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Coolim, Roaringwater Bay, Co. Cork.
Photograph: Robbie Murphy
A Major Investment in Wastewater Infrastructure

By Matt Murphy

Earlier in the year the Minister for the Environment, Heritage and Local Government, Mr. Martin Cullen, T.D., outlined a major investment programme in sewerage infrastructure. Because of the significance of such a programme for the good of the environment, the editorial will highlight the important aspects of the sewerage programme.

This investment programme 2003-2005 will cover 434 wastewater schemes. It is funded under the National Development Plan, which will ensure every single location in the country with a population equivalent greater than 1000 will have its own waste water treatment plant.

If this programme is delivered it will be a remarkable turnaround from what prevailed up to relatively recently where some of our major cities and towns were discharging wastewater with little, or in some cases, no treatment. There will thus be an increase in Ireland’s compliance with the 2005 EU Urban Wastewater Treatment Directive (UWTD) standard from 25% at the start of the NDP, to the current level of 69%, and a projected 87% compliance rate by the end of 2003. Full compliance is anticipated by the end of 2005.

The Minister outlined that “the great strides” of eliminating discharges of untreated sewage to the sea from the main towns and cities around the coast. “The Ringers Sewerage Plant in Dublin, is a prime example. This new plant, built at a cost of €286 million will be a remarkable turnaround from what prevailed up to relatively recently where some of our major cities and towns were discharging wastewater with little, or in some cases, no treatment. There will thus be an increase in Ireland’s compliance with the 2005 EU Urban Wastewater Treatment Directive (UWTD) standard from 25% at the start of the NDP, to the current level of 69%, and a projected 87% compliance rate by the end of 2003. Full compliance is anticipated by the end of 2005.

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The Minister and his predecessor have taken major decisions on environment care, such as the plastic bag, recycling, the Water Services programme, and now the Sewerage initiative. At times both have ruffled some feathers but have shown that they had the courage to drive forward often against opposition from many quarters.

It is hoped that the Minister will now examine other environmental issues that need an enlightened approach. The EU have taken legal proceedings against Ireland under the Groundwater, Birds and Habitats Directive. There are genuine issues to be addressed, especially:

- Inadequate designation of SPAs (Special Protected Areas) for dispersed and migratory bird species.
- Inadequate protection of SACs (Special Areas of Conservation) and of non-native bird species.

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By Oscar Merne

ALTHOUGH one of the commonest of our seagulls there is a dearth of information on numbers in Ireland prior to 1969-70, when the first full survey and census of breeding seabirds was carried out in Britain and Ireland. At the end of the 19th century Herring Gulls were almost exclusively coastal in distribution, rarely appearing inland. By the mid-20th century the species was regularly seen inland and a number of breeding colonies had been established, mainly on islands in large lakes such as Loughs Neagh, Corrib, Mask, Conn, Ree and Derg. There was also a general perception that numbers had increased in coastal areas, but there is little quantitative information available. The 1969-70 survey and census produced a grand total for Ireland of 59,700 breeding pairs, though this did not include the relatively small numbers breeding inland.

The overall increase in numbers of Herring Gulls in Britain and Ireland since the beginning of the 20th century has been attributed to a combination of reduced persecution and egg-collecting, and to a great increase in year-round food resources, including fishing waste (offal, discards), rubbish dumps, sewage outfalls, abattoirs, and the species’ adaptation to inland feeding on agricultural lands. Looking back three decades or so to the 1969-70 survey and census it seems that this may have coincided with a peak in Herring Gull numbers, for declines began to be noticed at some colonies soon after. A seabird survey and census carried out in the mid-1980s indicated a significant overall decline in Herring Gull numbers to c.40,000 pairs. Just recently, the final results of the Seabird 2000 survey and census have been computed and it has become clear that the Herring Gull situation in Ireland is alarming.

One of the most dramatic declines has been recorded on Great Saltee Island, Co. Wexford. Following the Seabird 2000 survey and census, it has become clear that the Herring Gull situation in Ireland is alarming.

HERRING GULLS
THEIR RISE AND FALL

One of the most dramatic declines has been recorded on Great Saltee Island, Co. Wexford.

Only a little over 6,000 breeding pairs were found in Ireland during the last survey and census - a decline of 90% over thirty years.

Wicklow Head, the main colonies on the Co. Wicklow coast, now have but a handful of breeding Herring Gulls. In Northern Ireland there have been major declines on Rathlin Island, the Copeland Islands and at Strangford Lough.

I mentioned earlier the culling of Herring Gulls on Lambay Island. It has to be said that culling has been carried out elsewhere, where very sensitive and important tern colonies have been vulnerable to egg and chick loss to predatory Herring Gulls. Back in the 1950s and 1960s there was a general perception the Herring Gulls were becoming too numerous and were having an adverse impact on other breeding seabirds. Therefore it was considered “a good thing” to cull them or destroy their nests. However, now that the species is in serious trouble, at least in parts of its range, control measures such as culling should not be carried out unless there is a major justification for it, and after non-lethal methods have been tried and found ineffective.

Oscar Merne heads the Bird Research Section of the National Parks & Wildlife Service, Department of the Environment, Heritage and Local Government, 7 Ely Place, Dublin 2.

Facsimile (021) 4342996

Victoria Cross, Cork
Telephone (021) 4545655
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Elements of Medicine

By Anthony Toole

THROUGHOUT the history of medicine, remedies for all ailments have appeared and disappeared with fashion and the centuries. Some had their origins in folklore, others emerged from the not unrelated, darker recesses of witchcraft and alchemy.

With the introduction of the scientific approach, a number of these cures have been found to be effective. The mechanism of their curative powers has, however, remained a mystery, and many are now incorporated into modern practice. On the other hand, some old remedies are known to have been ineffective, while a few were quite dangerous.

The poisoner’s favourite, arsenic, for example, has been used to treat illnesses as diverse as TB, diabetes, malaria, rheumatism and syphilis. Its close relative, antimony, used to cure skin complaints, and to induce vomiting, as tartar emetic, may have been responsible for the premature death of Mozart.

Mercury compounds were often used in skin ointments, despite the fact that this deadly metal could be absorbed easily through the skin. Another element favoured by murderers, thallium, was employed, often to dangerous levels, during treatment for ringworm, one symptom of its toxicity being hair loss, which exposed the infection and thus made it easier to treat.

Of course not all of these cures held significant dangers for their recipients. Among the more benign and beneficial were the uses of iron to cure anaemia, magnesium salts for constipation and indigestion and iodine as an antiseptic and for problems with the thyroid gland.

Despite the dangers, modern medicine continues to employ toxic elements in cases where there appear to be no safer alternatives.

The soluble salts of barium are poisonous, and if swallowed, cause vomiting, diarrhoea and ultimately, paralysis. Even the insoluble barium carbonate reacts with stomach acids to form a solution of barium chloride. On the other hand, barium sulphate is almost entirely insoluble, and will pass safely through the digestive system as a suspension of solid particles, which is opaque to X-rays. If a patient is given a ‘barium meal’, X-rays can then be passed through the stomach to reveal ulcers or tumours that would otherwise be invisible.

Bismuth belongs to the same family group as arsenic and antimony, and though it salts, in excess, can cause liver damage, it is much less poisonous. As the nitrate and carbonate, and more recently as the citrate, it has been used as a treatment for stomach ulcers. It appears to work by killing bacteria that cause ulcers and by protecting the stomach wall against enzymes that otherwise attack it.

Some compounds of aluminium, such as the alums, have been used for nearly 2000 years to stop bleeding. Other elements that lie in the same group, such as boron, gallium and the already mentioned thallium have their uses in modern medicine.

Boron is a non-metallic member of the group. Its atoms can be attached to chemicals which, when injected into the body, tend to concentrate in tumour cells, particularly those in the brain. When exposed to a beam of neutrons, these boron atoms become radioactive, giving off alpha rays, which kill the tumour cells. As the alpha rays cannot travel far in dense material (they can be stopped by a sheet of paper), they do minimal damage to surrounding healthy cells.

A radioactive form of gallium also concentrates in tumours that may occur in soft tissues of the body, such as the liver, spleen or lymph nodes, and can be used to diagnose such tumours, which would otherwise be difficult to detect. It is also used to treat skin cancers, like melanoma and to monitor the treatment of bone tumours, which would otherwise be difficult to detect.

Atoms of the toxic metal thallium closely resemble those of potassium and can be mistaken for such by the body. Radioactive thallium, when injected, finds its way to the heart, in the guise of potassium. The gamma radiation emitted can assist in the diagnosis of heart disease. The radioactivity decays, and the thallium will be eliminated from the body after a few days.

A radioactive isotope of yttrium can be attached to antibodies that attack cancer cells in the colon, bones, ovaries and pancreas, and can be used to destroy these cells.

Technetium is an element that is always radioactive. Any atoms that may have existed in the early earth have long ago disintegrated, so that the metal can now only be made in nuclear reactors. It is used in the diagnosis of cancers and to show up damage resulting from a heart attack. The residues formed by the decay of technetium are only mildly radioactive and are quickly eliminated from the body.

Lanthanum is known as a rare earth element, though it is much more abundant than better known metals like lead and tin. The carbonate of lanthanum is often added to the diets of patients with kidney disease to prevent the absorption of phosphates through the gut. The excess of phosphates that might otherwise be absorbed can cause painful bone deformities, as calcium phosphate is the main component of bone.

Even the genuinely rare and expensive metals find their places in medicine. Sixty tons of gold each year are used in dentistry. Gold fillings contain 75% of the metal. Gold compounds are also employed to treat rheumatoid arthritis, though the side effects of the build-up of gold, which include diarrhoea and skin rashes, mean that the treatment has to be discontinued after a few years.

Cis-platin, a complex of platinum with chlorine and ammonia, combines with DNA in cells and prevents replication. Because of this, it is used to kill cancer cells. Unfortunately, it has the same effect on healthy cells and can cause breathing problems and vomiting. Nevertheless, cis-platin brings about a 90% cure rate for some cancers.

While the medical uses of these elements continue to expand, and more diseases fall under their control, one must not lose sight of the toxicity to many of them. With greater understanding and monitoring of their effects, these can now be prescribed in quantities that ensure that the benefits vastly outweigh the dangers.
Hydraulic jet fluidises seafloor and cable

Pipeline Installation in Aquatic Settings

By Michael Ludwig

NATURAL gas, electricity and telecommunications transmission systems are expanding to meet increasing usage. This expansion is, often times, a competition of proposals to supply markets such as Boston, Massachusetts and Long Island, New York. In a growing number of distribution proposals, right-of-ways are being located in, over or under aquatic environments. The shift in routing arises from improved technologies for aquatic installations and the difficulty in obtaining land routes. Sadly, pipe and cable alignment proposals are driven, often, by the location of existing, land side infrastructure and without thorough consideration of aquatic impacts. A further complication is the varying missions of Agencies in the United States that regulate pipeline and cable installations.

Although newer technologies are designed to minimise environmental impacts or achieve compatibility more quickly, they do not eliminate damage to resources and habitats within and adjacent to the construction and operation right-of-way. Often, utility line (cable and pipeline) impacts can occur during installation or operation. However, through design, installation and operation management practices these impacts can be characterised and dealt with.

Horizontal directional drilling (HDD) allows the installation of utility lines well beneath sensitive areas such as trout or shellfish habitats. HDD can create conduits more than 1500 meters in length. Because drilling mud creates pressure, it can be squeezed out of any cracks along the borehole route. In such a “frac-out,” the mixture of freshwater and clay (sometimes with additives) escapes into the waterway and can create problems. The mud has the consistency of thick soup and when released in water, doesn’t readily disperse. It often sits on the bottom like a whipped pudding, covering and suffocating organisms unable to move from beneath it. Cleanup is difficult because the material is a liquid sitting in a liquid. A vacuum and filtering system is the usual recovery method. Although HDD is touted as a simple and safe method of avoiding impacts to surface ecosystems, the procedure requires a thorough understanding of the geology of the installation route, close attention during deployment and a recovery plan should a frac-out occur.

Burial of cables and pipes is now routinely considered for both pipelines and cables, and the trend is to deepen the burial. Of the burial options available, we prefer jets and plows for pipelines and HDD for cables and are movable, typically, of mud and sand mixtures are composed, of freshwater and clay with additives). The impacts of a HDD installation are characterised by the author. Pictures obtained from NOAA/NMFS, 212 Rogers Avenue, M. Ilioffd, CT, USA 06460-6489. M. Ilioffd Ludwig.
The Search for Red Blenny

Climatic Change or Insufficient Data?

By Paul Kay

As underwater photographers we all need to be keen observers of the underwater and its natural history, if for no other reason than trying to identify good subject matter. And being in the marine environment, this more often than not means watching its inhabitants and shooting natural history photographs.

Now I am not a marine biologist (despite having been described as such in various diving magazines), and would much rather classify myself as a marine naturalist. In this role I am the equal of anyone else who dives, as I can make observations of the species I encounter and their behaviour firsthand, and, providing I try to understand what I am seeing, am quite able to see things which are currently unrecorded (or at least impossible to find any existing records of).

This was brought home to me when I got a roll of film back from Glasson Rock of Inish Mór in the Aran Islands, Galway Bay, Ireland. This is a spectacular dive. You can follow a ledge along a sheer limestone wall until a boulder slope appears below. Many fishes, crustaceans and invertebrates make excellent subject matter (the cuckoo wrasse are tame despite not being diver fed), but it was one pretty red ‘Tompot’ Blenny which caught my eye.

I was using a Nikon 28–105 zoom lens on my Subal encased F100 and two Nikons SB105 strobes. This acts as a 50–105 macro lens capable of focussing down to just a few centimetres, and whilst not giving quite as close focus as either a 60 or 105 micro-Nikkor, it makes up for this in terms of versatility. Well, to get back to the ‘Tompot’, it was sitting on a rock and allowed me to zoom to 105 and compose. I took a couple of shots.

As with many pictures, it isn’t until they are back and on the lightbox that anything ‘special’ is revealed. This was the case here. Under the loupe, the Provia transparency showed a fascinating but strange feature of the ‘Tompot’. It had a yellow fringed, very dark blue spot towards the front of its dorsal fin. Now I’ve seen a lot of Tompot blennies but never one with such a marking, and it looked odd in other ways, as the body was not so ‘stout’ as a normal Tompot’s and the eye did not seem quite ‘normal’ either.

So I sat down with my books (a vast collection made over the last twenty years) and drew a blank. No temperate book contained anything remotely like this. So what was it? Well as Sherlock Holmes would undoubtedly have deduced, when the probable is exhausted move on to the improbable, and I did.

Eventually I located a similar looking fish in Peter Wirtz’s book Underwater Guide Fish - Madeira, Canary islands, Azores. This did not show the spot, but the eye and a blue patterning on the fish’s face did look similar (I had thought this just a variation on a Tompot’s colouring). I queried the book’s author (an expert on Blennies) regarding my fish by emailing a jpeg file off to him (the wonders of technology) and it was soon confirmed, I had photographed a Red or Portuguese Blenny.

Not only this, but the fish I had seen was a male in breeding colours (the picture was taken in June this year) and this was the cause of the spot – although in my specimen this was apparently very pronounced.

A Tompot Blenny off the north Wales coast.

An identifying shot from the Aran Islands showing a male Red or Portuguese Blenny (Parablennius ruber) in breeding colours.

Another picture of Red Blennies, this time from south Kerry. This photo illustrates that, unlike Tompots, Red Blennies are gregarious.
Now here’s where the fun starts; just what does this isolated record mean? I had some detective work to do. A round robin email to people I thought may be able to answer this revealed one confirmed record in the Scilly Isles, and also that more information was being sought about this fish’s distribution in Ireland. Having now ascertained that I was not looking at a Tompot and having determined the nuances other than the spot which were different to an ordinary Tompot, I started to wade through my many thousand underwater photos from Ireland. I now had a nagging suspicion that I had seen this fish before. And sure enough I found it.

The previous year I had dived in south-west Ireland and had photographed a group of Tompots in a crevice. This was in itself unusual as Tompots don’t tend to be very gregarious, but I had not really thought a lot about this at the time. As I reviewed the photograph it was clear that these too were red blennies. I searched further and sure enough another photo appeared. This time from St. Kilda! Not the world’s best photo but one I had taken when my old SB103s had been playing up (old age - I’m very grateful for Nikon’s recall). This again showed the red colour and blue patterning. Next I started on photos by my wife Lucy, who is also a diver. Lucy’s pictures revealed another, again in a crevice and this time from Islay, in Scotland.

Not a Tompot nor a Red Blenny, this is actually a male Butterfly Blenny guarding his eggs in Cardigan Bay, Wales.

Another friend has a nice photograph of a reddish Tompot that he took, framed and on his wall. Next time I called on him I examined it. Another one and from Kilda again! Recently I found that my searches were not unique. Nigel Motyer has had the same problem having seen the fish for years - he too finally identified it as the same Red Blenny. He added more records from Kerry to Donegal.

So we now know that the Red or Portuguese Blenny can be found all along the western Irish and Scottish Coasts. But what does this mean? Well it is tempting to think that it is an indicator of that in-concept Global Warming. Now whilst scientific evidence backs warming thoroughly, there is very little reason to believe that its effect will be the shift of ‘southern’ species northwards especially in the short term. In fact there is as much discussed about alterations in the Gulf Stream and what they might mean (it could cool down our own (temperate enough) seas. So the occurrence of one unusual fish in an area that it has not been recorded from before, is not an earth-shattering important event!

It is though a fascinating glimpse into what we are able to see for ourselves, something unusual enough to be overlooked by the academics and authors of many books. Perhaps it is something that should reinforce what we already know - that the marine environment is still a poorly understood place where observational skills can still reveal the unexpected, and where the camera is still coming into its own. Without a photograph, I would not have identified this fish as anything other than a Tompot and it is quite likely that it would have been far longer before anything went into print about its distribution.

Paul Kay BSc FRPS runs the Marine Wildlife Photo Agency in Angelsey, North Wales, UK.

Website: www.marinewildlife.co.uk

Photos: © Paul Kay
JOHN GORE-GRIMES sailed Arctic Fern from Howth to Northern Iceland and then to Scoresby. He proceeded northwards on the east Greenland coast stopping at Daneborg and Shannon Island. He went to the south end of Store Koldewey before turning to the east. The narrative here describes part of his voyage through the ice. He eventually tied up at Longyearbyen in Svalbard and sailed from there to the North Cape. From the North Cape he sailed to Tromso and the Lofoten Islands and from them to the Faroes, Scotland and home again to Howth. The voyage was just in excess of four thousand six hundred nautical miles. John was accompanied on this voyage by his nephew, Nicholas Gore-Grimes, Adrienne Roche, Rob Harris and Karen Rudd. John’s boat, Arctic Fern, is a 44 foot auxiliary sailing cutter built by Njad of Sweden.

For those who have never been in ice, the sight of even one small chunk is a great source of delight. It has to be photographed, not once but twice and from every angle. When these early photographs are developed, they are binned with a certain amount of silent shame as, later, many more photographs produce dramatic images. For those who have been there before, there is a certain inevitability about sea temperature at two degrees and drift ice floating by. It looks nice enough but you know that soon you will lock horns with it and you will feel a sense of almost uncontrollable fear and depression. Just as the solid ground is a sure cure for sea sickness, the only cure for ice is to get out of it. The trouble with sea ice is that it gets under your skin and when you leave it you, at once, start to forgive it, although hours before it may have caused you considerable grief. As the months roll by the crimson grief turns to black and eventually to misty grey and like the mist it finally clears leaving only good memories of clear and beautiful white and blue ice shapes. The following extract was written in 2003 and it illustrates the feelings of someone who has been there many times before. The new...
remember ice lessons which I had to see if it was still in date and tried to do, I could offer no solutions. More was a black situation. There was an and there was no way out. Nico went a small pool. Our entry lead had closed better than standing still. At 00.45 on a minute was a joy and every afternoon sun might burn off the fog, to move. The air temperature was -

We were stopped for two hours when Nico noticed that our small pool was getting smaller. He also noticed that the lead which we had come through, to get into the pool, was closing. Rob was optimistically fishing with rod and line in four thou-

We moved on at 04.30. Karen did an exclusive ice pool. We failed and we tried again at 18.00 but that failed exclusive ice pool. We failed and we seemed surprised about that. At 07.40 we were stopped com-

I rang the Norwegian Met Office in Tromso and spoke to the ice offi-

All of this effort was rewarded and up into the air. The sun was low and the sun's energy of massive ice floes are inspi-

I had been up for long hours and got nowhere. At 20.45 Karen spotted another lead. We went from one pool to the next open lead and directed us through. We moved south, as advised by the Met Office in Tromsø. All went well with the mainsail providing the power

The Arctic Fern’s journey into the Arctic Circle.

Hacking away the Ice using heavy sharpened ice picks, trying to create an opening.

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were motoring blind at very low speeds and we tried to look for leads on the radar. Much of the ice was no more than fifty feet and there was no way out the surface so that no clear picture emerged on the radar screen. We found a small pool and pulled in. We put the anchor out on the ice floe. It was 02.15 and we walked a little dis-

She knelt down and weaved her fingers to the rhythm of the wind. ‘It’s a, you know, when you’re dancing on the water’s surface some-

I had been up for long hours and got nowhere. At 20.45 Karen spotted another lead. We went from one pool to the next open lead and directed us through. We moved south, as advised by the Met Office in Tromsø. All went well with the mainsail providing the power

The Arctic Fern’s journey into the Arctic Circle.

Hacking away the Ice using heavy sharpened ice picks, trying to create an opening.
Schering-Plough are delighted to continue their association with Matt Murphy and his staff at Sherkin Island Marine Station on the production and continued success of the informative and entertaining Sherkin Comment.

Highlights from An Bord Pleanála’s Annual Report

An Bord Pleanála (The Planning Board) published its annual report for 2002 during the autumn. We give some of the main features from the Chairperson Mr. John O’Connor’s Statement:

- The total number of cases determined by the Board in 2002 reached almost 5,900 and was, by a significant margin, the highest output every achieved by the Board, representing a 15% increase on the 2001 output which was itself a record. The increased output was due to the package of special measures introduced by the Board to clear the backlog, which were detailed in the 2001 Report, backed up by a sustained exceptional effort by Board members and staff. The intake of cases in 2002 showed a decline of 16%, reflecting the downturn in economic growth and also the disruption in the planning system arising from the changeover to the 2000 Act, affecting applications made after 11th March 2002. The combined effect of the increase in output and the decline in intake resulted in the large backlog of cases on hand being eliminated by the end of the year with the result that the percentage of cases determined within the 18 week statutory objective period increased steadily during the year, from 26% in January to 61% by December 2002.

In 2003 to date, the rate of intake of cases is running a par with last year and the number of cases on hand has stabilised at a level commensurate with achieving the Board’s strategic target of determining 90% of cases within the statutory objective period. In the month of May the figure was 79% and the average time taken to dispose of cases was 15.8 weeks.

The following are some noteworthy features to emerge in 2002:

- The percentage of local authority decisions reversed on appeal increased from 29% in 2001 to 33% in 2002. This appears to be almost entirely due to the increase from 14% to 20% in the success rate of appeals against refusals which, in turn, may be accounted for by a tendency on the part of the Board to give greater weight to national policies, as opposed to local considerations.

- The percentage of appeals in which the Inspector’s recommendation was reversed by the Board, at 11%, was generally in line with the historical pattern, which must be regarded as satisfactory considering the high number of reports produced by external consultants of various categories (as opposed to Board staff) in 2002.

- There was a significant drop in the number of large (30+) housing schemes to come on appeal in 2002 (235 in 2002 compared to 392 in 2001). This may be due to the introduction of Part V of the 2000 Act relating to social and affordable housing which appears to have artificially brought forward planning applications in 2001 and led to uncertainties surrounding the operation of these provisions in 2002, as well as the general disruption caused by the changeover to the new legislation. The current year is showing an increase in the number of these housing schemes coming before the Board over 2002.

- The Board decided to carry out detailed surveys of its decisions in relation to three significant development categories that come on appeal i.e. rural housing, windfarms and telecommunications masts. Very briefly these show:

  - A relatively high rate of reversal of local authority decisions to refuse permission in the case of both windfarms and telecommunications masts for reasons relating to national policies in relation to these categories of infrastructure.

  - The requirement in the 2000 Act that third parties have to make a submission to the local planning authority at application stage in order to have a right of appeal has resulted in somewhat of a fall in the share of appeals made by third parties, but it has also resulted in a quite substantial rise in the number of invalid appeals (19% of third party appeals are being invalidated for lack of evidence of having made a submission to the planning authority).

The Chairman reiterated the Board’s three core principles of independence, impartiality and openness which are embedded in the Board’s Mission Statement and objectives and underpinned by legislation. They are of particular importance in terms of retaining the confidence of the public, particularly in the context of adjudicating the major development projects which are determined by the Board. Public confidence depends on the integrity, impartiality, independence and openness of the Board’s decision-making and the professionalism with which they carry out their functions.

There are stringent obligations on members and employees of the Board to declare interests and a new code of conduct for all Board Members, staff and consultants was adopted in accordance with the requirements of the 2000 Act.

Brinny, Inshannon, Co. Cork, Ireland.
Tel: 021 432 9329

An Bord Pleanála, 64 Marlborough Street, Dublin 1, Ireland www.pleanala.ie

Schering-Plough (Brinny) Company
Two Sides to Every Flatfish

By Declan T. Quigley

MORE than 600 species of flatfish (Order: Pleuronectiformes) have been described. The group has been most successful in colonising a wide range of habitats, from Arctic seas to the tropics, and from shallow estuarine waters (including freshwaters) down to considerable ocean depths (>1830m). However, they appear to be absent from the deeper abyssal and hadal zones.

Only 22 species of flatfish have been recorded from Irish waters (Table 1). The Irish group includes several species which are exploited by both the sea fishing industry (10) and anglers (8) e.g. megrim, turbot, brill, witch, halibut, dab, lemon sole, flounder, plaice and black sole. However, very little is known about the biology and distribution of the remaining (12) species in Irish waters. Indeed, most of them are considered rare or uncommon, probably because they have (as yet) no commercial or recreational value.

In most respects the early pelagic larvae of flatfish are similar to those of symmetrical fishes. However, during metamorphosis in the later stages of larval life the typical asymmetry becomes obvious. The eye on one side of the larva migrates over the head and comes to rest close to one side of the larva migrates over the head and comes to rest close to the opposite number. At this stage the pelagic life ceases and the young fish assume a primarily bottom-living (benthic) existence.

The most noticeable feature of adult flatfishes is the asymmetry of the head, in which, depending on the species, both eyes are sited on either the left (unilateral = left-sided) or right (dextral = right-sided) side of the body. The side on which the eyes are placed (ocular side) is usually colourless, while the opposite side (blind side) is usually unpigmented. In general, the percentage of congenital abnormalities occurring in fish is considered to be highest among the Pleuronectiformes, possibly due to the complex morphological changes which occur during larval metamorphosis. However, it should be noted that several other factors can give rise to abnormalities e.g. disease, nutritional deficiencies, injury and pollution.

Some species of flatfish appear to exhibit a greater frequency of abnormalities than others (Table 2). However, this may only be a reflection of recording effort. All of the species exhibiting abnormalities in Irish waters were commercially important and therefore the chances of abnormalities being observed are greater in these species. It seems reasonable to assume that abnormalities would also be discovered in non-commercial species if greater numbers were examined. Some international studies have found that the frequency of abnormalities in specific species varied geographically and this has sometimes been linked to variations in water quality due to pollution. However, it may also be simply a reflection of recording effort. For example, more than 75% of the Irish records were reported from Co Kerry where recording effort is known to have been consistently high since the early 1960’s. Indeed, the first recorded abnormalities were reported from this area as far back as 1850. The remaining records came from Co’s Waterford (1), Wexford (3); Dublin (2) and Antrim (1). It is clear that there have been no records of abnormalities from a significant area of Irish coastal waters.

Albinism, which appears to be relatively uncommon, is usually incomplete (partial albinism), part of the ocular side retaining its normal colour. The condition appears to occur most frequently in black sole (Figure 1) in Irish waters. Albinism, and particularly partial albinism (13.6%), has accounted for about 16% of all the anomalous flatfish known to have been recorded in Irish waters to date (44).

More commonly, the blind side (which is normally white or unpigmented) may be completely coloured or bear patches of colour. This abnormality, which is termed ambiocolouration, is more common in some species than in others; it appears to occur more frequently in brill, turbot (Figure 2) and flounder (Figure 3) in Irish waters. In the turbot ambiocolouration is usually accompanied by other abnormalities, the most noticeable being the development of a ‘hook’ or ‘notch’ at the origin of the dorsal fin, which does not join the head in the usual way. ‘Notched’ turbot were noted by naturalists during the 1800’s and some were of the opinion that they constituted a separate species: Platessa melanostygus. Ambiocoloured turbot may also exhibit bony excrescences or nodules on both the ocular and blind side; these nodules are only found on the ocular side of normal turbot. Ambiocolouration (50%), including partial ambiocolouration (Figure 4), has accounted for nearly 60% of all the anomalous flatfish recorded in Irish waters to date.

Some species of flatfish have also been found lacking the characteristic spotting pattern for the species (e.g. red spots on the ocular side of place), while other species have exhibited spots which are normally absent on these species e.g. brill (Figure 5). The condition where spots were either present or absent, has accounted for 13.6% of all the anomalous flatfish recorded in Irish waters to date.

Finally, an even more interesting abnormality is the phenomenon of reversal. Occasionally in flatfishes individuals occur with the eyes and colour on the side which is usually eyeless (blind side) and unpigmented. During metamorphosis the eye from the ‘wrong’ side of the head (for the species concerned) migrates and the fish ends up having both eyes on what would be the blind side in a normal fish. In some forms the right eye migrates to the left side; in dextral forms, the left eye migrates to the right side. Colouration follows the position of the eyes with the result that the fish is the ‘wrong way around’. This phenomenon is very difficult to notice unless normal specimens are available for comparison. Reversal is more common in some species than others; studies have shown it to be extremely rare in dabs and four-spot megrim. It has only been recorded in megrim (Figure 6), flounder (Figure 7) and black sole in Irish waters, representing 13.6% of all abnormalities.

**Table 1. Flatfish species in Irish waters, with notes on habitat, distribution, angling records and commercial catches**

<table>
<thead>
<tr>
<th>Species</th>
<th>Habitat</th>
<th>Distribution</th>
<th>Angling Records</th>
<th>Commercial Catches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Sole</td>
<td>Inshore common</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemon Sole</td>
<td>Offshore/deep water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dab</td>
<td>Offshore waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long Rough Dab</td>
<td>Mod. deep water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Witch</td>
<td>Inshore common</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dextral</td>
<td>Inshore common</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right-Eyed Flatfish</td>
<td>Inshore common</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambicoloured Turbot</td>
<td>Offshore waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brill</td>
<td>Estuarine waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norwegian Topknot</td>
<td>Offshore waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Four-spots Megrim</td>
<td>Offshore waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left-Eyed Flatfish Species Habitat Distribution</td>
<td>*ISFC**BRFC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2. Frequency of abnormalities in Irish flatfish species**

<table>
<thead>
<tr>
<th>Species</th>
<th>Partial</th>
<th>Full</th>
<th>Ambicoloured Turbot</th>
<th>Ambicolouration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Sole</td>
<td>2.3</td>
<td>11</td>
<td>6.8</td>
<td>50%</td>
</tr>
<tr>
<td>Lemon Sole</td>
<td>0.3</td>
<td>11</td>
<td>2.3</td>
<td>15%</td>
</tr>
<tr>
<td>Dab</td>
<td>0.7</td>
<td>11</td>
<td>2.3</td>
<td>20%</td>
</tr>
<tr>
<td>Long Rough Dab</td>
<td>0.3</td>
<td>11</td>
<td>2.3</td>
<td>15%</td>
</tr>
<tr>
<td>Witch</td>
<td>0.7</td>
<td>11</td>
<td>2.3</td>
<td>20%</td>
</tr>
<tr>
<td>Dextral</td>
<td>0.3</td>
<td>11</td>
<td>2.3</td>
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</tr>
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<td>Right-Eyed Flatfish</td>
<td>0.7</td>
<td>11</td>
<td>2.3</td>
<td>20%</td>
</tr>
</tbody>
</table>

*ISFC = Irish Specimen Fish Committee*

**Figure 1: Partial albinism in Black Sole (ocular side)**

**Figure 2: Ambicoloured Turbot**

**Figure 3: Ambicoloured Flounder, blind side above and ocular side below**

**Figure 4: Partially ambicoloured turbot, blind side above and ocular side below**

**Figure 5: Brill with unusual black spots on ventral side**

**Figure 6: Reversed Megrim**

**Figure 7: Reversed Flounder (above) and normal (below)**

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Oleg Polunin and Sherkin Island

By John Akeroyd

PEOPLE often ask me why I visit Sherkin Island, and what led me there in the first place. My first visit was in 1986, but I was aware of the island some 20 years earlier. I was at school in Surrey, and my biology teacher Oleg Polunin had just introduced me to Watsonia, the journal of the Botanical Society of the British Isles, which lived in a mysterious cupboard at the back of the classroom. He was keen to encourage me, showing me a scientific paper he had published in 1950, “Notes and additions to the flora of the islands of S.W. Cork.” I had always been interested in Ireland, but would not visit until 1979 when I took up a post-doctoral fellowship at Trinity College, Dublin. Strangely it took me a little longer to get to Sherkin.

So who was Oleg Polunin? His name suggests “Russia”, and indeed father Vladimir was Russian, a forester turned artist who found refuge in Britain after the 1917 Revolution. With his English wife he designed sets for Diaghilev’s famous Ballet Russe, and later he taught art at the Slade School. Oleg, who was born in 1914, grew up in the countryside near Reading. He read Botany at the University of Oxford and took up a post at Charterhouse School in 1938. Then the Second World War took him away for five years, much of the time spent in the Far East. He returned to Charterhouse in 1946.

Charterhouse was long in the forefront of biology teaching, especially the new science of ecology. The biologists always had a long excursion during school holidays, studying botany and marine life, and in the years after the Emergency they camped in West Cork, first near Lough Ine between Baltimore and Skibbereen, and later on across the sound on Sherkin. The Carthusians all came down, with tents and baggage, by train to Baltimore quay! Their campsite was at Tralee between Baltimore and Skibbereen, and later on across the sound on Sherkin. The Carthusians all came down, with tents and baggage, by train to Baltimore quay! Their campsite was at Tralee between Baltimore and Skibbereen, and later on across the sound on Sherkin. The Carthusians all came down, with tents and baggage, by train to Baltimore quay! Their campsite was at Tralee between Baltimore and Skibbereen, and later on across the sound on Sherkin. The Carthusians all came down, with tents and baggage, by train to Baltimore quay! Their campsite was at Tralee between Baltimore and Skibbereen.

In 1949 Oleg recorded the now very rare Corn-cockle (Agrostemma githago) here, the last record I have traced for the islands.

In 1948 Oleg was checking his last record I have traced for the islands. Other work – and Palmer being called off for National Service – intervened and the project was not finished, but the notes that Oleg left behind were invaluable for our own Flora compilation. However, these Sherkin interludes played a more significant role in his subsequent career – for they launched him fully on to the botanical stage.

In 1948 Oleg was checking specimens from Sherkin at the Natural History Museum in London. His work came to the attention of the then Keeper of Botany, Sir George Taylor, who arranged for this young plant hunter and plant photographer to join an expedition to the Himalayas. This would set Oleg off on serious plant hunting and plant photography, activities that would form the basis of his influential series of illustrated Field Guides on European and Himalayan flowers. He travelled widely in the 1950s and 60s, and the first of his field guides, *Flowers of the Mediterranean* (with the late Anthony Huxley) appeared in 1965, about the time I arrived at Charterhouse. I won it as a School Prize for Botany in 1966! The plates seem crude now, but they were state-of-the-art in those days and spawned a host of imitations.

Oleg remained a friend and influence long after school. He was one of the most remarkable people I have met, an enthusiastic teacher who did so much to tell ordinary people about Europe’s precious flora. A big man of great presence and with a genius for friendship, incredibly handsome and always with a slow kind smile, he was a conservationist before, to borrow a phrase from the immortal Flann O’Brien, “it was popular or profitable” so to be. He kept telling me to go to West Cork, but ironically I did not make it there until a year after his untimely death in 1985, from motor-neurone disease. I came back the following year, with Professor David Webb of Trinity College, who had gone to Charterhouse some 40 years before I did: we even had had the same zoology teacher, Percy Chapman, who gave us both an interest in marine biology.

Matt Murphy brought me back in 1990 and I have returned almost every year since. Studying the flora has been a labour of love, for it has enabled me to complete the last fragment of Oleg Polunin’s substantial contribution to botany. It is curious to reflect that I am now the age he was when we first met at Charterhouse!

In the summers of 1948 to 1951 Oleg Polunin worked tirelessly on Sherkin Island (above) and Cape Clear, recording common and rare plants and vegetation. This work was to help launch him onto the botanical stage.

As his biology teacher, Oleg Polunin was to first introduced John Akeroyd to Sherkin Island in the 1960s. Years later this was to lead to John completing the last fragment of Oleg Polunin’s substantial contribution to botany.

By John Akeroyd

*Flowers of the Himalayas* (1966), still finds interesting new plants for Sherkin and the other islands in southwest Ireland.
Laying Down The Law

The Litter Pollution Act, 1997 brought in tougher litter laws to combat the problems of litter pollution more effectively. This leaflet is intended as a practical guide to these litter laws. For further information you should contact your local authority or obtain a copy of the Litter Pollution Act (No.12 of 1997) from the Government Publications Office, 4/5 Harcourt Court Road, Dublin 2. Tel.: 01 647 6000

Fines

Leaving or throwing litter in a public place or in any place that is visible from a public place is an offence. This includes creating litter in the carrying on of a business, trade or activity or in loading, transporting or handling anything.

Offenders can be subject to an on-the-spot fine of €125 or a maximum fine of €3,000 in court.

The definition of litter is quite wide and extends beyond casual pieces of paper or cigarette ends to anything large or small which is, or is likely to become, unsightly.

A person convicted of a litter offence may also be required by the court to pay the local authority's costs and expenses in investigating the offence and bringing the prosecution.

Property Owners / Occupiers

The owner or occupier of property, which can be seen from a public place, is obliged to keep it free of litter. Basically, any outdoor area on your property that is visible from a public place must be kept free of litter.

In addition, if you occupy land/properties along a public road in a built up area, you are required to keep the footpaths, pavements or grass verges in front of your property free of litter.

Presenting Your Refuse for Collection

Taking a few small precautions in the way you present your refuse for collection, whether household refuse, commercial or industrial waste, will help enormously in preventing the creation of litter. If you are not already using a wheelie-bin or ordinary refuse bin, you should use strong plastic bags and avoid using lightweight supermarket type bags. You should put out refuse for collection on the morning of the collection and not on the day or night before. The longer it is left out for collection the more likely it is to attract the unwanted attention of dogs, cats and birds.

It is an offence to dispose of your household refuse in street litter bins.

Litter Black Spots

Where litter has accumulated on property for whatever reason and the litter is visible from a public place, the local authority can issue a notice to the owner or occupier requiring the prompt removal of the litter. Such a notice can also set down precautionary measures to be put in place to prevent a recurrence.

If a property owner or occupier fails or refuses to do everything that has been requested, the local authority has the power to do whatever is necessary itself and require the owner or occupier to pay all of the costs involved.

Local authorities can use similar powers to target mobile outlets, certain types of premises, major events and articles/advertisements on certain structures, to prevent and control litter.

Illegal Dumping

The litter laws have increased the powers of local authorities to combat the problem of illegal dumping of refuse and rubbish. Where a local authority finds material that is illegally dumped and establishes the identity of the owner of the material, that person will have a case to answer without necessarily having to be caught in the act.

Extra powers are also available to local authorities to require a householder or business operator to indicate how and where they are disposing of their waste. This is particularly relevant if the householder or business owner is not availing of a refuse collection service or bringing their waste to an authorised disposal facility.

If you see someone dumping illegally, report the matter to your local authority who will investigate and take any necessary enforcement action.

Who Enforces the Litter Laws?

Local authorities are responsible for implementing the litter laws in their own areas. This means they are responsible for the prevention and control of litter and they have the power to take enforcement action against individuals who break or ignore these laws. Gardai also have the power to issue on the spot fines for litter offences.

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Major Events

The promoters or organisers of major events are required to ensure that they have litter control measures in place at the venue and in the surrounding vicinity before, during and after the event. This applies to football matches and other social and sporting events at which large crowds attend.

It is possible that this task can be undertaken by the local authority. The promoter / organiser must bear the costs involved.

Mobile Food Outlets

Operators of mobile food outlets selling fast food or beverages, or other outlets such as those selling farm produce are obliged to provide suitable litter bins in the vicinity of their outlets. Also, they must clean up any litter arising from the operation of their outlets within a radius of 100 metres from their outlet.

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Posters and Signs

The law forbids the putting up of posters/signs on poles or on other structures in public places unless you have the written permission of the owner of the pole or other structure in advance of putting up the posters/signs.

Local Authority Duties: Litter Management Plans

Each local authority is obliged to prepare a litter management plan for its own area.
Do Plants Make Good Mothers?

By Rosie Solbé

STRAWBERRY, Creeping buttercup, Couch grass, Creeping Bent grass. Gardeners will recognise these – some are useful, some a real nuisance, some neither one thing nor the other. If these plants are growing in a good place with the right amount of water, light and minerals they don’t want to set seed, they produce offsets to exploit the resources. These plants build up a colony of daughter plants without the need for flowering. We call this ‘vegetative reproduction’, the daughters are all genetically identical to their mother so these are called clonal plants. We assume that until they are established, these daughter plants will be supplied by their mother. So we can ask “Do plants make good mothers?”

How does a colony form? Think of a strawberry plant. It pushes out runners along the ground and develops offspring at every ‘node’, that is, at the base of every leaf, so the stem linking the parent and the daughters is a stem of the parent plant. Water and minerals such as nitrogen and phosphate move from the soil in the yam-like upwards from the root through the stem to all parts of a plant. Food may travel in either direction in the phloem, mainly from the shoot to the root from photosynthesis in the leaves but also from a storage root like a carrot or parsnip, to the shoot. A horizontal stem therefore could have food moving in either direction but should have water and minerals moving only from mother to daughter. A grass plant needs about 1/200th of its weight in phosphate if it is to grow properly. Plants without enough phosphate weighed about 1/4 the weight of plants given enough phosphate. But does a mother grass plant share phosphate with her daughter?

Four mother plants, each linked to her own daughter, had their roots in one concentration of phosphate and the daughters roots in the other. High phosphate is called +P and low phosphate –P so the four pairs of mothers and daughters are the same size. We’d expect that water would go from the mother’s roots into the stem and so into the daughter but in fact if the roots of mothers and daughters are put in different dyes some of the water can be seen to be flowing in the ‘wrong’ direction, with the mother taking a little water from the daughter and giving most back. But just because the mother is taking water is she also taking dissolved phosphate? To find out, we have to feed her roots with water containing radioactive phosphate and find where the radioactivity ends up. This shows that a mother plant given high phosphate allows some phosphate to the daughter, but remember that the poor deprived daughter in pair 2 had an enormous daughter – now we see why - the well fed daughter is strong enough not only to take up her own phosphate through her roots but also to grab the mother’s phosphate. The poorly fed daughter in pair 1 had some phosphate given her by her mother – but it’s rather harder for the phosphate to go to the “wrong way” so a poorly fed mother attached to a well fed daughter suffers.

So much for water and minerals – but they’re not food. Do plants make good mothers when it comes to sharing food? Plants trap the energy of sunlight in their green chlorophyll and use the light energy to combine water and carbon dioxide into sugar. To look at this we again use radioactivity – this time growing the plant in an atmosphere of radioactive carbon dioxide gas. We let the mother plant use this and in daylight the radioactive carbon is built into the sugar and we can track where that radioactive sugar goes. And we see that the mother isn’t giving a thing away – all the sugar she makes she keeps in her own shoots and roots!

Thus a well fed plant, growing in fertile soil, will have the strength to grab what it can – from the soil, from its parent or even from its own daughter. Do plants make good mothers?

Well, do plants make good mothers?

All we can say is that plants try very hard to produce large families! Either they produce seeds which disperse and produce more of their kind or they short-circuit the system and produce large families! Either they produce seeds which disperse and produce more of their kind or they short-circuit the system and produce identical daughter plants. In order that valuable resources are not wasted it seems that a well fed plant will make certain that it can grow well and produce offspring – either by making clones or by making flowers and seeds. Thus a well fed plant, growing in fertile soil, will have the strength to grab what it can – from the soil, from its parent or even from its own daughter.

So sorry! Plants don’t make very unselfish mothers but they do their best to ensure the survival and success of their kind and if they happen to have a sickly offspring then it’s rather hard luck on that offspring - mother will not go out of her way to help but will use the daughter to help provide her with the resources she needs in order to reproduce – and that’s the advantage of this method of reproducing by creating a clone. The plant can take advantage of every possibility of ensuring its survival, and thus the survival of the species.

Dr. Rosie Solbé, St Asaph, Denbighshire, U.K.

The graph shows the weight of pairs of mother and daughter plants attached to each other - the mother on the left and the daughter on the right. If the plant is given high phosphate the bar is coloured black and low phosphate is shown as white.

Notice in the numbered pairs in the graph how the daughter is doing best of all in pair No 2 – so perhaps it is attached to a “good mother” and some plants do make good mothers

1. well-fed mother shares P so she and her daughter are the same size
2. deprived mother has an enormous, well fed daughter
3. both do well
4. neither does well

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Forbait na Gaeltachta
Serving the needs of Ireland’s Fishing Industry
A Balanced Approach

Development & Heritage Protection

By Joe Gavin

Development Growth

It would be true to say that the opportunities which the architectural and planning professions have today to shape the future built fabric of our country have seldom been greater. Ireland is experiencing unprecedented levels of growth in the construction industry. In the residential area alone there is a demand for 60,000 new houses per year. This demand has been provided each year for the next 10 years. There is no sign where a specific demand for office and retail development. Side by side with these demands there is emerging a greater emphasis on sustainable development and the protection of our national heritage.

We have seen recommendations in the Bacon Report for other residential densities built which have been taken on board by the government and by local authorities. Good design and layout are essential requirements to be addressed if higher density housing is to be sustainable and to provide a comfortable style of living for our citizens. In moving away from the 6 to 8 houses per acre on green field suburban development to perhaps twice this level, good creative design is important. In urban development housing units of 70 to 100 per acre have been achieved and, based on good design, have been found to suit housing needs and lifestyles of many of our citizens.

Heritage - Public Buildings

It is important that while we address the needs of new development that we have due respect for our existing built heritage. Some of Ireland’s finest public buildings were built in the middle of the 19th century. Most of our universities date from that time as do the finest public buildings. It is essential to protect these buildings as defined in the Heritage Act 1995 as including:

- Monuments
- Archaeological Objects
- Heritage Objects
- Architectural Heritage
- Flora & Fauna
- Landscapes
- Seascapes
- Geology
- Heritage Gardens & Parks
- Inland Waterways

Wildlife Habitats

It is important therefore that in preparing Development Plans due regard is had to potential impacts on our national heritage in all of its aspects. Policies in Development Plans can, for example, have implications for the protection of the Irish Language.

Questions were recently raised in a particular case where a local authority was allowing substantial residential development in an “Irish Speaking” village as to whether the occupants of the houses, if not fluent in the Irish Language, could have a detrimental effect on the local language culture. A linguistic impact assessment was called for.

This was somewhat unusual but it is indicative of the influence which policies in the Development Plan can have on such a wide range of issues.

Financial Issues

While we now have comprehensive legislation in place for the protection of our heritage there are many financial implications which need to be addressed in the area of protected structures. If funds are not available to the owners of protected structures they will not be in a position to maintain or restore them. Some financial assistance is available in the form of tax incentives but much more is needed. Many of our finest heritage buildings are in need of urgent repair. Securing funds is a major difficulty.

Another local example of a protected structure under threat was the former Cork Royal Hospital. Because of its protected status and the extent of the property, the Irish Landmark Trust, has been established for the protection of our underground heritage, for ruins and artifacts more than they are for overground structures. Substantial state monies are expended on archaeological digs and on the recording of buried ruins. While they also have an important role it is critical to address overground structures which are endangered before they too become ruins.

Conclusion

Whether in the preparation and implementation of Development Plans, in the functioning of regulatory and advisory bodies, in the securing of funding or in the preparation of heritage policy, our national and built environment will be all the better for a partnership approach based on common sense by all the actors involved.

Joe Gavin, City Manager, Cork City Council, City Hall, Cork, www.corklive.ie
The long period of recording has shown that many species have cycles of abundance, with the length of a single cycle varying from three to 12 years. Other species, such as limpets, are relatively constant in their population size. At the end of the 1980s a major and widespread change occurred - the barnacle populations crashed significantly and only started to recover towards the end of the 1990s. This decline affected the dogwhelks that feed on them and they also declined in numbers, as did the mussels - the other main dogwhelk food species. Large brown seaweeds also decreased at many of the sites in the 1990s, which amongst other things - removed the habitat of the flat periwinkle; hence it too declined in numbers.

It is clear to us now, that had the work been written up after a much shorter period, five or ten years only, an entirely different interpretation would have been made. We still do not know the answer to the question - “What are the normal population levels on Sherkin’s shores?” Was it those of the 1980s when the shore supported more biomass - or the less productive years of the 1990s? Will productivity increase again in the shore community?

The original aim of the survey was merely to document the rocky shore species over time, but analysis of the physical and environmental factors recorded (sea temperature, air temperature, wind, rainfall, sunshine hours) has also been carried out. Of interest here is the fact that surface sea temperature has been slightly higher since 1987 than the early years of the survey 1981-1986.

Data always generate more questions and work at Sherkin Island Marine Station continues on what has now become a topic of national and international interest - how is climate change affecting our environment?
Jenifer Baker’s Launch Speech

We are here to celebrate three things. First, the publication of *The Ecology of the Rocky Shores of Sherkin Island*, this unique book which has been more than twenty years in the making. Second, the talents and dedication of Gillian Bishop in putting it all together and the skills of the many people who have contributed to the book. Third, the rocky shore programme itself, which is still going strong. So this book is a milestone rather than the last word, and perhaps in another twenty years Matt will be asking Gillian to write another book!

I’ve been around long enough to remember a time when there wasn’t a rocky shore programme based at Sherkin Island Marine Station. That was way back in 1975, when I first had the pleasure and privilege of meeting Matt and Eileen and their family. Like Eileen, I had been working on oil spill studies in Bantry Bay and could remember Matt wanting to discuss rocky shore surveys. Of course, I didn’t realise then that it would lead to one of the world’s longest running and most extensive shore monitoring programmes. Yes, that’s right – you have on your doorstep one of the world’s longest running and most extensive shore monitoring programmes. It’s only in retrospect I can appreciate the greatness of Matt and Eileen’s vision. The publication of this book is a fruit of their vision and is a remarkable achievement in many ways.

It distills an enormous amount of work which has involved hundreds of people from many countries since 1975 – volunteer biologists, scientists, advisors and practical helpers, backed by the long-term commitment and skills of the whole Murphy family. Do read the Acknowledgements section of the book, and read between the lines as well to appreciate the depth of so many people’s commitment.

Can you imagine the amount of data behind this book? I’ve seen some of it at the Marine Station and it’s certainly an impressive resource for researchers, but in its raw form it’s not easily accessible to the public. What Gillian has done so successfully is to make the information accessible, in fulfilment of a grand aim of the Marine Station to communicate to the public. Marine biology is for everybody, and there’s something for everyone in this book. For researchers, it’s a key to the Marine Station’s data bank, but it’s also useful for school teachers with an interest in marine fieldwork. And for any interested member of the public it’s a way of exploring shore life and its dynamics more deeply.

Gillian can tell me afterwards if I’m right, but I suspect that during the preparation of this book there have been occasions when it has been difficult to see the wood for the trees, or, to change to a shore metaphor, the book for the barnacles. But both perspectives (we might call them the microscopic and the teleoscopic perspectives) are necessary, and she has used both. The great vision can’t be fulfilled without all the detailed work, but the detailed work lacks purpose if there isn’t a vision of the values of rocky shores.

One of the values, which clearly emerge from the book, is educational value. Rocky shores are superb for teaching ecological principles to school and university students. Apart from learning to identify the wealth of organisms, there’s a great scope for relating distribution of species to environmental variables, working through different zones up and down the shore or along the shore from wave-exposed to sheltered. The book gives plenty of information on these two dimensions, but outstandingly offers the third dimension of time. Studying one’s skills expanded in unexpected directions. I’m sure that’s the common experience of Gillian, myself, and the many volunteers over the years. I have a memory of arriving on Sherkin one evening for a conference the following day, and finding the conference hall still under construction. I seem to remember floor tile laying most of the night with Sarah Pepponi, a research biologist from Thailand, and Professor and Mrs Knight-Jones from University College Swansea were installing a door. Where else could one combine rocky shore biology with enhancing one’s building skills?

Gillian speaks for many of us when she mentions her love of the Island’s rocky shores. That points to something beyond their educational and research value, and beyond utilitarian values such as producing shellfish and seaweeds that can be used for food. It points to the beauty of the rocky shores, and the fact that they can refresh us at a deep level. Many professional environmental scientists are drawn to this sort of work because sometimes in the interstices of doing the data collection there are opportunities to just soak up the beauty of creation. As with a beautiful painting, however, it helps to know something about what you are looking at, and in this respect the book can help anyone make the most of appreciating the shores of south-west Ireland – shores which are among the world’s finest. The illustrations and photographs are a great help in this respect.

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The Ecology of the Rocky Shores of Sherkin Island
– A Twenty-year Perspective
by Gillian Bishop

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*The Ecology of the Rocky Shores of Sherkin Island*
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The Great Whale Debate

“The whaling debate is as shot through with contradictions as a stick of seaside rock.”

By Alex Kirby

The world’s whales, you could say, have had it pretty easy these last 15 years or so. The global moratorium on commercial whaling came into force in 1986, and since some time before that there has been a conservation-oriented majority on the International Whaling Commission. After the years of bloody slaughter during the industrial whaling era, when steam and then oil conspired to give the harpooners a decisive and fatal edge even over the fastest-swimming and deepest-diving whales, they deserved a respite. But the days of relative peace may be drawing to an end. Time to dust off the infaatable whales, the bloodstained placards and head once more for the barricades, then? Or time, perhaps, to accept that whales are essentially very large marine cattle, harder to hit but just as legitimate a target as their terrestrial cousins? Whichever way it goes, there are going to be some very loud squeals of protest from someone.

The whaling debate is as shot through with contradictions as a stick of seaside rock. The commission, for a start, was established in 1946 with a dual mandate which today has virtually paralysed it. It was set up to conserve whaling, and also to conserve whales (so there would be enough to catch). That means both sides can sincerely claim to be acting in the spirit of the IWC.

It has never (till this year, at least) sought to protect all whales, let alone all cetaceans (a category which includes dolphins and porpoises as well). The commission has concerned itself only with the so-called great whales, the species of principal commercial interest. Finally, at its 2003 meeting, it did agree to extend its mandate to cover all cetacean species.

The commercial whaling moratorium has compounded the contradictions by not even trying to stop all killing. Two of the leaders of the whaling camp - Japan and Iceland - each continue to kill 6-700 whales a year without infringing IWC rules in any way. Japan does so in the name of research: the commission allows its member states to catch unlimited numbers of any species, so long as it is done to advance scientific knowledge. Norway can continue to hunt any species, so long as it is done to advance scientific knowledge. The commission allows its member states to catch unlimited numbers of any species, so long as it is done to advance scientific knowledge. In support of the whalers (bribed to do so in many cases), the IWC secretariat, competent, conscientious and scrupulously non-political, is a small group of British scientists operating from a modest house in a suburb of Cambridge. There are no gunboats to enforce the commission’s decisions. There is not even a dinghy.

Perhaps the greatest contradiction of all is the clash between the science which is supposed to underpin all the IWC’s work, and the emotion which has in fact dominated it for many years. I am not decrying emotion in the least. If we were more emotional we might well have a world which had banned landmines and decided to feed every child adequately. But I do think there will be tensions when an organisation founded to act on science chooses to qualify it.

There is ample scientific justification for refusing to allow any killing of several whale species. The commission’s scientists said this year they thought the blue whale, the largest of them all, was finally starting a very gradual recovery from the industrial massacre. They believe there could be up to 1,500 of them in the Antarctic now, three times more than 25 years ago. But in the whalers’ “best” year, 1929-30, they killed 30,000 blues in the Antarctic. Recovery is relative.

It is much the same for some of the others, like the northern right whale. For many species, the data is too patchy to be sure. Earlier this year researchers claimed DNA analysis of tissue samples suggested there had once been far more whales than the IWC estimated, and that therefore recovery lay even further in the future than it seemed.

But for some whales, like some populations of minke, its very hard to argue a scientific case against killing. You can say whaling is inherently cruel, because of the impossibility of guaranteeing a clean shot and a quick death. You can say whales are special, iconic, too important to risk straying into the harpooner’s crosshairs. Whatever way you look at it, whales are no safer and the opposing sides no nearer.

This year the commission’s annual meeting voted to establish a conservation committee, whose job will be essentially to conserve cetaceans for their own sake, not just to ensure there are enough to hunt. The whales were appalled at what they saw as an attempt at a fundamental change of purpose. One member of the Japanese delegation, a man respected for his low-key and thoughtful interventions, told me: “It’s as if you thought you’d joined a football club, only to find it had become a stamp-collecting society.”

The deep divisions which have made the commission virtually dysfunctional for years now threaten to tear it apart. Japan muttered yet again that it might walk out. The difference from previous years, perhaps, is that this time there is some support back home from parliamentarians and public.

If the IWC does fall apart, the three whaling nations will feel free to do what they want. What they want is probably not very different from what they are doing already. They are unlikely to unleash another bloodbath. But if there is no commission, there will be no international control of any other countries that may decide to set up as pirate whalers. Then the gates will open with a vengeance. You can tell what species a piece of whale meat has come from if you analyse its DNA. But not every small harbour has the equipment to do so, or the skill and the will to use it. So you could rapidly find not just the relatively abundant minke being killed, but whales of any species that strays into the harpooner’s crosshairs.

If you want to save the whales, the IWC is the best hope for their salvation. But it looks increasingly as if only an IWC which agrees to some limited whaling - based on what the science says is sustainable - can itself hope to survive. (A relatively) few whales may have to die if we are to save the rest. In 2000 the then secretary of the IWC (the retired soon afterwards), Dr Ray Gambell, told me: “The whale is a high-profile animal. It has become a symbol. A failure to signal the forthcoming end of the moratorium, he said, would mean “a real danger that the commission will lose its credibility totally.” Three years on, the IWC is arguably no safer and the opposing sides no closer.

Alex Kirby is environment correspondent of BBC News Online (http://news.bbc.co.uk/), and has covered several IWC meetings.

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Things have now changed. Ireland is an industrial nation, with tourism a major employer, and farming is no longer the mainstay of the local economy. Indeed, many farmers must have off-farm income to survive. In former times, the single rural house made sense as people needed to live close to work but now education has opened up other opportunities and different lifestyles. In the past, people adapted to the changing social and economic conditions of the time.

Any settlement strategy must look at the development of both rural and urban areas as both are interdependent. People want to live where they can have a good quality of life and ready access to work, shops, schools and other services. But rural needs vary and a ‘one size fits all’ approach will not work. A variety of choices need to be available.

Census figures show the population of towns is increasing much faster than rural areas. This is not a sign that people are being forced into towns, rather that they are ‘voting with their feet’ and choosing to live there. Many people enjoy the convenience of being close to all facilities and places to socialise. Small towns and villages can be very pleasant places to live.

Some may prefer the country life and, since about 1970, there has been a drift of people out of towns into the surrounding countryside. There is a marked difference between this urban generated housing and the older farmhouses. Modern living requires external services, including piped water, electricity, and telephones and, as these services are normally provided beside the public road, that is where the majority of new houses are sited. The result is ribbon development along all the roads leading out of towns and it is generally recognised that many places within the town catchment area are becoming over-developed.

Rural houses are in demand partly because of the lower site prices but this does not take into consideration the higher long term costs of commuting to work, schools etc. usually requiring a second family car. There are other costs that are not so obvious. An Foras Forbarth, in a study carried out in the mid 1970s, showed that it is more expensive to provide services to rural houses but the extra cost is often borne by the community, not by the individual. Indeed, An Post reminded us recently of the huge increases in the cost of rural mail deliveries, leading to higher postal charges for everyone.

The recent census figures show that, despite the overall rise in population, some rural areas continue to decline. This is often used as an argument to justify more liberal planning policies all over the county but first the reasons for the drop in population needs to be investigated. In the more remote areas, the decline in farming and lack of alternative employment is an obvious factor. Large tracts of forestry have pushed people out of other areas. Scenic coastal areas often experience a huge increase in the number of houses but the population continues to fall. The extra houses are obviously holiday homes and, in some townlands, they constitute 60–80% of the housing stock.

Introducing more liberal planning policies will not necessarily revitalise the more isolated areas but it will lead to even more houses within commuting distance of towns. It is becoming obvious that different planning restrictions are required in different parts of the country. More research is needed to develop policies to suit every situation.

The National Spatial Strategy (NSS) published recently, seeks to control the over-development of Dublin and to shift people and jobs to the rest of the country. It advocates the strengthening of designated urban ‘gateways’ and ‘hubs’, where we can expect the population to increase. As regards rural areas, it recommends that rural generated housing needs should be accommodated in the areas where they arise and such housing (should) be occupied by established members of the rural community.

The NSS recognises the problems of urban generated housing where people wish to live in a rural area and commute to work in cities and towns. It does not recommend single rural housing, rather that: smaller towns and villages have a key role to play in catering for these types of housing demand in a sustainable manner.

Much of the present controversy centres around the interpretation of the above two paragraphs. It is difficult to define a ‘need’ to live in the area or what is an ‘established member of the rural community’. A foolproof system for identifying those with genuine needs must be developed with appropriate legal controls to prevent abuse.

Another bone of contention is the issue of ‘landowner’s rights’, with many feeling they have a constitutional right to do what they like with their own land. In fact, the constitution does not protect property owners’ rights so as to protect the ‘common good’ but there is disagreement as to whether present planning restrictions are constitutional.

There are many other issues also to be considered, particularly the increasing use of the motor car due to the mismatch between location of residences and workplaces. This is both an urban and rural problem and the ever increasing traffic congestion is having an adverse affect on the quality of life for everyone.

In the more isolated rural areas, jobs, rather than houses, are the first priority. Urban generated rural housing must be controlled but the proposal to divert it to the smaller towns and villages will work well only if good infrastructure, including public transport, is available. In practice, infrastructure is often inadequate and public transport almost non-existent so that people become ‘car dependent’. Holiday homes should be restricted to those areas where they have no adverse impact.

To conclude, planning policies need to be tailored to suit the particular circumstances of the area, a ‘one size fits all’ solution will not work. The type of development permitted in rural areas needs to be defined in more detail while the position regarding constitutional property rights must be clarified. Further research is essential and development must be monitored to ensure that policies are achieving their purpose.

And, finally, a reasoned and informed debate must take place between all the stakeholders to ensure the policies adopted now create a better Ireland in the future.

Catherine M. Nicholl is a scientist by profession but has many years experience of planning issues as a member of An Taisce.

A foolproof system for identifying those with genuine needs must be developed with appropriate legal controls to prevent abuse.

Single Rural Houses

By Catherine McMullin
By Mary Kelly

The face of waste management in Ireland is rapidly changing, in some areas for the better, with a more comprehensively regulated waste industry taking shape in recent years. However, there is no room for complacency. Three of the greatest pressures on the efficient management of waste remain and need to be tackled: increasing waste generation, a continuing high dependence on landfilling and the lack of a proper waste infrastructure.

The Environmental Protection Agency is in a unique position to be able to take an overview of the success or otherwise of various waste policies as it has many functions in respect of waste and its management. Earlier this year, the EPA published the National Waste Database Report 2001 which gave an overview of waste generation and management in Ireland in 2001 and into 2002. It was the third in the National Waste Database series so allowing comparisons between these and previous waste statistics. The report described available waste management infrastructure, examined changing regulatory and infrastructural requirements and made recommendations on waste infrastructure, capacity and future management practices. Collection and publication of this data, as reported by local authorities, will allow policy makers and decision makers to look at trends in waste and future management practices. Fuelled and publication of this data, as reported by local authorities, will allow policy makers and decision makers to look at trends in waste and future management practices.

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The implementation of the plans needs to be accelerated if we are to meet national targets. The plans also need to be reviewed and updated. Waste quantities have grown at rates significantly in excess of those projected when the plans were being prepared and the plans have not kept pace. The range and scale of infrastructure required in each region for a period of at least 15 years should be identified and put in place.

On the positive side, a more balanced waste management infrastructure is taking shape. In line with government policy, the number of operating local authority landfills decreased from 76 in 1998 to 50 in 2001. The number of private sector landfills decreased from 50 to 42 in the same period. Landfills are operating to a higher standard because of waste licensing which began in 1995. Either local authorities or the EPA now regulate all legally operating waste disposal and recovery facilities. The discovery of illegal dumps can be attributed to tighter controls and the fact that local authorities, not just the EPA, are taking illegal dumping seriously. Most local authorities have now taken their environmental responsibilities on board and the noose is tightening around the necks of those involved in illegal dumping.

Parts of the waste infrastructure have improved; significantly, the private sector collected 63 per cent of the municipal waste accepted at licensed facilities in 2001. More transfer stations and composting facilities are being opened.

“Overall, there has been a doubling in the actual quantity of household, commercial, packaging and construction and demolition waste being recycled or recovered. While this can be welcomed, the basic recycling rate was extremely low and Ireland is still well below the recycling and recovery rates of other European countries.”

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Dr. Mary Kelly, Director General, Environmental Protection Agency, P.O. Box 3000, Johnston Castle, Wexford, Ireland.
By Daphne Pochin Mould

PEOPLE looking at the bright colours and clean air of West Cork and Kerry exclaim at the "unspoilt" landscape and regret the building of new houses in contemporary styles. But if by "unspoilt" you mean the work of nature alone, you are very wrong indeed, for you are looking at an old industrial site and its consequences.

All those bare, rocky hillsides were once heavily wooded. Scant remnants of the Irish oak woods survive in Killarney, as the equally extensive forests of the Scottish highlands came to be represented by the pines of Romanichara in the Cork gorges. There were trees everywhere, lots of trees. Oaks, of course, the tall evergreen pine, willow and alder in the wetter spots, the golden leafed in autumn, and ash. Long, long ago by some chance or accident, one supposes, people found that intense heat would melt certain compound minerals and a metal could be produced. The rocks of West Cork are highly mineralised, and by the early Bronze Age men were at work, locating copper ore, melting it and smelting it in little primitive kilns, and used the trees to do it. These early mines were small caves, cut not very far into the hillside and excavated by “fire setting”. A fire was set against the rock and the heat shattered stones breaking out, with natural boulders for hammers. The ore was picked out and smelted and a block of copper produced. It was very pretty but if you wanted to make an axe or other hard wearing tools, it needed to be alloyed with tin to make bronze. There was no tin to hand so they headed off by ship to that tin very far into the hillside. Mines were small caves, cut everywhere, lots of trees. 

The oldest Bronze Age mines are in Killarney’s Ross Island (where a mining trail has been laid out) and have been dated to c. 2400-2200 B.C. Those on Mount Gabriel in the Mizen peninsula, Co. Cork, are the most exciting, in that they were overworked with peat and only re-entered by men and excavated in the 20th century. There are 12 iron mines on Mount Gabriel, dated to 1700-1500 B.C. They are one of the most important such sites in Europe and are listed as a National Monument. On the top of the hill are the domes of the aircraft tracking station: from the beginning of technology to the latest!

But the greatest secret of the Irish and Scottish woods came in the 17th century with Sir William Petty and his short lived English colony at Kenmare; Sir Walter Raleigh at Youghal (and later the Boyles of Lismore) and the East India Company ship building on the Bandon river at Dowlanadel, between Inlishannon and Banard. Timber was needed for everything from ship building (no iron ships till the mid 19th century) to staves for barrels (in which meat and fish were salted in pre-refrigeration days) and for iron smelting. Iron was increasing wanted for making contemporary “weapons of mass destruction”, cannons and smelting. Requiring very high temperatures that only charcoal could produce. So charcoal burners came to dot the landscape and timber was cut and burnt in small kilns, in which the air was restricted so that the wood charred and did not burn out. You may, on the hills of Cork and Kerry, yet come across charcoal traces on some of these sites. The iron ore was shipped into where the woods, smelted on site and the metal exported again. Bloom is the name given to the smelted mass of metal and the furnaces are therefore known as bloomeries. Their sites today are poorly marked, but you may find some deposits of slag scattered there. But the list of bloomery sites is long: in the west are Adrigole, Bantry, Cappaghglass, Dunboy, Durrus, Glengarriff, Macroom and Roaringwater Bay. By the time it was found that coke was the better fuel for smelting, the woods were gone.

With the Industrial Revolution, the need for metals set people prospecting again and brought large scale copper mining to West Cork and Kerry. The Mackross and Ross Island mines at Kilgarvan were working at the end of the 18th century and a huge steam engine on Ross Island pumped the water out of the workings and back into the lake. The most profitable was Allihies on the Beara peninsula which made the fortune of the Pusey family in the 19th century (and gave Daphne du Maurier the theme for her novel “Hungry Hill”). The work began in 1816 and even continued, off and on, until 1900. Post World War II, there was some talk of re-opening it and surveys carried out there. But there are easier places to win copper these days.

Allihies is the site with the most extensive remains. It is also the best documented mine of any in Ireland or Britain - thanks to the preservation and discovery of a vast treasure of mine papers. Some 1000 people worked there in dark and dangerous conditions and steam engines kept the workings free of water. There were the massive beam engines of the first days of steam - beam engines in which the steam worked one arm of a pivoted beam and the other arm worked the pump. They were shipped into the locality, set up on site and an engine house built for them with its tall Cornish chimney. The Cornish, who had been mining from prehistory to the last decades of the 20th century, were the experts and some were brought to Allihies and given their own “Cornish village” (which is still there) and the best of treatment. Their furnace chimneys were built of cut stone till the very top, with brick then used, as it is easier to fit into the small circle there.

But there were old copper mines all over West Cork - some thrived, some didn’t. Durrus, with its reservoir system from the mountain above and pretty powder magazine, Crookhaven, Sheeps Head, Cappaghglass and Kilgarvan. Galena (lead) was worked at Ringabella, manganese at Leap, barytes near Schull, and in our own time, in a very clean and modern mine at Duneen on Clonakilty bay (now closed). Silver is associated with lead ore, and West Cork has shown some tiny traces of gold, as in Somerville & Ross’s story of the Irish R.M. and the failed “Harringtons” mine: “Copper and precious little of it and they got some gold too - just enough to go to their heads and ruin them”. The various ores from the mines were shipped out to Swansea for smelting.

“Unspoilt” country? Rather a museum of metal working from the earliest times to now.
Nature on Irish Canals

1. Primary Producers
Green plants make their own food from carbon dioxide and water, using sunlight as their energy source.

2. Invertebrates
Animals without backbones, such as insects, can be herivores (plant eaters) or carnivores (meat eaters). For example, caterpillars are herivores and eat leaves, while ants are carnivores. Carnivorous invertebrates, both aquatic and terrestrial, eat other invertebrates.

3. Invertebrate Life Cycle
Many aquatic invertebrates have an aerial phase in their life cycle, when they live above the water, not below it.

4. Birds
Birds can also be herivores or carnivores. Many birds eat insects and berries as well as other invertebrates. Larger birds can hunt and eat relatively large prey - herons are very efficient at fishing, while owls catch bats as well as mice.

5. Fish
Some fish are herivores, and eat only underwater plants. Other fish are carnivorous and eat aquatic invertebrates. Pike are also carnivorous - they eat smaller fish.

6. Bacteria and Fungi
All living things, plants and animal, die and are broken down by bacteria and fungi. Nutrients are thus returned to the soil to be used by green plants, and the cycle continues.

WATER has been used as a means of transport since pre-historic times. In the early days the natural rivers were used. The Shannon was then the main route from north to south through the country. The first attempt to alter and improve on the natural waterways networks was the cutting of a channel - Friar’s Cut - through an island in Lough Corrib at the end of the 12th century.

Work on the Newry Canal began in 1731, making it the first summit level canal (a canal which crosses the water shed between two natural waterways) in Ireland or Great Britain. The Ballinamore and Ballinyconnell Canal (now restored and called the Shannon-Erne Waterway) was opened in 1860. Between these two dates a number of navigation schemes were carried out, some more successfully than others, and an extensive network of canals and navigable rivers was developed.

Construction of the Grand Canal began in 1756. Thirty years later (five years before the first boat made the journey from Dublin to the Shannon on the Grand Canal) work began on the rival Royal Canal. Both canals linked Dublin with the Shannon, the Grand at Shannon Harbour near Banagher and the Royal at Cloondara near Tarmonbury.

Trade on the canals declined as first the railways and then the roads were developed. In 1961 the Royal Canal and a number of the branch lines of the Grand Canal were closed to navigation. It appeared at the time that the canals did not have a future. However attitudes changed over the next twenty years.

In 1986, in recognition of their potential as recreational and heritage resources, the canals were transferred from CIE, the national transport authority, to The Office of Public Works (OPW) to be developed as public heritage. The Heritage Act (1995) confirmed the importance of the waterways as part of the national heritage. The Waterways Service was part of the Ditches - The Heritage Service but Waterways Ireland, one of six North/South Implementation Bodies under the terms of the British/Irish Agreement, now has responsibility for Irish canals.

Although the canals are man-made and not natural systems they are very important wildlife habitats. Since they were first built, a great diversity of wild plants and animals has moved in and colonised the banks and the water. The ecological value of the canal lies more in the number of species it supports along its linear habitats than in the presence of rare species, although some rare species can be found. The canals cross through agricultural land and therefore provide a refuge for species threatened by modern farming methods. Many species that were once common in the countryside but which are now becoming rare still thrive along the canals.

The ideal canal has a clear central channel; a wide band of vegetation along both banks, consisting of reeds and wild flowers; short grass on the towpath, with longer grasses and flowers on either side of it; a species-rich hedgerow on the boundary; and a variety of habitats on the non-towpath side - woodland, scrub or grassland.

For most of its length the towpath is bordered by a hedgerow. Hedges provide shelter and protection for birds and small animals. Hawthorn is the most common tree in the hedgerow, although most hedges contain a mixture of plants - a wild flowers as well as shrubs and trees.

The strip of land between the boundary hedge and the towpath is particularly variable in terms of the range of habitats it supports. In some places the hedgerow plants have spread out to cover a relatively large area with scrub. In other places the coarse grasses and tall wildflowers that grow at the base of the hedge grow out towards the towpath. Meadow grassland, with its range of finer grasses and wild flowers, can also be found here.

The towpath ranges from road or tarmac path with not plants at all growing on it to dense vegetation, which may be quite difficult to walk through in summer. In general, however, the plants growing on the towpath are shorter than those elsewhere on the banks. The more common towpath plants are those that have adapted some means of coping with the effects of constant trampling.

Between the channel and the towpath is another strip of tall vegetation. Most of the wildflower species in this zone are capable of growing in damp or waterlogged soil.

Meadowsweet, with its creamy flowers and heavy scent, is very common along the canal banks. Yellow Irish, a wild cousin of the garden species, provides a splash of colour in early summer.

The reed fringe is the band of vegetation along the water’s edge – plants with their roots in the mud of the canal bed and their leaves and flowers rising above the water. It is extremely important to the health and well-being of the canal. The plants of the reed fringe protect the canal margin which are now full of boats, absorbing the wave energy which could damage and erode the banks. They provide food, shelter and breeding sites for a variety of different aquatic animals. In addition, by using up excess nutrients in the water, they can prevent the growth of algal blooms.

Aquatic plants in canals are often referred to as weeds, suggesting that they are nothing more than a nuisance in the water. This is far from the truth. They support a wide variety of invertebrates, which in turn support the populations of coarse fish and water birds that people associate with the canal. They offer cover for fish, both predator and prey species, and they provide safe sites where aquatic invertebrates and fish can lay their eggs.

Scrub is often found along parts of canals, usually on the bank opposite the towpath. The plants of scrub and hedgerow are similar, though the scrub is wider and more dense. An unmanaged habitat quickly develops into scrub and grows out over the adjoining habitats. Regular trimming of hedges keeps this tendency to develop into scrub in check. However scrub is a very valuable wildlife habitat, and adds to the diversity of habitats and therefore to the nature conservation interest along the canals.

Woodland is not a common habitat along the canals as there is rarely the space for it to develop between the...
boundary and the towpath. Where it does exist, it is usually a mixed deciduous woodland. The trees and shrubs shelter the ground layer plants, protecting them from extremes of temperature and from winds. Without maintenance the habitats along a canal change - a process called natural succession. The reed fringe gets wider as it extends out into the open water. The water itself gets shallower as silt builds up in the channel. The hedgerow grows out over the towpath, and scrub replaces grassland on the banks. In time the scrub can extend to cover what was once the bed of the canal. Restoration of the canal means clearing towpath, and dredging and rewatering the channel. In the short term this restoration work can leave the canal and its banks looking a bit like a building site. With time, however, the system can and does recover.

Where the canal channel was still wet and was filled with marsh plants before restoration the marginal vegetation recovers relatively quickly. After only one growing season the reed fringes are established. Where the old channel had dried out totally and supported dry grassland or scrub, the reed fringes and aquatic vegetation take much longer to become established - but they do return.

In the long term the banks and the water are recolonised with plants and animals in the same way that the canal was first colonised over two hundred years ago, when it was built. Most of the wildlife that you see as you walk the banks of the canal is there not because it was planted or placed there by anyone, but because it has “moved in” of its own accord in the two hundred years since the canals were built. The seeds of some plants blow in from the surrounding countryside. Others are carried on birds’ feet or on the fur of the animals as the animals and the birds themselves moved in to colonise this new set of habitats. Boat traffic helped to spread water plants from the Shannon eastwards through Leinster along the canals. What all these plants have in common is that they will only stay in the canals or on their banks for as long as conditions remain favourable for them. And the animals, large and small, all depend ultimately on the plants for their survival - they all either eat plants themselves or they eat other animals that eat plants. If the plants are lost, the animals will be too. It is up to all of us to see that this does not happen. One of the ways of doing this is to learn all about the wildlife you can see along the canals, and find out what you can do to protect it.

There is a wide range of habitats along a canal change - a process called natural succession. The reed fringe gets wider as it extends out into the open water. The water itself gets shallower as silt builds up in the channel. Without maintenance the habitats along a canal change...

(right) A reed fringe, a very special piece of wetland

(left) A reed fringe, a very special piece of wetland

(below) Many species of butterflies and moths can be found along the canals.
The Broads
By Brian Moss
HarperCollins Publishers
www.fireandwater.com
ISBN: 0 228 22001 1
2001/392 pp/£19.99stg
The Broads are situated in Norfolk East Anglia and a bit of Suffolk. They are a set of around 50 very small lakes linked with four rivers. The words of the author in his Foreword encapsulate this book. To quote: “I am an academic; and enjoy the proper role of a academics to say what I think and not what is politically expedient or locally convenient. I hope this is a ruthlessly honest, academic”. This book is a breath of fresh air. It brings the Broads to life; its history, freshwater biology and conditions, vegetation, fauna and flora, and geology. He carries out major research in the Broads for many years from his base at the University of East Anglia. The book has 17 chapters but it is Chapter 16 that carries all the punches, entitled ‘What Can Be Done’—The Current Condition of the Waters and their Restoration. The author refers to his work to the book is a revelation. It is ruthless and honest about what is necessary if the Broads are to be saved.

Killer Algae
The True Tale of a Biological Invasion
By Alexander Meinesz
(Translated by Daniel Simberloff)
University of Chicago Press
ISBN: 0 226 35220 0
1999/300 pp/US$29.50
In 1982 a beautiful green alga (seaweed) called Caulerpa, arrived on the Oceanographic Museum of Monaco where it was cultivated in the tanks. Two years on the algae was discovered in the sea occupying only a square metre, under the windows of this world-renowned institute. Six years later the algae was noted 0.5 kilometres from Monaco along the French coast. It was growing un restrained, covering and then eliminating many plants and animal species. By 1997 it had invaded 99 sites, west as far as Spain and east into the Adriatic Sea, totalling more than 4,600 hectares. This book, by Alexandre Meteensz, unravels the intriguing story of the advance of this seaweed along the Mediterranean coast. The treatment he received from French scientists and bureaucrats alike was appalling. They did everything to hinder his investigations, especially during the first few years. He was in any way at fault. This true story is gripping, like a novel one must not put down. The author is a man of exceptional courage, a true scientist, who continued to investigate this killer alga against all the odds.

Butterflies
By Dick Vane-Wright
Natural History Museum Publishing
www.nhm.ac.uk/shop
ISBN: 0 569 07174 X
2003/132 pp/£9.50stg
&
Dragonflies
By Steve Brooks
Natural History Museum Publishing
ISBN: 0 569 03850 8
(Dragonfly)
2002/96 pp/£9.95stg
Knowing little or nothing about butterflies I have found this to be a wonderful insight into these beautiful creatures from this book. It contains easily understood text and wonderful photographs: a batch of eggs laid on a stinging nettle leaf; a butterfly beautifully preserved in a piece of Dominican amber — about 20 million years old; a monarch swallower with her tongue hanging out. These are but a few of many detailed but beautifully photographed and the book also provides some photographs of the differences in butterfly species worldwide. One learns from the text how long a butterfly lives, its courtship, mating, laying eggs, caterpillar habits, communicating. The butterfly has at least five senses: smell, sight, hearing, touch and taste. The Natural History Museum have also published a similar book on dragonflies and like the butterfly book this brings you through their various life stages: eggs, hatching, feeding, lifespan, how it defends its territory etc. For the beginner these books are a wonderful introduction to these species. Highly recommended for young and old.

The Birdwatcher’s Yearbook and Diary 2004
Edited by David Crompton
Buckingham Press
55 Thorpe Park Road, Peterborough, Edward Bourke, PE6 6JU, UK.
ISBN: 0 953830 71 1
2003/352 pp/£13.50stg (price £20 postage in Europe)
Now in its 24th year this yearbook is, as usual, full of information. The features sections include: new discoveries, animal website surveys covering overseas birds and binding locations, directory of English language and bird magazines. Other sections include: day by day diary, log charts explaining the new BOU order of species lists, directory lists: book publishers, equipment, holidays; bird reserves and observatories; county directory etc. As always, highly recommended for the bird enthusiast.

Bound for Australia
The loss of the emigrant ship “Tayleur” at Lambay on the coast of Ireland
By Edward J. Bourke
Available from leading booksellers or from the British Library, 33 Rushbrook, Blanchardstown, Dublin 25, Ireland.
ISBN: 0952305 3 X
2003/236 pp/£18.00
This is the story of the sailing ship “Tayleur”, which was lost at Lambay, just north of Dublin, on 21st January 1854. Of the 650 aboard only 290 survived — amongst those only three of the hundred women and three of the fifty children.much shore area. There were several Inquiries, which sought to explain the loss of a brand new ship. She was at the forefront of sailing design and was the longest sailing ship in the British fleet. The author has under taken wonderful research into the building of the ship, the loss, and the legends and also details the list of passengers, all the various artefacts that have been recovered by divers, as the wreck is so easily accessible. A great story from cover to cover.

Arable Plants
A field guide
By Phil Wilson & Miles King
English Nature & WildGuides Ltd
www.wildguides.co.uk
ISBN: 1-903837-02-4
2003/312 pp/£15.00stg
This attractively presented, example guide identifies the rare and declining wild plants of UK arable land and is a practical hand book to their conservation. A wide ranging introduction discusses the history, cultural significance, ecology, conservation and biology of plants often dismissed as ‘weeds’. In the main section, 100 species accounts contain a colour photograph and concise description, a distribution map, and notes on habitat, management, seed biology, life history and reasons for decline. Other sections cover keys, management, native and threat status, and references. A masterpiece! — John Ascen

Links between Biodiversity Conservation, Livelihoods and Food Security
The sustainable use of wild species for meat
Edited by Sue Mainka and Mandri Trivedi
IUCN - The World Conservation Union 2002
www.iucn.org/bookstore
ISBN: 2-8317-0865-8
2002/135 pp/£13.50stg
These proceedings from a workshop on the sustainable use of wild species for meat are a revelation. We hear much of declining numbers of wild animals in many countries in Africa, many of whom are being killed by humans. But behind this problem is the fact that there are people in need of food. For example in rural areas in Kenya 80% of households consume 14.1 kg of bushmeat per household each month. The workshop recommends solutions, which if properly implemented, will help address this conservation problem. It contains the text of the International instruments that can be used to enhance sustainable fisheries. This book is a must for anyone involved in fisheries management.

Making Waves
Integrating Coastal Conservation and Development
By Katherine Brown, Emma L. Tompkins, W. Neil Adger
Earthscan Publications Ltd.
www.earthscan.co.uk
ISBN: 1 85639 922 4
2002/164 pp/£17.95stg
Worldwide over a billion people live in what is defined as coastal areas. This makes the challenge of sustainability in these areas crucial for the multiple-use resources which are constantly under pressure from so many different sources. The authors present a variety of methods and techniques that can be used to highlight and promote sustainable decisions among the various users. The most important message coming from this book is that all stakeholders need to be involved in the selection of evaluation criteria. Local residents may not be aware of the important and environmental impacts of certain development and regulations or scientists may not understand local issues. Thus this book is especially suited to planners, scientists and NGOs.

For further information phone: 028-20128
Email: info@islandersrest.ie
Website: www.islandersrest.ie

The Islander’s Rest
Skerk Island
West Cork
21 ensuite bedrooms with TV & direct dial phone
Proprietor: Mark Murphy

Publications of interest

Sherkin Comment 2003 - Issue No. 35

accommodation
• Bar & Lounge
• weddings
• private parties
• business meetings
• marina facilities

The Islander’s Rest
Skerk Island
West Cork
Conservation and Education in Churchyards

By Jenifer Baker

Churchyards often contain remnants of ancient grassland, never ploughed or re-seeded and consequently rich in species. Typically there are also other habitats (such as old trees, hedges, banks, and walls) each with its characteristic species, so in general churchyards may be regarded as oases for a rich variety of wildlife. Their significance for conservation is reflected in the fact that many English and Welsh churchyards have been designated as sites of importance for nature conservation. For example, in the arable landscape of Norfolk, six species of meadow plants have at least 50% of their county population within churchyards. In Ceredigion (west Wales), 99% of the county’s green-winged orchids are in churchyards. Butterflies, bees, and a variety of other invertibrates also find a haven, as do birds and small mammals.

Ecological work carried out during 2003 in the churchyard of my own village (Ruyton-XI-Towns in Shropshire, UK) has turned up over 100 species of meadow plants, many of which are rare or non-existent in the surrounding countryside; and an interesting diversity of insects including a rare species of bee. At the same time, the churchyard is being developed as an inspirational area for art and for writing. For instance, children may be asked to walk around slowly, then sit for a little while in a quiet place, then close their eyes and become aware of sounds (such as bird song). Their feelings then become the basis for creative work such as writing a short poem. Like many churchyards, there is a special atmosphere of peace, of the sacred, which may be sensed by children if only they are given the opportunity.

What could be more appropriate than using some of our sacred space as a Noah’s Ark for species under pressure? As Nigel Cooper (biologist and priest) has said: ‘The more we are able to manage churchyards for wildlife, the more we may be able to influence others to do the same for whatever land they have responsibility for. Churchyards can become highly visible examples of good practice in nature conservation.’

Dr Jenifer Baker has worked all round the world as an environmental scientist, specialising in oil spill response, and is currently a theological student.
Bigger than the biggest dinosaur...

The blue whale is the largest animal that ever lived; the largest ever caught was 29.16 metres long and weighed 158 tonnes. Its heart would have been as big as a Volkswagen "beetle" car and its arteries (the largest blood vessels in the body) wide enough for a person to crawl through.

The largest dinosaur that ever lived - the brontosaurus weighed only 30 tonnes a quarter of the weight of the average fully-grown blue whale.

Blue whales were hunted almost to extinction until the International Whaling Commission declared them to be a protected species in 1966.

Stop Press
Blue whales recovering

Scientists believe the Antarctic population of blue whales could be three times larger than it was 25 years ago - rising from 700 a quarter of a century ago to 1,300 now - according to the June meeting of the International Whaling Commission.

Source: Alex Kirby
BBC

Check it out on:
http://www.bbc.co.uk/science/nature/29881280

Captain Cockle's Log
Welcome aboard shipmates! Together, we'll be taking a look at the world's greatest natural resource - one that covers two-thirds of the earth's surface - the sea!

... Louder than the loudest rock band
Blue whales are the loudest animals on earth. When they call to each other, their low frequency whistles rise up to 188 decibels - louder than a jet engine (at 140 decibels) and MUCH louder than human shouting (at only 70 decibels). Any sound over 120 decibels is painful to the human ear.

Check out these amazing facts...
The tallest mountain in the world is the submarine volcano at Mauna Kea in Hawaii, whose cinder cone stands over 9,000 metres above the ocean floor.

This makes it slightly higher than Mount Everest which stands 8,850 metres above sea level and was first climbed by Sir Edmund Hillary in 1953.

While most jellyfish in Irish waters are harmless - like the Portuguese Man O' War (Physalia physalis) - can give a nasty sting.

Beneath the gas-filled float, its tentacles can reach down as far as twenty metres - loaded with stinging cells capable of catching small fish and giving anyone who touches them a painful sting.

The most deadly jellyfish in the world is probably the box jellyfish or sea wasp (Chironex fleckeri) which, luckily for Irish swimmers, only lives in warm, tropical waters. This jellyfish feeds on shrimps inshore waters and needs a strong poison to knock out their prey quickly. But the poison is so strong that contact with only 3 metres of tentacles can be fatal to an adult.

The best advice about jellyfish is to stay well away from ALL of them and not to touch even though you find washed up on the shore.

Robo-Cat?
American scientists have developed small robot submarines called Automated Underwater Vehicles (AUV's) to carry out research underwater. Some will be fitted with advanced high-resolution sonar to identify individual fish species by way of sound not programming. The US Navy plan to have some 117,000 robots in the water by the year 2012.

Jellyfish:
www.aquarium.org/jellies

Automated Underwater Vehicles:
http://www.nms.org/oceans/scientist/submersibles.html

Blue whales:
www.explorationslearning.com/subject/s/whales/species/whale blue.shtml
IF any bird were to score a zero in the national bird popularity stakes it would have to be Magpie! Its loud raucous nature and unwelcome habit of feeding on many of our nesting garden birds has made it one of our most unpopular birds!

The reason for the Magpie’s success is that it is an opportunisist and is as much at home feeding from our overflowing dustbins and rubbish bags as it is plundering a Blackbird’s nest. Their omnivorous diet includes fruit, seeds, worms, grubs, eggs, young birds, carrion, small mice, insects and frogs.

Despite their fearome reputation, Magpies rarely capture full-grown birds. They usually confine themselves to robbing nests and eating chicks in spring and summer when birds are nesting. By contrast, the Sparrowhawk kills birds all year round and consumes about 16 kilos of songbirds a year. A far greater quantity than any Magpie. Likewise, cats have a far greater impact on songbirds than Magpies. In Britain, cats kill 4.5 million birds a year, while Magpies kill 1.1 million. In city suburbs, cats are much commoner than Magpies. In suburban Britain, there are about 25 cats to every Magpie territory - and the 25 cats kill about 400 birds in total every year.

Of course, our garden birds have had to devise methods of survival and against the Magpie, and many songbirds live for several years and raise large clutches. Some have several broods each year, so there is always a surplus of young birds for Sparrowhawks and Magpies to exploit. For each pair of adult songbirds, only two chicks now breed to replace the parents. This means that some species can lose over 50% of their breeding population during their lifetime and the population will still remain stable! The Magpie even has its own natural predators. Magpies feed on carrion which takes its eggs and kills its young. Even adult Magpies are sometimes killed by Hooded Crows. In nature, predator and prey numbers are always in balance, so predators never expect prey - otherwise they would starve! Predators keep down prey numbers so they don’t exceed what their habitat can support. We should always outlaw Sparrowhawks and Magpies, and Magpies always outnumber Hooded Crows. Likewise, our garden birds have had to devise methods of survival, and one of the most popular is the Redpoll, a small member of the finch family with a neat red cap which you can see carrying sticks to their selected nest site, usually high up in a tree. Redpolls are mainly visitors in the winter, and will construct their large domed nest and line it with mud and fine grass. Predators such as Sparrowhawks and Cats are more likely to be involved in displaying, ‘tail wagging’ and presenting of food offerings to the male, the female will lay 3-5 white eggs which she incubates for 18 days. The young are then fed in the nest for a further 24 days. After leaving the nest they stay with their parents for a further six weeks. There are over 80,000 pairs of Magpies in Ireland, although their numbers appear stable in the countryside they are increasing in urban areas as they learn to live among us, and many suburban households have Magpies nesting in garden trees.

Many of the Christmas cards we receive have a Robin on them. Despite being one of our commonest birds, the lifestyle of the Robin is often full of surprises! The Robin is one of our commonest birds, it seems to be everywhere, with over one and a half million pairs of Robins breeding in Ireland and many thousands more arriving in the autumn to spend the winter with us. Although the Robin is resident in Ireland, staying in the same place all year round, in some other countries they are migratory and many of the Robins we see in the winter will have come from either Scandinavia or continental Europe. A regular garden bird, the Robin is a frequent visitor to the bird table. Unlike finches and sparrows the Robin is not a seed eater. Their preferred food is worms, grubs and insect larvae, but they will take crumbs and grated cheese or fat from the bird table. Some Robins have even been seen feasting on food left out for a human’s pet! Robins are very sociable birds, often feeding with other birds which share the same territory for their lifetime. During the spring the male Robin becomes extremely aggressive and will attack anything red in his territory – try sticking a bunch of red feathers in a nearby tree and see what happens! The nest is often located in an old shed or outdoor building and is made of moss and soft grasses. You may find them in some gardens where they have made nests in the old eyelet placed low down in a hedge – make sure you have ample points of entrance so it doesn’t fill with water! The 4-5 white and red speckled eggs hatch after about 13 days and the young leave the nest after a further 13 days but are still dependent on their parents for a another two weeks. Most pairs will rear a second brood, and occasionally a third! With all these youngsters arriving, it is no wonder that robins can be seen pecking at the door of the garden shed in search of food. Robins are a very popular garden bird and are often seen in suburban gardens. If any bird were to score a zero in the national bird popularity stakes it would have to be Magpie! Its loud raucous nature and unwelcome habit of feeding on many of our nesting garden birds has made it one of our most unpopular birds!

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Seared Trout with Tomato Coulis & Garlic Vinaigrette

Ingredients
- 4 x 170g / 6oz fillets of trout
- Salt and freshly milled black pepper
- Olive oil

Method
Heat 2 tablespoons oil in frying pan. Season trout and quickly sear trout for 3 minutes each side. Remove.

Tomato Coulis
- 4 tomatoes - skinned, seeded and blended
- 25g / 1oz butter - diced
- Pinch castor sugar

Cook tomatoes for 3 minutes. Continue to cook, adding diced butter little by little. Season and add a pinch of sugar.

Garlic Vinaigrette
- 2 tablespoons olive oil
- 2 cloves garlic - crushed
- 1 tablespoon white wine vinegar
- 2 tablespoons cold water
- Juice of half lemon
- 4 tablespoons very finely chopped onion and courgette
- Chopped thyme and fennel
- 1 bay leaf

In a small saucepan mix all ingredients except onion, courgette and herbs. Boil for 30 seconds and then remove from heat and allow to infuse for 10 minutes. Strain, check taste and add onion, courgette, thyme and fennel.

To Serve
Arrange trout on hot plates and surround with tomato coulis and vinaigrette. Serves 4.

Fish alternatives - salmon, arctic char.

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An Bórd Iascaigh Mhara, The Irish Sea Fisheries Board, Crofton Road, Dun Laoghaire, Co. Dublin, Ireland.
Tel 01 284 1544. Fax 01 284 1123.
Email info@bim.ie  Website www.bim.ie

Answers to puzzles on page 29
**WINTER SLEEP**

HIBERATION, or winter sleep, is a way for animals to avoid the hardship of looking for food during winter. They just go into a deep sleep until the warmer weather arrives and food is plentiful again.

The dormouse is a good example of a hibernating mammal. It eats so much during the autumn months that it becomes very fat in a short time. When the air temperature drops below a certain level the dormouse curls itself into a tight ball and falls asleep in a nest it has made. It will sleep there until temperatures rise again, living all the while on the fat in its body.

While asleep an animal that truly “hibernates” drops its body temperature, reduces its breathing and lowers its heartbeat. Because so little energy is being used, the store of fat in the body is absorbed very slowly. Once the warmer weather of spring arrives, the animal wakes up, much thinner but not weak and is ready to start breeding.

The winter sleep for all animals that are said to hibernate are not the same. Some may just sleep more than usual, others might wake up briefly during the winter months. Many cold-blooded animals such as frogs, toads and snakes, are also said to hibernate, but not in the same way as mammals.

Hibernating animals include the dormouse, hedgehog, bat, bear, snake, frog, toad and squirrel.

**GOODNIGHT!**

With the help of the pictures above unscramble the words below, fitting them into the grids. Use the highlighted letters to solve the hidden word. *Clue: Zzzz Zzzz Zzzz Zzzz*

**HIBERNATION TRAIL**

It is hard for the bear to find food during the cold winter months so it will hibernate for the winter. Can you follow the instructions to bring it safely to the cave where it will find shelter? Help the bear collect berries and nuts along the way to build up its body weight. This stored energy will help it survive during the long, cold winter.

Column 1, Row B & C = thick forest; colour the squares green
Column 2-4, Row C = cliff edge; colour the squares black
Column 3-5, Row A = deep river; colour the squares blue
Column 2-4, Row E = mud slide; colour the squares brown
Column 5, Row E-F = large boulders; colour the squares grey

When you have coloured in all the obstacles, draw a path to the cave.
A couple of months ago while looking up information for my Bronze Award on the President’s Award website I noticed an offer for an Army Survival Course in Wicklow. Falling off mountains and other near misses seemed strangely familiar so I decided to apply. Amazingly I was chosen. That is why on Tuesday 1st July at 10.00 hrs, 26 Gaisce participants from Derry to Kerry traded our creature comforts for four days to undertake whatever challenges the 2nd Field Artillery Regiment of the Army decided to throw at us. We met at McKee Barracks, waved goodbye to civilisation and embarked on an incredible journey. From the moment we arrived we were made to feel welcome. We turned in our civvies and donned the Army Khaki. We were given our lunch and no one can say that they left the barracks on an empty stomach. The 26 of us aged from 15-19 years were divided into teams and each team was assigned a team leader. For the next four days we set up camp together and whatever challenges had to be faced we undertook them as a team.

After being togged out in our Khaki clothes, our faces resembling masterpieces (green is definitely my colour) we were loaded onto the army trucks ready to begin our adventure in Wicklow. Our first task as a team was to canoe across a lake to find our rations – our daily rations included two cooked meals; breakfast and dinner and snacks for in between. After canoeing we jumped back on the trucks and headed to the forests to set up camp.

Everyday brought new and exciting challenges. Try to imagine being woken at 6.30am, taking down our tents then wolfing some breakfast. Next we started a five-hour hike over a rocky terrain followed by an abseil down pure rock face near Glendalough. The next task was to cross the river from a towering precipice using three different methods one involving lying on the rope on your belly and pulling yourself to the other side. Indiana Jones eat your heart out. The fun continued into the night where anyone of these activities could be on the agenda – raft building, orienteering and lots more.

This was no ordinary trip where there would be just one highlight. Each day brought new experiences but what made this trip so memorable were the people. Everyone that took part from the participants to army and Gaisce personnel had a great attitude. Team spirit and mutual support and good humour were the key ingredients. For my part I loved it all from waking up in the morning and seeing the trees silhouette towering over me to trying new activities and most of all seeing people at their best and doing what they love.

Because of the constant variety of activities it was easy perhaps too easy to forget the people who made this all happen.

The Army’s planned activities and the Gaisce personnel’s encouragement and support combined to make this a really great experience. The motto of the trip was “Still smiling” and for the most part we were.

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
The Northern Lights

THE northern lights are a dazzling display of coloured light, sometimes seen in the night sky of the northern hemisphere. Similar displays occur in the night sky of the southern hemisphere. Scientists call these lights *aurora*, with the northern lights known as *aurora borealis* and the southern lights known as *aurora australis*.

These lights move across the sky in the form of luminous arcs, sometimes flashing like giant searchlights. These displays are caused by huge explosions, called flares, on the sun. When these flares take place they throw huge quantities of solar particles into space. Travelling at over a million kilometres per hour, these clouds of particles can reach Earth within two to three days. As they close in on Earth, the Earth’s magnetic field captures the particles and guides them towards our two magnetic poles, the geomagnetic north pole and geomagnetic south pole. On the way to the poles, the particles collide with the Earth’s atmosphere, which acts as a shield. This collision causes the particles to send out light, which result in fantastic displays in the night sky.

The northern lights are best viewed from northern Canada, northern Scotland and northern Norway and Sweden, but sometimes the lights can be seen as far south as Ireland, as shown in these photographs taken on Sherkin Island, Co. Cork, this November.

Photographs © Robbie Murphy
THE response to Sherkin Island Marine Station’s Environmental Competition for Primary School Children in Munster for 2003 was wonderful. We were delighted to have Cllr. John Mulvihill, Deputy Mayor of Cork County, presenting the prizes at the prizegiving ceremony at the Carrigaline Court Hotel, Carrigaline, Co. Cork.

We would like to take this opportunity to again thank our sponsors for this year. They were: BIM (Irish Sea Fisheries Board), Central Fisheries Board, City Print Cork, Cork City Council, Cork County Council, Denis McSweeney Photoshop, Cork, Dept. of the Environment, Heritage & Local Government, Evening Echo Newspaper Cork, Janssen Pharmaceutical Ltd. and Pfizer Ireland Pharmaceuticals.

Here is a very small selection of some of the 405 prize-winners.

Above: Scoil Insagain, Aghada, Midleton, Co. Cork.
Cllr. John Mulvihill, Deputy Mayor of Cork County presenting the prizes at the Carrigaline Court Hotel, Carrigaline, Co. Cork. Also present are Mr. Paul Bourke, Central Fisheries Board; Mr. Bob Cooke, BIM; Mr. Jim Murphy, Janssen Pharmaceutical Ltd.; Ms. Lynne Morrissey, Cork County Council; Mr. Eddie O’Sullivan, Pfizer Ireland Pharmaceuticals and Mr. Matt Murphy, Sherkin Island Marine Station.

Above: Banogue N.S., Banogue, Croom, Co. Limerick.
Cllr. John Mulvihill, Deputy Mayor of Cork County presenting the prizes at the Carrigaline Court Hotel, Carrigaline, Co. Cork. Also present are Mr. Paul Bourke, Central Fisheries Board; Mr. Bob Cooke, BIM; Ms. Niamh Hunt, Janssen Pharmaceutical Ltd.; Ms. Lynne Morrissey, Cork County Council and Mr. Matt Murphy, Sherkin Island Marine Station.

Above: St Mochulla’s N.S., Tulla, Co. Clare.
Cllr. John Mulvihill, Deputy Mayor of Cork County presenting the prizes at the Carrigaline Court Hotel, Carrigaline, Co. Cork. Also present are Mr. Paul Bourke, Central Fisheries Board; Mr. Bob Cooke, BIM; Ms. Niamh Hunt, Janssen Pharmaceutical Ltd.; Mr. Eddie O’Sullivan, Pfizer Ireland Pharmaceuticals; Mr. Matt Murphy, Sherkin Island Marine Station and Ms. Lynne Morrissey, Cork County Council.

Above: Our Lady of Mercy Convent N.S., Bantry, Co. Cork.
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Above: Kildimo N.S., Kildimo, Co. Limerick.
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