SHERKIN COMMENT

Issue No. 25 | Environmental Quarterly of Sherkin Island Marine Station | 2000 | Price 75p

INDEX

Primroses (*Primula vulgaris*), one of the first flowers of spring.
Photograph: Paul Kay

LACK OF CIVIC PRIDE

EDITORIAL

By Matt Murphy

Much is written about the positive side of the Celtic Tiger but there is one very dramatic downside, that is the increase in household and general waste. A question that must be posed for all of us is "where can it be put?". Attention is centred throughout the country on locating new landfill sites. Most of those being used at present are nearly full. Everywhere there is such a proposal for a new site, local communities have begun a campaign against the use of that possible site. However the reality is that there has to be a place for disposal.

There are pie-in-the-sky notions that we can recycle most of the waste we create. The fact of course is that we are at least 10-12 years away from even recycling 40% of what is presently going to landfill. However if we continue the present trends of producing more waste, we will be then looking at recycling only 30%. There must be major changes in the collecting of waste and in our outlook to recycling. However the starting point must be with ourselves. We have to change our own habits first before pointing the finger at others.

The latter is the worrying issue. Our track record to date on recycling just two items - glass bottles and aluminium cans - is dismal. Bottle recycling, although in place for many years, is at 37% and aluminium cans are at around 17%. Both these figures are appalling as these two items are the easiest to collect for recycling. No one seems to question our lack of effort as a nation. We do lack civic pride. In the present controversies over landfill sites, it would be interesting to see if they have made people more aware of the need for recycling and environmental care as a whole.

The recycling figures for newspapers, cardboard, paper, tin cans and plastic are atrocious. Lack of market outlets is the reason given for the problems. Surely it would be worthwhile to introduce subsidies for transporting these items to the recycling factories in and outside the country. The savings in space and other expenses at landfill sites would make economic sense. An example in Cork City: a printer weekly disposes, via a skip, around 2 tons of excellent quality paper to a local landfill - the cost is £200 or £10,000 annually. The estimated cost for disposal of printers' waste paper for Cork City and County is in excess of £5000 weekly - £250,000 per annum. Surely this must not be allowed continue? Indeed, if one takes the discarded office paper and cardboard in the county, not being recycled, into consideration then one can only say we have lost the run of ourselves.

Local authorities must introduce major recycling initiatives for households and insist on segregation of materials. To achieve this a major educational programme is needed. This must be directed, in the main, at children. They have a far better understanding of why it is necessary to protect the environment. Children at primary school have a desire, that older generations have not, to see nature protected. It is they who are the true inheritors of the earth. It is in them that we must put our faith. They must be given the encouragement to force all of us - as only children know how - to clean up our act and to care for our environment. How many of us could resist a constant harping by the young to save our environment.

It must be said that local environmental groups win the odd battle but in the country as a whole the environment is losing the war. It is not too late for the present adults of this country to start caring. If each of us decided to do only one positive act for the environment on a weekly basis much could be achieved. Some examples are: recycle your bottles and aluminum cans; re-use envelopes; start a compost heap; use recycled paper; reduce the size of the first page of your fax message - most only carry name and address. Try one in your home, in your place of work, in your neighbourhood. Be able to tell your grandchildren you cared or else be prepared to tell them why you weren't interested.

We adults must realise that we are only caretakers of our environment. We will be passing it on to the next generation. We had made an unholy mess of waste disposal to date. Landfill sites (or lets put the true name on them - dumps) that are closed or are due to close, may create major problems for the future. No one knows what is draining into the nearby rivers, streams or groundwater. Local authorities have some responsibility but we, the citizens who created the waste, have an equal responsibility.

What are also needed are national and local non-governmental organisations or groups to involve people of all ages in positive and practical work for the environment. Businesses must also take a lead, someone should have responsibility for waste control within companies, remembering this will bring financial savings. This has been proved very much in the United States.

There is too much hypocrisy doing the rounds about landfill, incineration and transfer stations. Each is going to be needed in the future. Will the solution have to be a transfer of the decision-making process to government departments?

SUBSCRIPTION FORM

SHERKIN COMMENT is a quarterly publication of Sherkin Island Marine Station aiming to promote the awareness of our natural resources, their use and protection.

SUBSCRIPTION: to receive a year's subscription to "Sherkin Comment", please send a cheque or money order for IR£4.50 for Ireland and IR£5.60 for the U.K. (postage included); send IR£7.40 for Europe and IR£8.40 for the rest of the world (surface postage) - payable to Matt Murphy, Sherkin Island Marine Station, Sherkin Island, Co. Cork. Ireland.
Tel: 028-20187 Fax:028-20407 E-mail: sherkinmarine@eircom.net

Please send me 1 years subscription - beginning with Issue No. .....

Please send me 2 years subscription - beginning with Issue No. .....

I enclose cheque/postal order to the sum of IR£.....

Name .....

Address .....

.....

.....

Signature .....Date .....

STAFF: Publisher, Matt Murphy; Editor, Matt Murphy; Editorial Assistant, Susan Murphy Wickens; Typesetting, Susan Murphy Wickens. ISSN 0791-2447 © 2000

Sherkin Island Marine Station website: **http://homepage.eircom.net/~sherkinmarine**

Subscription to Sherkin Comment

We need your support.

ATTITUDE AND ACTIONS

A National Survey on the Environment

Survey Highlights

As we go to press with "Sherkin Comment", we have just received a copy of the Department of the Environment's "Attitude and Actions - A National Survey on the Environment". Here are the highlights of the survey:

There are specific areas where a clear improvement can be seen in Irish behaviour with regard to the environment over the last ten years - buying recycled paper, recycling cans, using a bottle bank, helping clean up waste and bringing back or re-using plastic shopping bags.

However, bearing in mind the expansion of "bring" facilities and the greater awareness of environmental issues, progress over the last ten years has been disappointing.

- Irish people have a public and private morality, thinking one way and behaving another when it comes to the environment.
- The Irish public want to see the Irish Government doing more, yet few of us are willing to make individual sacrifices. When it comes to protecting the environment, only 20% are willing to pay higher taxes, 18% willing to pay higher prices and 12% willing to make cuts in their standard of living.
- We are a nation concerned about rubbish and the appearance of our local areas, yet almost half of the population, 49%, admits to having littered.
- We are concerned about water quality and conservation. Yet only 39% of us are prepared to pay for water according to the amount we use. Water conservation only takes place where there is a personal gain for us, e.g. fixing a leaking tap or radiator.
- We admit that we have recycling "bring" banks and facilities convenient enough to use if we wanted to, yet only a minority is making the effort to recycling regularly. As regards the frequency with which we recycle, only 25% recycle glass, 18% recycle paper, 17% recycle cans and 10% recycle plastic on a regular basis.
- With regard to shopping behaviour, although labeling is acknowledged to be a source of information on the environment for us, only 42% ever pay attention to it when making purchases. Similarly, only 31% ever pay attention to the amount of packaging prior to purchase.
- We have made some progress, however, with 68% now buying recycled paper/tissue products, a figure significantly increased on ten years ago.
- Even when it comes to doing without our plastic bags while shopping, 60% of Irish people appear more willing to pay for new bags than to re-use old ones or use a reusable shopping bag. Some people have begun to use reusable shopping bags, though still not enough do so.
- It is in the area of energy conservation that most progress is evident. Recent energy efficiency campaigns and the economic benefits of conservation are having an impact on behaviour, with 87% switching off lights when leaving rooms, 83% turning down heating when out and 63% fitting energy saving lightbulbs.

Keeping Records of the Past for the Future

By Tim Cadogan

THOUGH current information and its global dissemination via the Internet and other technologies is the more valuable product in the stock market, there is a constant and growing interest in historical information. This is the raw material that fuels pastimes such as genealogy and local history, but which also is of interest to researchers in other fields of endeavor botanists, zoologists, medical historians and meteorologists to name but a few.

The Irish experience of preserving records of the past has been far from impressive. The destruction of the Four Courts, the location of the Public Record Office of Ireland (P.R.O.I.), in the opening salvos of the Civil War in 1922, is the darkest in the story. Records dating back to the early centuries of English administration in Ireland disappeared in the conflagration. Perhaps the most dramatic loss in terms of broad interest to the general public, however, was the 1851 Census returns, as well as those for the three preceding censuses in 1821, 1831 and 1841. Had the census for 1851 survived, providing a base-line record of every person then living in Ireland, its value to genealogists and social historians today would be enormous. Its absence means that other less satisfactory sources have been pressed into service as substitutes.

The later nineteenth-century census records suffered a different fate. After the statistical data had been extracted from the census returns for 1861, '71, '81 and '91, they were destroyed. Had they been preserved, of course, the likelihood is that they would have suffered the same fate in 1922. Fortunately the 1901 census returns were not housed in the P.R.O.I. in 1922 and have been available to researchers for some years, as have the 1911 returns. Microfilm copies of these resources have been made and this has enabled their wider availability than at their paper-format home the National Archives at Bishop St. in Dublin.

One of the historical sources that was elevated in status as a substitute for the lost census returns is the Primary Valuation of Tenements, popularly known as Griffith's Valuation. This mid-nineteenth century record of land holding gives the names of the occupiers of land and property for the whole country. These occupiers were tenants for the great part, not owners in fee and the valuation lists are often used as a genealogical tool, since the list of tenants to some extent represents a census of heads of households. The valuation records and the manuscript Field and House books in which were recorded the raw data used in studying land use and settlement patterns. The Primary Valuation records have benefited from modern technology in recent times and there are now two searchable versions of the Valuation available on CD-ROM. The Field and House books however are still only available in the National Archives.

Dating from the same approximate period is that great cartographic achievement, the Ordnance Survey 6" to the mile first edition maps, completed in the early 1840's on the eve of the Great Famine. This is a source that regrettably is not as widely available or as accessible as its value merits. Many county library reference departments have a set of these maps for their own county, but increasingly access to these is becoming restricted as the maps are subject to deterioration through age and use. Hopefully, this wonderful resource will also benefit from technological advances and will become available to a wider audience in digitized format in the future, though the fact that this would not be a commercially viable venture may not be to its advantage.

Photo: Matt Murphy

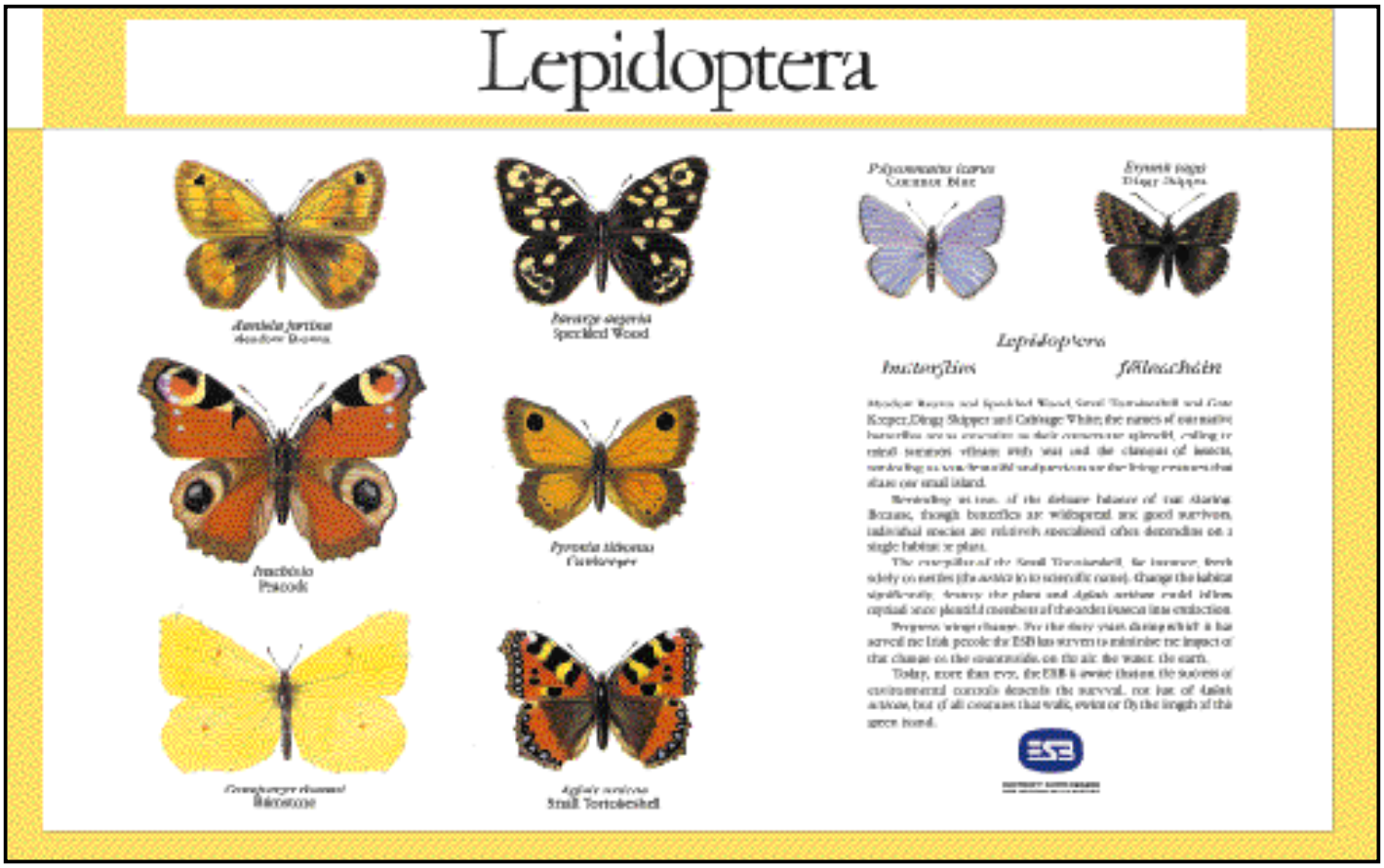
Niamh Cronin, Reference Department, Cork County Library.

The presentation of official historical sources such as the aforementioned is no more than one expects. As one moves down to records generated at other levels of administration and in business, the record of preservation is less impressive. Examples in the local administrative sphere are the electoral lists for the earlier decades of the twentieth century. While I am not conversant with the situation in other counties, no copy of the electoral lists for Co. Cork before the 1960's was preserved in the county and such lists as are held by the National Archives are incomplete. At parish level, one of the useful records that has suffered through neglect are cemetery burial registers, a record that is often sought by those researching family history, but which has disappeared over the years in the case of many rural burial grounds. Catholic parish registers of baptism and marriage have only in recent decades been considered in terms of preservation and the early registers had reached serious levels of decay before a more enlightened approach to preservation was observed.

The most valuable historical records are often those that were created without any notion of their historical value. These include all varieties of business records, diaries and journals, correspondence and photographs. There are many collections in these categories preserved in archives and libraries, but their geographical variety and range is far from impressive. The general public has a key role to play here. Every family has its own collection of family memorabilia; every community its local long-serving business. Every effort should be made to preserve locally-generated documents of that type for the long-term benefit of the community.

It is only in the long-term that the value of collections of local material is appreciated, usually when they are only a memory. Do you know of a potential historical treasure throve of material? If you do, encourage its caretaker to take measures to preserve it for future historians, now!

Tim Cadogan is Assistant County Librarian, Cork County Library, County Hall, Cork.



Titanium

A Metal for the Modern Age

By M. A. Toole

DISCOVERED independently, in the 1790's by W. Gregor in England and M. H. Klaproth in Germany, titanium was named by the latter after the children of Gaia, the earth goddess of Greek mythology. It was, for more than a century, thought to be a rare metal of little use. In fact it is the seventh most abundant metal in the earth's crust, up to 100 times as plentiful as metals in everyday use, such as copper, zinc and nickel, and 400 times more common than lead.

Its apparent rarity was largely due to the fact that isolation from its ores was difficult and there was very little demand for the metal. By the middle of the twentieth century, however, titanium proved to be a real prize among the elements when it was found to have several properties ideally suited to fulfilling many of the demands of modern technology. These provided the encouragement for chemists to develop methods for its commercial extraction, and its ores are now mined to the extent of 3 million tonnes each year, while 100 thousand tonnes of the metal itself are produced annually.

Small concentrations of titanium are widespread in rocks, and it is a common contaminant of ores of iron. The principle ore of titanium is rutile, which consists largely of the oxide of the metal. The powdered oxide formed by purification of rutile is the whitest material known, and is used as the standard against which other white substances are compared.

Until fairly recently, the main pigment in white paint was lead carbonate. Unfortunately this is quite poisonous and tends to darken with age, mainly as a result of reaction with sulphur compounds from burning fuels. The extreme whiteness of titanium oxide, combined with its lack of toxicity mean that this compound has now almost completely replaced "white lead" in paints.

Extraction of the metal is both expensive and complex, to the extent that it is unlikely ever to replace iron in importance. The usual method of metal extraction, which involves heating the oxide ore with carbon, is inefficient for titanium, as the inevitable traces of carbon, oxygen and nitrogen in the metal quite markedly affect is properties, making it brittle and susceptible to corrosion. Instead, rutile is heated with carbon in a stream of chlorine gas to form liquid titanium chloride. This is then heated with sodium or magnesium metal in an atmosphere of the noble gas, argon, to produce pure titanium. The chlorine and the magnesium or sodium, being themselves relatively difficult to obtain, are recovered from the by-products and re-used, so that very little goes to waste.

The metal resists corrosion by many of the common acids and alkalis, because it is protected by a layer of oxide on the surface. If this layer is scratched, it rapidly re-forms, so renewing its protection.

In powdered form, titanium burns readily and is used to produce sparks in many fireworks. In one method for the manufacture of sodium hydroxide and chlorine, by electrolysis of salt solution, one of the electrodes is made of titanium coated with platinum. This is more efficient than the graphite previously employed in this and other similar processes.

The most important uses of the metal are related to its unique combination of valuable properties. Though its density is greater than that of aluminium, it is very much less than those of iron and copper. This lightness, combined with its strength and ability to withstand high temperatures make it virtually the designer material for the construction of aircraft parts, jet engines and space craft.

Almost by accident, new properties of titanium were discovered in the late 1950's and early 1960's, which suggested unique potential in the medical field.

When titanium is fixed into contact with bone for more than a few months, the bone grows into it, a process known as osseointegration. In experimental work, no adverse reactions have been observed from the body's immune system, nor has the metal shown any evidence of even the slightest toxicity. Neither is it corroded by body acids.

In consequence, titanium is now being seen as the ideal material for use in bone replacement and strengthening operations. The metal traditionally used for these purposes has been stainless steel, though this is rigid and does not flex well with bone. Steel does not bond with bone in the same way as titanium. Though pure titanium is too soft for use in hip joint replacement, it is easily strengthened by alloying with other metals. Traditional hip replacement therapy remains effective for around five years, on average. Titanium joints last very much longer.

Extensive use in dentistry and cleft palate repair has also been undertaken, many of the prostheses still performing their tasks after more than twenty years.

From relative obscurity, and still hardly known by most people, titanium has, in little more than fifty years, become almost the magic answer to technological needs. As those technologies advance, the demands for this versatile metal of low density, high strength and zero toxicity will surely multiply.

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

Guillemots

By
Oscar J. Merne

NO doubt most readers of *Sherkin Comment* will be aware of the serious oil spill off the west coast of France last December. The amount of oil spilled when the Total-Fina oil tanker *Erika* broke up and sank was not particularly large (26,000 tonnes), compared with the amounts spilt when supertankers such as the *Torrey Canyon*, *Amoco Cadiz* and *Braer* foundered. However, the impact on seabirds from this latest accident may have been greater than in these earlier events.

As is often the case with major oil spills, Guillemots and Razorbills seem to have been the main victims, and in the latest spill in France Guillemots were particularly badly hit. It is usually very difficult to come up with an accurate total for birds killed, even if the conservation organisations mobilise immediately and organise coast patrols covering all of the affected area. In some cases the oil which lands on the beaches is so thick that dead birds are completely immersed in it and are overlooked. In other cases large numbers of birds are found by the general public and local authority staff and are not identified or counted. A proportion of the affected birds may come ashore along inaccessible parts of the coast. Depending on tides, currents, wind direction and strength, significant numbers of oiled birds may never come ashore, dying at sea and sinking. Indeed, in some major spills the numbers recorded on shore by the conservation bodies may be simply the "tip of the iceberg". Anyway, the latest estimates for the French incident are that up to 100,000 birds may have perished, the great majority (c.75%) of which were Guillemots. Many of these are probably from Irish breeding colonies because we have already received fourteen recoveries of Guillemots ringed as chicks on Great Saltee Island in Co. Wexford. Guillemots are not ringed at other major Irish colonies (mainly because of inaccessibility), so we do not know how those individual colonies may have been affected. There were also significant numbers of ringing recoveries from colonies in south Wales and west and north Scotland, so the impact is likely to have a wide geographical spread.

I've mentioned above the difficulties in relation to assessing the impact on seabirds based on totals of oiled birds recorded on the shore. Another approach is to census a sample of the major breeding colonies to detect declines due to the mortality from oiling. Happily, we have good recent census data from our major Guillemot colonies as these were surveyed in 1999 as part of the current *Seabird 2000* census of all breeding seabirds in Ireland and Britain. The *Seabird 2000* census will be continuing this year and next and we don't yet have a complete national population estimate for our Guillemots, but already we know that our top five colonies (Rathlin, Lambay, Cliffs of Moher, Great Saltee and Horn Head) between them contain almost 200,000 Guillemots. Repeat counts at these colonies this year may indicate the scale of losses due to the French oil spill. However, as is usually the case in biology, ecology and conservation, things are not as simple as a straight comparison between two successive counts before and after an event such as an oil spill. We know from ringing tens of thousands of Guillemot chicks -over the last quarter of a century that even without oil spills causing exceptional mortality only about 12% of chicks survive to breeding age. As it happens, a majority of the Guillemots involved in the French oil spill were first winter birds (i.e. hatched in summer 1999) and 88% of the 1999 cohort would be expected to die from various causes before reaching maturity and recruiting into the breeding population at the various colonies. So unless the oil killed large numbers of adults of breeding age it might well be that a significant impact will not be detectable at the colonies this summer.

Guillemots were some of the birds affected by the recent oil spills in France.

Since the first full census of Guillemots in Britain and Ireland in 1969/70, most colonies have shown long-term upwards trends. In Ireland, for example, Rathlin Island's population of Guillemots has doubled to 90,000; Lambay Island's has gone from 42,000 to 60,000; Cliffs of Moher's from 12,000 to 20,000; Great Saltee's from 13,000 to 18,000. And this in spite of a series of major oil spills within the species' range during the same period. It seems that the species, at a population level, is very resilient and is able to withstand not only "normal" mortality levels but also major events involving the deaths of tens of thousands of individuals. But while this may give us some grounds for optimism we should not be too complacent. The slow death by oiling of 100,000 seabirds is a shocking thing and conservationists and all other involved parties should continue to strive for the reduction of such oil spills as far as humanly possible.

Oscar Merne heads the Bird Research Section of the National Parks & Wildlife Service of Duchas The Heritage Service, 51 St. Stephen's Green, Dublin 2.

Photos: Oscar Merne

The Guillemot population on Rathlin Island, Co. Antrim, has doubled to 90,000 since 1969/70.

The **Central Fisheries Board** is the national co-ordinating body for the management, development, protection and marketing of Ireland's Inland Fisheries Resource. The Board is also responsible for the promotion of the Marine Sport Fisheries.

Ms. Josephine Coleman has recently been appointed as Catchment Management and Environmental Co-Ordinator for the Board.

This new post will involve the implementation of the Catchment Management approach to inland fisheries as outlined in the Board's 'Strategic Development Plan for Inland Fisheries 1998-2002'. This will involve the co-ordination of the six pilot catchment management projects announced some time ago by the Minister for the Marine and Natural Resources. A pro-active approach to pollution prevention and control will also play an important role in this process.

The Catchment Management process involves the various interested parties from a geographically distinct river catchment coming together to assess their own individual needs. Such interests may include anglers, commercial fishermen, riparian owners of fisheries, local communities, local authorities, agricultural interests, tourists and any other public and private agencies interested in fisheries and environmental matters.

For further information please contact: Ms. Josephine Coleman, Central Fisheries Board, Tel: (01) 837 9206, e-mail: info@CFB.ie.

MADAM DRAGONFLY a scientific odyssey

Cynthia Evelyn Longfield (1896-1991)

By Monica Power

AT the age of fourteen, exasperated by her lessons with governesses, Cynthia Longfield turned to her mother and begged for relief. "I said to Mother: "Must I go on learning this absolute footling history - the Corn Laws, or something?" Mother asked: "What do you want to learn?" "Science," I said at once," Cynthia got her way and began a life in science that was to last for close on 80 years and take her all around the world.

That life began on August 16th 1896. Cynthia Evelyn Longfield was the youngest of three girls born to Mountifort and Alice Longfield of Castle Mary, Cloyne, County Cork. The Longfields had been at Castle Mary since the end of the seventeenth century, first coming to Ireland during the turbulent period following the English Civil War.

The Longfields divided their time between a London house and the Cloyne estate. The young Cynthia preferred her months in Ireland, where she discovered her interest in nature, watching caterpillars develop and tadpoles hatch. Nothing in her history books seemed quite as alive as what went on outside the schoolroom. Lucky for her that her mother was well disposed and had also been curious as a child - she understood her daughter perfectly and provided her with science books. Cynthia, with her new books, could now make sense of what she saw around her. Her Grandfather Mason, though he died when she was seven, was another source of inspiration. On her visits to Eynsham Hall she recognised a like mind: "Natural history was born in me from Grandfather. I was obviously born with an analytical brain. I have always seen both sides of every argument in science."

Science was not her only interest, and she and her cousins joined the newly-formed Girl Guides in 1912. Cynthia loved the guides and would remain a member for many years.

In 1920 during "The Troubles", Castle Mary was burned to the ground. The castle was not rebuilt but a smaller house - The Park House - was built within its walls. Cynthia remained devoted to Ireland and always thought of Castle Mary as home. Around this time the family rented a house on the Isle of Wight, and then at Dartmouth.

When she was twenty-five she went with family friends on a long voyage to Rio de Janeiro. Although they had little time on land, Cynthia managed to collect some specimens. Her diary records:

"Early in the morning we were up watching birds. I saw three butterflies flying high. I nearly caught a big brown moth. We motored up one of the hills to lunch at the Hotel Internationale and there we had beautiful views. At the hotel I was lucky enough to get a huge caterpillar."

They continued across South America by boat, train and even horseback - crossing Argentina, northern Chile, Bolivia and the high Andean plateau, Lake Titicaca and Peru, up to the Panama Canal and onto Jamaica, Cuba and home.

In January 1923 she embarked on what would be her last tourist trip before her real expeditions began. Her mother Alice, ever interested in archaeology, had heard of the discovery of the previously untouched tomb of Tutankhamen and together they visited the great monuments of ancient Egypt. They even saw Tutankhamen's tomb before the contents were removed. Cynthia also made detailed observations of the Egyptian wildlife, particularly the birds, and "caught a scorpion" at the tomb of Ramases IX.

In 1924 Cynthia joined the St. George's expedition to the Pacific Islands. The research team included two well-known entomologists, Evelyn Cheesman and Cyril Collenette, along with a marine biologist, ornithologist, geologist, botanist, archaeologist and a film crew. Cynthia had to get her parents' permission to travel and pay her own fare before being accepted for the trip.

Her task was to help Cyril collect beetles, butterflies and moths. Between islands, their time on-board was spent pinning and identifying specimens, and feeding the larval and pupal stages they had collected so that the insects' life-cycle could be studied. The ship stopped at the Galapagos Islands, where the unique life forms had inspired Darwin's theory of natural selection.

She returned to London in 1925 an experienced field entomologist and joined the Entomological Society of London and the Royal Geographical Society. The *St. George* collections from the Pacific, which included many new species, now came to the (British) Natural History Museum for cataloguing. So Cynthia began her work there - as an unpaid associate member. She was entering a new world among fellow scientists, and wad put in charge of dragonflies - the Odonata, a group of insects that at the time was not well studied. So it was that Cynthia began working on dragonflies, becoming in time the British Museum's resident expert and an international authority.

In 1927 she joined an expedition on Brazil's Mato Grosso, put together by Cyril Collenette with a commission from Lord Rothschild. This area was known for its rich diversity of dragonflies, many unidentified.

It was all-told an extraordinarily successful expedition. The six-month return trip from Southampton had cost £210 each, and they had covered 4,000 miles. Cynthia returned to the Natural History Museum (in London) with butterflies and dragonflies for the collection, and much interesting work to do.

Now in her early 30s, she was already a recognised dragonfly expert, having brought back 38 species from the Mato Grosso, including three new to science. Douglas Kimmins, her director at the British Museum, named one of these after her *Corphaeschna longfieldae* Kimmins. And in May 1929 she read her first published paper.

Her father Mountifort died in 1929 and the family trust, which had provided an income at her father's discretion now became hers by right.

At 34, Cynthia was single and had few domestic concerns. She did not enjoy the usual social scene, preferring to study wildlife. Women were in a tiny minority in every scientific discipline but Cynthia was in the fine Edwardian tradition of intrepid lady naturalists whose courage and intelligence made them successful. She was an excellent field naturalist with many interests, and unconstrained by a university education. She had taught herself from nature - albeit with reference to books - and had solved many of the problems for herself, which made her knowledge securely her own.

In the mid-1930s she began working towards a definitive handbook on British dragonflies, "this neglected group of insects". Her book, *The Dragonflies of the British Isles* was published in 1937 by Frederick Warne, and quickly became the standard handbook. It contained keys for identifying species and notes about where they had been found, their life history and methods of collecting, preserving and rearing them. The book encouraged many young people to become interested in dragonflies, some of whom would later become Cynthia's protégés, students and scientific colleagues.

In 1946 when Cynthia was 49 her mother died. Cynthia set up home in a Kensington flat and the focus of her life became the museum, which had to be brought back to life. By now she was chairman of the entomological section of the London Natural History Society and she invited members to co-operate in compiling records of all orders of insects. Her *Dragonflies of the British Isles* had gone out of print the previous year and she was working on an enlarged second edition.

She published a steady stream of papers between 1929 and 1964 - at least one a year, and sometimes as many as four. But she was not confined to her desk. She still went on trips in Britain and Ireland and travelled extensively. Her interest in birds, plants and insects took her across Europe. She was made an honorary member of the British Museum in 1948, having worked tirelessly at her desk in a voluntary capacity since 1927. With her 60th birthday in 1956 she began to think of retirement. That meant going home, and home was Ireland.

So she came to live at Park House on the Castle Mary estate which had been her childhood home. Retirement did not mean she stopped travelling - in the 1960s she was in Holland, France and Greece - or collecting: she went on many field trips around Ireland and particularly loved the Burren in County Clare. She would set off in her Austin with a kit that included a butterfly net, binoculars and a walking stick. Even in retirement she kept up her work on the distribution records of British and Irish dragonflies. She was also working on a new book, and *Dragonflies*, co-written with Philip Corbet and Norman Moore, was published in 1960 in the Collins New Naturalist Series.

She became a patron of the Cork Ornithological Society in 1967, and her fully-annotated record books and entomological collection were sent to the Royal Irish Academy, Dublin, in 1978. She also kept detailed records of her garden plants and the wildlife around her until she was well into her tenth decade. In 1977 Cynthia wrote the foreword to *The Dragonflies of Great Britain and Ireland* by Cyril Hammond and Robert Merritt, which she generously described as "the dragonfly book of the century". Interest in dragonflies was now growing and the British Dragonfly Society was set up in 1983 with Cynthia as its first fellow, "in recognition of the immense and lasting contribution she had made to the development of interest in the documentation of dragonflies in Britain".

Cynthia Longfield at work on dragonflies in the Natural History Museum.
Courtesy of the Natural History Museum, London.

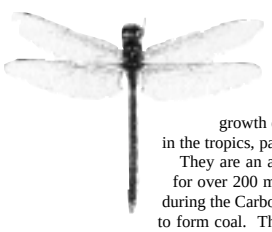
Every so often she would leave Park House for conferences overseas. In 1967 she was in Malta; in 1968, aged 73, she flew to Moscow for an entomological conference. In 1972 she went to Australia and on the way stopped off in Fiji.

Cynthia Longfield died on June 27th 1991. She is buried in St. Coleman's Church of Ireland Cathedral, Cloyne, County Cork, the last of the Longfield family to be buried there. A fine stone plaque commemorates her. Her obituary in The Irish Times remembers how:

"With her tidy, good clothes and plucked eyebrows, she looked as if she was about to open a rather smart village fête, but her real self would be revealed by such remarks as: "I find machetes so useful in the jungle, don't you?" Once when searching for dragonflies in the Chaco, a largely unexplored and disputed region, she met the Paraguayan army on its way to invade Bolivia. She surprised the Bolivians by telling them what was in store for them."

This is an abridged version of the story about Cynthia Longfield's life and work, which appears in "Stars, Shells & Bluebells - Women Scientists and Pioneers". This excellent and inspiring publication, with biographies of 15 women, was produced by WITS (Women in Technology and Science), P.O. Box 3783, Dublin 4, and costs £4.95. ISBN 0 9531953 0 9.

Dragonflies - the devil's darning needles



Casstoraeschna longfieldae, one of the new species of dragonfly which Cynthia collected on her expedition to Brazil in 1927, and which was named after her. *Courtesy the Natural History Museum, London.*

Horse-stingers, snake-doctors, and the devil's darning needles: they have been called many things in the past - most of them not very sympathetic - but we know them as dragonflies. There are about 5,000 species in the world today, grouped into 29 scientific families, but only 43 species are found in Britain and Ireland. Their larval growth depends on warmth, so by far the greatest number is found in the tropics, particularly South America.

They are an ancient group of insects and their present form has existed for over 200 million years, making them older than birds. They evolved during the Carboniferous era, when the first great forests were rotting down to form coal. The largest modern dragonfly has a wingspan of 18cm (7"), but massive fossil ones have been found with a wingspan of about 70cm (27").

Their characteristic shape is easily recognisable: a long narrow body and two pairs of large glassy wings. The closely-related damselflies are a little smaller, with a more slender body, smaller eyes, and wings folded back along the body when at rest. Dragonflies are voracious predators that feed on other insects. They have powerful "toothed" mouthparts and they hunt by sight, using their large, compound eyes which can contain up to 30,000 facets. The larvae are also predatory and have been known to feed on everything from tadpoles to small fish.

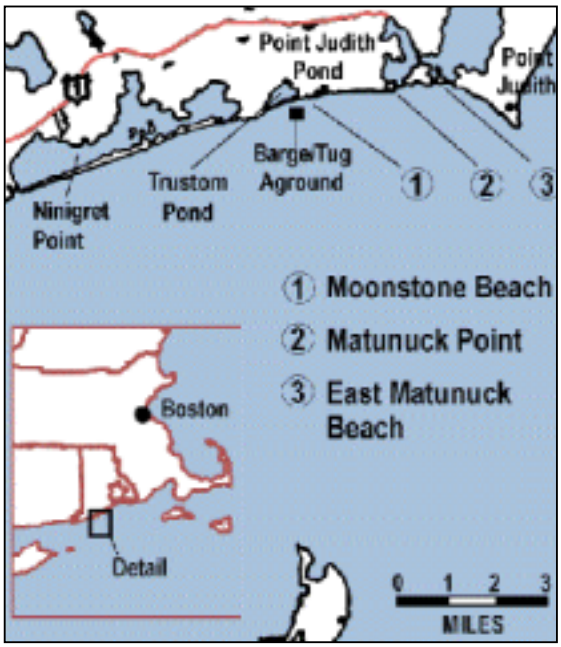
Dragonflies lay their eggs in water and so they are often found near streams. It can take up to five years before the larvae emerge as adults, but the adult life span is very short: and dragonflies proper only live for about four weeks on average.

Paying for Oil Spills: The North Cape

By Michael Ludwig

JANUARY 19, 1996 is remembered at Coast Guard Station Point Judith. Winds were gusting to 55 knots, seas were 20 to 24 feet and the "Mayday" call from the tugboat *Scandia* was received. Fire had broken out in the engine room of the 111-foot tugboat. Before the day was over, the *Scandia* and her 340-foot, barge, North Cape, came ashore at Moonstone Beach, in southwest Rhode Island, USA. Moonstone Beach is in the Ninigret National Wildlife Refuge. The North Cape held 4 million gallons of Number 2 or "home heating" oil. Although a cleanup was undertaken, more than 828,000 gallons of oil were spilled. (Number 2 heating oil is toxic to marine life but, evaporates if conditions are right.) In the days that followed the grounding, it proved its lethal reputation on the fishery resources of Rhode Island. Persistent storms and cold weather hampered the cleanup and limited evaporation.

On December 22, 1999, the final penalties for the North Cape spill were announced. The owners and insurers of the tugboat and barge will pay approximately $53.5 million for all the environmental damage and cleanup. $18 million will go to resource compensation and restoration in Rhode Island. Earlier in the week, the responsible parties settled the damage claims from 110 lobstermen. The lobstermen will share $10 million.



The location of the oil spill in southwest Rhode Island, USA.

How is it possible that $28 million are being paid for losses of natural resources associated with an oil spill? Simple, in the wake of major shipping accidents in the 1970s and 1980s, particularly the tankers Amoco Cadiz, World Prodigy, Exxon Valdez, and Argo Merchant, the United States Government recognized that not all oil spills are caused by acts of God or war. In 1990, in recognition of the environmental "costs" associated with spills, the "Oil Pollution Act" (OPA) was passed. Several laws spell out what should be done in preparation for oil spills, who does what at an oil spill, as well as how impacts are determined. OPA defines how natural resource penalties are assessed. The money is used for natural resource restoration. The individual States and Federal Government are "Trustees of the Public's Natural Resources." They protect and manage public trust resources for Americans. NOAA is a Trustee.

The North Cape spill was a difficult problem, made worse by bad weather. People doing cleanups joke that spills only occur on weekends, at night and in bad weather. There is some truth to that joke. Accidents happen more often when people have a lowered sense of caution. The Exxon Valdez ran aground when the guy steering the vessel didn't stop turning after changing lanes on the shipping highway through Prince William Sound. He drove off the road and onto Bligh Reef! After the Amoco Cadiz lost power, the owners worried that the cost of being towed by nearby tugboats would be too high. While they considered the situation, the ship ran aground on the Brittany Coast! The Captain and crew of the Argo Merchant had map problems. They ran aground because they were lost. Not all spills are someone's fault but caution goes a long way toward avoiding accidents. Was the weather too bad to be moving the North Cape?

In the days following the grounding of the North Cape, more than 75 percent of the oil was removed from the barge. However, storms were regularly sweeping through the area and shoreline resource assessments were difficult. Tracking the spill was made difficult because aircraft couldn't fly and ships couldn't sail. Satellite views were handicapped by cloud cover. Although backwater areas were fitted with oil exclusion booms, the weather, volume of oil released as well as its physical properties conspired to negate their effectiveness. Oil moved under and splashed over the booms. Because coastal ponds were ice covered, assessment and evaporation were restricted. Impacts that should have lasted days extended into weeks. Only after the ice melted was the situation appreciated. Offshore, the storm troubled sea stirred the oil downward. Sitting on and in the seafloor, millions of lobsters and clams were unable to escape the toxin. Only after dead marine organisms began washing ashore were the dimensions of the offshore impacts realized. Dead lobsters, clams and fish washed ashore forming windrows over a foot high in some places.

The money the State and Federal Governments received will be used to buy, tag and place 1.248 million adult female lobsters in Rhode Island's waters over the next 3 to 5 years. They will produce the replacements for lost lobsters. For species of waterfowl killed, shoreline nesting habitat will be created or improved. Land will be purchased as a buffer to protect sensitive habitats. Shellfish will be relocated from a Navigation Channel dredging project in Narragansett Bay and placed in reproduction "sanctuaries" to produce colonization larvae for adjacent areas overfished or damaged by spills. Several rivers will have their impediments to fish movement overcome by installing fish ladders that allow finfish to swim over dams. Is the restoration worth it? You bet!

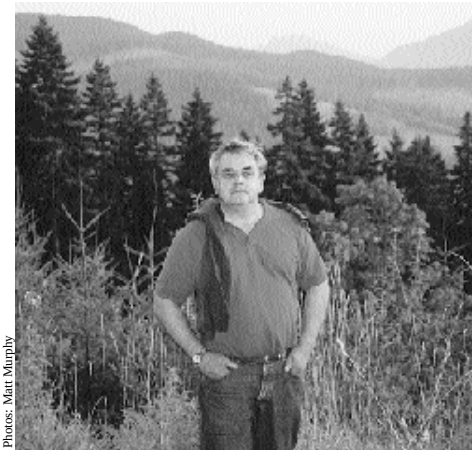
Read more about it:
http://seagrant.gso.uri.edu/riseagrant/oilspill or
http://www4.law.cornell.edu


Photo: © 1995 SoftKey International Inc., and its licensors.

The owners and insurers of the tugboat and barge will pay approximately $53.5 million dollars for all the environmental damage and cleanup.

Michael Ludwig, NOAA/NMFS, 212 Rogers Avenue, Milford, CT 06460-6499

Salmon *Without* Rivers



Photos: Matt Murphy

Jim Lichatowich, surrounded by his beloved Olympia, Washington, USA.

By Matt Murphy

JIM Lichatowich, author of *Salmon without Rivers* is described as a fisheries biologist but his book reveals he is much more. He is a conservationist who follows in the footsteps of the great American ecologist and conservationist, Aldo Leopold (1887-1948). Jim Lichatowich has few equals in understanding salmon and why they have has been brought to the brink of extinction. His book speaks for the salmon, describing its history, which dates back 40 million years in the American Northwest. He states: *"My study of the evolutionary history of the salmon and the geological history of the Pacific Northwest changed what I see when I look at a salmon. Now I see more than a silver fish sitting at the center of a regional crisis. Instead, when I look at a salmon today, I am reminded of the region's long history."*

The meeting of two rivers, the Grey Wolf and the Dungeness, in Olympia Peninsula, just a mile from Jim's home.

We learn that archaeological research shows that 6,000 years ago British Columbian salmon made up 80% of the diet of a coastal settlement in Namu, B.C.. He describes salmon as a gift to the whole ecosystem. *"The salmon's gift benefits the whole ecosystem, including at least twenty-two species of mammals and birds that feed on salmon flesh, such as bears, eagles, and even little winter wrens. The decaying carcasses release nutrients back into the river and the surrounding forest. When a bear pulls a salmon from the river and leaves the partially eaten body under a cedar tree, the fish fertilizes the cedar, which in turn shades the stream and keeps it cool for future salmon. The gift was the economy of the native northwesterners who were fundamentally in harmony with nature's own economy."* When the Northwest Indians dominated the area they had their own way of conservation - they knew when sufficient salmon were taken from a river each season. He points out that *"Indians had for thousands of years used the natural resources of the forest, plains and rivers and knew they had to practice preservation to survive."*

He writes of the first Euro-Americans who arrived in the Northwest and how their industrial economy set the co-evolutionary clock back to zero, throwing aside all that had been learned since humans harvested their first salmon. *"Since the arrival of white men, the relationship between salmon and humans has been reevolving in the context of a new economy and a new set of rules. But the new industrial economy has not dovetailed well with the salmon's natural economy; instead industry has insisted on new behaviours, new beliefs, and new technologies untuned to the natural rhythms of the Northwest's landscape."*

"In the management of watersheds and salmon, not only has diversity been ignored, but humans have waged a war against it. Hatchery programs, harvest regulations, and habitat destruction have all diminished the salmon's biological diversity."

"The salmon's problem is - at its root - a clash of two economies: the industrial and the natural. The gift economy the Indians evolved was a sustainable balance with the natural economy. The industrial economy could not afford such a balance. Eventually the industrial economy will also have to evolve a balanced relationship with the natural economy of the Pacific Northwest. As the dust bowl that ravaged the Great Plains in the 1930s clearly illustrated, there is a heavy price to pay if the needs of the ecosystems are ignored too long. To remain productive, the industrial economy of the Northwest will have to back away from a conflict with the natural economy and seek ways to achieve a balance with it."

Jim describes the adverse effect that the arrival of the Euro-Americans' activities had in the 1800s on the salmon habitats. The six major areas were:

· Fur Trade

The Beaver are nature's river engineers. Beaver dams create pools that store sediments, organic material and nutrients, releasing them slowly to the stream. Extensive beaver activity in a watershed stabilises the salmon's habitat. The Hudson Bay Company, on their arrival in the Northwest, depleted the beaver, especially in the Columbia Basin. This was a deliberate policy to remove any valuable resources from other competitors. The unanticipated result was the loss of salmon habitat.

· Mining

Mining for gold had grave consequences for the Pacific Salmon - shovels, dredging and use of high-pressure water jets to excavate river beds and banks turned watersheds inside out leaving silt covering spawning beds and salmon nowhere to spawn. Today, sand mining and processing can let unuseable silts flow into local streams creating similar problems.

· Timber Harvest

By the mid 1800s the lumber rush was on. The vast ancient Red Cedar, Douglas Fir, Western Hemlock and Sitka Spruce forests were falling to man's axe and saw. The loggers used the rivers to carry the logs down to the mills. Dynamite was used to "help" the logs downstream. Sinking logs, lost bark and the blasting killed or injured large numbers of salmon and destroyed their habitat. Building new roads and constructing new homes can create a small scale version of this problem.

· Grazing

Cattle were brought into the region and as their numbers grew getting to water caused the trampling of stream banks. The eroding banks released heavy sediment loads into the stream, which settled on the bottom and smothered salmon eggs. One need look no further than our own livestock watering areas to see examples of this problem.

· Irrigation

Beginning in the early part of the 20th century farmers were diverting so much water from rivers that adults could not swim to their spawning sites and the salmon disappeared.

· Dams

I read how the greatest enemy to the salmon has been the construction of dams. What is described is how little the builders of the 26 dams on the River Columbia, which include the Grand Coulee and Bonneville, thought of the salmon. Before the building of such structures 8 to 10 million Chinook returned to the river, by 1993 the run was only 750,000. Chinook are only one of the five species being killed off by dams. In recent years Americans have spent almost $3 billion attempting to restore salmon to the Columbia River. Now management institutions are calling for an additional $50 million for new hatcheries and over $1 billion to improve the passage of juvenile salmon over the dams.

I would like to end with some quotes from the book, they make anyone interested in the future and well-being of salmon, and above all nature itself, want to read this wonderful and saddening account of the salmon of the Northwest from 40 million years ago to the present day.

"The biologists talk a lot about salmon, but the salmon they refer to are a dry, lifeless representation of these magnificent fish. The salmon they see in the data are not the same fish I've come to know. In the "reality" constructed in conference rooms, the numbers are abstracted from the living salmon, the salmon are abstracted from their habitat, the habitat is abstracted from the river, and the river is abstracted from the ecosystem. The world of computers, numbers, and meetings is an essential part of salmon management, but having lived and worked in that world, I worry that it has lost too many connections to the rivers and the salmon."

"Biologists tend to treat the statistics as though they were independent of the ecological systems that produce them, and regard the fish as though they were under the complete control of the humans who manage them. Biologists relying solely on models treat salmon populations like chessmen being moved around a board rather than as living animals continuously responding and connected to their environment."

"Wild salmon are survivors - living through volcanic eruptions, ice ages, mountain building, fires, floods, and droughts. I feel certain they will persist if we can control our behavior and give back what we've taken from them - rivers that retain some of their healthy ecological function."

"For twenty-eight years, I have worked in both the real world of the salmon's rivers and the abstract management world, and I have observed a growing disconnect between the two."

"Fundamentally, the salmon's decline has been the consequence of a vision based on flawed assumptions and unchallenged myths - a vision that has guided the relationship between salmon and humans for the past 150 years."

I thoroughly recommend this book. It is written by a man who I am privileged to have as a friend. He has a deep and passionate love of salmon and our environment. I have stood with him on the river bed on the meeting of two rivers, the Grey Wolf and the Dungeness, in Olympia Peninsula, just a mile from his home. When he talked about the salmon runs and the distruction of spawning beds I knew I was listening to someone special. The salmon became something different to me. People involved in salmon management, hatcheries, angling and commercial fishing and research on this side of the Atlantic have much they can learn from this book.

On the back page of this *Sherkin Comment* we have an article by Jim Lichatowich entitled: "A Question of Values".

"Salmon Without Rivers - A History of the Pacific Salmon Crisis" *is written by Jim Lichatowich. It is published by Island Press, 76381 Commerical Street, P.O. Box 7, Covelo, California 95428, USA.*
Tel 001-707-983-6432
Email: ipwest@igc.apc.org.
ISBN: 1 55963 360 3
Price: $27.50.
It is also available from:
Earthscan Pubs., Ltd.
120 Pentonville Road
London N1 9JN England
Phone: 0044-71-278-0433
http://www.earthscan.co.uk/

Conference on Local authority statutory environmental performance

Photo: EPA

Pictured at the Conference on Local Authority Statutory Environmental Performance in Galway recently were (L to R), Mr. Noel Dempsey, T.D., Minister for the Environment & Local Government, who officially opened the conference; Mr. Donal Connolly, Waterford County Manager; Mr. Joe Byrne, Mayo County Engineer; and Ms. Anne Butler, Director, EPA.

A CONFERENCE to review the development of a management system to assess the performance by local authorities of their environmental protection functions, was held in Galway recently. The system developed by the EPA was officially opened by Mr. Noel Dempsey, T.D., Minister for the Environment and Local Government.

Speakers at the conference included those involved in the development of the system, members of the steering committee, representatives of the EPA, the pilot local authorities and persons in overseas local authorities who have implemented EMAS and ISO 14001 systems.

Management System

In 1998, the EPA commenced development of an environmental management system to assist local authorities to discharge their environmental functions. The system divides the environmental protection responsibilities into seven sectors: waste, air, noise, planning, water quality, wastewater and miscellaneous (see Figure 1).

A contract to develop the system (divided into four phases) was awarded in 1998 to E.G. Pettit & Co. of Cork. The progress to-date with the project is set out in Table 1 below.

The system is designed to:

- provide a tool for local authorities to manage their environmental protection functions; and
- enable the EPA to measure the performance of statutory environmental protection functions without placing a disproportionate burden on the local authorities.

Piloting of the system for a twelve-month period commenced in February 1999 in Cavan, Cork (South), and Galway County Councils.

The system is dynamic and adjustments can be made based on experience gained in the pilot local authorities and the period during which it is being extended to the remaining local authorities.

Steering Group

A steering group to assist in the development of the system was set up in 1998. The group consists of Mr. Brian Johnston, Cavan County Council, Mr. John Colleran, and Mr. Paul Ridge, Galway County Council, Mr. Maurice Coughlan from the Department of the Environment & Local Government (formerly Mr. Michael Layde) and Mr. Gerry Carty, Ms. Ann Butler, Dr. Matt Crowe and Mr. Gerard O'Leary of the EPA.

Mr. Frank Gibbons, Cavan County Council, Mr. Michael Lavelle, Cork County Council, and Mr. Liam Gavin, Galway County Council, took charge of piloting the system in their respective counties.

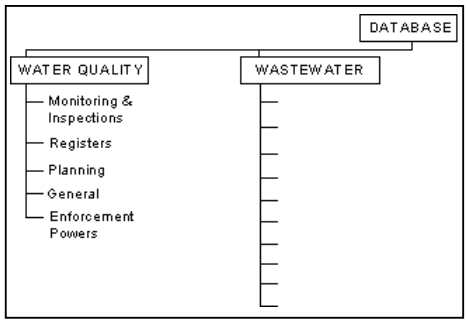


Figure 2: Categorisation of legislation into common themes

System description

The system categorises the environmental responsibilities of local authorities into seven sectors (see Figure 1). The legislation is then categorised into common themes such as Monitoring and Inspection, Registers, Planning etc. (see Figure 2).

Future plans for Management system.

The EPA intend to further develop the system on a full scale demonstration basis with the three pilot local authorities during 2000 and thereafter to introduce the system to all local authorities by 2002. It is intended that training on the use of the system will be provided to all local authority personnel involved in managing the system locally. Regular up-dates of the system and the development of a Web page are planned during the roll out period.

By the end of 2002, the EPA anticipate that the system will be in place in all local authorities. This will enable the EPA to prepare a national report on the implementation of environmental protection functions by local authorities during 2003.

Further Information: Mr. Gerard O'Leary, EPA Headquarters, PO Box 3000, Johnstown Castle Estate, Co. Wexford.
Tel: 053-60600
Fax: 053-60699
Email: g.oleary@epa.ie

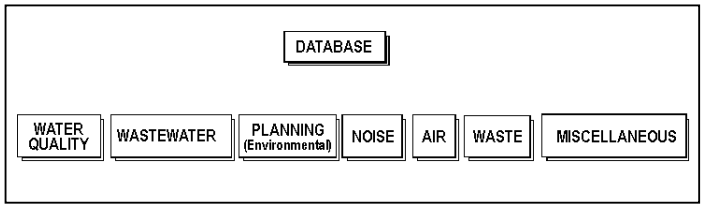


Figure 1: The system divides the environmental protection responsibilities into seven sectors.

PHASE 1:	Scoping of the system	completed in 1998
PHASE 2:	Development and preliminary testing of the paper based system	completed in 1998
PHASE 3:	Piloting in local authorities	Pilots in Cork, Cavan & Galway County Councils, Feb 1999 - 2000
PHASE 4:	Digitising of system	Commenced Jan. 1998, expected completion date, Feb. 2000

Table 1: Project outline and progress to-date

Delicious Wild Harvests

By Dr. John Akeroyd

Even in the modern world, wild fruits remain a popular free snack. Many of us have gathered bilberries, wild raspberries or wild strawberries, or have perhaps made sloe gin or elderberry wine. Blackberry pies remain a staple of late summer. However, few of us these days collect or eat wild vegetables. If we want greens we buy them from the supermarket, greengrocer or village shop. Few of us eat wild greens or herbs.

Yet throughout southern Europe, in the countries that border the Mediterranean Sea, wild greens remain an important food in late winter and spring. Much of the Mediterranean region is hot and dry in summer, but from late autumn to spring the landscape is green, moist and mild. Conditions for plant growth are ideal. This plant-rich region – with over 25,000 species in all – holds a great diversity of wild cabbages, cresses and rockets (Cabbage and cress family or Cruciferae) and chicories, dandelions and related plants (Dandelion and daisy family or Compositae). Traditionally the leafy winter growth provided local people with much-needed flavouring, vitamins and roughage in a season of scarcity. They were particularly popular during Lent, when both the Catholic and Orthodox churches maintained strict fasts.

These wild greens are still popular today. As well as leaf greens, the people collect, sell or eat wild asparagus shoots, grape-hyacinth bulbs, and fennel and leeks for flavouring. Later in the season they gather marjoram or oregano and the other richly scented and flavoured kitchen herbs that grow wild among the scrub on the region's rocky hillsides. In springtime on the large Greek island of Crete, for example, no self-respecting housewife or family group is seen out in the country without a rapidly filling polybag of snails – an ancient source of protein – and various wild greens. The greens, known as horta, will be eaten raw as a slightly bitter salad or cooked and eaten like spinach, dressed with olive oil and lemon juice. The wild but dignified mountainy men of Crete, with their fierce moustaches and long leather boots, eat these green salads and and tiny semi-wild olives as a snack to accompany glasses of raki, a fiery spirit (not unlike poteen) that is a traditional part of island life.

This extensive wild harvest seems to be sustainable. It does no harm, and enough plants are left to set seed. Nevertheless, some conservationists are a little bit concerned at high prices being paid for wild greens and an apparent increase in harvesting. Gatherers often take the root as well as the leaf rosettes. A revival of interest in traditional foods, similar to what we have seen in recent years in Ireland and Britain, may be partly responsible. On balance, it is admirable that local people have kept in touch with their ancient culture and are using everyday, widespread plants. This may well encourage a greater interest in plants and nature conservation generally.

Not only are these plants important wild foods, but also they are often the relatives or ancestors of modern crop and garden plants. Some were brought into cultivation over the centuries; some stayed semi-wild, others were bred on for growth and flavour. And here lies a curious link with Ireland, for several Mediterranen 'weeds' lurk around old ruins, especially in the west. During the 1980s–1990s, when we were compiling the Flora of Sherkin Island, my young colleagues and myself were particularly struck by a group of plants, originally introduced from southern Europe, on and about ancient buildings in the islands of West Cork.

Photo: John Akeroyd

Greek mountain village: wild foods are an important part of country life, especially in the mountains.

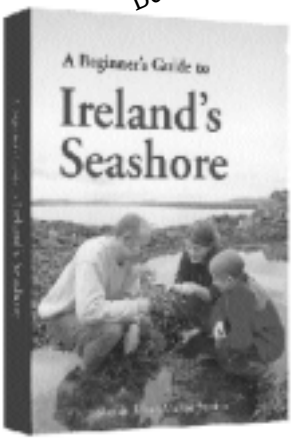
One of the most interesting is the flat-leaved Wild Parsley (*Petroselinum crispum*), with umbrella-like clusters of yellowish flowers, that persists abundantly on the walls of the Castle bawn at the eastern end of Sherkin. It was recorded here in the 1890s by Cork botanist R.A. Phillips and by British botanist Oleg Polunin in the late 1940s.

Continues on page 23

Sherkin Island Marine Station

Publications

Now a Bestseller!



A Beginner's Guide to
Ireland's Seashore

***"A Beginner's Guide to Ireland's Seashore"* is a pocket-sized guide, suitable for beginners of all ages. With the help of this book you will be able to explore the wonders of marine life on the shores around Ireland. Available for *£4.99* at all good bookshops.**

Also available for £4.99 plus 50p postage from:
Matt Murphy, Sherkin Island Marine Station, Sherkin Island, Co. Cork. Tel: 028-20187 Fax: 028-20407 Email: sherkinmarine@eircom.net

Ireland's Bird Life. A World of Beauty

Edited by Matt Murphy & Susan Murphy

Ireland's Bird Life - A World of Beauty contains photographs from the vast collection of Richard Mills, who is recognised as one of Europe's finest natural history photographers. They will show the great talent of a man who is a craftsman with his camera.

This book is not for the expert birdwatcher or photographer and is by no means a complete guide to Irish birds. It is for the many hundreds of thousands who, like us, know little or nothing about these wonderful creatures. It is hoped that the book will encourage many to take up bird-watching as a hobby.

ISBN: 1 870492 80 3 (size 8" x 12" - 160 pages)
Hardback - Price: £16.99 Softback - Price: £9.99
(plus surface postage - Ireland, UK & Europe - £4.00; Rest of the of the World - £7.00)

Ireland's Marine Life. A World of Beauty

Edited by Matt Murphy & Susan Murphy

Millions of photographs and billions of words have been printed on Ireland's landscape, her plant life and her inland waters, yet the magnificence of the marine life around her coast equals, if not surpasses, that terrestrial beauty.

The photographs chosen give but a glimpse of the thousands of animals and plants in Ireland's coastal waters. We hope that they will give people a new awareness of Ireland's wonderful natural resource - the sea.

ISBN: 1 870492 75 7 (158 pages) - Hardback only
Price: £17.99
(plus surface postage - Ireland, UK & Europe - £4.00; Rest of the of the World - £7.00)

The Wild Plants of Sherkin, Cape Clear and adjacent Islands of West Cork

Edited by John Akeroyd

This illustrated publication brings together 20 years of floristic data from the islands of Roaringwater Bay, S.W. Cork, Ireland. A total of 592 flowering plants, conifers and ferns have been recorded on these islands. This makes this small area the richest 10-kilometre square in Ireland. Twelve Irish Red Data book species, over 30 significantly rare Irish plants and several taxa new to the Irish flora have been recorded. This is the first Flora for any part of County Cork, the largest county in Ireland, since T. Allin's Flora of the County Cork, over 100 years ago in 1883.

Hardback - Price: £20.00; Softback - Price: £9.99
(plus surface postage - Ireland - £1.80; UK - £2.50; Europe - £3.20; Rest of the World - £5.00)

For further publications visit our website: http:/homepage.eircom.net/~sherkinmarine

Signal at Red for Diesel Leak

RAILTRACK plc and Silverlink Train Services Ltd in the UK have been fined a total of £250,000 for polluting groundwater with over 200,000 litres of diesel.

The Environment Agency in the UK says that although the companies knew that fuel was being lost from a pipeline, they both showed a "total disregard for the environment" by continuing to use it on a daily basis.

Railtrack and Silverlink admitted the pollution. Railtrack owns the sidings and the Train Maintenane Depot at Bletchley, Milton Keynes.

Silverlink has occupied the site since March 1997, using it to refuel diesel locomotives overnight. Aylesbury Crown Court heard that fuel was stored in an above-ground storage tank and pumped along 130 metres of underground pipeline to two refuelling islands. The pipeline was Railtrack's responsibility.

Silverlink found a discrepancy between the tank pump meter and the delivery pump meter readings in September 1997. It informed Railtrack of an underground leak on the pipeline the following month and in January 1998. The leaking pipeline was not isolated until July 1998. The Agency and Anglian Water Services found oil discharging from the surface water sewer system. Two feet of fuel oil was found on top of the groundwater.

Paul Waldron, the Agency's area environment planning manager, said after the case: "Action could and should have been taken when the loss of diesel was first reported."

The companies were fined £125,000 each and ordered to split the costs of £25,000.

Workman hurt in bin lorry aerosol blast

A WORKMAN was left shocked and suffering from smoke inhalation when aerosols exploded as he loaded a bin van.

The man was knocked back into a wall by the explosion, which engulfed the rear of the lorry in flames.

Details of the incident were given at Brighton and Hove Magistrates in the UK when Cable and Wireless Ltd admitted a duty of care offence. It was fined £2,000 with £408 costs.

The court heard that the driver from Hales Waste arrived at the Cable and Wireless depot in Basin Road South, Portside, for a regular pick-up.

As he started emptying the bins into the back of the lorry, there was a huge flash and exposion from the back of the vehicle.

An attempt to put out the fire succeeded briefly before several smaller explosions forced workers to retreat to safety. The fire brigade arrived, got the situation under control and discovered several boxes of used aerosol paints in the skip, put out as general industrial waste when in fact aerosols are considered to be special waste.

During an investigation, it was discovered that the employee who had put the aerosols in the skip had been employed by Cable and Wireless since 1992, but he had missed out on induction training introduced in 1997.

The company told the court that it had put procedures in place to prevent a similar incident in the future.

From "Environment Action", which is published by the Environment Agency for England and Wales.
www.environment-agency.gov.uk/action

BirdWatch Ireland In Action

Ireland's Largest Conservation Organisation

Photo: BirdWatch Ireland

Birdwatching is fun: members of the west kerry branch enjoy a day in the field

BirdWatch Ireland is Ireland's largest conservation organisation with over six and a half thousand members. The organisation was formed over thirty years ago following the amalgamation of three independent bodies. Back then, the pressing need was to conserve the White fronted Goose on the Wexford sloblands, and land was duly purchased to create a reserve. In many ways although the Ireland of the 21st century has changed dramatically, the challenge to protect our birds and their habitats remains.

Wildlife and Habitat Protection

After more than ten years of BWI lobbying for new legislation to protect wildlife and natural habitats, results were finally produced in June 1999 when the Heritage Minister, Ms Síle de Valera TD, published the Wildlife (Amendment) Bill 1999. Regrettably, the subsequent progress towards enactment of the Bill has been very slow. At the time of writing, the Bill is still at the Second Stage (general debate) in the Dail, with the more detailed Committee Stage still to come and then the whole process is repeated in the Seanad. The new Wildlife Act is to provide legal protection for Natural Heritage Areas and to enhance Ireland's compliance with the EU Birds and Habitats Directives and with other international agreements and conventions.

Progress was made during 1999 in rectifying the chronic shortage of field staff in Dúchas - National Parks & Wildlife. Gaps in regional coverage have been filled by the appointment of some 30 new Conservation Rangers, who have a key role in the effective implementation of wildlife and habitat protection laws.

The designation process for Special Areas of Conservation (SACs) under the EU Habitats Directive, has advanced considerably during the year, though the EU Commission still urges the Irish Government to do better. Fairly explicit EU warnings that shortcomings on SAC/Natura 2000 designations could jeopardise the flow of the multi-billion-euro Structural Funds to Ireland will undoubtedly have an effect. An SAC Appeals Advisory Board, with representation from the farming organisations and conservation NGOs, was established in 1999 to advise the Heritage Minister on appeals by landowners objecting to the inclusion of their land in SACs. This was in response to a BWI proposal two years previously for a mechanism to expedite the SAC designation process.

Farming and Conservation Management

BWI published "Birds of Irish Farmland - *Conservation management guidelines*", in collaboration with RSPB-NI. This illustrated publication sets out key management prescriptions to arrest the decline in farmland bird species which have been under severe pressure from CAP-driven intensification in farming. The booklet has been in great demand from farmers and agri-environment planning advisers and is now being reprinted.

As part of the review and assessment of the first five years of Ireland's agri-environment programme (the Rural Environment Protection Scheme) BWI presented a 26-page submission to the Irish Government and the EU Commission at the end of 1999. This document identified major shortcomings in REPS in fulfilling its objectives with regard to wildlife and habitat conservation. We advocated radical changes in the proposed new agri-environment scheme so as to focus it much more effectively on conservation requirements. The new scheme is still under negotiation between Dublin and Brussels as at April 2000.

Agri-environment and Structural Policy

BWI has played an active role in the work of BirdLife International in securing some (though not yet enough) reform of harmful aspects of EU agricultural schemes and payments in the "Agenda 2000" negotiations which concluded in 1999. Through our input to the BirdLife Agriculture Taskforce and through our direct liaison with the EU Commission, BWI will now maintain pressure for further CAP reform in the course of the World Trade Organisation international trade negotiations.

The extent to which BWI and our conservation NGO allies have influenced overall EU policies is indicated by the firm message now being issued by the Commission. EU member states will only get approval for national development plans involving EU funding if they fulfil their Natura 2000 obligations on SAC and SPA designation and ensure that development projects do not threaten protected sites.

At national level, BWI has thoroughly examined the Planning and Development Bill 1999, (which consolidates all previous planning legislation into one Act), and has lobbied actively for amendments to the Bill so as to safeguard sites and habitats of conservation value against harmful development works.

Research and Surveys

The Countryside Bird Survey (a survey partnership comprising Duchas, The Heritage Council, BWI and with sponsorship from ESB), monitors the health of our "common" birds and has made steady progress again during its second season's fieldwork in 1999. While two years' data is not enough to measure species population trends, the close correlation between the "league tables" for the top 30 species for those two years, is in itself a positive indication of observer consistency and of the basic soundness of the survey methodology.

BirdWatch Ireland is the principal Irish partner of the part EU INTERREG funded Seabird 2000 survey, the third complete census of British and Irish seabird colonies.

- 1999 was the first of a 3 year programme and effort was concentrated on the largest colonies of international importance. Large cliff-colonies, including Lambay (Dublin), Cliffs of Moher (Clare), Clare Island (Mayo) and Horn Head (Donegal) were counted by volunteers, BWI and Duchas staff.
- So far there is evidence of considerable increases in populations of Fulmar, Kittiwake, Guillemot and Razorbill but Shags and the large gulls (Herring, Great and Lesser Black-backed Gulls appear to have declined.
- To date over half the coast has been covered for Black Guillemots: the population has apparently quadrupled to ca.2165 birds, but this is thought to be due to better methodology and a more focussed approach rather than a significant population increase.

Photo: Richard Mills - *"Ireland's Bird Life, A World of Beauty"*

In the 1999 complete census of Irish and British seabird colonies, there is evidence of considerable increases in populations of Kittiwake (above), Fulmar, Guillemot and Razorbill.

BirdWatch is for People too

Apart from the activity in survey and research, BWI is also about people. BirdWatch Ireland Branch Volunteers organised a total of 369 events nation-wide on behalf of the organisation in 1999. Over 2,000 visitors took part in BirdWatch Ireland's National Open Day ' Discovering Birds at Bull Island' in November 1999. The National Dawn Chorus Day (now in its fourth year) was well supported by our branches with 21 events being organised throughout the country. Despite the early start (from 4am) attendance is generally excellent. The National Dawn Chorus Day is now a firm fixture on BirdWatch Ireland's national calendar of events, watch out for this years event on Sunday 14th May.

In 1999 BWI successfully obtained project funding and awards from the following: AIB Better Ireland Awards, Duchas , ESB, ESSO, Heritage Council; National Millennium Awards:. No wonder it was the busiest year in our history. Nearly £400,000 was spent on conservation projects alone. With 14 fulltime staff, effectively doubled by a minimum of 27,000 volunteer hours contributed annually by our members, we are ready and willing to take on the challenges of the 21st century.

BirdWatch Ireland has three new web sites and an easy to remember web address. The sites feature: BirdWatch Ireland, Migration - changing with the seasons; Working With Birds - around your school.

Oran O'Sullivan, BirdWatch Ireland, Ruttledge House, 8 Longford Place, Monkstown, Co. Dublin.
Tel. 01-2804322
Web address:
www.birdwatchireland.ie
e mail bird@indigo.ie

Overfishing: What is the Solution?

By David Crestin

ALTHOUGH some of New England's offshore groundfish stocks have turned the corner and are beginning to rebuild, most remain at or near historically low levels through severe overfishing. Regardless of the sequentially added severe direct controls finally imposed by the New England Fisheries Council to reduce fishing effort, it was much too late to prevent hardship to both the fleet and communities along the coast. Further reductions in allowable days-at-sea called for under the fishery management plan will surely lead to vessel foreclosures, since the ability to make mortgage payments will become difficult for many vessel owners. In fact, this has already become a reality for some. How could such a significant failure have happened in an industry almost four centuries old?

It is important to me to review the arguments made by industry representatives over the years regarding why severe stock depletions occurred in New England. One argument proposed that the concept of overfishing was an afterthought by Congress and was to apply only to foreign fishing vessels. As a result, many argued that selected stocks were not overfished, and even went so far as to bring suit against the government in an effort to reverse increasingly stringent management measures. Fortunately, such attempts failed or circumstances would be worse.

Many argued that decreased landings resulted from a lack of adequate law enforcement. This interesting position invariably blames the "other," unnamed fishermen—those apparently never present when the point is made. It would require cheating on such a massive scale to so severely overfish New England's groundfish stocks that the argument represents a shameful level of self-incrimination for the industry. When law enforcement had been targeted, overt, effective and widespread, fishing industry representatives more often than not claimed they were being singled out and harassed. Even if law enforcement efforts were completely effective, and fishermen operated in strict compliance with regulations, the number of vessels seeking a dwindling resource is too great to relieve the crisis. The culprit is overcapitalization. . .too many vessels seeking too few fish.

Another argument—that the decline in New England groundfish stocks is due to pollution, shore-line development or habitat destruction—has also been put forth forcefully and frequently. While there may be merit to this argument for some species that inhabit rivers, estuaries and coastal waters, there is no evidence of which I am aware that links any of these factors to declining stocks of groundfish in traditional offshore areas such as George's Bank.

It has been suggested that declining stocks were caused by environmental factors, such as changing weather patterns, water currents, water temperature and the like. If these explanations are correct, it is quite interesting that the factors seem to affect only those species for which there are markets. Offshore stocks of Atlantic herring and Atlantic mackerel are thriving. Former trash fish species, such as dog fish and monk fish, which were virtually unavoidable in fishermen's nets and were in great abundance, were fished so hard after markets were developed that they, too, require restrictive management. Therefore, the influence of environmental factors, which we are asked to believe are somehow synchronized to consumer tastes, clearly cannot have caused the selective near demise of New England's groundfish resources.

It has been suggested that discards of undersized fish and their subsequent decomposition so fouled water quality offshore that fish stocks were adversely impacted. Therefore, the Federal government is blamed for imposing regulations that prohibit landings of undersized fish. While I believe this idea is clearly without merit, it, too, fails to explain why only species for which a market exists are in a state of decline.

Finally, it has been suggested that overcapitalization and resulting overfishing has been caused by Federal government programs. In essence, the argument rests on the idea that since the government encouraged Americanization, i.e., domestic vessels replace former foreign fleets, this led to current excessive harvesting capacity. Consider, however, that virtually every management recommendation made by the government to the industry had been denigrated as emanating from the "ivory tower." Yet we are now asked to believe that since the government urged new vessels to be built or existing vessels be modernized, all of a sudden everyone leaped onto the band wagon. Nonsense! Even the much-maligned Guaranteed Loan Program became available for roughly only 3% of the groundfish vessels, and each represented "high liners." Just where did the other 97% of the groundfish fleet come from?

What is the truth? My humble opinion is that a finite resource on which is imposed an excessive harvesting capacity in the absence of meaningful controls must and will fail, which is what has taken place in New England. It is virtually impossible to achieve perfectly effective law enforcement. And pollution, even if a factor in declining offshore stocks, will not be eliminated in the near term. Environmental influences are beyond the control of mere humans. Thus, there is but one factor—fishing effort—that can be controlled.

To my knowledge, commercial fishing represents the only industry in the U.S. for which the raw material is free. Furthermore, fish and shellfish resources within the U.S. EEZ belong to the public, yet the public receives no economic return for its investment of tax dollars for research, management, administration and law enforcement. All other public resources are either purchased outright, leased, or paid for in other ways by users, whether or not one can argue that the tax-paying public receives a fair market value for those resources. Included in the list are timber harvesting, grazing rights, and natural gas and petroleum extraction from either public lands or the continental shelf. Free enterprise, I believe, implies a clear responsibility to pay a fair market value for raw materials, goods and services, as well as to protect the public's interest in the process. These considerations are not evident when applied to the commercial fishing industry or many recreational fisheries, nor are they likely to be unless prevailing attitudes change. Fortunately, more and more fishermen, who formerly attempted to compete in the irrational open-access arena, had second thoughts; there is growing support for considering new management approaches.

The law requires that fishery management plans be based on the best scientific information available. Since stock assessments always will be characterized by a degree of uncertainty, as with any attempt to "measure" living natural resource processes, the science supporting management's efforts is the first to be questioned. And, of course, we do need better data. Better data would help to thwart those arguments that revolve consistently around the question of science, and that allow political interference to influence and dampen the effectiveness of management efforts. The more solid the science, the less likely fishing industry representatives or politicians will be able to debate contrary conclusions. Unfortunately, there has never been adequate economic and human resources available for a sustained monitoring program for some sectors of our groundfish fishery, and the National Research Council (NRC) has already recommended that a better data base be developed. However, the NRC has also stated that what data are available are good enough and reflect acceptable precision. Certainly, scientific data have been more than adequate from which to predict the consequences currently plaguing New England's fleet and the groundfish resources on which it depends.

This brings us to the dilemma of the concept of Optimum Yield, with which we must deal under current law. Nor does the problem apply only to New England, since all eight fisheries in the US councils are attempting to deal with overcapitalization, depressed stocks, and the politics of free enterprise in a democracy. OY—a legally-mandated concept, which is the basis for all fishery management plans—must be examined to understand the dilemma facing fishery management in the U.S. today. The dilemma, then, is how to rebuild and manage overfished stocks and prevent overfishing without a politically unacceptable impact on the fishing industry? By this point, the reader will wonder if the apparent contradiction can be resolved, given the "rules of the game" and assuming there is merit to my interpretation of events. In fact, when I contemplate the critical decline in New England groundfish stocks and the extent of overcapitalization, I, too, am forced to question the wisdom of OY as a management imperative. In essence, however, it is the concept of OY that seems to be the problem. Even the fishing constituency is at a loss to derive a solution. Instead, due to excessive harvesting capacity coupled with a continuing decline in traditional species, various industry components are in conflict with each other. Fixed-gear fishermen blame mobile-gear fishermen; small-vessel operators blame large-vessels; inshore fishermen blame offshore fishermen; due to by-catch, directed fisheries for one species are blamed for the decline of species that are targeted in directed fisheries for other species; some states blame other states; the recreational and environmental communities are inclined to blame the commercial sector; and everyone blames the Federal government. Such circumstances will hardly give rise to effective fishery management."

David Crestin, 6 Paddock Drive, Harwich, MA 02645, USA.

Having your cake and eating it

By Victor Buckley

THE Irish landscape is like a birthday cake, made up of the many layers of history and prehistory that has made Ireland what it is today. The current boom in development, known, as 'the Celtic Tiger', is seen by many as the icing on that cake - inviting, attractive and leaving us with a taste for more. However development can be destructive - can we have our cake and eat it too? Or will the Celtic Tiger having eaten leave us only crumbs of our heritage?

Heritage - Why Bother?

Remembering our past is very important, as Joseph Joubert wrote in the 17th century "We must respect the past, and mistrust the present if we are to safeguard the future." Modern Ireland has nurtured this respect for its heritage, with culture and politics intertwined to create a national pride and sense of identity for the fledgling state. In 1930 the first National Monuments Act laid the foundations for what is today one of the strongest and most protective legislation governing archaeology anywhere in the world. But why bother? The answer is that the archaeological legacy of this country is a non-renewable asset. Unlike our natural heritage we are dealing with monuments which in every case are unique in the story that they have to yield. Whereas if one natural habitat is destroyed it will not mean the extinction of an entire species, in the case of a monument it will be destroyed forever. However we need new development and these developments need not be seen to be ripping through our cultural inheritance. The duty of preserving our past lies with Dúchas: The Heritage Service, a section of the Department of Arts, Heritage, Gaeltacht and the Islands. Dúchas is involved in protecting and presenting the past at many levels, from Interpretative Centre and Guide Services at National Monuments through to giving advice to other State Agencies, Local Authorities and Community Groups on archaeological development.

Quarrying can leave archaeology high and dry: **One of the remaining tombs, in Carrowmore, Co. Sligo, of what is the largest pre-hisotric cemetery in Europe.**

Balancing the Tiger

There are some 120,000 known monuments scattered across the Irish landscape and many previously unknown sites being discovered on a daily basis. These new sites are either being found by archaeological survey, aerial reconnaissance or by diligent landowners, though many are discovered during the course of new development. In the 1980's a Sites and Monuments Record was created by Dúchas consisting of Constraint Maps pinpointing all the known archaeological sites at that time. These aided planning officers and developers by drawing to their attention potential archaeological problems. This was an attempt to avert the needless destruction of the archaeology through simple ignorance of the nature of a site. Since 1994 the National Monuments (Amendment) Act has deemed the sites noted on the constraint maps to be Recorded Monuments. These sites have a level of protection which requires two months written notification prior to any development that will affect them. Developments within archaeologically sensitive areas are referred to Dúchas for comment as part of the planning process and other agencies such as the Forestry Service seek recommendations in advance of afforestation. However when a site is referred to us it does not mean that it is automatically refused permission. There are many different ways in which the archaeology can be protected. Of the 5,000 planning applications and 1,000 forestry or graveyard restoration schemes dealt with by Dúchas in 1999 relatively few were turned down. In some cases redesign methods were suggested that minimised the impact on archaeology. Alternatively monitoring of groundworks or pre-development testing determined the level of archaeology present. In quite a number of cases this has proved to be financially beneficial to the developers as they have shown the existence of previously unknown deposits which would have involved costly mitigation. Their discovery allowed a redesign of development which actually saved money in the long-term. Rather than halting the development outright, most of the time Dúchas recommends that the site be excavated. This is termed 'preservation by record' and means that development can be permitted once the archaeology has been fully recorded and the site sterilised. This can be a costly business but when weighed against the overall cost of development it is not as onerous as it would seem. An estimated cost for the work supplied by the clients' archaeologist in advance will allow the developer to weigh up their options and to decide on which approach to take - redesign, excavate or not proceed. In the case of large developments the key words are ADVANCE CONSULTATION. Dúchas freely provides advice on how to minimise the impact of unforeseen archaeology but it is up to the developer to act on this at an early stage.

Archaeology and Development can co-exist and with Dúchas working with developers we will preserve the cultural inheritance, our archaeological birthright for our children's children's children.

Photos: © Dúchas - The Heritage Service

Quarrying can be very damaging for archaeology.

Victor Buckley is Senior Archaeologist with Dúchas - The Heritage Service, 51 St. Stephen's Green, Dublin 2. Website: www.heritageireland.ie Email: duchas@indigo.ie

The Sharks of Beveridge Reef

By Pete Atkinson

LOST in the immensity of the Pacific Ocean between the Cook Islands and Tonga lies a tiny ring of coral enclosing a shallow lagoon. No trees, no islands, no land at all. Just ocean and coral beneath the endless sky.

On the leeward side, the ring is breached by a single wide pass where grey reef sharks laze in the current. The centre of the azure lagoon is 15m deep studded with small coral heads. Ringing the deeper water and extending to the back-reef margin inside the reef itself lies a shallow sand flat of old bottle turquoise where sunlight is broken into shards of David Hockney spangles.

Though the tidal range here is small, at high water a chop comes across the lagoon from the ocean swell outside. But at low water it lies like a mirror in a frame of coral rock rouged with calcareous algae.

Before the advent of GPS navigation, finding Beveridge Reef using an old plastic sextant and astronomical tables was a chancy affair. If it was sunny, we could sometimes see the lagoon blink - the turquoise lagoon reflected in the clouds - almost fifteen miles away. Now, with GPS and a new wreck on top of the reef, the anxiety of uncertain landfall has all but gone.

Motoring in the lee we caught a trevally. The water was staggeringly clear; we could see fish amongst the coral 25m below. We entered the pass where the lazy swell thundered to death on either side, motored across the lagoon and anchored on the shallow sand flat, sheltered from the ocean by the windward reef. To the south we could see the new wreck, a fishing boat from Seattle, the *Nicky Lou*. In the breathless calm beneath that scratched dome of sky there was a crisp and precarious silence, underscored by the faint white noise of the reef.

Atolls and particularly open reefs like Beveridge produce - like tropical rain - a feeling of primeval elation which Robert Louis Stevenson, at Fakarava in the Tuamotus Archipelago, captured thus:

"And still, on the one side, stretched the lapping mere, and from the other the deep sea still growled in the night. But it was most of all on board, in the dead hours, when I had been better sleeping, that the spell of Fakarava seized and held me. The moon was down. The harbour lantern and two of the greater planets drew vari-coloured wakes on the lagoon. From shore the cheerful watch-cry of cocks rang out at intervals above the organ-point of surf. And the thought of this depopulated capital, this protracted thread of annular island with its crest of coco-palms and fringe of breakers, and that tranquil inland sea that stretched before me till it touched the stars, ran in my head for hours with delight."

We slipped over the side for a snorkel round a coral head on the edge of the 45° slope which separates the sand flat from the lagoon depths. With crystal water it felt like an aquarium. Among the corals there were clownfish anemones, *Tridacna maxima* clams, the red pencil urchin *Heterocentrotus mamillatus* and a tessellated moray. There were knife fish slicing through shoals of fry and mackerel scad. We saw no sharks then.

At dawn, I took the dinghy against the light to the reef. The low tide revealed the debris from a more ancient wreck: hawse pipes, anchors and skeletal remains of chain. There were scattered iron-rich ballast stones now stuck to the reef by calcareous algae. Strangely, in the shallow pools around the wreckage there were thousands of the tiny bubble shell opisthobranchs *Haminoea cymbalum* feeding on filamentous algae. Strange, because a few paces away from the wreckage, there were none. How they resist the high water turmoil I have no idea. Other animals are better protected. Cemented to the calcareous red algal cap of the reef top were tubes of *Dendropoma maxima* vermetids. These gastropod molluscs cast mucus nets like cobwebs which collect passing plankton and detritus. The net is periodically gathered by the radula, consumed, and a new one secreted. At low water the tube opening is protected by a horny brown operculum.

On the seaward edge, the reef is etched into ravines and gulleys covered by stunted corals and encrusting red algae. The hard reef top is formed into shallow terraces like rice paddies. In the confined pools there are black sponges, heavily shelled gastropods, blennies and occasionally an octopus.

On that first morning I prepared for a dive at the pass. On my way the two nautical miles across the lagoon I saw a huge creature; it took me a moment to realise it was an adult humpback whale with her calf inside the lagoon in about 15m of water. They were lolling about at the surface, spyhopping and lobtailing. The calf made a couple of half-hearted breaches. After I had watched the whales for an hour they slipped out the pass. Where the current was swiftest, I had a look over with my mask; there were large schools of trevally and many grey reef sharks. Trolling a plastic squid I caught a goldenspot trevally and zipped back to *Eila*.

I took the filleted trevally carcase on a dive to the nearby coral head. Very soon a couple of grey reef sharks turned up. As they were intent on getting the fish, which I had put under a big lump of rock, I was able to take some pictures. Once the fish was consumed they cooled off down below the slight thermocline and meandered about disinterested.

Over subsequent days more sharks arrived from other parts of the lagoon until eight or nine were attracted by any feeding activity. One was a white tip reef shark, the rest grey reef sharks. The adult females were almost two metres long and dominated any feeding, seldom allowing the smaller sharks to feed.

The sharks were stimulated by smell, or by the sounds of other fish feeding and behaved in a manner reminiscent of exceptionally well-behaved dogs. They swam up the smell corridor to the source of odour, and rummaged around until they found the food. Unlike white tips which rely heavily on smell, the greys could see a piece of fish adrift in the water quite well and would come very close to me if I neither moved nor breathed. White tips would pass close to food many times, only realising they had missed it when the smell diminished. If the food was hidden in the reef, the white tips were more adept at locating it and sticking their noses into the reef to retrieve it than the grey reef sharks.

Few good photographs of sharks are taken under unbaited conditions. Most reef sharks are shy and after an initial close pass will stay away from divers. Feeding fish alters their normal behaviour. If this is in some way damaging to sharks, this should be weighed against the positive public relations value of pictures of these magnificent animals. Large numbers of sharks are killed annually and they need all the help they can get. Placing divers in the middle of a feeding frenzy is an unforgettable experience and creates instant ambassadors for sharks in the same way that being in the water with a whale focuses the mind to their plight. Shark feeds give sharks an economic value far above the value of their fins. When feeding sharks was banned in the Maldives, fishermen came and cleaned them out. The locals didn't care since they no longer had an economic value alive. I think that feeding grey reef sharks is reasonably safe. Not all their senses are stimulated and they behave well; however I would not want to spear a fish while grey reef sharks are being fed. The closest hospital is on Niue, 125 miles away, so any kind of bite would be a disaster at a place like Beveridge Reef. The only thing they were inclined to bite were the flashguns; either because of the charging noise or the associated electrical field.

Outside the lagoon, the reef drops off slowly and there were many small greys. Here, where they had probably never seen divers before, they would display. The contorted, twisted and exaggerated swimming movements were instantly recognisable, marring their usual fluid grace. On each occasion I have just stayed still, and the sharks have finished their display and gone away. The bites which follow such a display are not motivated by hunger; usually there is a single slashing bite and the shark disappears.

The back reef margin is shallow, not more than three metres deep, but the coral is lush, with much fire coral. In places *Tridacna* clams are packed tightly together. Coral heads on the sand flat have large colonies of the coral *Turbinaria peltata*. There are many parrotfish, groupers and snappers, and sometimes an octopus or turtle. This is the niche of white tip reef sharks which, unlike greys, are able to ventilate their gills while lying on the bottom. Sometimes you will find small caves in the coral with several white tips lying together. At night they are more active.

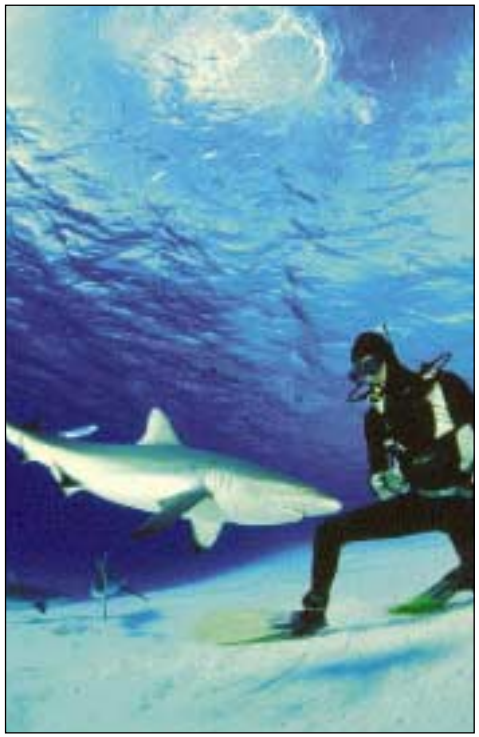
To explore the rest of the lagoon we waited for one of those crisp days when the wind is down and a large swell casts a veil of haze above the reef. There is that sparkling oceanic feel; lots of ions enhancing that atoll-mania captured by Stevenson. We motored across the lagoon picking up thirty spinner dolphins at the bow. Their euphoric antics seemed levitated in the aquamarine water.

Often, these particularly beautiful days are followed by the trough of low pressure whose associated depression casts the enhanced swell on the reef. Each trough brings high cirrus-like connective tissue followed by a succession of Turner skies and a shifting wind. To avoid any fetch, we change *Eila*'s anchorage to keep the reef between us and the wind which clocks from northeast to north, then quickly through the west before blowing hard and cold from the south with the passage of the trough.

The winter tradewind, when it resumes, can blow with a freneticism which is quickly tiresome at anchor. But this is the wind which will effortlessly drive *Eila* to the west, towards Tonga and a breeding ground of humpback whales.

Pete Atkinson, a former volunteer at Sherkin Island has sailed all over Polynesia in the last fifteen years, in a quest for underwater photos and material for articles. He now lives aboard a new boat, VIGIA, in the South Pacific.

See Centre Page spread...

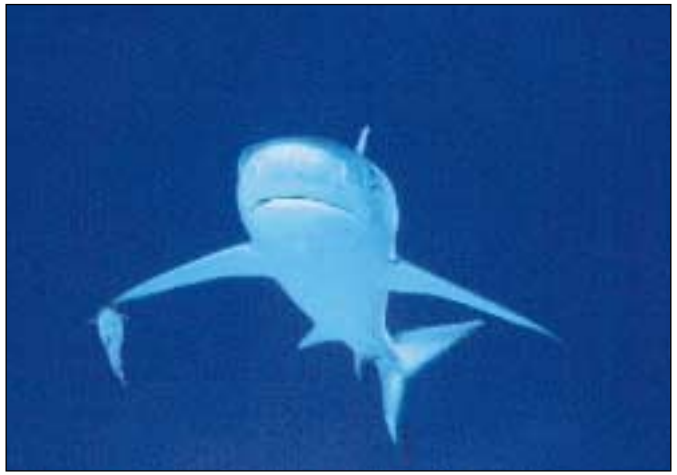


The Sharks of Beveridge Reef

Photography by
Pete Atkinson

(See article on page 15)

White Tip Reef Shark



The reef sharks are stimulated by smell and the sounds of other fish feeding.
Grey Reef Sharks (above) also have good eyesight and can see quite well in the water but the White Tip Reef Shark (top right) has poor eyesight and has to rely heavily on smell.

Information on the environment

Planting for Colour

A HOUSE, a street, a yard or a frontage can be brightened up by growing flowers and shrubs in containers, window boxes and hanging baskets. The effect is almost instant. You can also achieve a splash of colour for special occasions such as- festivals, local events, or tidy towns competitions.

Tubs and Containers

Containers come in a wide variety of shapes, sizes and materials, including wood, metal, concrete, clay and glass fibre. They can even be made from such unlikely items as lorry tyres and chimney pots.

The appearance of the container is as important as the flowers. It should not be out of character with its surroundings, such as a modern concrete 'cone' in a medieval courtyard.

Consider the overall design of a group of containers. For the best effect the containers in a group should be of the same type and should be placed to blend with their architectural surroundings. In a grouped arrangement, vary the levels by using different sized containers and plants, or stage containers on bricks or pedestals.

Large deep containers are suitable for growing small trees such as birch, eucalyptus, or rowan; 'accent' plants such as cordyline or hydrangea; and shrubs such as fuchsias, camellias, potentillas, berberis and hebes. The last of these is particularly useful for seaside containers. With trellising, containers allow climbers such as honeysuckle and clematis to be grown against walls and gables in paved areas.

Groups of containers, say three in the corner of a paved area, look very effective if the same combination of plants in terms of species and colour is throughout. In linear schemes, such as a line of tubs along a street, the floral colour scheme could progress through red, orange, yellow, blue to white and back again in reverse order: or starting from white through to red and back again, with tubs of red flowers emphasising a particular feature of the town.

Window Boxes

Almost any facade or street frontage can be brightened up with window boxes, which can be made from a wide variety of materials.

Wooden containers should be of durable timber such as oak or red cedar. The outside may be painted and the inside treated with a non-toxic preservative (not creosote). The box should be the depth of the sill plus 2.5 cm (1") and at least 23 cm (9") deep. Drainage holes are not essential. The box must be absolutely secure, preferably with a guard rail fitted to the sills. The box should tip back slightly which can be achieved by placing wooden wedges under the front edge. Planting boxes may also be fixed direct to the wall on stout brackets, to form a special feature.

Hanging Baskets

Hanging baskets enable plants to be grown in unlikely places, beside windows and doors, beneath arches, or hanging from walls and lamp standards. Various types of basket are available, made from wire, plastic, wood or compressed peat. In each case water conservation is vital, wire baskets being especially prone to drying out. Solid baskets, however, should have drainage holes at the bottom as well as holes around the side for plants.

Choice of Plants

Tubs and containers. Use the guidelines given under this heading below.

Windows boxes. Apart from considerations of light, shade and exposure, thought should be given to the colour of the background wall

• *against a red brick wall in sun:* white marguerites and senecio, blue stocks and trailing lobelia, in shade: white tulips, grape hyacinths and variegated ivy

• *against a grey wall in sun:* petunias, geraniums and training campanula; in shade fuchsias, heliotropes and trailing begonias;

• *against a white wall in sun:* zinnas, geraniums, marigolds and ivy; in shade: sems, nasturtiums, Iceland poppies and calceolaria.

• *against a dark wall in sun: Phlox drummondii*, petunias, antirrhinums with lobelia in front; in shade: plant yellow begonias, calceolarias and creeping jenny.

Hanging baskets. As with window boxes, choose plants which will contrast with the colour of the wall behind. Suggestions include:
• a selection of ivy-leaved geranium and *Helichrysum petiolaris* • nasturtiums and trailing fuchsias • blue petunias, a bright blue lobelia, variegated ivy and a yellow calceolaria at the top • a red dracaena at the top with trailing lobelia, pink ivy-leaved geranium or obegonia.

Care in Planting

Tubs and containers. As good drainage is essential, holes must be drilled in the base of the container; if none exists already, and a good layer of rocks or stones provided. If no holes are possible, extend this layer to a third of the depth of the tub. Avoid standing containers directly on grass or soil. Use a good potting mixture when planting such as John Innes No. 3 with added peat to retain moisture. Regular watering is essential. Bushy or taller plants should be in the centre with trailing plants, such as lobelia, ivy or nasturtium around the edge. Lutes should be well planted with no bare soil showing.

Window boxes. Provide a good layer of drainage material at the bottom, covered with peat, followed by a moisture retaining potting mixture in which the plants are planted. Alternatively potted plants can be sunk into moist peat which allows the colour scheme to be changed easily. The soil should be changed annually. Regular and careful watering is essential, together with an occasional foliar feed.

Hanging baskets. All baskets should be attached to strong hooks or brackets and the chains should be sound. Water regularly, either through a can with holes sunk in the centre of the basket, or by lowering the baskets into a tub of water. Feed occasionally with a liquid fertiliser.

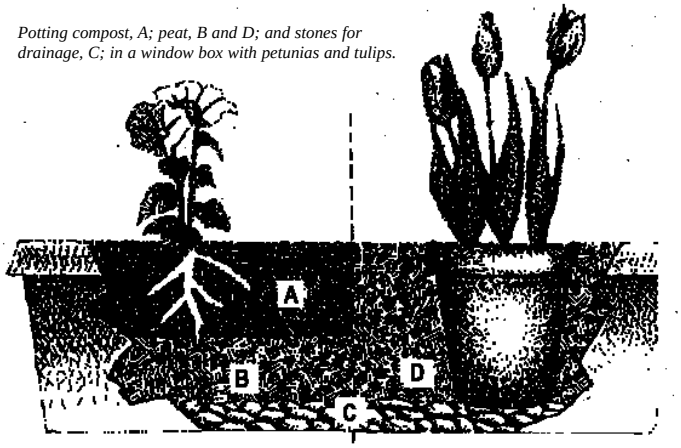
As with tubs, taller or bushy plants should form a centrepiece at the top, with trailers around the edge. With wire or slatted containers, thread some of the plants through the holes, so that no part of the container may be seen.

Hanging basket with fuchsia and nasturtiums, showing moss lining, A, and saucer, B, for water retention.

Line wire baskets with moss with a sauce at the bottom to retain moisture. Using a peat-based potting mixture, thread plants through the wire while filling the basket with soil potting compost, A; peat, B and D; and stones for drainage, C; in a window box with petunias and tulips.

Issued by ENFO - The Environmental Information Service, 17 St. Andrew Street, Dublin 2. Tel 1890200191 (price of local call) Fax 01-8882946
Email: info@enfo.ie Web: www.enfo.ie

Potting compost, A; peat, B and D; and stones for drainage, C; in a window box with petunias and tulips.



Weever Fish in Irish Waters

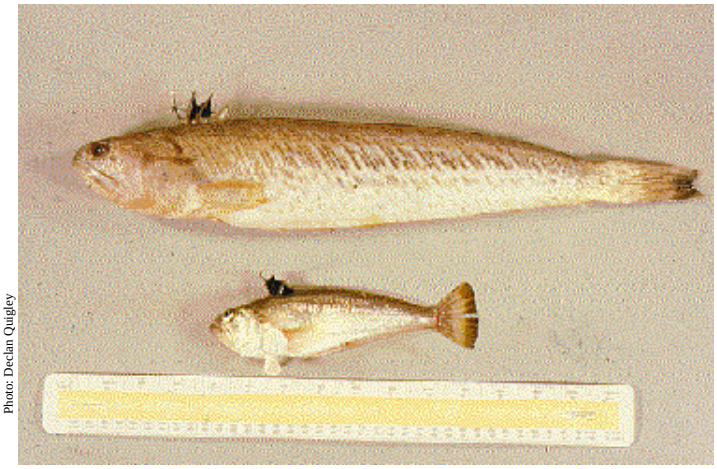


Photo: Declan Quigley

Great Weever (*Trachinus draco)* Keem Bay, Achill Island, Co. Mayo. (September 1986)

By Declan T. Quigley

THE name weever is thought to be derived from an Anglo-Saxon word wivere, meaning a serpent or viper, and reflects the venomous nature of these small but dangerous fish. Four species of weever are found in the NE Atlantic but fortunately, only two of these occur in NW European waters: Lesser Weever (*Echiichthys vipera*) and Greater Weever (*Trachinus draco*).

Both species of weever are well adapted to their benthic environment where they lie in ambush, partly buried in the sand. Both species have a long body, with a deeply compressed head. They have mouths that point obliquely upwards and eyes that are positioned on top of the head. The small first dorsal fin, which is positioned close to the head, has sharp venomous spines and behind this, a much longer second dorsal fin. The gill covers are also armed with smaller venomous spines. The colour is usually sandy yellow-brown.

Apart from size and habitat considerations, the two species of weever can be distinguished by carefully examining the first (venomous) dorsal fin, which is entirely black in the Lesser Weever, but only partly so in the Greater Weever. The pectoral fins are rounded in the Lesser Weever and square in the Greater Weever. The Greater Weever also has short spines above and in front of the eyes and another behind the upper lip; the Lesser Weever lacks these spines.

Lying camouflaged and partly buried in the sand during the day, weevers can quickly lunge upwards to catch passing prey. However, they appear to be more active at night when they emerge from the sand to feed on a wide variety of prey organisms such as gobies, young flatfish, sandeels, dragonets, sprat, shrimps, amphipods, isopods, worms, molluscs, and small crabs.

The Lesser Weever is the smaller of the two species, reaching only 15cm long, while the Greater Weever reaches a maximum length of about 42cm (Table 1). The Lesser Weever is found all around the Irish coast, but it is only common in certain sandy areas between the high-tide mark and a depth of 50m (e.g. Youghal, Wexford and Roundstone). Spawning occurs throughout the summer and autumn, and the eggs and larvae, which are planktonic, have been recorded from several parts of the Irish coast between May and September. Although relatively few specimens of Greater Weever have been recorded from Irish waters (only 26 specimens to-date), the species may be more common than we think because it mainly occurs in deeper water (30-100m). Indeed, up until the late 1950's, the Greater Weever was considered to be rare but it has now been recorded throughout most months of the year, albeit mainly from the SE, S and SW coast (Table 2).

Considerable research has been carried out on the weever's sting, which appears to be entirely defensive, and is not used for catching prey. When erected, the black colour of the first dorsal fin shows up against the sand where they live, and may serve as a warning. It has been suggested that juvenile Common Sole (*Solea vulgaris*), which have similar black markings on the upperside of the pectoral fin and which occupy the same habitat as the weever, mimic the defensive behaviour of the weever fish by lifting the pectoral fin above the sand when danger threatens.

The weever secretes very strong neuro-toxic venom that produces an agonisingly painful reaction in humans. Where weevers are numerous, bathers risk threading on partly buried fish. In certain areas, commercial fishermen, and particularly shrimp trawlers, are also at risk whilst sorting through their catch. At first a sharp stab is felt, the pain increases in severity for up to an hour and may last for twenty-four hours. The pain is at first localised to the site of the puncture, but subsequently spreads to the entire limb. Bleeding is not severe, but localised swelling and discoloration of the tissue is notable. Although death rarely occurs following a weever sting (no deaths have been recorded in Ireland), the pain and later discomfort are long remembered. The most widely recommended remedy is to soak the affected area in very hot water as soon as possible; the heat apparently destroys the toxin. However, in all cases, medical assistance should immediately be sought.

The author would be grateful in obtaining information from the general public and anglers about the Irish distribution of both species of weever fish and particularly from medical doctors who have treated patients for stings. He can be contacted at the address below, by telephone (087-2349440) and/or FAX (0404-62406).

Declan T. Quigley, Hibernor Atlantic Salmon Ltd., Derryclare Hatchery, Recess, Co Galway.

Table 1. Size frequency distribution of Greater Weever in Irish waters

	Total Length (cm)	Fork Length (cm)	Weight (gm)
Maximum	42.0	39.1	538
Minimum	26.8	27.5	110
Mean	34.5	32.9	278
Standard Deviation	4.2	3.4	129
Sample Number	21	11	21

Table 2. Distribution of Greater Weever

County	Number
Co Kerry	11
Co Cork	9
Co Waterford	3
Co Wexford	1
Co Dublin	1
Co Mayo	1

In a recent survey by the Department of the Environment it was found that only 36% of people have ever re-used plastic shopping bags. Can you help increase that percentage?

Farran Forest Park
CORK

Location: 18km west of Cork on N22 to Macroom.

Habitat: Old red sandstone forms the bedrock under Farran Wood, but there are relatively few outcrops. The bedrock is thickly covered with soil carried to the area and eventually deposited by retreating glaciers about 25,000 years ago. These soils are now being eroded by the waves in the reservoir which became part of the Lee hydro-electric scheme in the mid-1950s. The diversity of tree species in Farran Wood, the great vistas of surrounding mountains and the placid waters of the Lee reservoir combine to form an area of great natural beauty and a ready amenity for all visitors. The lake is not a natural feature.

Length/Type of Trails: 2km.

Main Tree Species: The park contains stands of coniferous trees and mixed woodland. The main species are Japanese larch, Scots pine, Norway spruce, Douglas fir, beech, ash, oak, sycamore and maple.

Other Flora: There are carefully sited clumps of broom, laurel and rhododendron.

Fauna: Farran is rich in both animal and bird life. A wildlife enclosure supports a variety of wildfowl and mammals including a herd of red deer.

History: Farran Wood is 53 hectares in area, and together with the nearby Looney's Wood forms a mere fragment of the once extensive Farran Demesne, owned in ascendancy times by Captain Clarke - a family name which is also associated with a popular tobacco. The demesne passed to a Captain Matthews, who converted the pasture land to woodland. Captain Farran was a keen sportsman and besides planting stands of common coniferous species, also planted carefully sited broom, laurel and rhododendron to provide cover and food for the game birds which he released in the woods.

Facilities: There is an ecology display housed in the restored hunting lodge. Children's adventure playground, wildlife enclosure, scenic views, walks and trails.

Derrycarne Wood
Doire Carna
LEITRIM

Location: 3.5 km north Dromod, 13 km south of Carrick-on-Shannon off N4 to Longford.

Geology: Low, shallow-shaped drumlin. Underlying rock. Carboniferous limestone overlain by glacial drift.

Habitat: A drumlin separates loughs Boderg, Bofin and Scannel.

Main Tree Species: There are remains of the old woodlands and a mixed broadleaf/conifer plantation has been re-established. Main species include beech and oak interspersed with pines around the car park while along the shoreline alder, birch, willow and hornbeam, fine old Douglas fir and Sitka spruce can be found. Mature Lawson cypress and silver firs grow along the entrance road.

Other Flora: Ground vegetation is abundant and many varieties of wild shrubbery and remnants of the former garden shrubbery abound. Lily ponds of the former estate can be seen by the lakeside.

Fauna: All the common species of woodland including mink, squirrel, badger, pigmy shrew, pine marten and otter can be observed here. The lakes and lake shores are the habitat of many varieties of wildfowl while gamebirds can be seen in the woodlands and surrounding countryside. Derrycarne is an ideal location for viewing wildlife.

History: Derry is the old Irish name for oak wood which probably formed part of the extensive woodlands recorded as lying north of Lough Bofin in the 17th century. The Estate was owned by Mathew Nesbitt, High Sheriff of Leitrim, around 1798. He was succeeded by Francis Nesbit who died in 1854 and subsequently Ormsby Gore MP.

Facilities: Car park, picnic site, forest and riverside walks, access to the Shannon.

"Discovering Ireland's Woodlands. A Guide to Forest Parks, Picnic Sites and Woodland Walks", produced by Coillte Teoranta - The Irish Forestry Board, provides details of forest parks, picnic sites and forest walks. Dún an Rí Forest Park is one of these forests. Price: £2.00.

The Secret Lives of Monks and Megrims!

By Colm Lordan

Colm Lordan of the Marine Institute reports on an exciting project aimed at finding out more about two important commercial fish species.

In June 1999 the Marine Institute, Marine Fisheries Services Division (MFSD) commenced a project entitled *'The distribution and biology of anglerfish and megrim in waters west of Scotland'* funded by the European Commission. This project is co-ordinated by the Scottish Association for Marine Science (S.A.M.S.) and involves teams of scientists from the Marine Laboratory in Aberdeen (MARLAB) as well as the Marine Institute. This project focuses on the biology and fishery of four types of fish off the North-West of Ireland: two anglerfish species (*Lophius piscatorius* and *L. budegessa*) and two megrim species (*Lepidorhombus whiffiagonis* and *L. boscii*). The fishery for these species has increased dramatically in Ireland and Scotland over the past 10 years. In Ireland anglerfish and megrim are the first and third most valuable demersal fin-fish species with provisional 1998 landings worth £7.9m and £5.9m respectively.

The objectives of the project are to map the distribution of all four species in the fishery, to look at their reproductive biology, diet, and importance to the ecosystem - as well as to assess new methods of determining the age of the fish. All this information will be fed to the International Commission for the Exploration of the Sea, which in turn assesses the abundance of the stock and advises the European Union on the safe levels at which it can be fished.

Progress to date

In year one the work programme will focus on collecting biological samples and fisheries data at sea on research and commercial fishing vessels. The Marine Institute is primarily responsible for investigations into megrim while the other partners are concentrating on anglerfish. Commercially landed samples of megrim have been obtained from the Stanton Bank area on a monthly basis since July 1999. In addition large numbers of samples and data have been collected during sampling trips aboard commercial vessels. To date there have been five trips on commercial vessels (one of which was on a Scottish commercial vessel the Endeavour III) and a sixth commercial vessels trip is planned. In addition, samples and data were obtained aboard the Scottish research vessel Scotia during a ground fish survey on the Rockall Bank.

Preliminary results suggest large variations in population structure of both anglerfish and megrim. Shallower areas of the continental shelf and banks such as Rockall and Stanton appear to be important nursery areas for anglerfish. The larger mature fish are more common in deeper waters off the slope. Maturity in anglers is attained at an extremely large size (>73cm for *L. piscatorious*). Areas West of Achill and West of Aran grounds could be the source of recruits to the North-West Ireland nursery areas.

For megrim the results to date have shown that the sex ratio of the megrim population exploited by the commercial fishery is heavily female biased. Also the sex ratio of megrim varies significantly with depth and area. The megrim population structure appears to vary between areas with larger fish being caught towards the north of the area and at Rockall.

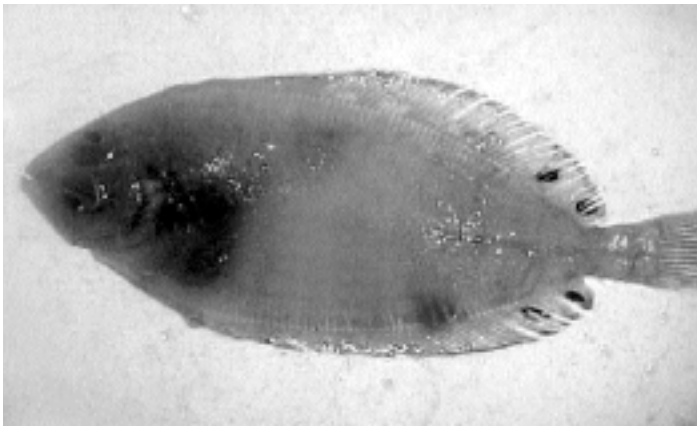
Photos: Marine Institute

The anglerfish is the most valuable demersal fin-fish species in Ireland.

Planned Future Work

Monthly sampling trips on commercial vessels will continue until June 2000. In addition, a dedicated anglerfish/megrim survey is planed for April 2000 aboard *R.V. Scotia*. Two commercial vessel charters are also planed for 2000. Laboratory work and data analysis will begin in July 2000. This project is scheduled to finish in January 2001.

Colm Lordan, Marine Institute, Abbotstown, CO. DUBLIN.



Landings of megrim were worth £5.7m in 1998

Wiping out the past

Photo: Daphne Mould

Bronze Age Stone Circle, Currabeha, Co. Cork, as it was in 1981.

By Daphne Pochin Mould

Ever since people first came to live in Ireland, some 9,000 years ago, they have left behind them some relics of their lives and thoughts. Shaped fragments of flint; the ashes and burned stones of their fires and cooking places; great tombs and circles of stone; trackways and house foundations; round towers; abandoned railway lines. This is the hardware of our history, a great cultural mass of information, as yet not fully explored, important not only for Ireland but for the world, and we are rapidly destroying it all.

Some of it exists nowhere else in the world: the ring forts, the farmsteads of early Christian Ireland, long protected by the fairy beliefs, are easy victims to bulldozers clearing land. The Irish raths are all there are - destroy them here and none are left anywhere.

Of course, destruction has always taken place, pulling down, building anew. But never at the pace of today. Of strictly archaeological remains, which includes the Fairy forts, the raths, most will be gone in thirty years time and all by the start of the 22nd century. If we do not act now, we lose all, and saving the past depends very much on local interest, local action and local reporting. The official Archaeological Surveys cannot maintain a watchdog service on all they have recorded. The material is marked on the 6 inches to the mile Ordnance Survey maps, available to planners and in libraries, and it is illegal to destroy it without permission and often a "rescue dig" to learn all about it before it is gone. However, this does not always happen, a bulldozer in an afternoon can, before anyone is aware, totally destroy a monument which took many people years to build and which has stood for thousands of years.

The figures are frightening. Up to 34% of monuments known in 1838 are gone and the present destruction rate is running at 10% of those left for every ten years. Dr. Muiris O'Sullivan (of the National University of Dublin) undertook a sample survey for the Heritage Council. In the sample area he studied, 478 of the monuments total of 1400 known in the 1820's were gone. Of those recorded by the Archaeological Survey in 1980, 11% had vanished, another 1% between 1997 and 1998. Almost all will be gone by 2100.

On a county basis, Wexford has the worst record and will soon have nothing left. 68% of known monuments are gone, 15% since 1986/8 and of the survivors, 10% are at risk of immediate destruction. Kerry is the next worst, 49% gone, Cork has lost 30% of known items.

Monuments most at risk are in pasture and are earthworks. Of the destroyed known items, 83.8% were in pasture and easy victims to enlargements of fields, knocking of hedges and reseeding. 72% of those lost were earthworks - raths and ring barrows and so on. Recorded land improvement schemes took 54.5%, various development schemes took 9.7% and natural erosion on coasts took 16.2%. The National Monuments Record of Sites on the 6 inch maps seems to have no effect on all this. It is estimated remains are being destroyed at a rate of some 1500 a year!

And these are only the earlier remains. The more famous castles and abbeys are in State care and protection but much more consists of ruins on privately owned land, ruins now feeling the effects of time and weather and needing some immediate and expensive repair if they are not to collapse. And later, there are the mills, some of which can be adapted to new uses, and the beautiful old cut stone industrial and domestic buildings of our towns, now so often knocked, rather than rehabilitated to new use.

Heritage is now big business - much of what is being rapidly destroyed, could bring visitors and money if properly handled. Interest in local history is growing, local people are publishing excellent local histories of their areas. And what they are writing about is not going to be there to see much longer.

Duchas, the Heritage Service (Department of Arts, Heritage, Gaeltacht and the Island, 51, St. Stephen's Green, Dublin 2), is the official State guardian, but real protection and conservation depends on the observation, protests, and action of the people on the spot. Get to know what you have, from the Survey maps and the series of volumes now being published with inventories, information, photos of each county's heritage. A great many monuments are now marked on the "Discovery" maps, but by no means all. Many places have local historical societies, which individuals can join, or warn of impending destruction, so that action may be taken.

Nor should we ignore the heartless despoliation of the Irish landscape, the unnecessary destruction of old walls, whether drystone or with mortar; the felling of healthy trees and shrubs, the cutting of roadside hedges to English suburban neatness, a truly horrible sight in this country. Hedges, vital habitats for flowers, birds, insects, should be kept trimmed, not mown like lawns. In many places now, the whole roadside beauty is gone, no flowering or fruiting trees, no wild roses, no honeysuckle, no hedgerow flowers, no butterflies, and soon no birds. Over many districts, this destruction of what we once had, what our visitors want to see and enjoy, is running at 100%.

Photo: Daphne Mould

Fine masonry incorporating cut limestone, red sandstone and brick in a now demolished old builidng in Cork City.

Photo: County Cork Archaeological Survey

Land clearance at Currabeha has damaged, indeed virtually wrecked, the stone circle.

A Naturalist with an Impossible Task

By David Hewetson-Brown

I farm 700 acres near Overton, Hampshire, including 60 acres of woodland and 18 miles of well-trimmed and wide hedgerows. During my 16 years here, I have tried to farm with a long-term view, not just an annual cropping pattern. However, I must stress emphatically that this long term view, of hedge and tree planting etc depends totally on a profitable farming scenario, and for the last 3 years this has been absent.

This situation will apply to the vast majority of farmers in the UK who are keen to maintain hedges and woods for the sporting benefits that accrue to them, but who will be unable to continue this work unless farming profits allow this work.

Let there be no misunderstanding, sporting interests drive the vast majority of farmers - be they tenants or landowners - to dig ponds, plant hedges and trees and gamecover strips which provide shelter and food for game and small birds alike. Their employment of gamekeepers who feed all the birds and control vermin maintains a vastly more friendly environment without which our countryside would be hugely poorer.

In a profitable situation farmers are happy to employ a modest surplus of labour. This policy ensures the seasonal routine work is timely, so helping produce better yields, but it is also more important that it creates slack periods or windows into which environmental work can be slotted. It is therefore natural that in times of low or non-profitable farming, costs are cut. As I have said, every type of farming, livestock and arable is now making these cuts, leaving enough labour just to do the essential work. UK Farm incomes in 1973 were £7,000 million net in real terms based on 1997 prices. In 1997 they were £2,000 million.

The effects on the countryside of these cuts will appear very slowly and may not be apparent for a few years. It is likely that only those who take a detailed and knowledgeable interest in the countryside will observe these changes. Unless trained practical people with a broad range of knowledge of the countryside draw suitable attention to these facts, then I fear greatly for the future of our lovely countryside. At present we have far too many ill informed people, often with theoretical qualifications in other spheres, passing comment to the media who lap up their erroneous theories. This is leading to mistaken and ill-advised policies which will do untold harm, long-term. I have stressed these points because they are inexorably bound up in what is happening in the countryside today.

We have planted each year many Lonicera Nitidae in our woods. This was done in four ways. We took small cuttings from the few existing bushes and just stuck them in the soil; they thrived if not too much top was left on to cause dehydration before the roots developed. If wet small bales of straw are cut open, the segments can be placed one each side of each new "plant". This prevents weed growth smothering the young plant but also creates a mulch.

We planted cuttings in plant pots, bashing the stem, dipping in growth hormone and transplanting 6 months later when the roots had developed to fill the pot.

We have dug suckers from earlier planting and transplanted but they must be replanted the same day.

We have used a forklift bucket to dig large scoops of bush, root and soil and put into a pre-dug hole.

All four systems have merit, but the first is probably the quickest and most cost effective. We have done at least 500 each year until the last 2 years when lack of profit prevailed.

Lonicera must not be shaded so we plant in open "Skylights" (clearances say 30 yards wide, perhaps from a windfallen tree, sawn up) in the wood, or plant hedges alongside woods. Earlier plantings are now 7-8 feet high and make wonderfully warm nesting and windbreak cover for all sorts of birds.

We have done 2 one-acre lots of hazel coppicing, both with 50% grant and lots of inspections. One was done by a contractor, one with farm labour. Both cost us £4-500/acre after grant. It is extremely slow and laborious work and we cannot afford to do anymore. When the coppice has regrown in 9-10 years it might have a sale value, standing, of £50-100/acre, if anyone wants it. Our 60 acres of woodland is almost all hazel and desperately needs coppicing. If farming made a reasonable profit, I would be delighted to do more. We have a smelly material which keeps the deer away, so regrowth is not damaged.

We have about 9 miles of laneside, fieldside and woodside hedges which we cut each year and have to do this as a routine expense to keep the farm tidy, prevent ingrowth into fields and to give nesting cover to birds. Our hedges, like everywhere else on southern chalklands are becoming seriously affected by Old Mans Beard (wild clematis), which is killing many sections, some, hundreds of yards long. Finding a suitable spray has proved almost impossible. However one spray I trailed last year killed the weed, and doesn't seem to have done much harm to the hedges. I am very disappointed that the CPRE (Council for the Protection of Rural England) and various other people I have approached are not interested, and of course the spray manufacturers are now so controlled by officialdom that they cannot help. I fear this is typical of those organisations who constantly moan about loss of hedges, but are unwilling to take any positive action to help save them. If no action is taken, the long-term damage will be very serious.

We have a variety of standard trees in the woods, Ash, Oak, Beech, Chestnut, Field Maple, Silver Birch and Corsican Pine as well as Larch for timber. One 7 acres, 40 year old wood of Larch was felled 3 years ago, and has been replanted with Cherry, Ash, Beech and Larch. We were very lucky to break even, inspite of the grant, on the whole operation, because the contractor made a mistake in his estimate. Timber values are now so low due to cheap imports that many timber mills have closed - another effect of the strong £. We felled a second small area of Larch and have replanted a few hardwoods. Even this modest replanting in tubes, showed an overall loss. The contractors ran over and destroyed a fair amount of mature Lonicera. In a profitable scenario, we would have replanted densely, but the long-term prospects suggested we would be wasting our money. We have therefore stopped further felling and replanting and will just let the trees fall. This is another example of an inevitable decline in conservation due to economies, which will only slowly be noticed by the public.

The RSPB (Royal Society for the Protection of Birds) did a survey of hedgerow birds on the farm, and it was pleasing to find that we had a much higher diversity than is usual on an arable farm. Perhaps our game cover strips, drinking points, feeders and Lonicera hedges combine to make better habitat. We keep weedfree a narrow strip of soil, say 18" wide between the crop and the grassy hedge bottom. This acts as a dusting area and one where birds can dry off after rain. I am upset to see the considerable damage done by at least one pair of Sparrowhawks, which arrived 2 years ago. We have seen them carry off many small birds and all our bantam chicks. The attitude of the RSPB, in so strongly protecting Sparrowhawks is strange and seems to me to be another example of an organisation distorting the balance of nature. We grow a special type of soil-less turf, which needs regular watering. This had created a micro-climate and environment, which encourages extra bird life. The swallows love the extra insect life over the reservoir and use the muddy puddles for nesting material. We had a pair of Common Sandpiper nest and hatch last year, but the chicks vanished, as did those of about a dozen pair of Pee Wits, all taken by Sparrowhawks. This year just one pair of Pee Wits have nested.

Conservation Grants

There are many schemes available encouraging farmers to do this or not do that. Most, if not all, require long term commitments for perhaps 10 years, and have numerous strings attached. The grant available never amounts to more than 50% of the cost, leaving the farmer to foot the rest of the bill, although he will probably not benefit at all.

Enforcement is usually draconian, so if circumstances change and earlier rulings cannot be complied with, all grant paid, interest, plus possibly a fine have to be paid back. In some cases MAAF (Ministry of Agriculture, Fish and Food) having started a scheme, suddenly stop paying the grant, saying there is no more money, but the farmer has to continue with the scheme. The Countryside Stewardship scheme is a typical example and has received much publicity, but is sadly underfunded. A friend of mine who committed himself is totally disheartened and wishes he had never touched it.

I need to add that agriculture is increasingly burdened with legislation, which is taking up more and more office time. The rules are often badly thought out and impractical to implement. However misinterpretation and farmer mistakes are very easy to make and the farmer is very heavily penalised, yet endless mistakes by MAFF continue to occur with apparently no responsibility on their part. The "jobs for the boys" syndrome is controlling our lives to a greater and greater extent, and we are not only paying their salaries but finding our lives more hassled.

There is talk of more encouragement for farmers to do conservation work, but unless payment for this is at a higher level, I doubt many will take up the offers. As we were told at a recent conference, conservation does not pay. Another speaker recently predicted the phasing out of most if not all, EC subsidies within 10 years and that this would lead to only 20% of the largest farmers surviving. He used the words "survive" several times to describe this new scenario. These 20% largest farmers will use huge machinery with consequent damage to narrow lane verges, employ less labour than today and will have absolutely no time to spare for environmental work in their effort to survive. This will inevitably lead to amalgamation of farms with many buildings becoming redundant and inviting applications for industrial uses. We have seen exactly this situation recently south of Whitchurch. In 1962, 22 employees worked on two Tufton farms, i.e. 22 families. Now just 2 men do the work and there is much objection to the development of the Tufton Manor buildings for other uses.

A recent study by Hampshire County Council showed that 50% of Hampshire farmers expect to retire within the next 7 years, and about 50% of farmers sons consider farming so bad, they will not follow their fathers onto their farms. In most cases, these will be family farms which will amalgamate to form large conglomerate farms, and I feel this is very bad news for the countryside.

David Hewetson-Brown, Ashe Warren Farm, Overton, Nr. Basingstoke, Hampshire, RG25 3AW, UK.

Irish Record Fish Listing
Freshwater Species 1874-1999

Species	Weight lbs.	Weight ozs	Date of Capture	Place of Capture	Captor
Salmon	57	0	1874	River Suir	M. Maher
Sea Trout	16	6	29.10.1983	Shimna River, Co. Down	Thomas McManus
Brown Trout (River)	20	0	22.2.1957	River Shannon, Corbally	Major Hugh Place
Brown Trout (Lake)	26	2	15.7.1894	Lough Ennell	Wm. Mears
Bream	12	3	22.5.1997	Bolganard Lake	Paul Mathers
Carp	29	13	5.7.1998	The Lough, Cork	Sidney Kennedy
Dace	1	2	8.8.1966	River Blackwater, Cappoquin	John T. Henry
Perch	5	8	1946	Lough Erne	S. Drum
Pike (River)	42	0	22.3.1964	River Barrow	M. Watkins
Pike (Lake)	39	3	11.4.1993	Lough Key	Michael Egan
Roach	2	13.5	11.8.1970	River Blackwater, Cappoquin	Lawrie Robinson
Rudd	4	8	5.9.1996	Coney Lake	Hugh Gough
Rudd/Bream Hybrid	7	10	19.10.1996	Monalty Lake	Brendan Doran
Roach/Bream Hybrid	5	14.5	13.6.1999	Lough Kinale	Daniel Smith
Tench	8.15		20.6.1995	Ballyeighter Lake	Nick Parry
River Eel	6	15	12.6.1979	L. Droumenisa, Bantry	J. Murnane

Source: Irish Specimen Fish Committee - Report for Year 1999

"Release your Millennium Salmon"

By Dr. Paddy Gargan

The Central Fisheries Board earlier this year launched a campaign entitled "Release your Millennium Salmon". This educational campaign includes a comprehensive instruction leaflet on catch and release techniques and a video "Catch and Release, The Future is in your Hands". As part of this campaign, the Central Board, in conjunction with the Marine Institute, offered a prize of £2,000 for charity and two days salmon angling to the angler who caught and released the first wild salmon of the millennium. The prize was claimed by Mr Ashley Mathews from Cleggan, Co. Galway, who caught and released a ten pound wild salmon on the Delphi's Bundorragha river on February 16th. Mr Mathews donated the £2,000 prize to Amnesty International.

Photo: Central Fisheries Board

As a result of falling stocks of Atlantic Salmon, **catch and release** is one of a range of conservation measures being practised in many countries to reduce mortality in recreational fisheries to allow additional numbers of salmon to spawn. Other conservation measures include:

- bag limits
- restrictions on fishing methods
- limiting the angling season

In order for **catch and release** to be successful, salmon which have been caught by anglers and released, must survive in good condition until they have spawned. It is important therefore that guidelines for the practice of **catch and release** are followed to ensure the maximum chance of survival of released salmon. The following guidelines should greatly assist anglers in the practice of **catch and release** in Ireland.

Fishing Tackle

The angling method used can have a significant bearing on the survival rate of released salmon. Anglers intent on releasing fish, or anglers fishing waters where a **catch and release** rule is in force, should carefully consider the angling method used. Salmon caught by fly fishing using single barbless hooks, have a greater chance of survival than fish caught on barbed hooks, baited hooks or lures with double or treble hooks. Barbless hooks do less damage, are easier to remove and reduce handling time which can be an important factor influencing survival. Barbed hooks can have the barb pinched with a pliars to allow salmon to be released more easily. Where it is not possible to use barbless hooks, the hooks used should preferably be single. The fishing tackle used should be strong enough to enable the fish to be brought in quickly, taking account of the prevailing conditions and the possible size of the fish that might be caught.

Playing and Landing the fish

Once hooked, the way a salmon is played can have a significant effect on its chances of survival. Anglers should avoid exhausting the fish and once the fish is ready it should be brought in quickly. In a river, the fish should be moved out of the fast current into quieter water.

Research has shown that exposing a salmon to air for even a short period, for example to take a phopograph, can significantly reduce its chances of survival. Playing a fish in the following way will help its chances of survival:

- Keep the salmon in the water at all times
- Use a large diameter landing net with soft knotless mesh
- Avoid beaching the fish
- A gaff or tailer should not be used
- If handling a salmon, always use wet hands

Removing the Hook

Great care should be taken when removing the hook and the guidelines set out below should be followed to increase the salmon's survival chances:

- Wet your hands and keep the fish in the water
- Handling of the fish should be minimised. When necessary the fish should be supported from beneath and the hook gently removed either by hand or by means of a long-nosed forceps
- If a hook is deeply embedded and cannot be removed, the leader should be cut close to the hook, as fish released with the hook attatched generally survive
- Take extra care with fresh fish, as they are more prone to scale loss, injury and subsequent fungal infection
- Care must be taken not to squeeze the fish or hold it by the gills

Releasing and Reviving the fish

After removing the hook or cutting the leader, the fish should be supported in the water facing into the current and given sufficient time to recover. The fish should be held gently until it is capable of swimming away strongly. Anglers should avoid weighing the fish. The weight of a salmon can be estimated from its length using a weight conversion chart. A tape measure or a wading stick can be used to take the approximate length while keeping the fish in the water. Unless compelled by statutory regulations or local rules, fish that have suffered serious damage (bleeding heavily, hooked in the gills or eyes) should be retained.

Survival chances of released salmon

Research has shown that the survival rate of salmon caught and released can be close to 100% when the above guidelines are followed. Survival rate is greater at water temperatures below 20°C. Very good survival to spawning of released rod-caught spring salmon, which have subsequently spent up to nine months in the river before spawning, has been recorded in Scotland. Spawning success and viability of eggs are unaffected in salmon caught and released in late autumn.

Spring Salmon

Stocks of multi-sea-winter salmon or spring salmon are at an all time low across their North Atlantic range. Conservation is more necessary now than at any time and **catch and release** can play an important role in ensuring that many more spring salmon survive to spawn. The following should be borne in mind by anglers when **catch and release** is being considered for spring salmon.

- Research in Ireland has estimated the total Irish spring salmon stock to be about 20,000 fish in recent years
- Research suggests that spring salmon are genetically distinct from grisle with regard to age of maturity and time of river entry
- Exploitation of spring salmon by anglers averages approximately 33% and can be as high as 80% compared to an average rod exploitation of 15%-22% for grilse
- In many spring salmon populations up to 80% are females
- Each female will contribute an average of 6,000 eggs to a system. If one hundred spring salmon were caught and released and survive, this would contribute almost half a million spring salmon eggs to the system
- Small salmon entering rivers early in the year are valuable as they have the early running trait

Salmon anglers in Ireland can play an important part in restoring salmon stocks, particularly stocks of spring salmon, by practicing **catch and release** and individual anglers and angling clubs should be encouraged to practice **catch and release** for salmon.

Further Information:
Dr. P. Gargan, Central Fisheries Board, Balnagowan, Mobhi Boreen, Glasnevin, Dublin 9.
E-mail info@cfb.ie

Copies of a 20 minute video on 'Catch and Release - The Future in your Hands' *is available from the above address. (Price £5 including P&P). Brochure* "Catch and Release for Atlantic Salmon" *is available free of charge.*

Delicious Wild Harvests

By John Akeroyd

Continues from page 10

Nearby grows the closely related but much more robust Alexanders (*Smyrnium olusatraum*), a Mediterranean wayside plant once prized as a potherb. Another member of this family (Carrot family or Umbelliferae), Elecampane (*Inula helenium*), a stately plant 1–2 m tall with spear-shaped leaves and huge yellow daisy heads, is a relic of onetime medicinal use. The Abbey or Friary too on Sherkin formerly had a rich flora of introduced plants – food and medicines for the friars – but recent restoration has cleared much of the weed flora.

Perhaps Sherkin's most remarkable wild food link with the Mediterranean grows near a ruined cottage towards the island's western end. Here, clumps of Babington's Leek (*Allium ampeloprasum* variety *babingtonii*) produce globular heads of purplish flowers mixed with small onion bulbs on stems over 2 m tall. This handsome wild leek is locally common in the Aran islands and parts of the coasts of Connemara and Donegal. It also occurs in western Britain. Sherkin is its only Cork locality. The plant is well named, for Charles Cardale Babington (1808–95), Professor of Botany at Cambridge, loved Ireland and did much to raise money in England for Irish Famine victims. Amazingly, the plant's closest relatives occur in Greece and the Aegean islands. Is it perhaps an ancient, maybe Bronze Age or Iron Age leek, introduced long ago and surviving in open seaside ground on mild Atlantic coasts?

Dr John Akeroyd, Associate Editor of 'Plant Talk' *magazine and Editor of* 'The Wild plants of Sherkin, Cape Clear and adjacent islands of West Cork' *has travelled in the Mediterranean region since 1970. He has published numerous papers and articles on Mediterranean plants.*

Photo: John Akeroyd

Sherkin Abbey and the adjacent castle retain a small but fascinating flora of Mediterranean plants, several introduced for food.

Just when you thought it was safe to go back into the water...

...it still is, but not for him!

The Basking Shark

The Basking Shark and CITES

THE international wildlife trade, worth billions of dollars annually, has driven massive declines in the numbers of many species of animals and plants. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (known as CITES) was drawn up to protect wildlife against such over-exploitation and to prevent international trade from threatening species of extinction.

Nearly 150 countries have joined CITES. They have banned commercial international trade in an agreed list of endangered species (Appendix I), and regulate and monitor trade in other species that might become endangered (these are listed on Appendix II). All trade in listed species is covered, whether alive, dead, or in the form of manufactured products.

The enormous Basking Shark *Cetorhinus maximus* is one of the most magnificent marine animals that may be seen off our coasts. It has been fished for over 200 years, and recent commercial fisheries providing fins and oil for international trade have seriously depleted shark stocks.

Collapsing fisheries and low population recovery rates have led to legal protection for Basking Sharks in some regions. However, unmanaged fisheries continue in other countries. Additionally, the high value of sharks caught accidentally outside protected waters are increasingly likely to be finned rather than being released unharmed. These unmanaged fisheries may threaten Basking Shark populations that are legally protected in other parts of their range.

The UK government is considering proposing the Basking Shark for an Appendix II listing on the CITES in the year 2000. The aim is to ensure that future international trade and target fisheries for the Basking Shark are sustainable, protected populations continue to thrive, and depleted stocks recover. Their reasons for the proposal are as follows:

- Basking Sharks are very vulnerable to targeted fisheries because of their slow growth, late maturity, and the small numbers of young born after a long pregnancy.
- Most documented Basking-Shark fisheries have collapsed after only a relatively short period of exploitation.
- Recovery from depletion is extremely slow: some populations still appear to be at very low numbers decades after fisheries closure.
- Basking Sharks are thought to be wide-ranging migratory animals. Sharks protected in one country are still highly vulnerable to unmanaged, unsustainable fisheries elsewhere.
- The high value of the fins in international trade is now the major factor driving Basking Shark fisheries and encourages finning of sharks caught accidentally.
- No Basking Shark populations or fisheries are managed, other than in territorial waters where legal protection has been granted or target fisheries have been prohibited.

This Appendix II CITES listing is intended to be a management tool, not a complete trade ban. It would:

- Prevent the high profits available from international trade from driving local populations to extinction.
- Require exporting countries to ensure that international trade is not detrimental to the survival of the species.
- Encourage the introduction of fisheries management and research to ensure that future catches are sustainable and do not affect the viability of populations that are legally protected only in parts of their range.

Basking Sharks are now listed as Vulnerable on the IUCN-World Conservation Union Red List of Threatened Species, and legally protected in British, Isle of Man and Guernsey waters, the USA, New Zealand and Mediterranean Sea. In Britain it is illegal to injure, kill, capture, or disturb them, or to own or sell parts of a Basking Shark without a special permit.

The Decling Basking Shark

The Basking Shark was traditionally fished to provide liver oil for lighting and industry, and meat for food or fishmeal. Some meat, oil and cartilage (a health food) are still used today, but Basking Shark fishing mainly continues because of the high value of the gigantic fins. These are in huge demand in East Asia as an ingredient for shark fin soup.

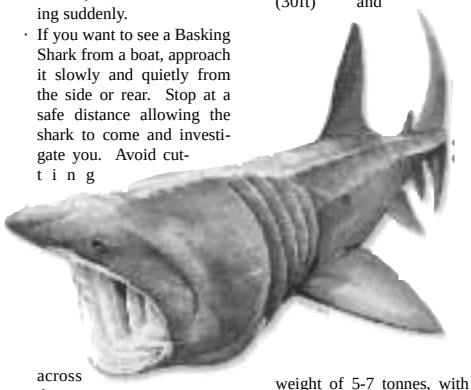
Although high Basking Shark fin prices encourage fishing activity, most targeted Basking Shark fisheries have now cased as a result of stock collapse or legal protection. The few remaining known fisheries are only to catch very small numbers of sharks. This is the result of former unsustainable "boom and dust" fisheries: high initial catches removed most of the sharks, then the fishery collapsed. This pattern of rapid population decline followed by very slow recovery has been reported in many shark fisheries around the world.

Basking Shark may not be threatened with extinction in the near future (yet). However, if unrestricted and unregulated fisheries continue, numbers may be reduced to a point where local extinction becomes possible. Basking Sharks caught accidentally in fishing gear may be killed and finned. Collisions with boats also kill sharks. Despite this, virtually no research is underway to assess Basking Shark numbers and the impact of fisheries on their populations. A precautionary approach to the management of fisheries and international trade is essential.

Watching and swimming with Basking Sharks

The following guidelines will help shark watchers to avoid causing disturbance or injury to the sharks (and minimise any danger to themselves):

- Basking Sharks are huge, powerful wild animals. These normally gentle creatures may lash out with their tails and dive abruptly if disturbed or surprised.
- For your own safety, do not touch them or swim in front of them. A minimum distance for swimmers of 3m from the head and 4m from the tail is suggested.
- Never chase Basking Sharks, drive any craft directly towards them, or allow several boats to surround them - this will probably frighten them and make them dive.
- Avoid changing course or speed suddenly or erratically in response to Basking Sharks. Slow down by putting your engine into neutral, rather than reversing suddenly.
- If you want to see a Basking Shark from a boat, approach it slowly and quietly from the side or rear. Stop at a safe distance allowing the shark to come and investigate you. Avoid cutting across the nose of the shark.
- Avoid pairs or large numbers of sharks following each other closely. This may be courting behaviour and should not be disturbed.
- Beware of leaping sharks - this activity may be dangerous to onlookers.



Basking Shark Facts

- The second largest shark in the sea (after the tropical Whale Shark).
- Related to the Great White Shark, but has tiny teeth and is harmless to man.
- Grows to a length of 10m (30ft) and weight of 5-7 tonnes, with fins up to 2m long.
- Swims slowly near the surface in fine weather, dorsal and tail fins showing.
- Feeds on plankton, filtering 1,000 to 2,000 cubic metres of seawater per hour through its gill rakers.
- Found in temperate (cool) waters worldwide, but populations in different oceans are separated by continents and warm tropical waters.
- Wide-ranging. Probably undertakes seasonal migrations, but regularly returns to the same summer feeding grounds.
- Usually disappears mysteriously in winter, either moving to warmer regions or into deep water.
- Sometimes sheds gill rakers in winter. May hibernate on the seabed while new ones grow for use in spring.
- Thought to mate in inshore waters during early summer, but pregnant females are hardly ever seen.
- Bears a small number of gigantic young (1.5-2m long) after a pregnancy of over two years.
- Life cycle is poorly understood, but they may take 10-20 years to reach maturity and live for 50 years.
- Sometimes, for unknown reasons, leaps clear out of the water.

Printed with the kind permission of WWF-UK, Godalming, Surrey, UK. Web site: www.wwf-uk.org

Publications of Interest

How To Identify Trees

By Patrick Harding and Gill Tomblin

HarperCollins*Publishers*

ISBN 0 00 220067 8

£9.99stg / 1988

A good starting point for those wishing learn about trees and their identification. The introduction includes concise but detailed information about trees and woodlands including tree structure and biology, early mans influence on woodland, history of woodlands, the wildlife they support and even a section on Trees in Legend, History and Folklore. Simple keys based on summer leaf form are given to separate the main species and lead to detailed profiles accompanied by good illustrations of the diagnostic features. These accounts are coupled with details and illustrations of similar cultivars and other related confusable trees which should be useful in the field.

Pest Diseases and Disorders of Garden Plants

By Stefan Buczcki and Keith Harris

HarperCollins*Publishers*

ISBN 0 00 220063 5

£19.99stg / 1998

This is a very comprehensive book suitable for gardeners of all levels of experience and will prove an invaluable addition to any gardeners library. The subject is dealt with in a clear and systematic manner with a useful introduction which details what treatments are available, how to prevent problems and any relevant legal issues. This is followed by a clear symptom key and over 600 detailed full colour photographs. Finally further details are given in separate sections for Pests, Diseases and Disorders. Pests are dealt with by related groups with details of the symptoms they cause, relevant biology and treatment. Diseases are similarly treated but they are arranged by the symptoms they cause. Lastly Disorders are set out by the factors which cause them. Overall there is an emphasis to avoid unnecessary use of chemicals and the use of non-chemical / Biological control methods.

Field Guide to the Dragonflies and Damselflies of Great Britain and Ireland.

By Steve Brooks

British Wildlife Publishing

ISBN 0 9531399 0 5

£18.95stg / 1997

This is an excellent book which would prove valuable to both the professional entomologist or the beginner. The author clearly has an enthusiasm and great understanding of subject which comes across in the writing. In addition the book is well presented in clear sections and has a good mix of full colour illustrations and photographs. The book contains an introduction to the life history, distribution, and habitats of dragonflies and also relevant legal issues. Following the introduction there is an excellent regional guide to the best places to watch dragonflies descriptions of the habitats and what to expect. This is followed by a guide to identification of both larvae and adults. There is a key to identify the larvae of most species with diagrams embedded in the text and some colour photographs. The key for adults separates the families and leads to detailed descriptions of each species contained within each family. These descriptions include useful information such as “Jizz”, field characters, status and conservation and ecology and behaviour. There are also good illustrations of both males and females with distribution maps and flight periods.

Birds of Britain and Europe

By John Gooders

HarperCollins*Publishers*

ISBN 0 00 220011 2

£14.99stg / 1998

This is a photoguide designed for field use and is a good size to fit a pocket. Its laid out with the photographs at the front and species accounts to the rear. The introduction is well written and contains all the necessary information to get someone started. Also the species accounts are detailed but concise and the photographs are mostly very clear. With the good introduction to the art of bird watching, fairly extensive glossary and good photographs this could be a useful book for someone wishing to take up bird watching.

Bird Guide

Text by Lars Svensson & Peter J. Grant
Illustrations by Killian Mullarney & Dan Zetterstrom

HarperCollins*Publishers*

ISBN 0 00 219728 6

£24.99 / 1999

The latest effort in serious bird guides from the Collins publishing house is proclaimed on the front cover as ‘the most complete field guide to the birds of Britain and Europe’ and one finds it hard to disagree.

After a short introduction on how to use the book and how to identify birds we are plunged straight into the species accounts. These are well written and concise, with diagnostic features picked out in italics.

The illustrations are of the high quality we have come to expect from our field guides, with useful thumbnail sketches of the birds in their natural surroundings as well as the standard identification figures, which are heavily and clearly annotated.

Handbook of the Birds of the World Volume 3 -Hoazin to Auks

Edited by Josep del Hoyo, Andrew Elliott, Jordi Sargatal

Lynx Edicions

ISBN 84-87334-20-2

IR£104.00 / 1996

This book, the third volume in the series, covers Hoatzins to Auks, and includes the two extensive families of Waders and Gulls. The sheer scope of this project almost beggars belief, but the authors have done a sterling job.

Each family is considered in depth, covering systematics, morphology, habitat, behaviour, breeding biology, relationships with man and conservation status. In addition each species is covered in more detail under the same headings. A nice innovation is the provision of a silhouette comparison of the size of the bird in comparison to the size of a human. This gives a much better idea of size than a mere measurement in centimetres can.

Distribution maps are given for families and individual species showing breeding and wintering ranges.

A standout feature of this book is the quality of photographs, in most cases they are stunning. Even the more secretive rails and finfoots have been captured in their natural habitat with clarity and artistic flair. The photographs of crane courtship are particularly worthy of mention. The captions that accompany the photographs are condensed versions of the main text and this rewards even a casual flick-through of the book.

The colour illustrations are outstanding. Although the price tag of IRL£104 may put a lot of people off, I feel this book more than justifies such an outlay.

Whales and Dolphins - Collins Gem -

Written and photographed by Mark Carwardine

HarperCollinsPublishers

ISBN 000 472111 X

£3.99stg / 1998

A handy little book to have when whale watching as it gives clear identification pictures of most cetacean species. Not only that but it includes clear and concise information on cetacean biology and behaviour, and conservation issues relating to cetaceans. A chapter on where in the world to go watching also comes in handy.

Collins Whales and Dolphins. The Ultimate Guide to Marine Mammals

Mark Carwardine, Erich Hoyt, R. Ewan Fordyce, Peter Gill

HarperCollinsPublishers

ISBN 0 00 220105 4

£17.99stg / 1998

An excellent book for anyone interested in cetaceans, it greatly expands on the information included in the Collins Gem. Whale and Dolphins book. Chapters range from the origins of cetaceans to their biology and behaviour, along with the much needed identification section. Nearly every page is lavishly illustrated with actual photos of cetaceans making this reference book ideal for young and old alike.

The book also goes into great detail about the practical side of whale watching and gives detailed information on preparation for trips, whale watching, recording data and taking photos. Along with this is information on 30 whale watching destinations from around the world.

Savage Earth

By Alwyn Scarth

HarperCollins*Publisher*

ISBN 0 00 220106 2

£16.99stg / 1997

As our knowledge and technologies are constantly improving, we may be feeling secure in our homes, safe from the outside environment. Savage Earth, however, is guaranteed to change that confident attitude of anyone who reads it. In reality, millions of people around the world, are living completely at the mercy of the Earth’s immense natural forces. Violent and catastrophic volcanic eruptions, earthquakes and tsunamis constantly threaten to cause unimaginable devastation, often without a moment’s warning.

Savage Earth is a gripping account explaining both the science and the emotional human suffering behind the more violent side of nature. The underlying physical processes of plate tectonics and continental drift are first explained using clear and helpful diagrams, showing how the conditions arise which lead to these dramatic events. Many sensational historical examples are reviewed using powerful photographs and terrifying eye witness accounts. The final chapter looks at the state of the art technology being used to try and forecast these events and allow life saving preparations to be made.

Sometimes we may be able to predict and even minimise the destructive impact of these events. The only fact that we can be sure of, however, is that the Savage Earth will never be tamed.

Proceedings of the Work Shop on Energy from Biomass and Wastes from Biomass and Wastes

5th-7th December 1995, Dublin Castle Ireland

Edited by J.I Burke, B. Rice

Teagasc, Oak Park Research Centre, Carlow

This publiction is a report on a workshop on energy from biomass and wastes, conducted from the 5th to the 7th of December 1995, in Dublin Castle. Attending this workshop were some of the most eminent researchers and policy makers in the US and Europe. The workshop was set up to address one of the most important issues of the moment, the development of renewable and environmentally friendly resources for a more environmentally sustainable future. The meeting cocentrated on the use and production of biodiesel, bioethanol and bioelectricity.

This a valuable insight into the current status and position of the development of renewable resources in bioenergy technlogies. The workshop deals with the current efforts to increase the viability and use of bioenergy alternatives with and aim to promote a reduced dependency on foreign oil and the development of real competitive options and alternatives for bulk power production. In the end success will mean increased economic developent, energy, security and environmenatl sustainability.

Forage Fishes in Marine Ecosystems

Lowell Wakefield Fisheries Symposium

Proceedings of the International Symposium on the Role of Forage Fishes in Marine Ecosystems, Alaska, USA, Nov 13-16 1996

University of Alaska Sea Grant College Program

ISBN 1-56612-049-7

$40.00 / 1996

This publication contains 56 papers from the Lowell Wakefield Fisheries Symposium. The primary objective of the conference was “to provide findings to assist in the multispecies management of Alaska marine ecosystems, especially those of the Bering Sea and the Gulf of Alaska including the Exxon Valdez oil spill region.”

A dramatic unexplained decline of Steller Sea Lions, Harbor Seals, Fur Seals and several species of seabird prompted research into forage fishes - a major food source to all these species. The Exxon Valdez oil spill in 1989 prvided further motivation for this research.

The papers in this volume cover a wide variety of issues such as forage fish basic biology, their role as predator and prey, causes of population fluctuations, assessment methodologies and management considerations. This publication successfully translates research findings into information useable by both resource managers and the general public alike.

Recreational fisheries - social, economic and management aspects

Edited by Phil Hickley and Helena Tompkins

Published by arrangement with the Food and Agriculture Organization of the United Nations by Fishing News Books

ISBN 0-85238-248-0

£59.50stg / 1998

Because since 1989 the status of recreational fishing has changed markedly, showing a slowly increase tendency , there is now a definite need for a greater understanding of the value and management of recreative fisheries. This book provides some recent data on this subject based on official data, estimates and private information from all the European Inland Fisheries Advisory Commission (EIFAC) member countries.

The book encloses some interesting reports of the symposium topic session on the current status in recreational fisheries as well as good valuable reports of surveys among the countries of the EIFAC with the aim of exchanging information and establishing criteria on social, economic and management aspects of it. This book is an up-dated and excellent reading book for anglers and people interested in the subject.

Rehabiltion of Rivers for Fish

Edited by Ian G. Cowx and Robin L. Welcomme

Published by arrangement with the Food and Agriculture Organization of the United Nations by Fishing News Books

ISBN 0-85238-247-2

£49.50stg/1998

This manual provides the rationale, guidelines and techniques for the rehabilitation of rivers for fish. It is intended for the use of fishery managers, fisheries and wildlife biologists, land and water use planners, and civil engineers working on projects involving protection and rehabilitation of inland running waters. It describes a great variety of techniques for the restoration of rivers related to the protection and restoration of fish movements, management of aquatic vegetation and impact of mans activities on aquatic habitats. A very well illustrated account of fisheries management and a must for both reference and research for the budding fisheries scientist.

The Unpredictable Mistress

by Harris Stewart

Best Publishing Company

ISBN 0-941332-61-6

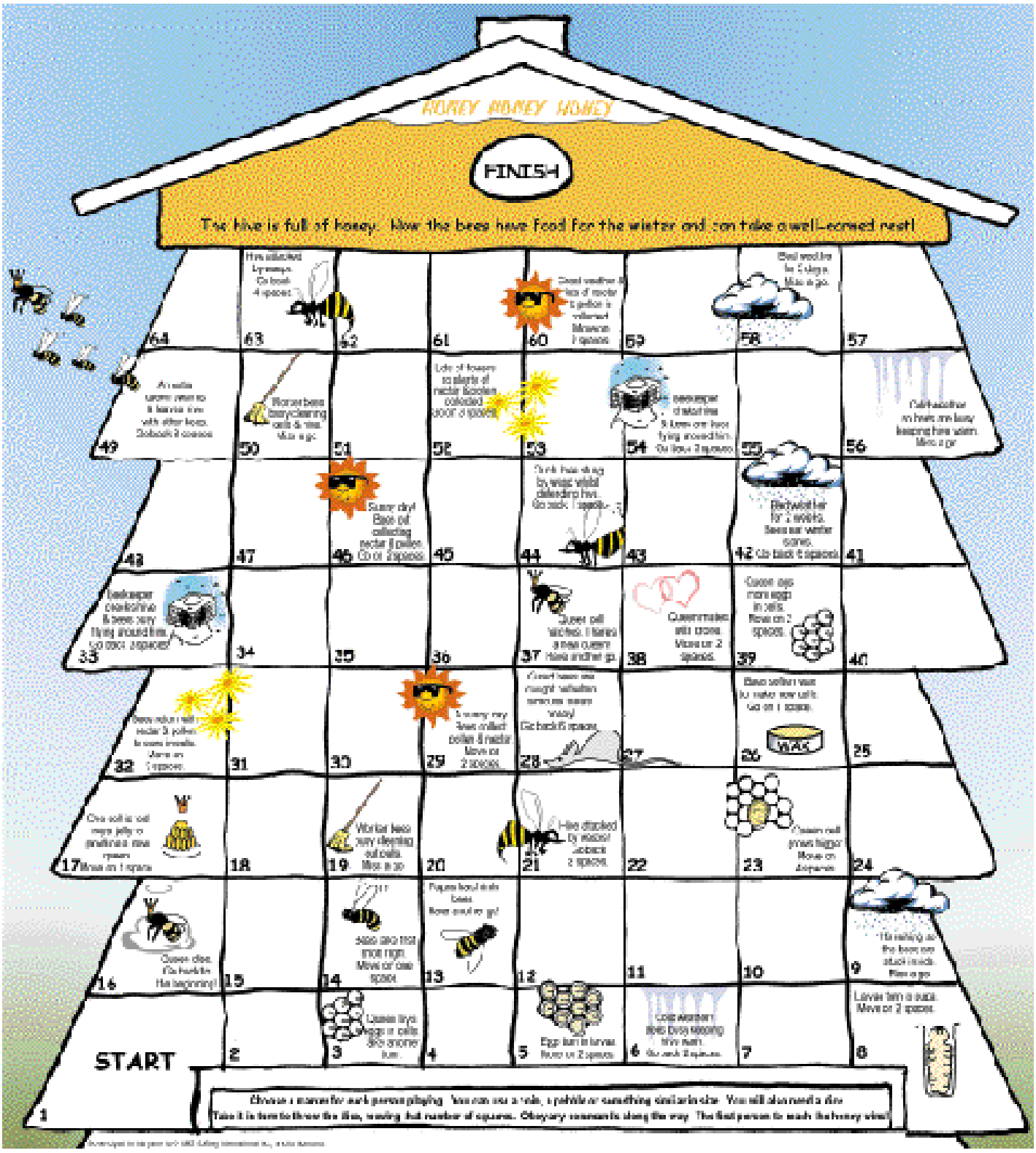
$19.95 / 1997

The Unpredictable Mistress is basically the life and times of the oceanographer, giving a fascinating insight into the world of the science. With the use of an autobiographical guise, the author carries you through the adventures, trials and tribulations involved in an amazing career spanning the entire world. Places that are visited include; the Persian gulf, the gulf of Alaska, the Moroccan straits, the bay of Bengal, the south china seas and the Caribbean seas.

The book covers processes and experiences ranging from underwater mapping to encounters with killer whales. All in all a very satisfying read conveying an infectious love for the sea.

JUNIOR PAGES JUNIOR PAGES JUNIOR PAGES JUNIOR PAGE

Honey, aren't you beautiful!



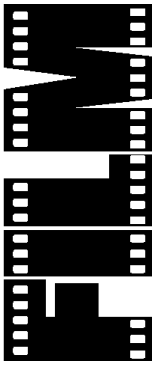
Movies Animals

This is a two-part puzzle, with the first part being easier than the second. The animal words listed below are hidden in the block of words on the right. See if you can find them.
These animal words are also found in the titles of well-known films. The letters in the title have been jumbled up and only the animal word is given as a clue. Do you know you films?

falcon
cat
cuckoo
mockingbird
horse
deer
lion
bull
rabbit
animal
apes
beast
birds
fish
wolves

x	s	d	r	i	b	n	m
w	f	r	i	b	o	c	o
o	i	a	u	i	v	o	c
l	s	p	l	e	k	i	k
v	h	e	l	c	o	m	i
e	l	s	u	w	o	b	n
s	a	c	b	l	h	n	g
e	m	h	s	i	o	g	b
t	i	b	b	a	r	l	i
a	n	b	e	a	s	t	r
c	a	s	p	r	e	e	d

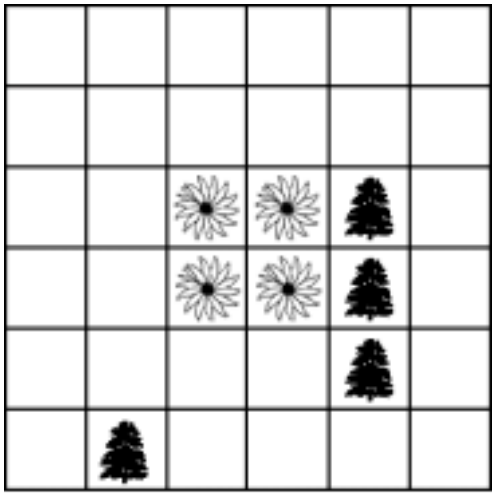
a. **Falcon** = f m h t e e c e l s n a t o a l
_____
b. **Cat** = n n f o t o t o i o c t h a a r
_____
c. **Cuckoo** = c c w t u o t e e o h k s l v o e f e o n r s e n
_____
d. **Mockingbird** = i o d k r c i k n b i t l a g o m l
_____
e. **Horse** = p h r e e w h h i e r s o t s r e
_____
f. **Deer** = r t r t d u h e h e e n e
_____
g. **Lion** = g h i n n l t e o k i
_____
h. **Bull** = u n r g i g b l a l
_____
i. **Rabbit** = b g d w o f e r e r r i b a m a h r o t
_____
j. **Animal** = m a f r a n l a m i
_____
k. **Apes** = s e l n o t t f a e h e a p p
_____
l. **Beast** = d b u a h b t s t e y a a e n t e
_____
m. **Birds** = i b h e r s d t
_____
n. **Fish** = n f c e w s h d a a l a i l a d
_____
o. **Wolves** = o i e n c w w d s t v e l a h s
_____



Answers on page 29.

Minding the Park

Four rangers have been given the job of looking after a large park. The park has four ponds and four separate areas of forest.
To give each ranger equal responsibility, the park is to be divided so that there are four areas. Each area must be the same size and shape and must include a pond and tree.
Can you see how the dividng lines are drawn (there is only one way!)?



Answer on page 29.

Kedgeree Salad

This traditional Victorian breakfast dish with its origins in India can be served at any time of day, hot or cold.

Ingredients

- 450g/1 lb smoked fish*
- 225g/8ozs cooked long grain rice
- Choose from finely chopped: roasted red or green pepper, corn, spring onion, peanuts, pineapple chunks, hard boiled egg
- 3 tablespoons mayonnaise
- Chopped parsley
- Salt and freshly milled pepper

Method

- Place fish in cold water (parsley stalks, bay leaf and lemon slice added).
- Bring to simmer and cook gently for 4-5 minutes. Remove, flake and chill.
- Combine all the ingredients in a large bowl.
- Fold in mayonnaise.
- Sprinkle with lots of chopped parsley and serve.

To serve hot:

- Combine cooked onion and curry powder with rise, fish, eggs and seasonings.
- Stir in cream and heat or bake until heated through. Serve piping hot with lots of chopped parsley.

* You can substitute smoked coley, cod or haddock.

Serves 4.

Join "Storm Force", the RNLI's club for young people, and you will be sent an exciting members' pack filled with lots of goodies. Four times a year you will receive the action packed *Storm Force News* magazine full of exciting stories, paintings, ideas or jokes to Storm Force headquarters.

To join just send your name and address, with a cheque/P.O. for £5.00 to Storm Force HQ, RNLI, 15 Windsor Terrace, Dun Laoghaire, Co. Dublin. *(The above cartoon has been reproduced from "Storm Force News".)*

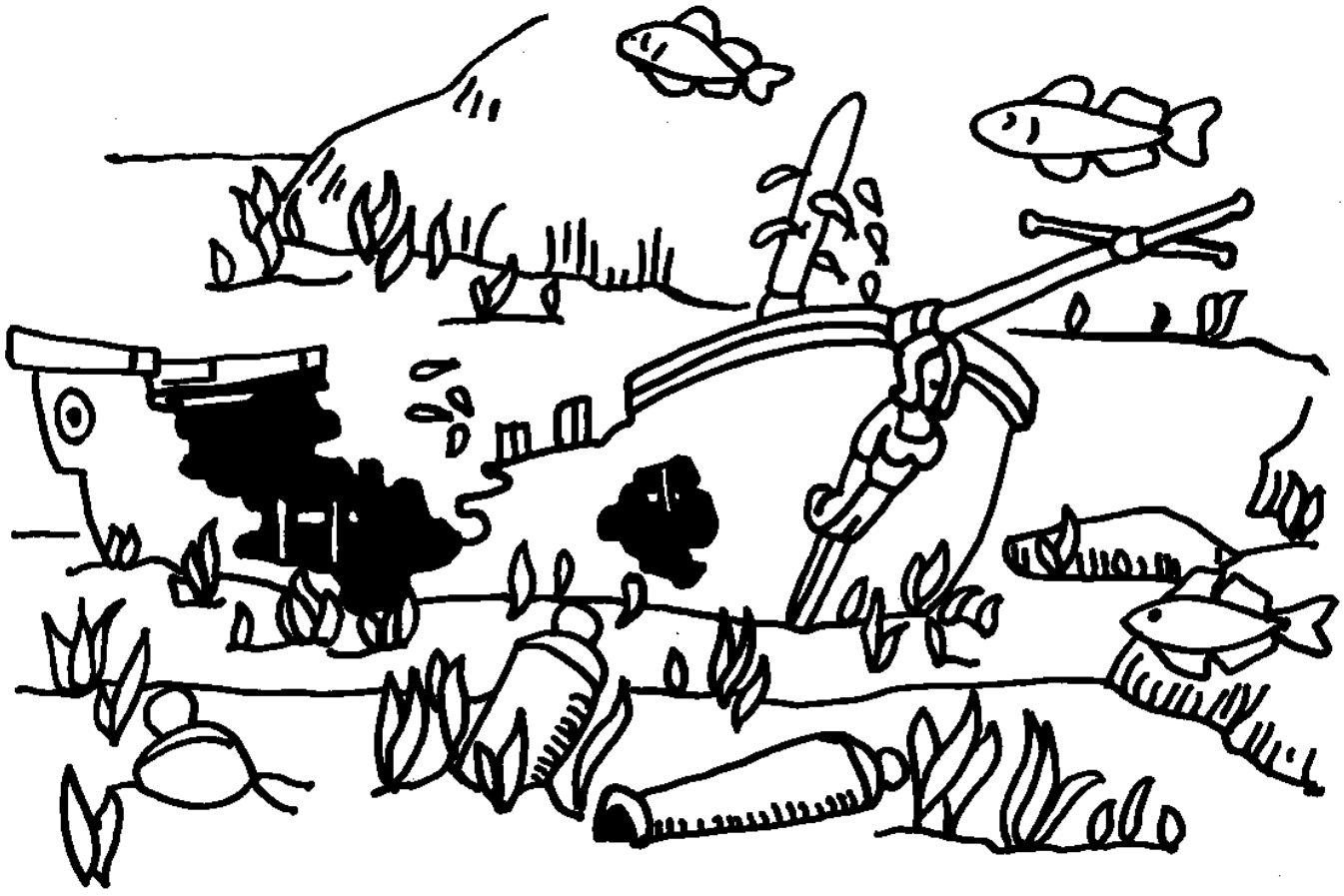
For further details on fish recipes write to:

BIM (Irish Sea Fisheries Board),
Crofton Road,
Dun Laoghaire,
Co. Dublin.
Tel: 01 284 1544 Fax: 01 284 1123
Web Site: www.bim.ie

Bord Iascaigh Mhara
Irish Sea Fisheries Board

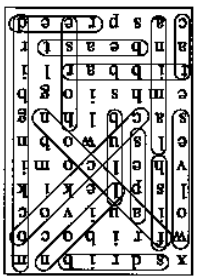
At the Bottom of the Ocean

Here's a picture for you to colour!



Answers to Puzzles on Page 27

MOVIE ANIMALS WORDSEARCH



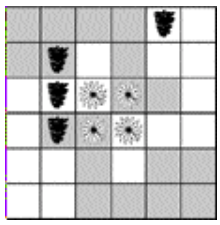
MOVIE ANIMALS

a. The Maltese Falcon; b. Cat on a Hot Tin Roof; c. One Flew Over the Cuckoo's Nest; d. To Kill a Mockingbird; e. The Horse Whisperer; f. The Deer Hunter; g. The Lion King; h. Ragging Bull; i. Who Framed Roger Rabbit?; j. Animal Farm; k. Planet of the Apes; l. Beauty and the Beast; m. The Birds; n. A Fish Called Wanda; o. Dances with Wolves;

TAKE YOUR PICK

b.

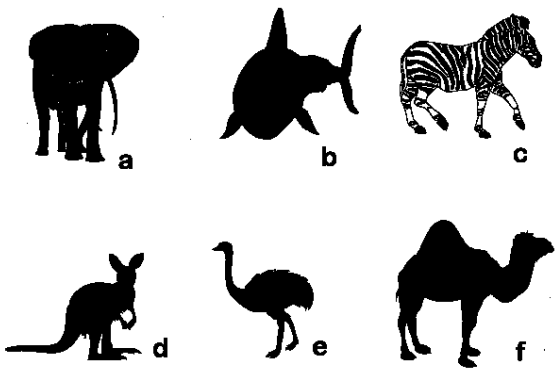
A STROLL IN THE PARK



Take your pick!

Can you pick out the only animal that lives in the sea?

(Answer in box on the left)



Visit the Sherkin Island Marine Station Website

http://homepage.eircom.net/~sherkinmarine

Ten Weeks in Mongolia

Anne Marie washing her hands at a well in the middle of the Gobi Desert.

ANNE Marie Peters is an eighteeen year old student in Trinity College Dublin. She is from Athy, Co. Kildare and she is a Gold President's Award participant. Last year she was one of five young people who went on one of Raleigh International's very demanding ten week long expeditions. The rest is her story...

My name is Anne Marie Peters and I'm doing my Gaisce Gold Award. Last summer I went on an expedition to Mongolia with a group of 120 international young people. It was an amazing new experience. For me it was one of the best things that ever happened. It gave me a chance to explore the world untouched by man.

For the first 18 days I trekked with a group of 15 people through part of the Gobi Desert. It proved a very challenging task for me but because of just that I was pushed to my limits. We got up at 5am each morning to avoid the 40° midday heat. The vast empty barren land was gobsmacking. "The middle of nowhere" were words that often came to mind. While walking we saw gazelles, camels, eagles, scorpions and snakes. Everything was new to me. I noticed the camels with their humps hanging limply from their backs. One day we stopped to find a ring of quick sand just infront of us containing skeletons of unfortunate animals. That same day we set up shelter on a soft sandy bed in a great valley. Then it started raining for the first time since we arrived. Of course we took advantage of it and had ourselves a shower. The next thing I knew, people were shouting and we had formed a chain throwing our rucksacks to higher ground. Ten minutes later a red river appeared and there it was gushing through my legs. We were caught in a flash flood. The adrenaline was pumping in all of us. Afterwards we were very happy in how we all worked together as a team. Each night we slept soundly outside in our sleeping bags under the sparkling stars.

One of the highlights of the trek was climbing to the highest peak of the mountain range. I have always loved climbing mountains with their powerful energy. But this one was the highest and steepest. We had rucksacks on us weighing over 20kg. I was sure that one of us was going to fall down backwards. In the end the hike became a race to the top against the sun setting. I just made it. The view of the mountains against the coloured sky was very beautiful.

I celebrated my 18th birthday in the heart of the Khan Khenti mountains on the border of Siberia. I was helping in the development of a fire management plan. We each had our own horse for those few weeks. The local rangers were amused at my freckles and laughed as they gave me the brown speckled horse! Riding the horses gave us an extra sense of adventure and allowed us to see more of the protected luscious countryside. I enjoyed walking to the stream each day to wash and collect water. Cooking on our fire was good fun and we tried to make the food taste better.

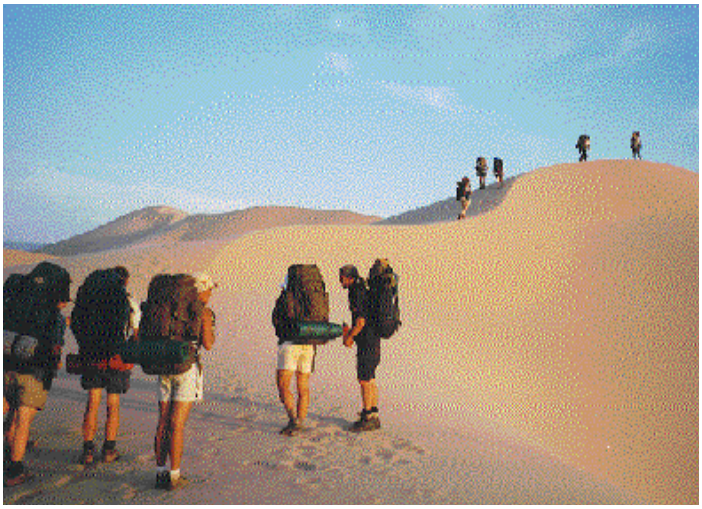
For the last three weeks I was back down in the Gobi Desert. We stayed in the small towns of Bayan-Ovoo and Khanbogd. We worked with the locals building new models of public latrines. It was very satisfying taking part in digging the six foot deep pit and making the concrete slabs. We were all very proud of ourselves when the toilets were completed. During this project there was a more serious approach taken in our own personal development. We all had the chance to be group leader for the day. That involved organising the day's work and taking responsibility for all the decisions needed to be made. During my leadership day I had a meeting with the governor of the town. I was also really happy with my organisational skills when I went out to see how the work was getting on and I found six separate groups doing different tasks. Staying in the towns allowed me to interact more with the locals. I learned a lot about the traditional Mongolian culture. The Mongolians were very pleased with our help and one day treated us to a freshly slaughtered goat.

The ten week expedition focused on environmental conservation, community and scientific research work with the youth development charity Raleigh International. The living conditions were hard with communal sleeping areas, cooking on fires and no running water. There was no escape from the 24 hour living environment of the group and project. I found the greatest challenge to be the team work, relating to other people and getting on with each other. We were all so different and so the group discussions and living together has taught me a lot. Now that I'm home, back in the luxury of the western world I can say that I've been through situations and in places that must be experienced to be truly appreciated. Going to Mongolia was about stretching my horizons and I now look at the world with a renewed smile.

Photos: Anne Marie Peters

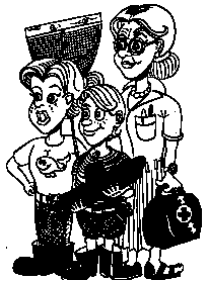
Anne Marie and Munoo (Mongolian venturer) working on the concrete slabs for the public latrines in Bayan-Ovoo.

For further information contact John Murphy, President's Award, Dublin Castle, Dublin 2. Phone 01 4758746.
Website: www.p-award.net



Evening time: **Part of the expedition group crossing sand-dunes in the south Gobi Desert.**

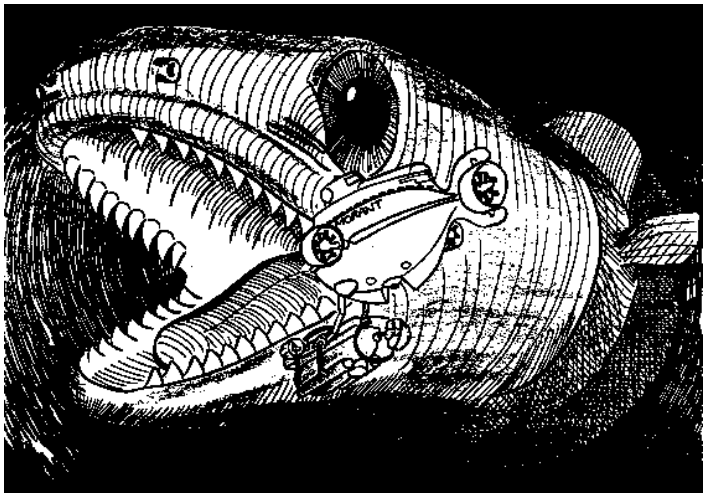
Captain Cockle & the *Cormorant*



by John Joyce

Episode Three - The Enormous Eel!

(Abridged in four parts.)



A gigantic conger eel hits the *Cormorant*

THE STORY SO FAR - Captain Cockle, his wife Dr. Catherine Cockle, and the grandchildren Jenny and William have flown to the North Sea in the amazing flying submarine Cormorant to rescue a pair of divers trapped on the bottom of the ocean under a collapsed oil rig, where a large demolition charge is still ticking. To get inside the wreckage, Captain Cockle has used his secret miniaturiser to shrink the Cormorant and its crew but, in trying to reach the Deepstar, William has fallen into a giant sea anemone, and is being sucked into its stomach . . .

"Granny! Get me out! Pleeease!"

But Dr. Cockle had something even worse to worry about! As she pulled on the safety line to free her grandson, the huge prawn that had knocked him into the anemone loomed up with its claws open.

"Granny! Behind you!"

Dr. Cockle screamed and fell flat on the sand. The prawn rushed over her - straight into the anemone! William could see it kicking and jerking as the terrible tentacles closed around it, and felt the anemone's grip slacken on his legs.

"Pull, Granny!" And with a slippery "Pop!" he was free.

The last of the tentacles closed over the prawn and it was gone . . . into the bulging sack of the anemone's stomach.

"Quick!" said Dr. Cockle. "Before anything else down here gets hungry!"

As soon as Dr. Cockle had treated the two divers, William settled himself into the pilot's seat of the Deepstar and operated the controls as Captain Cockle told him over the radio. Bubbles hissed from the sides of both tiny submarines as the ballast tanks emptied and, held together like dancing turtles in the Cormorant 's mechanical arms, they rose towards the pipe that led to the outside world.

"What's that, Grandad?" asked Jenny.

Amongst the tangle of rusted metal from the old oil rig was a huge red box, with an enormous clock on the front and the words:

ACME Underwater Demolition

"Oh dear," said Captain Cockle. "It's the last bomb! And it's set to go off in five minutes! Let's get out of here - fast!"

The Cormorant pulled the Deepstar up over the lip of the pipe.

"That's odd!" muttered Captain Cockle. "There seems to be something blocking our way!"

William peered into the distance. He could see a faint shimmering disc, like a car's headlight.

Then everyone saw there were two discs in front of them, and between the discs was a pair of nostrils, a colossal head, huge pointed teeth the size of traffic cones and . . .

A gigantic conger eel hit the Cormorant, ramming the two little submarines backwards out of the pipe towards the bomb! As they sank past it, the big metal hand on the clock ticked off another minute.

"Do something, Horatio!"

Then William had his brilliant idea!

"Why don't we use some of the electricity in the Cormorant 's batteries to scare the eel away, just like Captain Nemo did with the giant squid in 20,000 Leagues Under the Sea ?"

"It could be dangerous! There's one thing that..."

Dr. Cockle lost her temper.

"Horatio! We are trapped four hundred feet under the sea, inside a six-inch long submarine, inside a collapsed oil rig, with a bomb that is about to explode, and a five hundred foot conger eel waiting to eat us! What could be more dangerous than that?"

"Quite right, dear!"

Captain Cockle pushed his submariner's cap forward on his head and pointing the bow of the Cormorant towards the pipe.

In the dull glow of the searchlights, two blood-red eyes, each the size of paddling pools, glared at them angrily from the far end of the pipe. The cavernous mouth yawned horribly, and with a sickening lurch the Cormorant was sucked past the rows of teeth into the eel's throat.

"Now, Jenny!"

With a "clack" and a loud "BUZZZZZ!" the whole cabin lit up as ten million volts of electricity burst from the Cormorant 's batteries. In a frenzy, the eel dropped the two submarines and shot out of the pipe into the open sea, sucking them after it in a flurry of rushing water.

"Everybody down!" shouted Captain Cockle, and from behind them there was another flash as the bomb exploded. The two submarines were picked up in the fist of the giant shock wave and churned like socks in a washing machine - over and over, up and down, round about!

The controls of the Deepstar were pulled from William's hands. Bubbles seemed to be flying in all directions outside the porthole.

There was a terrific "crash" - and then silence...

"Are you all right, Granny?"

"I think so," said Dr. Cockle. "But what's that out there?"

William could see something long and yellow hanging from the Deepstar as it lay on the sand. It was one of the Cormorant 's mechanical arms . . . broken right off!

But of the Cormorant itself, or of Jenny and Captain Cockle, there was no sign at all!

Are Jenny and Captain Cockle fish food? - Find out in the next episode - The Giant Crab - only in Sherkin Comment.

Adapted by the author from "Captain Cockle and the Cormorant " - published in Ireland by Poolbeg Press and available in all good book shops. Price Ir£3.99

Check out Captain Cockle on the Web at the Captain Cockle Home Page on: http://www.cockle.com

A Question of Values

By Jim Lichatowich

I OFTEN turn to my heros for advice when trying to think through a difficult problem. Aldo Leopold is among those I consult. I recently found some help from his thoughts while wrestling with the implications of Oregon Trout's petition to review the status of the lower Columbia River coho salmon, and the Snake River chinook salmon. Leopold said, *"I suspect there are two categories of judgment which cannot be delegated to experts, which every man must judge for himself, and on which the intuitive conclusion of the non-expert is perhaps as likely to be correct as that of the professional. One of these is what is right. The other is what is beautiful."* Beauty refers to the ecological beauty of diverse, stable and productive ecosystems.

Leopold's words have a direct message for the debates that will take place before and after the status of the threatened stocks of salmon is determined. What is right refers to the way we balance today's economic needs with our moral and legal obligation to manage resources for the use of future generations. What is beautiful refers to the ecological beauty of a great river basin like the Columbia: tremendous natural productivity, amazing biological, geological and climatic diversity, and especially, the diversity of stocks of anadromous salmonids. Our judgement of ecological beauty will determine the quality of the world our descendents will live in. The experts and their technical information are needed to review the status of the salmon stocks under petition and determine if their existence is in fact threatened, but it's up to you to decide if those stocks will continue to exist.

What is right and beautiful in this context are questions of individual values -that is why your opinion carries as much weight as the experts. Environmental debates that are at their root based on differing values, usually resolve themselves into choices between short term economic needs and long term obligations to future generations. The spotted owl debates characterized this in the extreme. We have allowed the intellectual level of the public debate over the spotted owl to degenerate into a slogan, "owls vs jobs". There can be no satisfactory outcome to a debate that has man fighting against his ecosystem - in the long run, everyone will lose. When an issue degenerates to a slogan -a slogan that has man fighting his ecosystem - it usually means management has failed in its responsibilities.

The debate over the status of threatened stocks of Columbia River salmon has already begun to separate into interest groups seeking to advance their values for short term economic needs or long term conservation. Hopefully the experts will not remain silent too long. Hopefully information will be made available to the public so the debate can be carried out at a higher intellectual level than politicized slogans. But if your opinion is as valid as the experts on the questions of values, what is the role of the experts with their specialized information?

Between the extremes of only short term economics and total preservation there are several possible alternative courses of action. Each alternative carries a set of risks economic risks and ecological risks. The experts have the experience and knowledge to identify reasonable alternatives and define the economic and ecological risks for each alternative. Devising risks and alternatives is the expert's job and you should insist they do it. Unfortunately, there is a lot we don't know about the stocks we may be destroying. Where we just don't know what the risks are, the experts should say so. The public has its own way of assigning risks when scientific data are lacking and we do not know the consequences of our choices.

Selecting an alternative and deciding how much risk to accept is a matter of individual values. An irrigator, for example, may be as concerned about the fate of threatened salmon stocks as you and I but his values may let him accept more ecological risk and less economic risk than you or I would be willing to accept. Scientific data can define the risks but there are no scientific rules to tell us how much risk is acceptable, and it's probably better that way. You and I won't make the final decision. We have given that responsibility to others. But we have a right and an obligation to let the decision-maker know where we stand on these important value judgments.

Very few decisions are made this way and that is one of the reasons we have reached this point of crisis. Too many decisions were made without informed public input and without accountability to the public for the risks taken. Don Erman and Edwin Piester wrote in the March-April, 1989 issue of Fisheries magazine on this subject. They said too often the experts hide decisions that are really questions of public values under the guise of technical or scientific questions. They made a strong argument to biologists "don't fear the common man" and face up to the tough questions and conflicts that arise from differing values. When the scientist or administrator does otherwise, they in effect substitute their values for the public's values. Of course, it's easier than facing up to the tough, value-based conflicts which often have no middle ground. In fact, it's very possible that the debate over Columbia River salmon will never get to the evaluation of alternatives and risks and the honest airing of values. I expect you will see the cautious approach, the one that permits win win optimism while limiting the argument to "scientific" questions. This approach will lead us to turn again to technology -hatchery technology. I say again because this won't be the first time or second or third time we have optimistically predicted that hatcheries will cure all the shortcomings of management on the Columbia.

Aldo Leopold had a few appropriate words on optimism generated by comfortable, old modes of thought and action. He said, "Timidity, optimism, or unbending insistence on old grooves of thought and action will surely either destroy the remaining resources, or force the adoption of policies which will limit their use to a few."

Jim Lichatowich is a fisheries biologist and conservation writer who lives in Sequim, Washington, U.S.A. This article is from The RiverKeeper which is published by Oregon Trout, P.O. Box 19540, Portland, Oregon 97219, USA.