try to avoid those that have to be dry- cleaned and opt for machine or hand- washable styles instead. It is even possible to buy suits, etc. now that can be machine-washed. Also, regular dry-cleaning can be expensive, so you may also save money in the process! If you do have to get clothes dry-cleaned, make sure to hang them in a well-ventilated place before storing them away.

MAY

Week 1: Water

There's nothing like a cool drink of water when you're thirsty, especially in summer time. However, running the tap to get cold water results in wasted water each time. The amount of bottled water we buy has also increased significantly but most of it comes in plastic containers, which have to be recycled if they are not to end up in landfill, where they can last for hundreds of years.

Action: Keep a jug or bottle of water in the fridge to provide a constant source of cold drinking water without having to run the tap each time. If you don't like the taste of tap water, investing in a water filter jug can also help to reduce both the amount of bottled water you buy and the amount of plastic you will have to recycle.

Week 2: Waste

Many of us regularly receive so-called "junk mail" in the post –that is, unsolicited mailings, usually of a advertising or promotional nature. As most of this usually ends up in the waste bin, there are ways to cut down on the amount of junk mail that you receive, leaving less waste paper for you to dispose of or recycle. Under section 2(7) of the Data Protection Acts 1988 and 2003,you have a legal right to have your details removed from marketing databases.

Action: To reduce junk mail, the Mailing Preference Service enables you to have your details removed from the marketing databases of the main direct marketers in Ireland. A leaflet on this service, entitled Direct Mail: Your Right to Choose, is available from your local Post Office or from An Post head office. Also, when completing survey forms, etc., be sure to check for a box /space where you can indicate your preference not to receive any future promotional material or to have your details passed on to other organisations for marketing purposes.

Week 3: Air /Energy

Another household appliance that consumes electricity is the cooker and oven. While we all need these appliances to feed our families, knowing how to use them as efficiently as possible means that we can reduce the amount of energy they use.

Action: On your cooker, always match the size of the pan to the ring /hob and keep elements clean, both of which save energy. Keep the lid on pots and turn the heat down once the liquid starts to boil. When cooking food in the oven, minimise the number of times you open the oven door to check the food – each time the temperature drops by 4-5°C. Also, if you use glass or ceramic pans in the oven, you can reduce the temperature by 4-5°C and still have the food cook as quickly, saving more energy (and money!) in the process.

Week 4: Shopping

Since the introduction of the 15-cent levy on plastic bags, the number of these bags in circulation has fallen significantly. This has major benefits for the environment, including a reduction in littering problems and the use of resources to manufacture the plastic. However, some of us still need to get into the regular habit of bringing reusable shopping bags with us and cutting down on the amount of plastic waste we generate.

Action: When heading out to the shops, remember to always take your own shopping bags with you – it may be useful to keep some in the boot of your car or by the front door, as a reminder. Also, when in the supermarket, try to avoid using the smaller plastic bags to package fruit and vegetables, as many can simply be placed in your basket or trolley unpackaged. Some supermarkets also offer paper bags as an alternative.

JUNE

Week 1: Water

While it is important to keep our cars in good condition so that they will run efficiently, regular washing of a car can use a significant amount of water each time –up to 300 litres if you allow the water hose to run constantly. Also, whether at home or in the garage, car washing can also use toxic cleaning products, which can contaminate soil if allowed to drain away untreated.

Action: When washing your car at home, use a bucket of water and non-toxic cleaning products for the main wash and only use the hose for a quick rinse at the end. If you are using a garage carwash, which can be more efficient in its water use, check if they have a system to filter and reuse the carwash water.

Week 2: Waste

Recent statistics on litter in Ireland indicate that the majority of our towns and cities are "heavily" or "very heavily" littered (Anti Litter League 2003). Besides the clean-up costs involved, littering also reduces the attractiveness of Ireland for tourists and citizens alike, as does illegal dumping in the countryside and scenic areas. While surveys show that we are concerned about Ireland's littering problem, they also show that many of us admit to having littered ourselves (Dept. of the Environment &Local Government, 2000).Changing our personal habits is the only permanent way to tackle this problem.

Action: An easy way to start acting on litter is to pick up one piece of litter each day. If everybody did this, imagine the difference it would make! You might also consider contacting your local Tidy Towns committee or local authority to see if you can help out in any regular neighbourhood clean-ups they may organise.

Week 3: Air /Energy

Given the unpredictable Irish weather, many of us find tumble dryers a very effective way of drying out clothes. However, as these dryers can use considerable amounts of energy, we need to make sure that we are using them as efficiently as possible, helping both the environment and our pockets in the process.

Action: Try to schedule your use of the dryer for off-peak energy times (usually in the evenings) and make sure that it has a full load. Before you use your dryer, check that the lint screen / filter (usually in the door) has been cleaned regularly, so that the hot air can circulate freely. You might also consider running your dryer for shorter periods and putting the clothes in the airing cupboard to finish drying. If at all possible, dry your clothes outdoors, as this not only reduces your energy use but also avoids clothes shrinkage and the production of static electricity in your clothes.

Week 4: Shopping

The packaging on products that we buy regularly makes up a significant amount of the household waste that we produce. By bearing this in mind when we are shopping, we can easily make changes to reduce this waste, particularly by opting for products with less packaging.

Action: When doing your weekly shopping, look for products that come in bulk- sized containers, which means less packaging to dispose of, but be careful to avoid individually-wrapped items. Many liquids, such as detergents and fruit drinks also come in concentrate form, again helping to reduce waste. Finally, try to choose products for which you can buy refills, which usually come in smaller containers.

GREEN ACTION PLANNER

Changing our ways takes time but it helps to get into a regular routine. Use a chart to help you plan your actions on a weekly basis and don't forget to mark them off when you've done them!

Further Information – ENFO Websites: www.enfo.ie and www.10steps.ie ENFO also provides free information leaflets, posters and booklets. Issued by: ENFO – The Environmental Information Service, 17 St Andrew Street, Dublin 2,Ireland. Tel: 1890 200191 Fax: (01) 888 2946 e-mail:info@enfo.ie www.enfo.ie

The Importance of Long-term Monitoring

By Matt Murphy

AT Sherkin Island Marine Station we have recently published a major book on long-term monitoring of the environment. In September 2003 we brought together over 20 people from around the world for a workshop. Their challenge was to produce a reference and guide, a 'mini bible' for long-term monitoring. I believe that we have achieved that objective. No doubt some will say long-term monitoring is a luxury that is not financially affordable. I counter argue – our natural environment is a priceless heritage and must be protected. And, the price of protection is far less than the cost of loss.

The goal of Sherkin Island Marine Station since it was founded in 1975 has been to set up such programmes. We now have two of the longest rocky shore and plankton surveys worldwide in place.

Because of the data we have collected on these and other projects, such as plants, otters, butterflies and moths, I have great difficulty understanding how people put so much faith in Environmental Impact Statements that are used for obtaining planning permission. At present, local authorities reviewing those studies do not have the tools to analyse and interpret environmental impact and make informed decisions. In most cases the data used to describe the natural conditions and project impacts are but snapshots of natural conditions that vary with the day and year. Often times the data are based on a few, brief site visits or less. These "views" of the environment lack full understanding and appreciation of natural variability and may even misrepresent the natural conditions, making them totally irrelevant.

The solution is better knowledge. I know that long-term monitoring provides that and is an absolute must. The proof of my belief is being revealed every day in our scramble to understand the earth's environmental shifts and how we respond. The mindset of those responsible for the protection of the environment must change if the environment is to be protected for future generations. For instance, a simple way to check on resource protections is to revisit projects and see if claims are supported by results. How many Environmental Impact Statements submitted to authorities are revisited in later years? It is time to make it a condition of planning approval that projects are revisited and evaluated in a set number of years.

The book has two sections: the first part is the discussion and recommendations from the workshop, the second section containing 17 papers by the participants of the workshop/conference. In his introduction to the book, one of the participants, Prof. Barrie Dale of Oslo University in Norway wrote:

"One major factor fuelling public concern over environmental deterioration is the uncertainty surrounding the main issues: global warming, ozone depletion, pollution, and destruction of natural habitats. Ideally, we would tackle these issues of changing environments by first understanding the natural environment sufficiently in order to identify the change. In truth we are facing the urgent need to understand changes to natural systems when we have little understanding of their former state. There are several main reasons for our being inadequately prepared:

- Natural systems are complex - understanding them is therefore difficult, demanding enormous scientific efforts on a larger scale than has previously proved possible.
- Natural systems are characterised by a high degree of variation - on timescales of hours to thousands of years; understanding this requires observations spanning at least the time frame of interest to humans (up to several hundreds of years).
- We lack the necessary long-term observations - to adequately understand the background for assessing the perceived threat from environmental change.

For these reasons, we are forced into making estimates of environmental change in the absence of adequate background information. In practice this involves using available, mostly short-term, observations to answer questions requiring longer-term series of data, with a heavy reliance on modelling to help make up for the shortfall. This inevitably produces large amounts of uncertainty in any predictions generated by the models, and it is this that adds to the uncertainty felt also by the public.

All this raises the question of what can we do to reduce the levels of uncertainty regarding environmental issues? The obvious need for more longer-term observations cannot be met instantaneously. However, if more such records would have helped us to understand present-day environmental changes and improved our ability to predict future changes, as seems to be the case, we should at least consider the possibilities for maintaining the few long-term series of observations we have in place and starting new series where needed."

This book has been very special to us at Sherkin Island Marine Station as it confirms our 31 years of commitment to long-term monitoring.

The book "Long-term Monitoring: Why, What, Where, When & How" (ISBN: 1870492 82 X) Price: €40.00 (softback) plus postage €4.50. Further details on our website: www.sherkinmarine.ie

Recommendations from the Workshop

New Programmes

i) Long-term monitoring* of the environment will succeed best if it follows the principles of:
   - Involvement of all interested people** from the outset;
   - Clear identification of the objectives and benefits (real or predicted);
   - Openness (transparency) at all times.

ii) No matter who conducts monitoring, it should follow Best Practice as outlined in the book.

Existing or Historic Programmes

i) Data sets which may contribute to long-term monitoring: should be identified and catalogued (eg scope, duration, accessibility) and their existence be made more widely available eg by the European Environment Agency. These data sets may have relationships to each other which have not yet been realised.

ii) We encourage collaboration between the holders of data sets.

Special Recommendations

i) Understanding of Biological monitoring requires an understanding of natural history that may well begin at primary school level. We encourage schools to include this concept in their curricula. The role of parents educating their children in environmental matters should not be underestimated, but should be encouraged.

ii) The public should be encouraged to become involved in local monitoring.

iii) Key environmental indicators need to be identified: these may be global, regional or local in scope, depending on the long-term monitoring issue.

iv) In Academia at least, there should be a better linkage between field studies and laboratory work: such integration may help to identify significant and insignificant causes of an observed effect.

v) Businesses should involve themselves in long-term monitoring, reaching out to their local, regional or global communities by
   - Monitoring within their own area of operations (especially as a condition of a planning consent, but also more altruistically) and
   - Facilitating education, co-operation and co-ordination, thus:
   - Demonstrating the commitment of businesses to their customers and their customers' environment.
   - Acquiring data on environmental and resource factors which may influence their own ability to continue.

vi) Predictions need to be checked, as and when possible, and the outcome needs to be reported so that risk reduction measures can be introduced or monitoring programmes tuned.

vii) Technology should complement, and not be a replacement for, observational science.

** The term 'monitoring' is to include 'surveillance' throughout.*
*** We are all shareholders in the Earth.*

A GEOLOGICAL TREASURE TROVE

The Geological Museum, Trinity College, Dublin

By Patrick N. Wyse Jackson

THE Geological Museum in Trinity College Dublin holds important collections that date back to the late eighteenth century. It has evolved through the amalgamation of a number of collections, including those of the Dublin University Museum and the Geological Society of Dublin. Since 1857 the collections have been located in the beautiful Museum Building, where many are on public display in the museum gallery. This article briefly describes its history, outlines the major collections of the Geological Museum, and discusses their scientific and educational use today.

View of the Geological Museum 2005.

Male Giant Irish Deer skeleton in the Museum Building.

Historical Sketch

The Dublin University Museum is reputed to have been founded in the late 1770s by Rev. William Hamilton who was the author of Letters concerning the northern coast of the County of Antrim (1790) which advanced the igneous origin of the Giant's Causeway. For many years the collections were on display in a large room immediately over the front gate of the College, where geological specimens occupied cases alongside anthropological, botanical and zoological material. The naturalist Robert Ball was appointed Director in 1844 at which time he donated over 7,000 zoological specimens.

By the late 1850s the collections were split-up and the geological collections were accommodated in 1857 in a new purpose-built Museum Building, designed by the Cork architects, Benjamin Woodward and Thomas Deane. This building contains many examples of Irish decorative stone and displays elaborate floral and faunal carvings executed by the Cork sculptors John and James O'Shea. For one hundred years the collections were displayed in a large and impressive gallery on the first floor, but in 1956 this was subdivided into teaching laboratories, and a smaller museum was established on a new second floor.

Photos: © P.N. Wyse Jackson

Photos: © P.N. Wyse Jackson

Interior of the Museum Building.

Major Collections

The Geological Museum collections number approximately 100,000 specimens of which fossils comprise 70%, minerals 20% and rocks 10%. This material has been acquired over a period of nearly 250 years from all corners of the globe.

Minerals: The oldest collections are minerals and by 1850 the College had assembled 2,000 specimens of which those purchased from the Honorable George Knox, former Member of Parliament for the University were the most important. Later still Charles Lewis Giesecke, Professor of Mineralogy of the Royal Dublin Society presented a small but significant suite of specimens that he had collected during his travels in Greenland. More recently John Joly, who was the Professor of Geology and Mineralogy in the College, bequeathed in 1933 a cabinet of minerals which included some that he had used in his own research in geophysics.

Rocks: Representative collections of Irish and foreign rocks number 3,000 specimens, and include volcanic material from Vesuvius in Italy, including those collected by the Dublin engineer Robert Mallet in the 1850s. Mallet was responsible for some of the earliest research into seismic waves and earthquakes. The museum holds a number of meteorites including the main mass of the Dundrum Meteorite that fell in 1865 in Co. Tipperary.

Fossils: Much of central Ireland is underlain with fossiliferous limestone deposited during the Carboniferous period some 250 million years ago. In the 1850s a large collection of limestone fossils was donated by Sir Richard Griffith who oversaw the survey that produced the 'Griffith Valuation'. Since the 1930s this material has been added to by successive Trinity academics. The museum also holds some rare fossil amphibians from Jarrow Colliery in Co. Kilkenny, and some beautiful ichthyosaurs (marine reptiles) from southern England. Today most fossil material acquired comes from academics and their students.

Present Museum Displays

Geological specimens can be seen in the hall of the Museum Building which is dominated by two Megaloceros giganteus (Giant Irish Deer) skeletons from Lough Gur, Co. Limerick. The Museum gallery itself contains a semi-permanent installation The Story of the Earth that serves as an introduction to the geological sciences. Information is presented with clarity and in some depth, but at a level to be of interest to a broad range of users; text is kept to a minimum. Here displays outline the diagnostic features of minerals; gemstones; quartz and its varieties; zeolites and the north-eastern Tertiary volcanic province; Irish metals, industrial minerals and building materials and their uses; meteorites; marine reptiles; dinosaurs; and trilobites. One wall of the gallery is dominated by Griffith's 1855 geological map of Ireland.

Educational and Scientific Use of the Collections

The Geological Museum is best regarded as a research and teaching museum. It holds material of huge scientific value such as type specimens of fossil species described from Ireland. It is used for the teaching of university students, and parties of school pupils are accommodated with guided tours, and the general public is most welcome.

Specimens are made available where possible for academic research. Material has also been loaned for use in exhibitions elsewhere such as at ENFO, and for use as props in plays in Dublin theatres. The Museum is open to the public every weekday and admission is free (Monday to Friday 10.00 am to 5.00 pm).

Patrick Wyse Jackson (e-mail: wysjcknp@tcd.ie) is Curator of the Geological Museum and Lecturer in Geology at Trinity College, Dublin. Together with Audrey Murphy he produced the recently-published "Fossils: Colouring & Guide Book" (Sherkin Island Marine Station, 2005).

Publications of Interest

Ireland's Coastline
Exploring its nature and heritage

By Richard Nairn

Collins Press

www.collinspress.com

ISBN: 1-903464-50-1

Price €30.00 / 2005

At last we have a book that describes the natural history and human heritage of Ireland's 7500 kilometres of coastline. The author introduces us to the shape of the shore with its coastal habitats, geology and landscape. He continues with the rocky shore, its splash and intertidal zones, its bird life, seals, otters and flora. We learn about shingle, gravel and sandy beaches, sand dunes and beachcombing. In the chapter "Open Sea" the author explains the continental shelf, the seabed, plankton, whales, dolphins and seaweed. In "Harvesting the Sea" he recalls old fishing methods, whaling and shark fishing. In the chapter "In Respecting the Coast" there are sections on threats to coastal habitats, coastal erosion and climate change. What thoroughly enhance the book are over 230 photographs, which show what a precious heritage we have on and off our coastline. A wonderful book and highly recommended.

Cruising Cork and Kerry

Graham Swanson

Imray Laurie Norie & Wilson Ltd

ISBN: 0 85288 758 2

www.imray.com

£27.50 stg / 2005

This book has been written for those that cruise the waters of south west Ireland from Youghal, Co. Cork, to Tralee, Co. Kerry. The book's introduction has short and crisp information on such things as weather, forecasts, hazards, salmon nets, marine farms, Irish coast guard communications, safety, pilotage, navigation, facilities and shopping. There are two pages of excellent drawings of common seabirds one may encounter at sea. At each anchorage a short description of the town/village and an aerial photograph is included for each place. These photographs are fascinating. Listed are such items as moorings, marinas (if there is one) car parks etc.. There are many other excellent photographs and of course a plan on each anchorage with depths. This book is beautifully presented and ideal for the sea lover but it should have a much wider readership. The landlubbers that visit the many sea towns and villages along the SW coast of Ireland would find it most helpful because it has much information, especially in the beautiful and informative aerial photographs rarely if ever seen in a tourist guide.

The Estuarine Ecosystem
ecology, threats and management
(Third Edition)

Donald S. McLusky
& Michael Elliott

Oxford University Press

www.oup.co.uk

ISBN: 0 19 853091 9 (Hbk)

ISBN: 0 19 852508 7 (Pbk)

Price: £29.95 / 2004

Most people do not realise how important estuaries are for the well-being of our marine environment. Many believe they have little life, especially where there are many mudflats, but of course this is a total fallacy. Estuaries are vibrant places, full of plankton, fish, plants, birds and many other forms of animal life and need to be protected. Estuaries can be perceived as either the originators of pollution or more often the recipient of pollution that originate on land, freshwater or from the sea. This book has chapters on life in estuaries, primary producers, plant producing, primary and secondary consumers, estuarines uses and users and the management of estuaries. We are told this book is a text book for advanced undergraduate and graduates. I beg to differ. Its is ideal for local and port authority personnel and for the lay person as well.

People need to understand that all types of pollutants from sewage to excessive nutrients flow into estuaries so each of us has an input into the health of our estuaries. This book explains many of the problems that need to be addressed. Highly recommend.

The Gulf of Alaska: Biology and Oceanography

Edited by Philip R. Mundy

Pub. No: AK-SG-05-01

Alaska Sea Grant College Program

www.uaf.edu / seagrant

ISBN: 1-56612-090-X

US$25.00 / 2005

When one talks of the Gulf of Alaska one has to remember that twelve and a half per cent of the continental shelf of the United States lies within this area. The Gulf of Alaska (GOA) is one of the most productive ocean regions in the world. It is the home of immense populations of fishes, sea birds and marine mammals. Tens of thousands of Alaskans make a living out of the sea.

Included in the eleven chapters of the book are climate and weather, biological and chemical oceanography, benthic communities, seabirds, fish and shellfish and marine mammals. I found the chapters on sea birds, fish and shellfish fascinating. The Gulf has a population of some 7.8 million birds and one must relate these to fish stocks. There has been a reasonable amount of monitoring of numbers since the 1970s. The author calls for more monitoring in his conclusion, stating "it is very clear that long-term monitoring programmes for bird populations are essential." The joint authors of the chapter on Fish and Shellfish describe the main fish stocks throughout the Bay. They give an excellent overview of the commercial fisheries with special reference on salmon, pollack, Pacific cod, halibut, crab and shrimp. The final section of this chapter has a very interesting discussion on forage fish and their effect on commercial fishing. If only some independent minded scientists would come together and analyse Ireland's marine resources in a similar fashion to the GOA. This book should be a must for scientific managers, fishermen and school libraries.

Business & Biodiversity
The Handbook for Corporate Action

Edited by Nick Bertrand

IUCN

www.iucn.org / bookstore

ISBN: 2-940240-28-0

Price: £12.50 stg / 2002

This book has three sections:

1. The business case for biodiversity shows how responsible biodiversity stewardship is a fundamental business issue. It explains the concept of biodiversity and the three objectives of the Convention on Biological Diversity: conservation, sustainable use, and benefit sharing. It also surveys the risks and opportunities which biodiversity presents to business. Insights from companies demonstrate the business case.

2. Corporate biodiversity issues, looks at a selection of issues of particular importance to the corporate sector. Lessons learned within the corporate world are presented, covering issues such as protected areas and "hotspots", threatened and invasive alien species, and access to genetic resources. Advice is also given on how a company can identify and prioritise the biodiversity issues it should address.

3. Corporate and biodiversity action, provides companies with a starting point on how to deal with biodiversity issues and develop a biodiversity action plan. Practical guidance is offered on integrating biodiversity considerations into a company's environmental and social responsibility programmes. A framework for corporate action and key components of a biodiversity action plan are presented, illustrated by examples from corporate practice.

Finally, environmental management in companies, if they believe in environmental care, need this book on their shelves. What is striking is that major worldwide companies (such as Shell and Du Pont) have contributed resources to produce this book. Many have contributed case studies giving tangible evidence of their commitment.

Caring for the Earth
A Strategy for Survival

Mitchell Beazley

IUCN

www.iucn.org / bookstore

ISBN: 1 85732 168 5

Price: £10.00stg / 1993

This book presents a strategy for a kind of development that provides real improvements in the quality of human life and at the same time conserves the vitality and diversity of the Earth. Many of the pictures alone tell the story of this book, the negative ones showing desolation and poverty. One stunning but depressing photograph of a ship drowned in sand, a haunting image from what was once part of the Aral Sea, Uzbekistan. This sea has lost two thirds of its area as a result of grossly misconceived government planned irrigation schemes. Chapters include Gambling with Survival, Working Together for Change, Human Settlements, Forest, Freshwater. Anyone from the industrial world reading this book should become uneasy. They must recognise that we cannot continue destroying the planet and leaving catastrophic problems, which can only be solved if we act now. A book to hit one's conscience. Read it.

International Environmental Governance
An International Regime for Protected Areas

Edited by John Scanlon and Françoise Burhenne-Guilmin

IUCN

www.iucn.org / bookstore

ISBN: 2-8317-0768-4

Price: £9.50stg / 2004

Governance can be described as the means by which society defines goals and priorities and advances cooperation; be it globally, regionally, nationally or locally. Governance arrangements are expressed through legal and policy frameworks, strategies, and action plans; they include the organizational arrangements for following up on policies and plans and monitoring performance. Governance covers the rules of decision-making, including who gets access to information and participates in the decision-making process, as well as the decisions themselves.

The book has four sections: the Executive Summary, An International Legal Regime for Protected Areas, Protected Areas and Certification, International Funds, Partnership and other Mechanisms for Protected Areas. Like other books from IUCN on Protected areas, this is a book for the bookshelves of government agencies and managers with responsibility for protected areas.

Communicating Protected Areas

Editors: Denise Hamú, Elisabeth Auchincloss and Wendy Goldstein

IUCN

www.iucn.org / bookstore

ISBN: 2-8317-0822-2

Price: £10.00stg / 2004

This interesting book is drawn on material from the Vth IUCN World Park Congress (Durban 2002). Recommendations on a strategic agenda for communication, education and public awareness approved by workshop stream participants. The papers presented give a very useful insight into the use, value and role of communication as a means of building support for protected areas.

The conclusions of the group could be used for any environmental project that needs promotion and so this book would be a very useful addition to people working and promoting the environment. It has to be recommended.

International Water Governance: Conservation of Freshwater Ecosystems
Vol. 1 International Agreements Compilation and Analysis

Edited by Alejandro Iza

IUCN

www.iucn.org / bookstore

ISBN: 2-8317-0815-X

Price: £20.00stg / 2004

The objective of this series is to help provide a better understanding of existing governance arrangements for the preservation of freshwater ecosystems and to assist the on-going process of the review and evolution of such arrangements. The book contains a compilation and analysis of selected watercourse agreements for some water resources from around the world along with an analysis of other multilateral environmental agreements that may impact the conservation of freshwater ecosystems. There are sections which relate to non-watercourse agreements, European Legislation and some Law of the Sea agreements.

Towards a Strategy for High Seas Marine Protected Areas

Proceedings of the IUCN, WCPA and WWF Experts Workshop on High Seas Marine Protected Areas 15-17 January 2003, Malaga, Spain

Edited by Kristina M. Gjerde and Charlotte Breide

IUCN

www.iucn.org / bookstore

ISBN: 2-8317-0732-3

2003

Available free of charge (p&p only)

These proceedings are offered in the hope that they will inform and inspire others to join efforts to protect the 64% of the oceans surface that is beyond national jurisdiction. This document and the four action plans produced may serve to guide, co-ordinate and prioritise activities towards a representative system of high seas Marine Protection Areas. They also urge 1) protection of seamounts in the short term and 2) improve implementation of the existing legal framework for oceans government. Other recommendations include technical and scientific support and public relations. With the huge over-fishing of the high seas at present this report is a must for government and other state agencies and fish mangers. It is the way forward whether sooner or later.

Everything you always wanted to know about birds... but were afraid to ask!

Stephen Moss

A&C Black

www.acblack.com

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£9.99 stg / 2005

At last a book for the non-birder. Hundreds of questions and answers about our feathered friends. How many of us would like to ask simple questions but are embarassed to ask an expert. Let me list a few:

* Do birds sing in the rain?
* Do all ducks quack?
* Do birds build more than one nest?
* Why are some eggs white, while others are patterned or coloured?
* How do young birds in the nest get water?
* Can birds fly upside-down?

These are but a sample of over 450 questions which are answered in this educational and enthralling book. Great for children and even better for adults.

Conserving a Special Landscape in Russia's White Sea

By John Akeroyd

Solovki Monastery is an integral part of its island and forest environment. Inset: Inspired landscape architect Kim Wilkie.

CONSERVATION involves more than just plants, animals, air, soils and water. Landscape architect Kim Wilkie, based in Richmond-upon-Thames on London's western edge, comes to conservation from quite a different angle to the biologist or environmental scientist. Taking a historical and aesthetic overview, he seeks to identify, protect and enhance landscape, using the past to illustrate and improve the present. "My fascination" he says, "is how man and land relate to one another, and how human culture and wildlife have emerged from that relationship." Recent commissions for his company, Kim Wilkie Associates, include a botanic garden for Moscow University, the garden of London's Victoria and Albert Museum, and modern grounds for Heveringham Hall in Suffolk based on 18th-century designs.

Some of Europe's best habitats are artifacts of human activity where plants and animals thrive in a cultural landscape. In Ireland, the Burren and the Curragh of Co. Kildare spring to mind; and Eastern Europe is rich in such places. One of Kim Wilkie's most exciting projects was to produce a strategy plan for the future of the Solovki Archipelago, north-west of Archangel in the White Sea of northern Russia. Local people have profoundly altered this 350-km^2 mosaic of sea, rocky islands, freshwater lakes and coniferous forests, whilst retaining its spirit of wildness. The site holds both Neolithic burial mounds and stone labyrinth, and a working Russian Orthodox monastic community, established in 1429, even before Russia was a nation. In Soviet Union days, Solovetskiye – which features in Alexander Solzenitsyn's 1973 book 'The Gulag Archipelago' – was a slave labour camp. Monks returned only in 1990, and two years later it was declared a UNESCO World Heritage Site.

"Part of the interest", says Wilkie, dissecting the landscape with his architect's eye, "is that it's on the margin of human existence near the Arctic Circle. The area has been settled for thousands of years and has long been seen as a sacred space. The monks devoted themselves to sustaining life. They built channels inland to lakes to provide fresh water and to reclaim just enough marshland to grow enough hay, to feed the cows that produced the dung needed for their vegetable plots – enabling them to survive the winter. They selectively harvested dead wood from the sparse forests, and carefully harvested seaweed. Curving breakwaters connect islands – with a fish farm on the leeward side." Wilkie is confident that this remarkable place is not a relic of a lost era but has a viable, secure, sustainable future. From its foundation, the monastery evolved as a complex of churches, monastic buildings and villages. Facilities the monks built for visiting pilgrims offer a basis for modern spiritual and environmental tourism.

This Russian project led to a commission from Prince Charles and others to produce a review and management plan for the Saxon Villages of Transylvania, Romania, a landscape of medieval villages, timeless patterns of rural life, and biodiversity-rich countryside (see *Sherkin Comment* 32 and 40). But Wilkie's most ambitious project lies nearer home. His office on Richmond Hill is close by one of England's most famous vistas, of the River Thames winding through trees and meadows across London's western suburbs – both historic 18th century landscape and green corridor taking nature right into London. The Thames Landscape Strategy is an ambitious project, funded by the Heritage Lottery Fund, to restore the meadowland, trees and 18th century gardens of this Thames urban countryside corridor. It will create a fitting backdrop for fine period buildings such as Ham House, Kew Gardens and Hampton Court Palace. Alexander Pope, the 18th century poet whose naturalistic Thames-side garden here inspired the English Landscape Movement, would certainly have approved. "All must be adapted", he wrote, "to the Genius and the Use of the Place, and the Beauties not forced into it, but resulting from it." Indeed, this quote appears on Kim Wilkie Associates website (www.kimwilkie.com)!

Photos: ©

Canals bring fresh water unobtrusively through the forests.

Solovki Monastery, founded in 1429, has a bright future built on a long tradition.

An old monastic building and well-head blend into the landscape.

A mosaic of islands and conifer forest in the White Sea.

Dr John Akeroyd edited The Wild Plants of Sherkin, Cape Clear and adjacent islands of West Cork *(1996) and remains active in botanical recording at the Marine Station.*

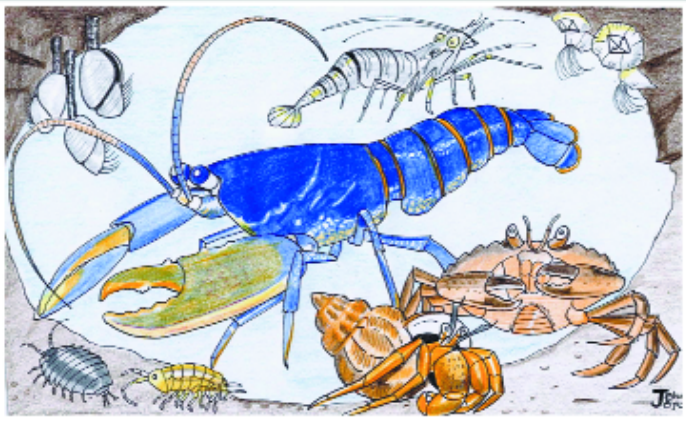
Junior Pages Junior Pages

The Crusty Crustacea . . .

Lobsters, crabs, prawns, shrimps, sand hoppers and even barnacles all belong to a class of animals called Crustacea (pronounced "crust – asia". They probably share common family ties with insects in that they belong to the same major division of the animal kingdom, the Arthropoda (animals with jointed feet).

Of the crustacea found around the Irish coast, the most valuable are the lobsters, crabs and crayfish, which are caught with baited pots laid on the seabed. The Dublin Bay Prawn (served in restaurants as "scampi") lives in muddy burrows in the seabed and is caught with nets.

Some crabs in tropical countries have managed to climb out of the sea to make a living on land. In the South Seas of the Pacific, the robber crab, is said to actually climb trees and cut down coconuts. While the largest animals in the world – the great whales – feed almost exclusively on huge swarms of flattened shrimps called "lobster krill" which they filter out of the sea by the ton.



Crusty on the outside – soft on the Inside . . ?

Unlike you and I, lobsters, crabs and all crustaceans do not have a bone in their body. Their strength comes from an outside skeleton (or "exoskeleton") to which their muscles are attached. As a crab (for instance) grows, this rigid exoskeleton becomes too small and the animal has to split its old shell, climb out of it like an ancient knight climbing out of a suit of armour, and then quickly hide somewhere safe until a new exoskeleton grows around it (see below).

Stop Press

Pirates Celebrate World Ocean Day – June 11th

Over 3,000 people turned up for a Monster Pirate Party to celebrate World Ocean's Day with the Marine Institute at Oranmore, Co. Galway in the company of BIM, the Western Fisheries Board, the Geological Survey of Ireland, the Irish Whale and Dolphin Group, and many clubs and societies from the Galway area.

The event was linked with the World Oceans festival in Tramore, Co. Waterford.

Check out: www.worldoceanday.com www.marine.ie

Captain Cockle's Log

Welcome aboard shipmates! Together, we'll be taking a look at the world's greatest natural resource -- the sea!

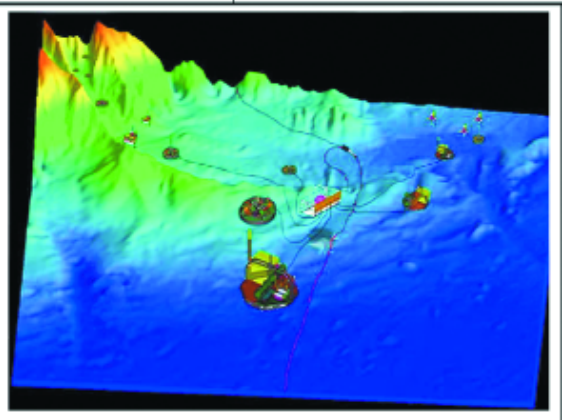
Words & pictures by John Joyce
www.cockle.com © John Joyce 2005

An Irish tsunami early warning system . . .?

Tsunami warning systems, robot submarines and deepwater observation stations along the Irish continental shelf that can beam real-time pictures of the seafloor onto computers in schools all over the world were discussed at a high level international meeting in Dublin Castle earlier this year.

CeltNet – a prototype underwater monitoring station off the Irish coast is planned for the Porcupine Basin to monitor seabed and ocean conditions. The underwater observatories can measure seawater temperature, nutrients, current and monitor marine life through video cameras. The systems can also be fitted with pressure sensors to detect the long wavelength waves that warn of approaching tsunamis. Ireland has suffered from tsunamis in the past, the worst being in 1755, which affected our south west coast as far north as Galway Bay and was the result of a major earthquake in Lisbon, Portugal.

For more information, check out www.ssc06.com www.neptunewashington.edu and www.neptunecanada.ca



Cool New DVD

A cool new DVD from the Marine Institute follows the adventures of scientists and crew on the research vessel *RV Celtic Explorer* in search of the deepwater fish orange roughy.

This 30 minute programme shows what it's really like to be at sea on a scientific mission and features underwater robot cameras, unique footage of Ireland's deep sea coral reefs and computerised mapping systems in action. Available from the e-store of the Marine Institute at www.marine.ie

Buoy Zone

Fishermen, yachtsmen and other water uses can all receive real-time weather information from a network of offshore databouys on their mobile phones using the text messaging system SMS, thanks to an innovative new service pioneered by the Department of Communication, the Marine and Natural Resources, the Marine Institute, Met Eireann and the UK Met Office. This service complements the on-line weather information recently updated and improved by the Marine Institute at www.marine.ie/databuoy

Garden Birds

By Declan Murphy

Thrushes are well known for their melodious songs and these include both the Song Thrush and the Mistle Thrush. They are both resident in Ireland and at first glance appear quite similar in appearance with a distinctive spotted appearance. However they differ quite markedly in their habits and their historical references.

SONG THRUSH

Photos: © BirdWatch Ireland

Slightly smaller than a Blackbird, the Song Thrush is a bird of distinction. For hundreds of years it has been tenderly observed by common people and by poets. It is one of the most welcome of the birds which visit our gardens and it is quite as widespread in suburban areas as in woodland. Its prowess as a singer have long drawn attention to it and immortalised it in prose. The song is loud and ringing with full clear notes and a sweet tone. It is Robert Browning's rapturous thrush that 'sings his song twice over', Shakespeare's 'Throstle with her note so true' and Skelton's 'Mavis with her whistell' The name Mavis which appears in Chaucer and other Middle English poets comes to us via the French mauves and is of Celtic origin and appears in many other Celtic and Irish references.

Song Thrushes are shy birds. They have medium brown upperparts with small black spotting on a buff breast. They are usually to be seen singly or occasionally in pairs and rarely far from cover. They often forage in the leaf litter beneath trees or along the edge of shrubs and hedgerows. Earthworms and grubs form a large part of its diet as do berries in the Autumn and early winter. Its speciality however is feeding on snails, especially in dry weather. It cracks these against a stone to break their hard shells. Over a period of time the area surrounding the 'anvil' becomes littered with shell fragments, a good indication that there is a Song Thrush at work in the area.

Nesting starts in March. The female builds the nest in a tree or a shrub, usually close to the trunk. The nest is made up of twigs, grass and moss and lined with a smooth layer of mud, which distinguishes it from the similar nest of the Blackbird, which is unlined. Between 3 and 5 eggs, light blue in colour, are incubated for 10 – 17 days and the young remain in the nest for a further 13 days with the young becoming independent soon afterwards. There is usually a second brood and occasionally a third.

The far carrying musical song comprises a series of short phrases, each repeated 3-5 times. It sings during the day and late into the evening, often long after the other birds have stopped singing. They start singing on mild winter days, often in November or December with birds in full song by February and continuing into late June.

MISTLE THRUSH

Larger than the Song Thrush the Mistle Thrush is a striking bird. Its bold upright stance and strong spotting on its underparts command attention. It is a bird of open fields and parks and does not readily visit small gardens. It is aptly named as it shows a marked fondness for berries especially Mistletoe and Holly. Its fondness for berries was mentioned by Aristotle in his History of Animals in the fourth century BC. Its other Old English names such as 'Hollin Cock' and 'Holm Cock' are also reminders of its diet. (Holm and Hollin are derived from holin or holly)

During the breeding season Mistle Thrushes will usually be seen in pairs, outside the breeing season and in the winter months they usually form small groups or flocks comprising 15 – 20 individuals. They often mix with other winter Thrushes such as Redwing and Fieldfare.

They are big birds, larger than Song Thrushes and appear to be a lot 'taller' as they stand very upright. They often hop across open fields in big bounds, quite unlike a Song Thrush. The upperparts are a cold grey brown and the underparts are white with large bold black spotting. They feed primarily on earthworms and grubs such as leatherjackets during the breeding season and rely heavily on berries during the autumn and winter months. These include Rowan, Hawthorn, Holly, Rosehip and Cotoneaster. They will also take fruit at this time of year.

Mistle Thrushes are early nesters and may begin as early as February. The nest site is usually in the fork of a tall tree and often one that stands alone from surrounding vegetation. The nest is cup shaped and made from grass, roots, leaves and some earth. It is then lined with finer grass. Between 3 and 5 speckled eggs are incubated for 13 – 15 days with the young remaining in the nest for a further 12-16 days. Both parents then tend to the young for up to two weeks after which they leave the nest. There is often a second brood.

The Mistle Thrushs song is not nearly as melodious as the Song Thrush but is powerful and far carrying. It has a distinctive wildness about it and a certain rambling quality. It is almost always delivered from the very top of one of the tallest trees often the nest tree itself, and is given in all weathers. Its habit of singing in windy and wet weather has earned it the name of 'Stormcock'.

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, Rockingham House, Newcastle, 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 web-site for details: www.birdwatchireland.ie

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

- Visit the Migration web site to learn about the fascination of bird migration
- 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, Rockingham House, Newcastle, Co. Wicklow.
Tel: 01-2819878 Fax: 01-2819763
Email: info@birdwatchireland.org

Website: www.birdwatchireland.ie

Bird Quiz

What is a Stormcock?

The first five correct answers drawn will each receive a copy of *'The Usborne Spotter's Guide to Birds'*. Answers on a postcard to *'Sherkin Comment'*, Sherkin Island Marine Station, Sherkin Island, Co. Cork.

This activity is from the handbook ***A Day of Adventure in the Forest – Environmental Activities for Protected Areas*** offers suggestions for activities to develop guided excursions into forests, protected areas and other natural spaces, and encourages participants to discover the answers for themselves by experiencing nature using all their senses.

The handbook is designed to support and promote new and creative activities related to environmental education within the protected areas of Panama, Central America. Though it presents various alternatives and suggestions for guided excursions within Panama's forests, these can be easily adapted for many different situations.

The handbook is available, free of charge plus postage & packing from IUCN Publications – www.iucn.org/bookstore ISBN: 9962-8806-0-2

Copying Bark

Contents:
To copy or take an impression of the bark from different trees.
Objective: to call attention to the differences among the barks of trees
Type of activity: tranquil, creative
No. of participants: unlimited
Age: 6 years and older
Time limit: approximately 10 minutes
Materials: heavy paper, pencils, crayons, charcoal, chalk
Preparation: find an area with a variety of species
Weather conditions: dry

Development:
Move to a place with a large variety of tree species. Distribute the sheets of paper and pencils, crayons, charcoal or chalk. Each participant should trace different trees. The participants approach the trees, place the paper against the bark and lightly pass their pencils or colours over the paper. The structure of the bark will appear on the paper.

Variations:
Instead of tracing different tree barks, you may trace one species at different ages. You can collect leaves, seeds and fruit from the species in question.

Meeting a Tree

Contents:
To feel a tree with closed eyes and to recognise it later.
Objective: to establish a relationship with a tree
Type of Activity: tranquil
No. of Participants: maximum 20 persons
Age: 5 years and older
Time limit: approximately 30 minutes
Materials: blindfolds
Preparation: find an area of the forest with notable trees
Weather conditions: N.A.

Development:
Divide the participants into pairs and distribute a blindfold to each pair. One participant in each pair is blindfolded. The partner leads the blindfolded person along a path to a notable tree. The "blind person" tries to get to know the tree by touching and smelling it. The blind person is led by his/her partner on a roundabout path back to the starting point, where the blindfold is removed. Now the formerly blind person must try to find his/her tree. Once the first round is finished, the pair switches roles.

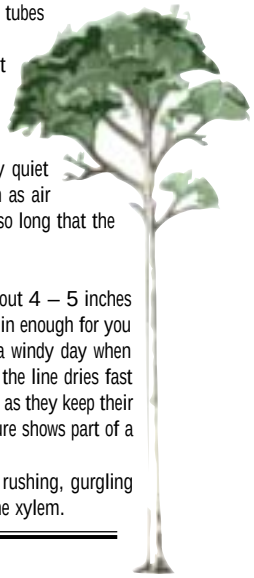
Suggestions:
Form pairs with persons who have confidence in each other. Before beginning, discuss with all the participants the characteristics of some notable trees. Everything that can be revealed though touch should also be mentioned. This is very important for young participants. For example you can hug a tree to find out how wide it is, you can detect at what level its branches begin, you can search for holes made by birds or other animals, and you can determine if the bark is smooth or grooved. Remember that only when the blind person thinks he/she can find the tree again should he/she be taken back to the starting point. Here, give the person two or three turns before removing the blindfold. Now the person tries to find the tree by using the image created in his/her mind. If the person cannot find it, you can help them by saying things, like, "cold, cold, hot".

Listening to a Tree

Dr Rosie Solbé

Have you ever heard a tree working? I hadn't until Nigel Brown of Treborth Botanic Gardens, part of Bangor University in North Wales, told me how.

One of the things that trees, like other plants, have to do in order to survive is to pull water up from the ground through their roots and then up through the stem, the trunk in the case of a large tree, to all parts of the plant. The water is pulled up through the xylem, the scientific name for the wood. The xylem is made up of tiny wooden tubes about the diameter of a human hair



The water is sucked up through the xylem because it evaporates from the leaves, so more water is pulled in to take its place.

Just as if you are pulling a drink up through a straw it makes a gurgling noise if air gets into the straw so a very quiet gurgling noise is made by water moving through the xylem as air gets in. And air gets in quite easily because the tubes are so long that the column of water breaks and rejoins.

You can hear this gurgling noise!

You have to find a young Eucalyptus tree with a trunk about 4 – 5 inches across. A tree as young as this will have bark smooth and thin enough for you to hear the water rushing through the xylem, specially on a windy day when the leaves are losing water very quickly, just as washing on the line dries fast in windy weather. Eucalyptus trees are easy to spot in winter as they keep their long narrow leaves when most other trees are bare. The picture shows part of a large leafy eucalyptus tree.

Press your ear to the trunk and listen - those crackling, rushing, gurgling noises are the sound of the water being pulled up through the xylem.

Dr. Rosie Solbé, St Asaph, Denbighshire, UK.

Puzzle Page

TREE WORDSEARCH

All the trees listed below are native to Ireland.
Try to find them in the grid on the right.

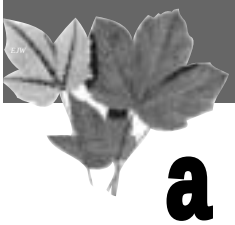
ALDER
ASH
ASPEN
BAY WILLOW
BIRD CHERRY
CRAB APPLE
DOWNY BIRCH
EARED WILLOW
GOAT WILLOW
GREY WILLOW
HOLLY
JUNIPER
PEDUNCULATE OAK
ROWAN
SCOTS PINE
SESSILE OAK
SILVER BIRCH
STRAWBERRY TREE
WHITEBEAM
WILD CHERRY
WYCHELM
YEW

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

Word for Word

How many words, with two letters or more,
can you make from the word:

SYCAMORE



a forest of trees

1 _____ _____
2 _____
3 _____ _____
4 _____
5 _____
6 _____
7 _____
8 _____ _____

SESLEIS KOA

SAH

VIESLR CIRHB

DEARL

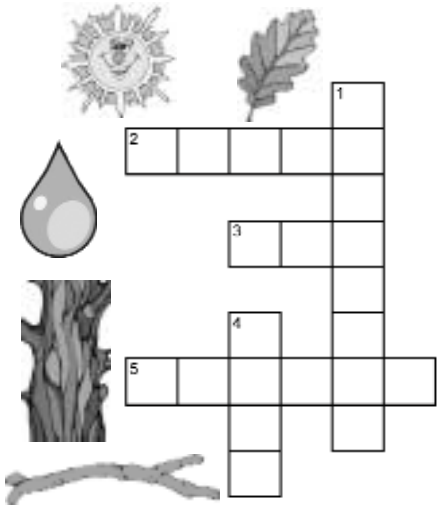
LYOLH

RAWON

HEIMBWETA

SOCTS PENI

Stumped!



Across
2. What a tree sucks up through its trunk.
3. Provides energy for the tree.
5. These are green and make food for the tree.

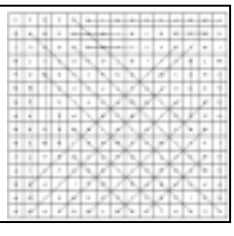
Down
1. Limbs that support the leaves.
4. Protects the trunk of the tree.

ANSWERS TO PUZZLES

A Forest of Trees:
1. sessile oak; 2. ash; 3. silver birch; 4. alder; 5. holly; 6. rowan; 7. whitebeam; 8. scots pine. NATIVE IRISH TREES

Stumped!:
Across: 2. Water; 3. Sun; 5. Leaves. Down: 1. Branches; 4. Bark.

Word for Word:
We 42 found the following words: ace; aces; am; are; came; cameo; cameos; car; cmes; come; mace; mare; mare; mares; may; mayor; mayors; me; more; morse; my; or; ore; race; races; ram; ray; rays; roam; roams; rome; same; say; scam; scar; some; sore; soya; yam; yams; yes; yore. How many more can you find?



"Donegal here I Come!"

By Margaret Cox

MY name is Margaret Cox and I am from Fenagh in County Carlow. I am currently living in Cork City, where I am doing a degree in general nursing at University College Cork.

I first got involved with Gaisce – The President's Award during my Secondary School years at Presentation De La Salle College in Bagenalstown in Carlow, where I completed my Bronze and Silver Award. When I decided to go for gold, I asked my President's Award Leader Sheelagh Clowry to continue being my PAL, to act as my leader for my Gold Award challenge and she agreed.

There are four sections to the award and for the 'Skill' section I learned Sign Language. I had always wanted to do this, so I researched and took on the challenge. It seemed like a perfect choice to fulfil a personal goal and to end up with a valuable skill. As I planned on doing a nursing degree, I felt this would be a useful skill in any future dealings with members of the deaf community. I was inspired by Helen Keller who wrote: "The best and most beautiful things in the world cannot be seen or even touched. They must be felt with the heart."

For my 'Community Involvement' I got involved in mentoring programmes and after school clubs, and I was also a volunteer in a Dublin Summer Camp. A very rewarding experience as I developed more and more interpersonal skills.

For the 'physical' section of the Award, I joined the local mountaineering club. An activity that combines many of my passions: nature, challenge, people, solitude and beauty.

One of the required activities for the gold is a Venture Project and I left this part of the award uncompleted until I had all my other activities finished. This venture was going to be my reward and time to reflect on all I had completed and learned. I researched the possibility of walking in Spain, Israel and other foreign countries. During the previous few years of my participation in this award, I had travelled a lot and lived and worked abroad. I discovered when I was away how little I knew about my own culture.

With this in mind and also other influences, I decided to discover and walk in a part of Ireland about which I knew very little. I was excited to begin to explore. I finally decided on Donegal. Donegal is a county that I had only vague memories of from when I visited as a child. When I rang the tourism board I was impressed by the friendliness and variety of options available. This began the process – Donegal here I come!

I took on the four-day adventure with friends of mine and on day one we trecked in Glenveagh National Park - from the Visitors Centre to Doochary Road near Lough Barra and returned to Loughnally – it was a tough and tiring first day. We were delighted to reach the An Oige Errigal Hostel where we cooked dinner for ourselves. As it was the off-season we had the place to ourselves. On day two we walked around Lough Garton. We decided to contour the outskirts of the park as we would cover a variety of terrain and see a lot of interesting wildlife and the beautiful scenery.

The plan for the third day was to climb Mount Errigal, but there was a bad mist and rain was expected so we had to resort to plan 'B'. We went walking in Ards Forest Park. It was a tough but enjoyable trek. We must have appeared mad to the many people that passed us in their cars, but we were determined to keep going in the pouring rain and persevered to the end. We really enjoyed the trail as it featured a lot of historical places, sand dunes, coastal walks and woodland trails. We were absolutely soaked through, tired and pretty miserable by the end of the walk at 15:30 hours (we had been going since 09:30 hours) and were delighted to get back to civilisation for hot food and a hot shower.

Photos: © Margaret Cox

Margaret Cox, who has attained a Gold Award with Gaisce – The President's Award.

On the final day of our venture we set off on a 20 km trek from the Derrylahan Independent hostel, which was the perfect location for our route plan. It was 2km outside of Kilcar where the route walk began. We were in good spirits and looking forward to a nice fine day and a feeling of great satisfaction to complete our goal. The forecast had been for a damp day but thankfully there were no showers. We used a route card from the 'Walk Donegal' information pack. It was a laminated route map and was perfect for our journey. We stopped along the way at the Spanish Church for lunch. We enjoyed the walk very much as it seemed we were the only people on the route for hours. It was nice to find a place in Ireland where there is little evidence of man's influence on the land. We arrived back in Kilcar at five o'clock as we took our time and stopped for breaks along the way. We really wanted to savour our final day. We were tired by the end of our trip but very proud on our completion.

I learned to love my country and all the many beautiful places that are so near that I have yet to discover. I have plans to go back to Donegal and discover more of its beauty (and next time climb Mount Errigal!). I would highly recommend time in Donegal. Although I was fortunate to get such time there, it really was too short and I wished I could have stayed longer.

It is nearly five years since I first set myself the goal of the Gold Award. I knew the type of commitment and energy needed from the challenge of both my Bronze and Silver, but the long time dedication was often the biggest challenge. The end seemed very far away.

The Gaisce has been part of my development and life story. I still see myself as being resourceful and always conscious of the opportunities that there are out there by being more aware.

I have gained so many personal qualities from taking part in the award. I have increased my confidence and belief in my abilities. All the social interactions and people skills which I have gained have influenced my path in life.

The Gaisce Award was a huge motivation for me to make contact with people from a variety of backgrounds and areas. Creating opportunities that I believe I would not have discovered or undertaken without my gold ambition in mind. I sometimes find it difficult to leave my 'comfort zone' and enter my 'stretch zone' but through working for the Gaisce Award I definitely have spent a lot of time in my 'stretch zone' and therefore grown immensely as a result.

As part of the Award Margaret has to complete a Venture Project. This brought herto Donegal and to Glenveagh National Park, Lough Garton, Mount Errigal and Kilcar.

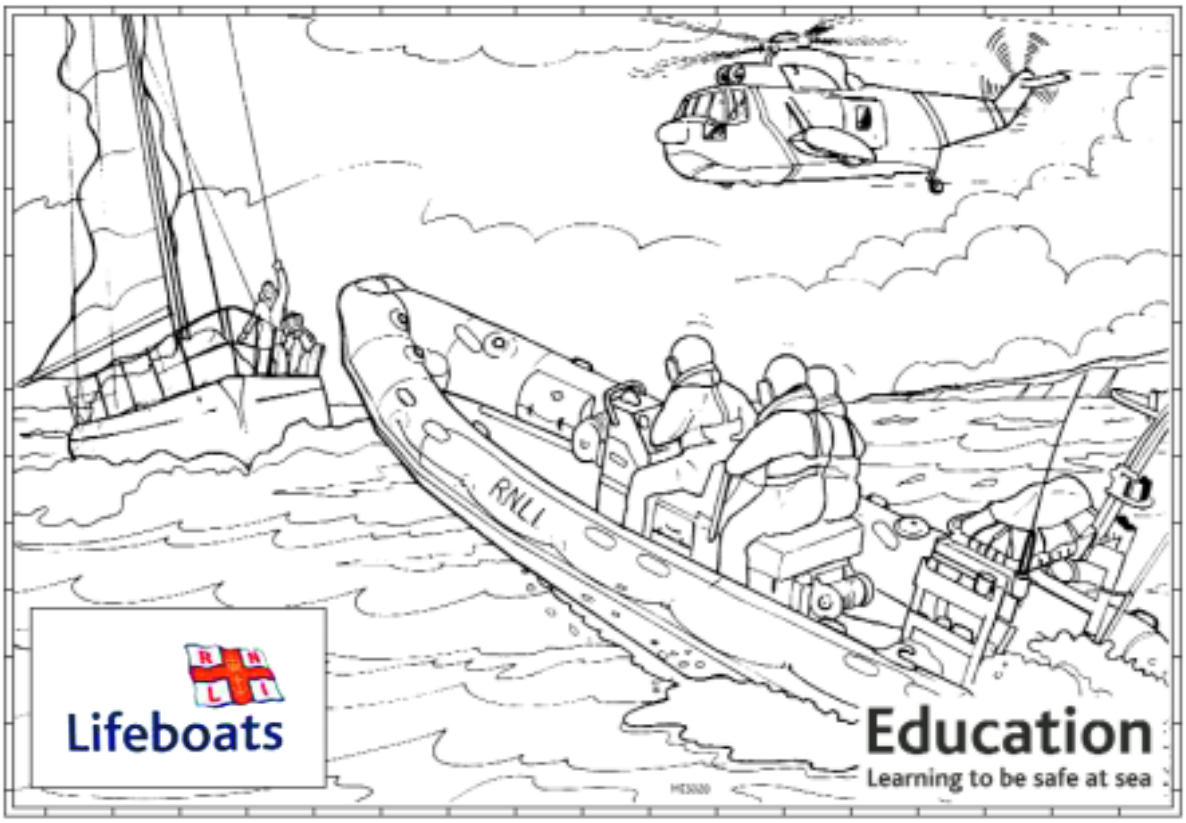
As I reflect back over my journey that was the Award, I am filled with memories; moments of laughter, determination, early mornings, new people, giggling children, fresh mountain air, new challenges, tiny hands reaching for mine, big hills, connections, fears, songs, frustrations, planning, completing, dirty boots, different accents, goose bumps, fairy cakes and the list goes on and on.

I am very proud of myself and have found a new belief that if I just set my goals anything is possible. It is a powerful feeling to have achieved the Gaisce Award, one that I can always look back on and indeed feel proud of.

I was presented with my Gold Gaisce Award by President McAleese on the 26th of April at the National Concert Hall in Dublin.

For further information about the awards contact Mr. John Murphy, Chief Executive, The President's Award – Gaisce, Dublin Castle, Dublin 2. Tel: 01–4758746 Email@p-award.net or Website: www.p-award.net

COLOUR-IN



The RNLI's site for young people (**www.rnli-shorething.org.uk**) is crammed full of exciting activities and games, from seeing how fit you have to be to become a lifeguard, to working out how to successfully launch a massive lifeboat and rescue people using your skills and knowledge. The RNLI is a charity that provides a 24-hour lifesaving service around Ireland and the UK. Their volunteer crews give up their time and comfort to carry out rescues in difficult and often dangerous conditions.

Moms Matter in the Briny Deep

By Michael Ludwig

ECOSYSTEMS have no memory. Once a system is altered, re-establishment of that version is just one of the possible new configurations. And since we often do not know what the original looked like, can we recognize a "recovery?" Several recent ecological studies consider elements of this problem and explain why efforts to restore fish populations are not going well. The studies suggest that understanding of aquatic ecosystems is incomplete and consequently, we are depleting the oceans of marine life at an increasing rather than decreasing rate. Orange roughy, Chilean sea bass and Atlantic cod appear to be bell weather species of the depletion spiral aimed at the economic extinction of traditional fisheries. Interestingly, these same studies suggest that the fisheries might be "saved" by imposing comprehensive controls on both honest and dishonest fishermen. Some countries are embracing these ideas, restricting catches, mounting naval operations against fish pirates and poachers and, as attention getting devices, even sinking ships that traffic in stolen fish.

The stories unfold from the fact that fish with long lives have more opportunities to produce their replacements than do fish with short lives. Berkley, Chapman and Sogard (*Ecology*, 2004) start with that fact, then offer evidence that as some species grow older they produce more and better eggs. And, the offspring of these older "mother" fish have better survival and growth potential. The differences are remarkable; a single 61 cm red snapper produces more eggs than 212 of her 43 cm long counterparts. The larvae of a 12-year old female rockfish grow four times faster and are able to withstand starvation for 12 days as compared to the offspring of a five year-old, whose slower growing offspring survive for five days when starved. The benefits of older moms are obvious. But, since the "best" fish to catch are the biggest, we have a problem.

In July of 2005, Worm, Sandow, Oschlies, Lotze and Meyers published a discussion of tuna and billfish concentration areas in the global ocean in *Science* (*Sciencexpress*). These species are some of the most widespread (equator to about 55 degrees latitude) and wide ranging fish in the ocean. When high sea fishing started, these species congregated in certain locations. Today, the number of concentration areas has been significantly reduced and several contain no more individuals than any other area of the ocean. The authors suggest that the concentration areas are vital to fish and should be declared High-Seas Marine Protected Areas. The "moms" are there.

Complicating the concentration area idea of Worm *et al*. is a paper by Shackell, Frank and Brickman in *Ecological Applications* (2005). They report that present day fisheries concentration areas may not be true or real "core" concentration areas because of the way fish migrate, reproduce and are harvested. For instance, if a stock is heavily fished in a concentration area, can they maintain their numbers? And, how do fish outside the optimum area realize there is available carrying capacity and move into that "best" habitat area? If the fish are slow growing and slow moving, the problem may be worse. This may be why the Scotian Shelf fish stocks of eastern Canada are not recovering although fishing has been severely restricted or prohibited for some species. Were too many "Moms" caught?

Disheartened? A recent discussion paper in *Oikos* by Mitchell (2005) speaks to "what is habitat and how do we identify it?" He offers that we may not understand what habitat is, but we need to if we are to manage resources efficiently. The U. S. designation of "Essential Fish Habitat" (EFH) is supposed to encourage the protection of those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. EFH designations rely on determining the nature and importance of habitat functions and values for fish. So, what makes certain fish congregate along the Manhattan waterfront when similar habitat is available across the Hudson River in New Jersey? Although we want to say "New York fish like the excitement of Broadway," the fact is they don't know the New Jersey habitat exists. To discover the New Jersey habitat they would have to leave Manhattan, swim through an unacceptable habitat (the main River) and find the new habitat. Are fish smart enough to undertake such a series of actions? Sampling in the River reveals that few fish make the crossing. If we don't understand the relationships between fish and habitat and fish don't take chances, how can we be effective resource managers?

Finally, a paper in *Bioscience* (2005) by Tear and eleven associates discusses "*How Much is Enough*" habitat when attempting to meet resource conservation objectives. If we want 100 fish do they need 22 or 2200 hectares of habitat? Resource Managers must have some method of evaluating these issues starting or ending with the question of how much is enough. Right now, there are some significant, unmet needs causing a lot of uncertainty and dwindling numbers of fish

Moms are important. Sometimes we do not understand how, but with continued research and good data collection a story is revealed. Let's hope that it is not too late for a happy ending.

The larger the cod the better the mom.

Michael Ludwig, NOAA/NMFS, 212 Rogers Ave., Milford, CT USA 06460-6499