SHERKIN COMMENT

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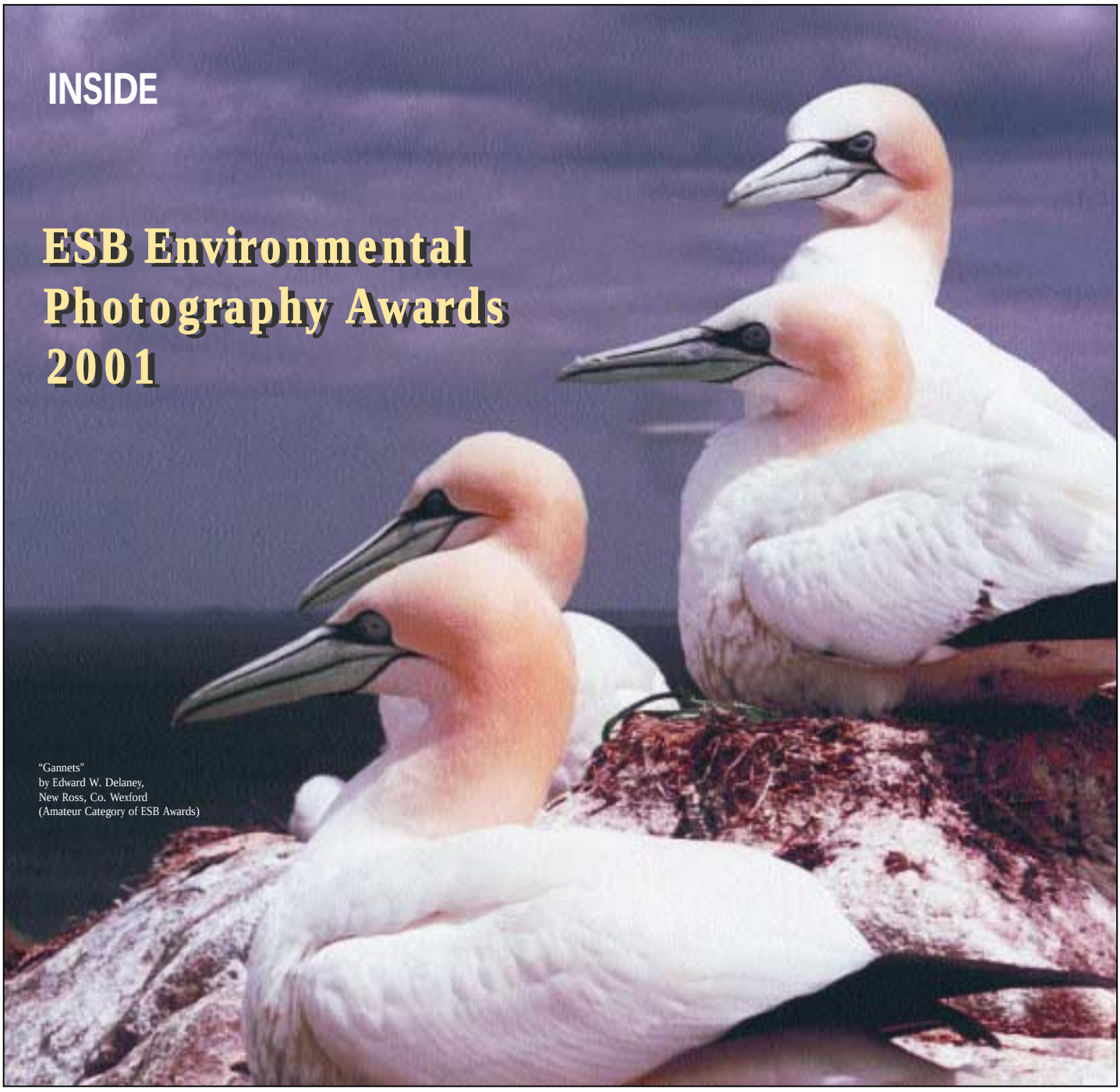
INSIDE

ESB Environmental Photography Awards 2001



"Gannets"
by Edward W. Delaney,
New Ross, Co. Wexford
(Amateur Category of ESB Awards)

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Editorial

Difficult Choices on Whales

By Matt Murphy

WHALES or trawling, what will cause the bigger heartache? Have we made any meaningful, long-term steps toward shouldering the burden of wisely managing our seas? We do not have a choice in these matters. We either manage to sustain and protect our aquatic resources or stand by and watch the oceans change to areas without resources, opportunity or hope.

In the late 1980s, three California Grey whales became trapped in a Bay in Alaska as ice choked off their route to the open ocean. Their plight was daily news for more than three weeks. A massive, multimillion dollar, effort via helicopters, icebreakers and hundreds of volunteers was involved in the rescue. It is uncertain if any of the whales was brought to freedom. While this rescue operation went on, Native Siberians (Inuit) were hunting the same species for food. Since 1982, the shores of Cape Cod Bay have experienced six major strandings of pilot whales resulting in 23 to 97 deaths each time. This year 56 died. In each case, large numbers of people and support equipment were brought in to save the whales. Whales rarely survive being stranded. In both these situations the whales were probably hunting food. The hunt for food is also causing the death of thousands of seabirds annually trapped in fishing nets or hooked on longlines. National Government's, the media and many NGO's have shown little or no interest in the massive and continuing murder of the seabirds or what it means. Why, one must ask? Is it because birds are small and usually can be counted in the millions? Are the global populations considered "not at risk?" These events tell a story. Is anyone listening?

Whales, dolphins, porpoises, seals and sealions are sacred animals to many people. The accidental killing or beaching of even one of these animals will receive massive media attention worldwide. Here in Ireland, the orphan seal pup will be featured in the media while on the same day, a human death will get but a few lines. It is right that sea mammals get protection, but are they entitled to their present status as being untouchable?

With some notable exceptions, marine mammal populations are approaching levels unseen in over a century. The Antarctic Minke Whale population is particularly successful. Marine mammals eat fish and the food that fish eat. Because of this simple fact, their future is troubled, especially those whose numbers are rapidly increasing. It is estimated that the world's general population of whales doubles every 15 to 23 years. In a short few years, our revered marine mammals will become major obstacles to re-establishing and maintaining the seafood production that humans now enjoy. At present, the 75 species of whales annually consume approximately 250 to 440 million tonnes of marine life. The annual world fisheries catch is about 90 million tonnes. Whales are better at catching seafood than humans. If the marine mammal population grows at its present rate something will have to give.

> *"In a short few years, our revered marine mammals will become major obstacles to re-establishing and maintaining the seafood production that humans now enjoy."*

If marine mammals continue to receive sacred status then countries world wide will have to begin to reduce their annual fish catches to sustain other fish eaters. The needs of marine mammals, seabirds and humans will create conflicts between the objectives of such groups as International Whaling Commission (IWC) and fishermen. Failure to make this adjustment is occurring around the Northern Pacific and marine mammals are starving to death. Commercial fishery landings are declining, particularly in inshore areas where marine mammals are concentrated. In human terms, the over-harvesting of our limited aquatic resources means the loss of jobs, careers and opportunities.

The immediate issue that needs to be addressed is the population of 760,000 minke whales in the Antarctic Ocean. Their increasing population is combining with global warming to put a major strain on the entire Antarctic ecosystem. These questions need answers:

(i) Have the Minke's exceeded the regions carrying capacity for themselves?
(ii) Is there sufficient food for the entire community relying on Antarctic food species, including penguin and other seabird populations?
(iii) Is the krill, which many animals feed on, being overfished?
(iv) Is the recovery of other whale species being held back because of the dominance of the minke whale?

If fishing nations world-wide are not prepared to curtail their commercial fishing especially in Southern Oceans, then the pressure will come on the IWC to introduce a "cull" of some whale stocks. Can you imagine the political consequences of making either choice? But, clearly that time is coming. That choice is difficult enough, but can you imagine planning the actual cull. To even mention the word cull and sea mammals would be considered as a treasonous act to many. Without some management, populations of whales and seals continue to increase or starve to death as a consequence of our fishing practices. At the present rate of events there will be no options but to do so. Observers must insure no return to the atrocious ways of the past. Do we trust the whaling nations to wisely manage the stocks? They haven't earned our trust yet.

If the world's seas are to be sustained, Governments, fishermen, NGO's, and you must address the major issues as well informed equals. If proper controls are not put in place then the ecosystems of the world's seas will become as barren as the Sahara Desert. Then everyone will want solutions but the pendulum will have then swung too far for "easy" solutions. Where is the wise and courageous leadership we need? All species must have equal billing. There cannot be discrimination amongst us.

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An Awesome Journey

The Spring Migration of Brent Geese

By Oscar Merne

SEVERAL years ago I was on a day-flight from Amsterdam to San Francisco. The first part of the flight, in a Boeing 747 jumbo jet, cruising at over 1,000 kph at an altitude of 11,000m, was uneventful, with heavy cloud obscuring the land and sea below. But over the coast of south-east Iceland the cloud gave way to completely clear conditions, which remained so all the way over the Denmark Strait, Greenland, the Davis Strait, Baffin Island, the tundra, taiga and prairies of Canada, over the Rocky Mountains and to the Pacific Ocean coast at Vancouver Island. As we flew over the arctic wastes I found myself thinking of the epic journey of the Pale-bellied Brent Geese which spend each winter on the benign and temperate coasts of Ireland. Here was I, cocooned in a warm and comfortable aircraft, propelled by four enormous jet engines. By contrast, the little Brent Geese have to do it all themselves, fuelled by the fat reserves they manage to accumulate from grazing on Irish saltmarsh plants, green algae and coastal grasses.

Our Brents spend the summer on the islands of the Canadian high arctic, as far west as eastern Melville Island (75 degrees N, 110 degrees W), and above 80 degrees N on Ellesmere Island. We know this from recoveries of ringed birds, mostly ones "banded" by researchers from the Canadian Wildlife Service, but also by expeditions from the UK (Wildfowl and Wetlands Trust) and Ireland (University College, Dublin). In earlier years, many of the recoveries of ringed birds resulted from Brents being shot on their Irish wintering grounds, but after the species was fully protected information on the origins of our birds came mainly from field sightings of geese, which have been fitted with telescope-readable neck collars or large-inscription leg rings.

So, we have good information on the distribution of the Pale-bellied Brent Geese during the seven winter months from October to April (when they are in Ireland), and a reasonable idea of their summer distribution in the Canadian high arctic. We also know, from aerial and ground surveys (and ringing recoveries), that the Brents stage in spring and autumn in western Iceland, where they rest and feed for two or three weeks before continuing their migrations. The journey between Ireland and Iceland is relatively straightforward for a migratory goose. The distance from the north coast of Ireland to the south coast of Iceland is about 1,100km, a journey which Brent Geese can probably accomplish - in favourable weather conditions - in 15-20 hours flying. But how do they travel from western Iceland to the Canadian high arctic - with the enormous obstacle of Greenland in the way? The direct route would take the geese 300-400km over the Denmark Strait to the east coast of Greenland, a journey which should not present them with any great difficulty. But then they would have to cross the great icecap at a point where it is 1,000km wide and over 3,000m high. This leg of the journey would be an incredible feat of endurance, with temperatures down to minus 50 degrees Celsius, and greatly reduced oxygen levels at high altitude. On the west coast of Greenland south of 74 degrees N there are lowlands with suitable habitat where geese have another major sea crossing (perhaps 500km or more, depending on their route) to Baffin, Devon or Ellesmere Islands. Those that continue on to Melville Island have another 900-1,000km to go - over mountains, glaciers, sea pack-ice, and some relatively benign coastal plains.

I contemplated all this while flying over this awesome landscape in my jumbo jet and I have to say I had doubts about the physiological ability of these small geese to make the journey by this route - particularly the crossing of the Greenland icecap. Perhaps the Brents took a longer but less demanding route around Cape Farewell at the southern tip of Greenland.

This spring my doubts about the crossing of the Greenland icecap were dispelled. The National Geographic Society provided funding for six Pale-bellied Brent Geese to be fitted with miniature satellite transmitters so they could be tracked all the way from Ireland to their breeding grounds. This investigation is part of a study of the Canadian-Irish Pale-bellied Brent Geese being undertaken by the Wildfowl & Wetlands Trust, the Irish Brent Goose Research Group, National Parks & Wildlife, and our colleagues in Iceland. In May a flock of Brents were captured in western Iceland during their spring stop-over, and six birds were fitted with transmitters. Unfortunately two of these birds came to a bad end: one is thought to have been shot at Disko Island in western Greenland, having successfully crossed the icecap; the other stayed for some weeks in western Iceland with a group of (presumably) non-breeding Brents and then seems to have died. The surviving four made a quick journey over the Denmark Strait, crossed the Greenland icecap by a wide, high route, continued over the David Strait, and then split and dispersed to different locations within the breeding range. At the time of writing they are hopefully busy rearing a new generation of goslings. The transmitters have been programmed to "sleep" during the breeding period and to reactivate at the beginning of the return migration in autumn. That way it is hoped the batteries will last long enough to track the birds back to Iceland and Ireland in September and October. You can follow the story of these Brents on www.wwt.org.uk/brent.

Photos: © Oscar Merne

The Pale-bellied Brent Goose.

Above: Pale-bellied Brent Geese spending the winter months on the Slobs in Co. Wexford.
Right: The distance from the north coast of Ireland to the south coast of Iceland is about 1,100km, a journey which Brent Geese can probably accomplish - in favourable weather conditions - in 15-20 hours flying.

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Oceanic Puffer Fish (*Lagocephalus lagocephalus*)

PUFFER FISH in Irish Waters

By Declan T. Quigley

PUFFER FISH, also known as Globefish, Blow Fish, Blowies, Toadfish, Toados (Australia), Tobies (S. Africa) and Fugu (Japan) belong to a relatively large family of fishes (Tetraodontidae) that includes 19 genera and about 121 species. The family, however, is poorly represented in both the Mediterranean Sea and the NE Atlantic, where only 4 genera and 6 species have been recorded.

Of these, the Brown-backed Puffer Fish (*Lagocephalus spadiceus*) has only recently been recorded in the SE Mediterranean (Egypt, Israel, Turkey and Aegean Sea) as a lessespsian immigrant from the Indian Ocean via the Suez Canal.

Bennett's Puffer Fish (*Ephippion guttiferum*), which is normally found from Angola to Morocco, also appears to have been extending its range northwards into the SW Mediterranean (southern Spain and Algerian coast), while a single specimen has been recorded from the Bay of Biscay.

Similarly, the Band-tail Puffer Fish (*Sphoeroides spengleri*) and Sharp-nosed Puffer Fish (*Canthigaster rostrata*), which are normally found on both sides of the Atlantic from Angola to Madeira (in the E Atlantic) and in the W Atlantic from New England (including Bermuda) to Brazil (*S. spengleri*) and from Bermuda to the Gulf of Mexico (*C. rostrata*), have been recorded as far north as Portugal (*S. spengleri*) and Morocco (*C. rostrata*).

Puffer Fish are particularly rare in northern European waters where only 3 species have been recorded and only 2 of these from UK and Irish waters: Oceanic Puffer Fish (*L. lagocephalus*) and Blunt-head Puffer Fish (*S. pachygaster*). However, it is possible some of the species mentioned above might also occur, albeit rarely, in NW European waters.

Puffer Fish are generally found in shallow tropical and subtropical inshore waters, around reefs, in sea grass beds and in estuaries, while several species live exclusively in freshwater (e.g. R. Nile, Congo and Niger) and a few are pelagic (e.g. *L. lagocephalus*). Most are stout-bodied, rounded fishes with small fins, moderately large eyes, and small slit-like gill openings. They are not powerful swimmers, but propel themselves by means of gentle waving dorsal, anal, and sometimes pectoral fins. All have four teeth, the pair in each jaw forming a parrot-like beak.

When threatened, Puffer Fish are well known for their ability to inflate themselves like a balloon with either air or water and thus double or treble their size. Many species also have spines partially buried in their skin, which, when inflated, stick out like a pincushion. It is curious too that a group with two such well-developed defensive mechanisms should also be acutely poisonous if eaten. Certain parts of Puffer Fish, particularly the gonads, liver, gut, skin and blood, contain a violently paralysing neurotoxin, tetrodotoxin (TTX), which is 1250 times deadlier than cyanide. A single milligram of TTX, an amount that can be placed on a pinhead, is sufficient to kill an adult human, while smaller amounts can suppress all outward signs of life, yet leave a victim's consciousness intact. Nevertheless, in certain parts of the world, Puffer Fish (or Fugu) are regarded as a delicacy. Indeed, about 20,000 tonnes are annually prepared for aficionados (who pay up to $400 per serving) by specially trained chefs in 1500 Japanese licensed restaurants. However, despite the tight controls, fatalities are not uncommon, and Fugu claims 70-100 lives each year.

The Oceanic Puffer Fish is one of the few exclusively pelagic species that lives in the surface waters of the tropical Atlantic, Indian and Pacific Oceans. It has only rarely been recorded in NW European waters, and its presence there is undoubtedly due to vagrant drift from warmer waters of the SW Atlantic.

The species has only been recorded on 7 occasions in Irish waters (all from the SE, S and SW coasts) and only twice during the last 100 years (Table 1). Most of the specimens were recorded between August and December, and may have been disorientated due to decreasing water temperatures.

Although most of the 20+ UK specimens have been recorded from the English Channel, two specimens were taken off the Orkney Islands (N Scotland) in 1853 and these would appear to be the most northerly records for the NE Atlantic. Very little is know about the species' biology, but it appears to feed on squid and crustaceans.

Blunt-head Puffer Fish (*Sphoeroides pachygaster*), Dingle Bay 18.09.1989

The Blunt-head Puffer Fish is normally found circum-globally in tropical and temperate seas: from South Africa and St Helena to Nigeria and Azores (E Atlantic); New Jersey to Argentina (W Atlantic), Australia and New Zealand (SW Pacific), Japan (NW Pacific), Hawaii (mid Pacific) and both sides of the Indian Ocean. Within these areas, the species appears to occupy a wide range of habitats, including deep oceanic water (down to 480m) and shallow inshore areas on sand, mud and rocky substrates. Indeed, the species' wide range of adaptability may explain its recent phenomenal invasion into the E Mediterranean and its successive northward extension into NW European seas, including Irish (Table 2) and UK waters. Indeed, a total of 5 specimens have been recorded in Irish waters since 1984, including a specimen from the Co Donegal coast, which is the most northerly record for the NE Atlantic.

The recent increase in Puffer Fish and Trigger Fish abundance (see Sherkin Comment 1997, No. 23), as well as other warm water species, in both the Mediterranean and NW European waters, may be another indication of significant climatic changes worldwide.

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Date	Location	Method	T.L.	F.L.	Wt.
c1837	Tramore, Co Waterford	stranded			
September 1850	Wexford		45.0		
26.08.1852	Ardmore, Co Waterford		55.2		
December 1854	Ardmore, Co Waterford				
11.10.1949	Dingle Harbour, Co Kerry	seen on surface	62.0		2327
?	Kerry Coast				
15.08.1969	Oysterhaven, Co Cork	seen on surface	47.1	43.5	910

Table 1. Oceanic Puffer Fish (*Lagocephalus lagocephalus*) in Irish Waters

Date	Location	Depth	Method	T.L.	S.L.	Wt.
Jan-84	NW Ireland	100-150	pelagic	15.7	13.7	
	55° 10'N, 09° 12'W		trawl			
19.08.1989	SW Ireland		trawl	30.0		
	51° 10' N, 08° W					
18.10.1989	Dingle Bay		trawl	34.5	30.0	1015
	SW Ireland					
Sep-90	56km W Fastnet Rock	160	trawl	37.0	32.5	1425
	SW Ireland					
Jan-02	SW Ireland		trawl			

Table 2. Blunt-head Puffer Fish (*Sphoeroides pachygaster*) in Irish Waters

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What is a Marine Protected Area?

By Joseph Uravitch

MANY accept the definition developed by the World Conservation Union: "any area of the intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment" (IUCN, 1988; Kelleher, 1999). But, marine protected areas (MPA) mean different things to different people, based primarily on the type of protection provided. The concept of an MPA has been around for centuries, the term has been in use for over two decades.

MPAs are used as management tools to protect, maintain, or restore natural and cultural resources in coastal and marine waters. They have been used effectively internationally, to conserve biodiversity, manage natural resources, protect endangered species, reduce user conflicts, provide educational and research opportunities, and enhance commercial and recreational activities (Salm et al. 2000).

There are many different types of MPAs. For example, MPAs may include regional or national marine sanctuaries, fishery management zones, seashores, parks, and monuments, critical habitats, wildlife refugees, estuarine research reserves. MPAs have different shapes, sizes, and management characteristics, and different purposes. Biscayne National Park is the largest marine park in the US National Park System, with 95% of its 173,000 acres covered by water. The area was set aside in 1968 to "...preserve and protect for the education, inspiration, recreation and enjoyment of present and future generations a rare combination of terrestrial, marine, and amphibious life in a tropical setting of great natural beauty" (Public Law 90-606).

Some MPAs are sanctuaries where little, if any, use or human disturbance is permitted. Others are specially managed areas designed to enhance ocean use. The range includes areas closed to public uses, such as the UK, Marine Special Area of Conservation at the deepwater coral reefs off NW Scotland; to sites that permit access but do not allow consumptive uses, such as Edmonds Underwater Park in Washington (Murray,1998); to areas where the use of specific types of fishing gear is restricted, such as the fishery management areas off Iceland; and to multiple-use areas, such as the Florida Keys National Marine Sanctuary (National Ocean Service, 2002). MPAs also protect specific natural and cultural resources. The near-shore Bristol Bay fishery closure area off Alaska protects king crab aggregations and habitat important to this valuable fisheries species (Code of Federal Regulations, 2000). The Virgin Islands National Park protects coral reef habitat and sea-turtle nesting areas (National Park Service, 1998). Midway Atoll National Wildlife Refuge protects habitat for endangered species and historical artifacts from the World War II battle that occurred there (U.S. Fish and Wildlife Service, 2002). The Monitor National Marine Sanctuary off the coast of North Carolina protects the site of this famous Civil War-era shipwreck (National Ocean Service, 2002).

"MPAs [Marine Protected Areas] are used as management tools to protect, maintain, or restore natural and cultural resources in coastal and marine waters"

MPAs can range dramatically in size and shape. There are small areas, such as the 14-acre Farnsworth Bank Ecological Reserve in Los Angeles County, California (McArdle, 1997), and large areas, such as the Monterey Bay National Marine Sanctuary in California, which covers 5,300 square miles (National Ocean Service, 2002).

MPAs differ in location and jurisdiction. Some MPAs are in national waters only, which, for the most part, extend from three to 200 miles offshore. These are managed under national laws by federal agencies. Some MPAs are found in coastal waters where both regional and national laws may apply. MPAs may overlap. The Channel Islands National Marine Sanctuary and Channel Islands National Park share jurisdiction over some ocean waters (National Academy of Public Administration, 2000). Finally, some MPAs, such as the Cape Cod National Seashore in Massachusetts, include both marine and land components (Bauman *et al*., 1998).

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THE LARGEST SAND CASTLE IN THE WORLD

By Anthony Toole

THOUGH the ferry crossing from the Queensland coast takes barely ten minutes, once you land, you know you are in remote territory. People have disappeared here, and accidents often lead to rescues on an epic scale. This is strictly 4WD country. An ordinary car would not get five yards. For this is Fraser Island, the world's largest island composed entirely of sand.

We set off from Brisbane shortly after 8 a.m. Our journey took us past the precipitous, spiky Glasshouse Mountains, through miles of eucalypt and pine forests and the cane plantations that provide Australia with 95% of its sugar. Four hours after leaving the city, we arrived at Inskip Point, just north of Rainbow Beach, and transferred to our 4WD vehicle.

On leaving the ferry, we drove a short distance along a deeply rutted track that threw us about without mercy. Sea eagles circled over the trees and dingoes mooched around in the scrub vegetation, scavenging for scraps that might be tossed away by travellers. We then broke through a short section of soft sand into which we sank up to the axles, before emerging onto the seashore. We were now on the Great Sandy Highway: 75 miles of beach, that runs up the eastern side of Fraser, and serves not only as the main thoroughfare but also as the island's only airstrip.

The sand of which Fraser Island is composed is rich in oxides of titanium and zirconium, and originates in the Blue Mountains, west of Sydney. It is washed by rivers into the sea, then carried northward by ocean currents, to be deposited here, rising in some places to a height of 200 metres. The western coast is more than 700 000 years old, while that on the east is less than 500. From east to west, a distance of less than ten miles, the island displays several distinct ecologies, demonstrating how the land has evolved through time.

The eastern strip shows young vegetation and newly formed humus. Farther inland, where the humus has had time to build up, stand tall, dense rain forest trees. Travelling west, where the soil has become old and depleted, one passes into a region of scrub and sand held together by 300 000-year-old roots. And finally are the mangrove swamps and rich marine life of the west coast.

Fraser Island is named after Eliza Fraser, the wife of the captain of a ship that was wrecked near here in the 1830's. The survivors managed to make their way to the island and held out, with help from the aboriginal population, until their rescue, some months later. Eliza Fraser's story was the inspiration for the novel, 'A Fringe of Leaves', by Australian Nobel Prize winner, Patrick White.

We drove for about 20 miles up the coast, sometimes splashing into the edge of the sea, but slowing down only to cross the many creeks that ran out of the scrub. At Eurong, we stopped for a short break.

Photo: © Brendan Toole

Fraser Island dingo

This tiny village has chalets and camping facilities as well as a few amenities like shops and a garage. A visitor centre supplies information about the walking and vehicle routes. There is also a swimming pool at the hotel. Neither here nor on our drive up the coast did we see anybody in the sea. This was because of the threat posed by sharks and poisonous jellyfish that abound in the inshore waters.

I strolled out onto the beach, but retreated rapidly when I turned to see two light aircraft taxiing toward me at an alarming speed along the sand.

We now moved inland, the smooth progress of our coastal run replaced by the staccato bumpiness of soft sand and tree root. On either side of the track, at frequent intervals, lay shell middens left by centuries of aboriginal occupation.

Around us grew the darkness of the rain forest: tall eucalypts and trees with exotic names like tallow wood, brush box, black butt, Queensland kauri. And giving impenetrable ground cover and a look of the prehistoric, was a dense underlayer of cycads. The trees themselves hosted huge outgrowths of staghorn ferns and basket ferns: epiphytes that, unlike parasites, took no sustenance from the trees themselves, but merely hitched a ride on their branches, feeding on the water that trickled down the trunks and the discarded leaves that fell from the high canopy.

Much timber was cut down on Fraser Island from the 1860's to 1991. The main tree to be harvested was satinay, a species almost unique to the island. Its value lay in its resistance to a marine creature that bores into wood. Because of this resistance, satinay was used to line the Suez Canal during its construction.

We stopped at Central Forest Station for a more leisurely look at the vegetation, but our visit was cut short when the rain forest began to live up to its nature. Within seconds, we were soaked, though the heat prevented any discomfort.

In the continuing rain, we drove to Lake Mackenzie, one of around 40 freshwater lakes that are dotted over the island. Some of these are called window lakes, and are part of the water table, drawing supplies from underground reservoirs. Mackenzie, on the other hand, is an example of a perched lake. It has no rivers leading into or out of it, but is fed by rain and loses its water only by evaporation. The water is held in the lake by a watertight bed of sand and compacted humus.

Photos: © Brendan Toole

Fraser Island sand dunes

The ecology of Fraser's perched lakes does not rid itself of pollution, and traces of radioactive fallout from the British nuclear bomb tests of the 1950's can still be detected in the sediments. This said, however, the radioactivity is only marginally above background level, and there is no additional source of pollution other than the natural decay of the forest vegetation.

We stopped at a small clearing, and despite the rain, ran along a short track to the lakeside. As the jungle opened out abruptly, it revealed a scene that was as magical as it was unexpected. The shore was of white sand, and was backed by the forest. It had the appearance of a picture advertising a South Sea paradise. This was, of course a South Sea island, but we were in the centre of it, not on its coast.

About two dozen swimmers bathed in the clear, green water. And as if activated by a switch, the rain ceased, and a minute later, a hazy sun came out.

Photo: © Brendan Toole

Photo: © Anthony Toole

Photo: © Anthony Toole

The sand was damp, but easily covered by a towel, for now that we were here, we had to sample the waters. It was like a swimming pool, warmer in fact, without any of the shivering hesitation that visitors from the British Isles expect as the norm. The lake was totally transparent. Its gently sloping floor leading to deeper water, and the lack of any currents meant that it was completely safe, and could be enjoyed by swimmers of any level of skill or none.

By late afternoon, we were on our way back to Eurong and the Great Sandy Highway. Frazer Island is not quite in the tropics, but is sufficiently close for its dusks to fall rapidly and early. By the time we reached the ferry, it was almost dark.

A single day is not enough to give more than a cursory appreciation of Fraser Island. One really needs to stay for a few days, much of it in the same place, so that some time could be given to encountering the richness of its fauna, which matches that of its vegetation. As well as dingoes and eagles there are brumbies (feral horses), frilled lizards, tortoises, goannas. And from high points above the shore, turtles, manta rays, sharks, dolphins and even humpback whales can be seen.

Left: Great Sandy Highway.

Bottom Left: Epiphyte - staghorn fern, Central Forest Station, Fraser Island.

Bottom Right: Lake Mackenzie.

Such is the magic of this unique place that no visit would be long enough. A few days after leaving, one would want to start planning a return visit.

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Catching Sand

By Michael Ludwig

COASTAL erosion is a daily and storm-induced occurrence. Because of it, a whole industry has been spawned to deal with the symptoms, if not the causes. We have seen an unbelievable array of upland and aquatic "solutions" to eroding beaches. While the situations are often times truly sad, the solutions are more routinely outright funny. Take artificial seaweed for instance. This erosion control technology was sold as a means of reducing wave height by mimicking the natural wave dampening effects of marshes, thereby reducing erosion. Rows of plastic strips with a piece of floatation attached to each tip were embedded in the seafloor offshore of a beach. Parents hated the feel of the plastic streamers when swimming, kids liked to tear them up and wave erosion was not seriously altered. In a storm, the individual fronds or whole rows of the stuff would break free of their anchors and wash ashore with the other wrack. The proponents offered any number of different materials. Unfortunately, none of them were able to reduce waves or be very successful. Floating tyre breakwaters were the most common alternative. Masses of tyres, connected together, can reduce wave size, in some situations. In coastal situations the bundles tend to break apart and litter beaches for miles. We got so tired of loose tyres that all floating tyre breakwaters in the Northeast, were required to have each tyre marked with the owner's name to speed the cleanup. Tyre breakwaters did recycle a lot of old tyres.

Enter the wave barrier proponents. Their designs attempt to stop or reflect waves. By using inertia, waves can be reduced. A heavy, floating structure (often concrete) sits at rest in the water. A wave strikes it and expends its energy trying to move the structure. The barrier absorbs and reflects the wave energy. This idea was used for the landings at Brittany in World War II. Large concrete floats are used most often. The floats work well on days with calm or modest wave conditions and even provide a place for bathers to rest. However, on stormy days the floats would twist and turn. Concrete does not twist and turn it tends to break. Many of the wave barriers sank. Their shape made excellent reef habitat, but beach owners wouldn't leave them where they sank. The technology has improved, but a thorough wave analysis of a site should be used to determine if they are appropriate. The newer designs create problems with water circulation as well as trapping fish and debris. They have a poor record in ocean settings.

When a wave breaks on a beach it creates a swash-zone where water runs up and down the beach face. Some of the swash sinks into the sediment and some retreats back into the sea. The runup pushes sand up the beaches as the energy of the wave is depleted. The fallback pulls sand down the beach. When waves strike a beach at an angle, the swash cycle moves sand along and off beaches. The process is known as littoral drift. Why not place something on the beach that disrupts the cycle? Enter the "sand grabber."[1] Rows of concrete, building blocks were fastened together with reinforcing rod (rebar), to form cubes through which the runup water and its load of sand would pass. Once through, the sediment-laden water lacked the energy to pass back and the sand was grabbed. Good idea, but a failure in use. On stormy days the blocks would grind against each other and as the rebar snapped the blocks were breaking into pieces. When the storm passed, the broken pieces made the beach unusable. Because the rubble stayed on the builder's beach, the blocks did not require to be marked.

"As each wave pushed sand up the beach, disappearing water would leave the sand behind and the beach would grow."

A modification of the sand grabber was the beach guzzler. Instead of piles of concrete blocks, the guzzler system uses pumps to suck water out of the sand in the swash zone. The pumping robbed the sand and water mixture of the erosive fallback half of the cycle. A wave would strike the beach and travel up it only to have the water pulled into the sand. As each wave pushed sand up the beach, disappearing water would leave the sand behind and the beach would grow. These designers often forgot to see if there was a source of new sand moving into the clutches of the mighty water pumps. Beach goers were afraid they would be sucked into the beach. The operations used noisy pumps and lots of pipes. The system didn't grow beach but did erode areas where the water from the pumps was discharged. Beach users were annoyed.

What does work? Actually, nothing eliminates beach erosion. Sacrificial beach nourishment postpones the inevitable and creates the least amount of complications. Curiously, from an ecological viewpoint, eroding beaches, even without humans, are not very good habitat for most species. Beaches are always being changed by wind and water action. Some aquatic species take advantage of the constantly moving habitat to help them prey on confused organisms. Save some money, buy the property overlooking the beach, it's a lot safer and may last longer.

[1]Use of tradenames is not an endorsement of the product but meant solely to identify a concept.

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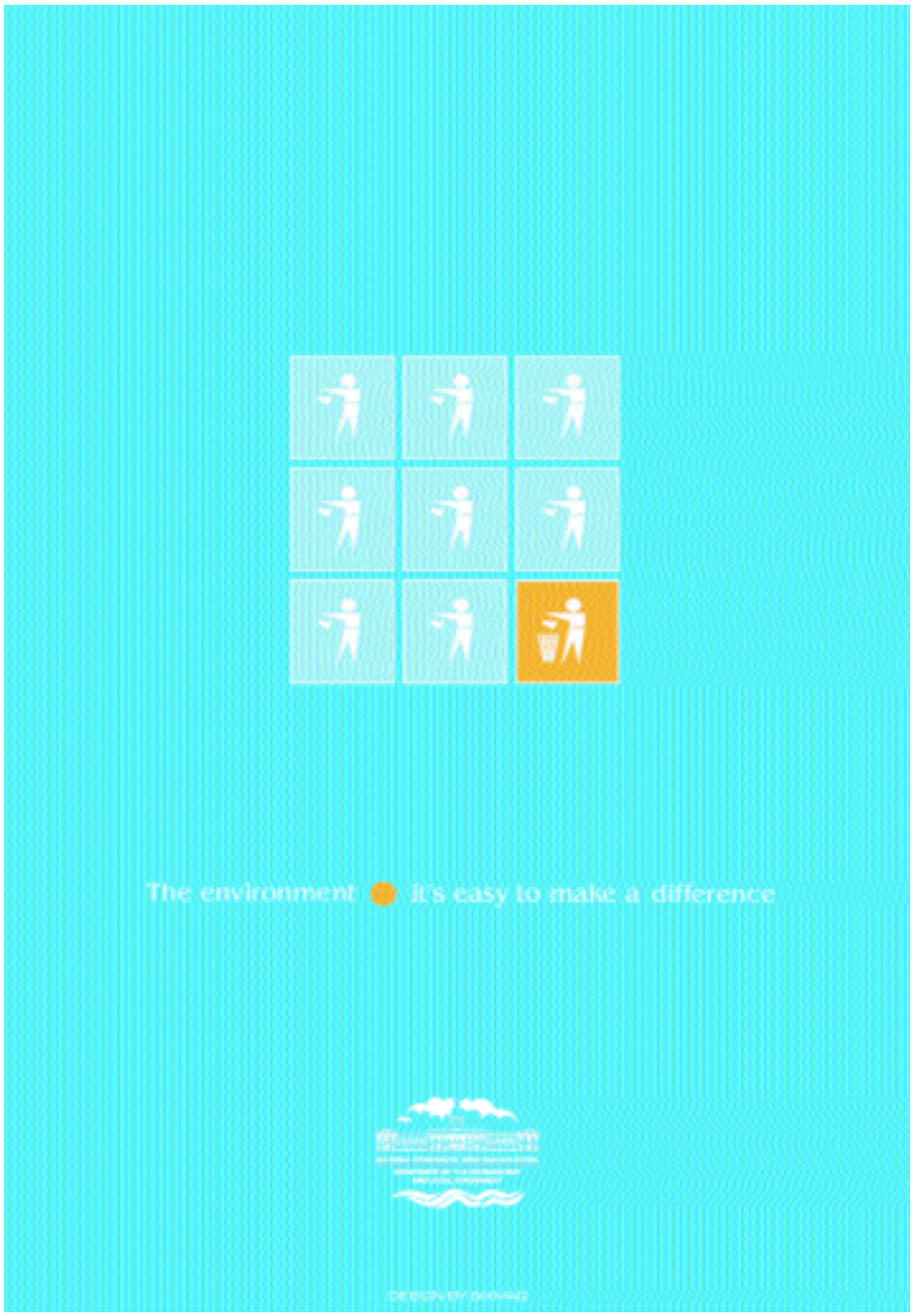
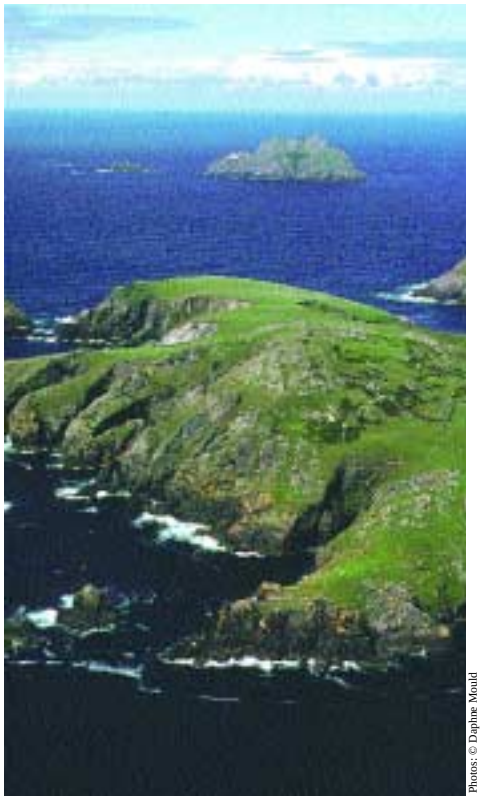




Photos: © Daphne Mould

Across Inishvickillane to the Tearaght.

Monastic remains and old field walls on Inishvickillane.

Inishnabro and Inishvickillane.

Ireland's Last Outposts

By Daphne Pochin Mould

IF you fly low along the great northern cliffs of Mount Brandon and look west, you see a coastline and mountainy peaks rising from it. It is an illusion. Come closer, and the mainland ends, and the peaks resolve into the six Blasket Islands set in a sparkling sea. Yet it is not all illusion, this is a drowned landscape. Flooded valleys - now Dingle Bay, the Kenmare River, the Skellig rocks and the Blaskets - were once mainland linked. There are strange things on those islands, the tiny wrens of Skellig (no long distance flyers), wingless insects on Tearaght and a few plants that dislike salt spray. The islands are the west-most outposts of Ireland, only ocean between them and America. But they are not the west-most point of all Europe, for that is the great cliff of Latrabjarg in Iceland.

Six islands - but only the Great Blasket, with its writers and story tellers and life at subsistence level (that ended with the final leaving in 1953) is well known. And these days, weather permitting, it is easily visited. Yet the long, monotonous whale back of An Blascaod Mór has none of the magic or interest of the outer four, whilst tiny, level, green Beiginis is hardly noticed as the boats speed out from Dunquin to the big island. Thirty-six acres of good grass, between the big island and the mainland, which Charles Smith in 1756 said was very fertile - "will fatten 30 bullocks every summer". Sheep have been grazed there too, and, briefly it seems, a family lived there, in the absence of a well, rowing to the Great Blasket to fill barrels with water.

To the north, is the high rocky Inis Tuasiceart (Englished as Inishtooskert - and there is another of the same name in the Magharees island group.) The fanciful see in its skyline, viewed from the mainland, a man lying asleep. Island goers and archaeologists see the challenge of its cliffs. For it is a high rocky mass, and there is no easy landing near the cliffs. Once up, it is pleasant enough and here are the remains of an early Celtic monastery, associated by tradition with St. Brendan. A ruined chapel, a couple of stone crosses, a beehive cell and other ruins and walls, lazy bed ridges, modified by the people who, off and on, lived there. A family named Keane lived there in the early 1800's, indeed warmly welcoming John Windle and Fr. Casey in 1838, as best they could. The Keanes lived in the beehive hut - there were 8 children. They left, but about 1850 a married couple were out there to mind the sheep (and destroyed much of the old chapel to build walls). The man died, and the island was storm bound: he was big and heavy and the wife had to wait to dismember the rotting corpse and bury the parts, and was found in a distraught state when help finally arrived.

> *"The islands are the west-most outposts of Ireland, only ocean between them and America."*

Inis na Bró and Inish Mhic Uíleán (Englished as Inishvickillane) lie out beyond the end of the Great Blasket. Inish na Bró, the Quern stone island, is high, cliff edged and hard to land on. Yet flying out over it, I was able to discover a rath, a cliff edge "fort", set high on the crag's edge, and traces of hut foundations and old lazy bed ridges. The rock itself was suitable to make quern stones for grinding the grain, and it seems produced them for export. Some may yet be lying there. Thrift (sea pinks) grow all over it and come in early summer. Then you will see a pink island in a blue sea.

Inish Mhic Uíleán, separated only by a narrow channel from an Bró, through which the seas race, is utterly different. It is cliff edged indeed, but green and undulating, with another early monastic site and network of old field walls. Again, here is a ruined ancient chapel, cross and ogham inscribed stones. One of these is now in Trinity College, with a stone lamp in the National Museum, and a broken stone "font" in safe keeping in Mr. Haughey's house on the island. John Windele, in 1838, said the island was "a great place for breeding eagles". Sadly, the fairly recent attempt to get them back, failed, but Mr. Haughey has brought in red deer, which if Foot and Mouth had reached Killarney, might well have saved the unique Kerry species.

Off and on, people have lived on this beautiful island, the Blasket islanders used to go rabbiting to "the Inish". It was on this island that an island fiddle player, alone in his house, heard, or said he heard, music sweeping back and forth over the land. He took up his fiddle and began to play, and gave us one of the liveliest of traditional tunes, port na bpúcaí (the pooka's tune).

And far off, the ultimate Blasket, Tearacht. It looks like another Skellig, and may have had a monastic site, though all trace, if there was one, is now gone. The rock rises nearly as high as Skellig's peak, and a helicopter pilot told me Tearacht was the most difficult of all the rock landings. The lighthouse was established in 1870. Goats, brought in by the light keepers for milk, have caused much erosion and back in the mid 1850's there were sheep that men went out to shear. In 1864, the Port of Dublin bought it from the Earl of Cork for £200, a lot of money then for this jagged bit of rock. It would always have been valued for its birds and their eggs. In the 1970s, the late Dr. Walton of the Zoology department of UCC, led a very full exploration of the island's flora and fauna, from the smallest bug upwards, and found it teeming with life. The zoologists use the light keepers old hoist to get on and off, swung out on a cable above the cave that cuts through the island and then down to the waiting boat. Only the coming of the helicopter has made access to the islands easy.

WHY CONSERVATION?

The Religious Dimension

Photos: © Jenifer Baker

A Hindu temple in Malaysia

By Dr. Jenifer Baker

CONSERVATION and religion are not always thought of together, but the connection becomes apparent if you consider the various reasons for conservation. Three prime reasons (as expressed by Charles Elton, a founder of ecological science) are 1) opportunities for richer human experience; 2) promotion of ecological stability; and 3) right relationship between humanity and other living things. The first two reasons are clearly based on the various values of the environment for human use, such as recreation and food production. The third reason, whilst it is closely intertwined with the first two, is different - it is essentially religious. The religious dimension of conservation is being increasingly recognised, and there have been some exciting international developments in recent years. These are described later, after a closer look at the three prime reasons.

1) Richer experience

Recreational, aesthetic and cultural values underlie the work of many environmental organisations. For example, there may be conservation of countryside and waterways for walking, riding, and angling; and conservation of species that people find appealing and interesting, such as birds and butterflies. Conservation of species in the wild necessarily also involves conservation of the habitats in which the species live (e.g. you can't conserve frogs unless you also conserve ponds!). Cultural values are basic to the conservation of heritage sites, which encompass places of archaeological and historical interest, a wide variety of public and domestic buildings, and industrial sites. There is also educational value - as evidenced, for example, by the use of sea shore sites for school or university field work.

2) Ecological stability

Conservation counteracts the over-exploitation which leads to breakdown of ecosystems and ecological processes that are important to us. A familiar example of exploitation is deforestation, which reduces the 'locking up' of carbon dioxide into tree biomass, and so is believed to contribute to global climate change. Another example is that both deforestation and overgrazing can result in soil erosion (particularly in tropical countries with high rainfall). There is also an argument based on the precautionary principle - we should conserve the full range of natural diversity because its complexity is mind-boggling. We just do not know enough to say what species, if any, can be lost without any undesirable consequences for us.

3) Right relationship between humanity and other living things

This most fundamental reason for conservation does not depend on values for human use such as those mentioned above. All the world's major faiths recognise that there are non-humanistic values, i.e. the natural world is of inherent value as part of the creation - not just because it may be useful to us. A right relationship takes this into account.

The importance of the religious dimension for the work of conservation organisations was expressed in the Assisi declaration in 1986 (co-ordinated by the Worldwide Fund for Nature - WWF). At Assisi, in the Church of St Francis, there was an historic gathering opened by Father Lanfranco Serrini (Minister General of the Franciscans).

The major faiths 'proclaimed through liturgy, scripture, symbol and declaration, where they stood on the issue of conservation. Likewise, the secular forces of conservation looked into their own values and beliefs and began to realise that there was more to this world than they had ever dreamt possible.'

More recently, in November 2000, there was a memorable event held in Kathmandu, Nepal. Following initiatives by WWF and the Alliance of Religions and Conservation (ARC), 11 faiths (Bahals, Buddhists, Christians, Hindus, Jains, Jews, Muslims, Shinto, Sikhs, Taoists and Zoroastrians) pledged 26 'Sacred Gifts for a Living Planet'. The Sacred Gifts are meant to be symbols and catalysts for action, recognising that the world faiths have a total of four to five billion followers - representing an incredible potential for specific initiatives to conserve the natural world.

Here are a few examples. For each of the faiths mentioned below, there is first a short extract from that faith's contribution to the Assisi Declaration, and then a description of two Sacred Gifts pledged by that faith.

Christianity

In his Canticle of Brother Sun, St Francis called all creatures his brothers and sisters because they are God's gifts and signs of His providential and reconciling love.

Catholic Benedictine Sisters are doubling their school programmes aimed at reducing the toxic waste in Lake Erie (N. America). The United Methodist Pension Board aims to convert its $30 billion funds to environmentally responsible 'ethical' investments.

Islam

Unity, trusteeship and accountability, three central concepts of Islam, are also the pillars of the environmental ethics of Islam.

Muslim fishermen will help to save turtle nesting sites in Zanzibar; and the Islamic Government of Saudi Arabia will establish the country's first ever biosphere reserve.

Judaism

We have a responsibility to life, to defend it everywhere, not only against our own sins but also against the sins of others. We are all passengers together in this same fragile and glorious world.

Jewish organisations in the USA intend to reduce energy use in buildings by 10% in three years; and to encourage the use of wood products from sustainably managed forests for synagogues, schools and other buildings.

Finally, the photographs illustrating this article are from a Hindu temple in Malaysia and illustrate the Hindu awareness of nature and reverence for life (reminiscent of the same tradition in Celtic Christianity). It is recognised in the Assisi declaration that traditions such as these, and the Jewish and Christian concept of stewardship, need to be reapplied in our contemporary context.

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

The main qualities of urban sprawl are plain to see from the air. Lost open space and lower aesthetic values are inevitable consequences and independent dwelling units decrease energy efficiencies. These factors can only be managed through careful planning of "smart growth" and managed avoidance of the root causes of sprawl.

The Limitless

By Robert S. De Santo, Ph.D.

A LITTLE recognised leader in the Principles and Solutions of the International Urban Sprawl Debate, Oliver Gillham should be recognised as a source of focus and direction in what is happening and what will happen as a nation experiences an era of bourgeoning economic prominence. He has championed understanding the history of political, social, and economic forces that foster urban sprawl, that frustrate its environmental control, and that result in affluent societies choking on the byproducts of their new found wealth and the independence and mobility it brings individuals. Those prizes of wealth can cost the loss of countryside, clean air, and pure water. Difficult choices for social "progress." That is what Gillham helps us make consciously and responsibly.

As an architect and planner based in Cambridge, Massachusetts, USA, he received a Master of Architecture Degree, with Special Commendation from Harvard University, Graduate School of Design in 1975. He has devoted untiring energies for more than 25 years to understanding and developing plans to create urban centres for rapidly developing communities — plans to change transportation patterns to discourage sprawl, and plans to revitalise downtowns drained by competition from suburban centres. He has worked in both the private and public sectors on projects across the United States and in Australia and India.

Photos: © Robert S. De Santo

Urban Sprawl creates an unbroken monotony of "ticky-tacky" houses that smother landscape and make mobility by automobile a virtual necessity."

The Limitless City

His latest effort to manage the struggle between the growth of wealth and the reason for growth is his newly published treatise, *The Limitless City* (www.limitless city.com). The book provides a clear description of the predominant form of land use in the United States today and its all too familiar pattern of commercial and residential development known as urban sprawl (See Sherkin Comment No. 29 *The Failure of Success*, and No. 30, *Urban Sprawl –The Cursed Blessing of Economic Prowess*). Gillham has consistently sought to discover the source, pattern, and management of urban sprawl. Do we know what it is? Where did it come from? Is it really so bad? If so, what are the alternatives? Can anything be done to make it better?

That search is the essence of *The Limitless City*. It is an accessible examination of those and related questions. Oliver Gillham considers the history and development of sprawl and examines current debates about the issue. The author argues that whether we like it or not, sprawl is here to stay, and only by understanding where it came from and why it developed will we be able to successfully address the problems it has created and is likely to create in the future.

This is the first book to provide a realistic look at sprawl, with a frank recognition of its status as the predominant urban form in America, now and into the near future. Rather than railing against it, Gillham charts its probable future course while describing critical efforts that can be undertaken to alter the future of sprawl and our existing urban core areas. Such a strategic understanding of what it is and what controls it can be realistically developed to direct its

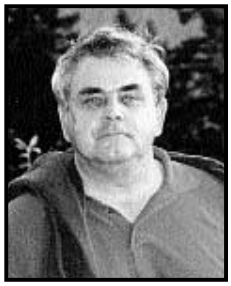
City

Oliver Gillham

consequences giving us an advantage from which any population can certainly benefit.

"The current malaise is hardly new. People in the United States were unhappy with big cities in the early part of the twentieth century, and they were unhappy with the first tendrils of sprawl caused by streetcars in the nineteenth century. But the level of unhappiness that exists today is what causes change – just as it caused the huge exodus from the cities seventy-five years ago. In a sense, it is only logical that Americans should find fault with where they are today, having come this far down the road. It is only natural that a nation should begin to treasure what it has lost in abandoning the cities and that its people should change their minds about what should be built in the future. But the logic of such a process doesn't mean that we, as a nation, should be complacent, either. Problems clearly exist, and if left alone, they will only get worse."

Robert S. De Santo, Ph.D, Vice President, Chief Scientist, and Director of Environmental Planning, Parsons Transportation Group, Inc., 655 Winding Brook Drive, Glastonbury, Connecticut 06033, USA.



Swimming Upstream

By Jim Lichatowich

A FEW weeks ago, Matt Murphy asked me to write an article about my career and what events caused me to spend most of my adult life caring for the Pacific salmon. Responding to Matt's request was not as easy as I first thought. I expect most people spend their careers focused on the immediate challenges. We don't take the time to examine the motives or search for the inspiration that opened up the particular paths that became our careers. Matt's request caused me to make such an examination.

If I could summarise the last 30 years of my career into one word it would be story. We tell stories about nature and our relationship to it and those stories are powerful regulators of how we behave toward the world we live in. Our stories are buried deep in our culture and are rarely examined or evaluated. Gradually over the course of my career I came to realise the overriding importance of our salmon story. I learned that the salmon's real problem wasn't the over harvest, the logging, irrigation, dams, although they are all part of it. The salmon's problem is more fundamental. It's our story.

Like many of the other students at Oregon State University studying fisheries science, I spent most of my early life outdoors, fishing and hunting in all the local wood lots and streams. Fishing and hunting gave me a love of the outdoors, but reading Aldo Leopold's *Sand County Almanac* gave me a purpose, a reason to pursue a career in conservation. Over the years, having Leopold's writings nearby on my book shelf has been like having a great mentor always in the same room, ready to help. He gave me a solid set of principles and a solid story to guide my professional life. However, I also had some practical leaning to do as a biologist.

When I left Oregon State University, like most graduates, I believed that hatcheries were a great salmon management tool. In fact, hatcheries were the solution to nearly all problems faced by biologists in salmon management. If demand for harvest increased beyond the capacity of rivers and their wild salmon stocks, increase the supply by building hatcheries. If habitat degradation decreases the productivity of freshwater habitats, hatcheries will make up for those losses. Hatcheries were the tool of choice for nearly every problem a salmon manager might face.

My first job as a biologist for the State of Oregon was to evaluate the effects of a high dam on the salmon in the Rogue River in southern Oregon. Part of the evaluation of the effects of the dam was an assessment of Cole Rivers Hatchery. The hatchery was built to mitigate for the loss of spring chinook spawning habitat blocked by the dam. To design the best research program, I started asking questions. In particular I started asking questions about the goals of the hatchery program. Not the goals in terms of the number of eggs to be taken or the number of juveniles to be released or even the number of adult salmon returning to the river. I wanted to know how the hatchery would be integrated into the management of the Rogue River's large runs of wild salmon. How would the natural and artificial production systems be integrated so the hatchery compensated for the loss of habitat above the dam without diminishing the remaining wild population below the dam? How would the harvest of hatchery fish be regulated to avoid over harvesting the wild fish? How would the dam be operated to enhance the survival of both hatchery and wild fish?

"Fishing and hunting gave me a love of the outdoors, but reading Aldo Leopold's Sand County Almanac gave me a purpose, a reason to pursue a career in conservation."

I could not find the answers to those questions. The hatchery was being operated as though it were independent of the ecosystem, so to the managers those questions were not relevant. Not only were there no answers to the questions, I found that simply asking the questions branded me as a "hatchery basher," a malcontent. As my career progressed, I became very interested in this unquestionable status of hatcheries. How did a tool, for hatcheries are just that, a tool, reach the status of a "sacred cow". How did the tool reach the point that it was improper to ask questions about its use, even if the purpose of those questions was to improve its performance. I started looking for the answers in the history of the salmon management. For the next ten years my study of the history of salmon management occupied much of my spare time. It was that study that opened my eyes to the importance of story.

The environmental philosopher and theologian, Thomas Berry, tells us that our stories help give meaning and set value to the often confusing signals we find in the world. Stories help guide our behaviour to preserve that which we value. Our deepest crises, according to Berry, occur when our stories no longer protect the things we value. My study of the history of salmon management led to an examination of the story that has guided our behaviour toward these animals. It is a story about the control of nature, regardless of the ecological costs. That story has caused us to view ecosystems as machines producing commodities for markets instead of living things with important gifts. It is a story without a happy ending for the salmon. Eventually my study led to the realisation that the real problem the salmon faced was not the logging, gold mining, irrigation, dams, pollution, grazing and all the other human activities that degrade habitat, although these are very real symptoms of the problem. In the later years of my career, I wrote a book about the failure of our story and the need to build a new relationship between humans and the salmon. That task will consume the rest of my professional life. I will continue swimming upstream.

Jim Lichatowich is a fisheries biologist and author of the award-winning book, Salmon without Rivers: A History of the Pacific Salmon Crisis. He lives in Columbia City, Oregon, U.S.A., and can be reached at jal@salmonwithoutrivers.com

New EPA Environmental Impact Guidelines

By Tadhg O'Mahony

THE Environmental Protection Agency (EPA) has published "Guidelines on the information to be contained in Environmental Impact Statements". These new Guidelines are intended to improve the quality of Environmental Impact Statements (EISs) in Ireland by improving scoping and integration of the Environmental Impact Assessment (EIA) process into both the design and development control processes.

An EIS contains the information necessary to enable the relevant Competent Authorities (the Local Planning Authority, An Bord Pleanála or the EPA) to make informed decisions in relation to the permitting of development projects. An EIS is the basis of every EIA which should ensure that development (e.g. an infrastructural project or a new industry) is undertaken in a sustainable manner.

The Guidelines have been prepared following wide consultation, with the benefit of a number of years in circulation as 'Draft Guidelines'. Experience has shown that the quality (sufficiency and relevance) of the information in EISs is closely related to the methods and procedures employed by the participants. For this reason additional guidance has been provided to address the process that gives rise to the information contained in an EIS. The guidelines stress that EIA (Figure.1) should be a practical and dynamic process of environmental protection.

Figure 1. Environmental Impact Assessment

The Guidelines have been drafted with the primary objective of improving the quality of Environmental Impact Statements in Ireland. Quality improvements will result from better scoping and a closer integration of EIA into both the design and development control processes.

The Guidelines will help to provide developers, competent authorities and the public at large with a basis for determining the adequacy of Environmental Impact Statements, within the context of established development consent procedures. They will also provide a focus for scoping between the parties concerned.

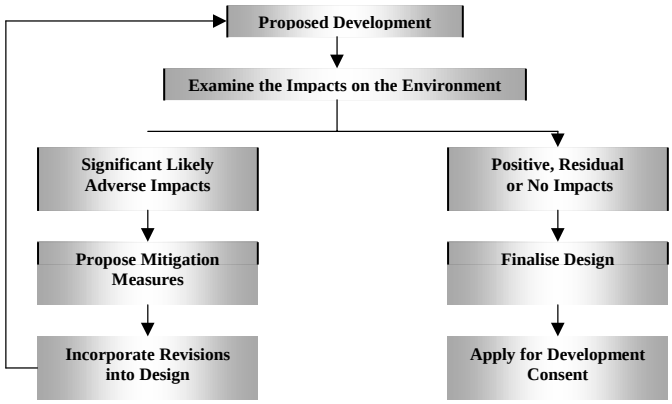


Figure 1. Environmental Impact Assessment

The importance of scoping cannot be overemphasised. It can help to avoid delays caused by requests for additional information. It also provides an opportunity for the exchange of views at an early stage when there is still flexibility in the design of the development. Ultimately it helps to increase confidence in the outcome of the EIA process. All parties should have confidence that the scoping exercise will identify the likely significant impacts of the development and that an appropriate assessment of these impacts is undertaken. This will reduce the time, effort and expense required to prepare and evaluate Environmental Impact Statements and should facilitate public participation in the EIA process.

The Guidelines address a wide range of project types and potential environmental issues. It must be stressed that all of these issues are unlikely to apply to every project. Each EIS is a unique result of site specific issues interacting with the effects of the proposed development.

The new Guidelines supersede the Draft Guidelines first published in 1995 and take account of the practical experience gained in this challenging area as well as recent legislative changes. A period of extensive consultation with interested parties and the public was undertaken by the EPA to ensure that there was a wide input to the Guidelines.

The 1992 Environmental Protection Agency Act (Section 72) provides for the preparation by the EPA of such Guidelines on the information to be contained in an Environmental Impact Statement. The Act further provides that those preparing and evaluating Environmental Impact Statements shall have regard to such guidelines.

The EPA is also currently revising the Advice Notes on Current Practice (in the preparation of EIS) and these will be published at a later date.

The Guidelines are available from:
EPA Publications Office,
Richview, Clonskeagh, Dublin 14.
Ph: 01-2680100; Fax: 01-2680199
Cover price is €13.00

Further information:
Dr. Gerry Byrne, EPA Headquarters, PO Box 3000, Johnstown Castle Estate, Wexford.
Ph: 053-60600
Tadhg O'Mahony, EPA Regional Inspectorate, Inniscarra, Co. Cork.
Ph: 021- 4875540

Dr. Mary Kelly
Newly appointed Director - General, EPA

By Matt Murphy

DR. MARY KELLY has been appointed by an independent selection procedure, as specified in the EPA Act 1992, to succeed Mr. Bill McCumisky as Director General of the Environmental Protection Agency (EPA). Prior to taking up her appointment Dr. Kelly worked with IBEC (Irish Business & Employers Confederation) with responsibility for environmental policy. She was, upto her appointment, a member of the Advisory Committee of the EPA. She had major involvement in establishing REPAK, the industry-led scheme for recycling of packaging waste and was a Board member.

I have known Dr. Kelly for many years through our annual environmental conferences. She has, during her time at IBEC, always had a great commitment to environmental care. She is a very determined individual and was prepared to dig in her heels with members that took a very lax approach to the environment. She was superb in using the carrot rather than the stick.

Dr. Kelly is a very worthy replacement to follow in the footsteps of Mr. Bill McCumisky, who was a m an of the utmost integrity and was dedicated to his work on the environment. I have no doubt that Dr. Kelly will maintain the high standards that the EPA has attained through Mr. McCumisky's leadership.

Recently there has been a very personal attack from the environmental lobby on Dr. Kelly on her appointment as EPA Director General. To quote: "We can have very little confidence in the EPA under her stewardship and it is clear that the sustainability agenda will not be moved forward significantly with the former IBEC spokesperson at the helm."

This statement saddens me greatly. Firstly, it attempts to cast a cloud over the work of the many hundreds of dedicated employees of the EPA. Surely, no one can believe any Director General of the EPA could, if they so wish, influence them in their research work in any way? Secondly, does it now mean that people who have worked in the private sector cannot apply for environmental jobs in the public sector? To be in business does not mean being anti-environment. I believe that the bulk of business people are very pro-environment.

I have been involved for nearly 50 years in creating an interest in the environment, through outdoor activities, and in education and research with Sherkin Island Marine Station. The great void throughout most of this time, as I saw it, was not having an EPA in Ireland. We now have one and we should be very proud of its achievements to date. Sherkin Comment will, in the coming issues, continue to highlight the work of the EPA and comment on its progress if necessary.

25 Years of An Bord Pleanála

Taking Stock After the First 25 Years

By John O'Connor

AN BORD PLEANÁLA (The Irish Planning Board) has a threefold purpose in celebrating the silver jubilee of its foundation - firstly, to mark the Board's achievements over its first 25 years, secondly, to acknowledge the dedicated work of the many people who have served and continue to serve the Board in various capacities and, thirdly, to take stock and ponder our preparedness for the challenges of the future. This 25th anniversary can truly be said to mark a watershed in the Board's existence because it coincides with the ushering in of the new regime under the Planning and Development Act, 2000 which changes and greatly enlarges the Board's role.

The establishment of the Board in 1977 was a major initiative as the appeals function had been with the Minister since the introduction of the planning system under the 1963 Act. By the time of the 1973 Bill, all party support had emerged in the Oireachtas for the idea of an independent board to determine planning appeals. Working in the Minister's Office in the late sixties and early seventies I had first hand knowledge of the pressures and controversies which deciding individual appeals entailed for Ministers. I think it is fair to say that events since have shown that an independent board was the right approach. The basic structure of the Board as set up in the 1976 Act and reformed in the 1983 Act, has stood the test of time. The procedures were streamline by the 1992 Act and further refined in the 2000 Act. The fact that the Oireachtas saw fit in the latter Act to assign very important new functions to the Board is a tribute to the Board's standing and its competence in the discharge of its existing functions.

Over the past 25 years the Board has made decisions on major projects which were controversial. Many of those that were portrayed as being unduly negative at the time can, in retrospect, be seen to have led to much better solutions. In general, I think it can be said that the Board tended to take the longer term and broader view, being removed from some of the immediate pressures that can be exerted on local authorities.

The organisation and structures of the Board are now under review to ensure that we are in a position to properly discharge both old and new responsibilities into the future.

John O'Connor was appointed Chairperson of the Board in May 2000 (Article abridged from commerative booklet)

The Board moved to new and larger premises in January 2002, at Marlborough Street, Dublin.

The Role of the Inspectorate

By Tom O'Connor

THE primary role of an Inspector in An Bord Pleanála is to inform and advise the board in relation to appeals and other matters which are referred to it for decision under the provisions of relevant legislation. In these matters an Inspector is required to provide a written report and recommendation for the Board's consideration and to supplement the recommendation with the specific reasons and considerations for the decision (along with any conditions which may be required).

From the outset the determination of "normal" planning appeals comprised the principal task of the Board. It currently remains the case, but to a somewhat lesser extent because of the additional categories of appeal casework introduced over the intervening period.

Taken in conjunction with this significant addition to the range and volume of casework to be discharged, the almost exponential growth in "normal" planning appeals received over recent years and difficulties in relation to the recruitment and retention of a sufficient number of qualified planners have posed major challenges to the Inspectorate.

In order to eradicate the backlog, the Board has sought to radically supplement the Inspectorate's resources through the engagement of more than 40 "fee-per case" consultant planners to deal with the less complex casework, as well as members of 7 planning consultancy firms who undertake appeals of a more substantial character. Over the last few years it has expanded to include planners from the UK, Australia, New Zealand and South Africa. In addition, the vast majority of casework arising from the transfer of functions previously performed by the Minister for the Environment and Local Government is handled by a panel of 16 independent consultants (mainly retired civil engineers of wide experience).

The Inspectorate currently comprises 38 planners out of a complement of 42. In 1977, when the Board was established there were 19 Planning Inspectors (assigned entirely from the Department of Local Government). By 1984 the number of full-time Inspectors had dropped to 9. Following the reconstitution of the Board, the numbers again reached 19 by the end of 1985.

In recognition of the additional requirements for effective monitoring and management within the Inspectorate, mainly deriving from the greatly increased workload and engagement of additional professional staff (both in-house and through consultancy arrangements), in 2000 the board obtained approval for the creation of three additional Deputy Planning officer (DPO) posts. Of the four DPOs now authorised, one has been assigned responsibility for the management of casework relating to functions transferred under the 2000 Planning Act while the other three are involved in management of planning-type casework.

Appeals are generally dealt with on the basis of written submissions from the parties, together with a site inspection by the designated Inspector. Oral hearings of planning appeals will normally be directed by the Board only in circumstances where it would aid the Board's consideration of a particularly complex case or where significant national or local issues warrant an open forum for public participation. However, the majority of "new functions" cases will be the subject of public oral hearings.

Having particular regard to the rapidly increasing scale and complexity of appeals (many requiring the scoping/evaluation of Environmental Impact Statements and the consideration of legislation in relation to conservation of natural and built heritage) the Board has actively encouraged and assisted the participation of Inspectors in various educational courses.

Although the essential characteristics of the Inspector's role had remained constant over the past 25 years, it is also evident that the level of professional expertise and technical competence required to carry out inspections and to effectively advise the Board has grown inexorably in parallel with an ever increasing range and complexity of environmental issues to be addressed under both national and European Union legislation. Similarly, the expectations of the Board in respect of the expeditious delivery of this wide ranging professional service had developed in concert with those of the parties directly involved in the matters to be decided.

It is the clear public service objective of the Inspectorate to continue to provide a high quality and efficient professional service to the Board in the interest of facilitating its determination of all matters before it, in accordance with the principles of sustainable development.

Tom O'Connor is the Board's Planning Officer and heads the Inspectorate. He is also a qualified architect.

Manchester City Centre Litter Boat Launch

IN the UK, Manchester city centre's first purpose-built litter boat was launched on July 15th, sprayed with champagne by Keith Barnes, Regional Director of Government Office North West, and Gordon McKinnon, Chair of Manchester Waterways Initiative.

The boat is set to become a regular feature as it constantly trawls for trash, travelling from the Bridgewater Canal at Castlefield, through the Rochdale Canal in the city centre and up the Ashton Canal to the Commonwealth Games site, negotiating 16 locks en route. It will enhance 11km of water frontage each week, annually removing hundreds of tons of debris.

The popularity of Manchester's canals and waterside developments has increased phenomenally of late, but this has also led to people discarding cans, fast food cartons and cigarette boxes in the waterways, ruining the potential beauty in the eyes of beholders. Now the super scooper, with its two-metre-wide metal mesh basket, is set to make a difference.

"Four men used to work with rakes on boats, physically taking out the litter by hand, now it's a two-man job and we can do it five or six times quicker," says litter boat foreman, Terry Evans.

The British Waterways crew and their managers have over 100 years of experiences working on the regeneration of the region's canals, and are totally committed to their task.

"It's great that canals which were derelict and threatening to people have now gone the other way," adds Terry. "They are now open with the multi uses of cycling, walking, fishing and boating.

There's something for everyone, and when you add the wildlife too what more could you want?"

The boat has been commissioned by the Manchester Waterways Initiative (MWI) in partnership with the Mersey Basin Campaign's Healthy Waterways Trust, with a £146,000 Biffaward from landfill tax credits and a contribution by Manchester City Centre Management Company.

It is hoped that the craft, a hybrid of two designs to cope with both the broad and narrow canals of the city, will not only spruce up Manchester's waterways but also send out a strong anti-litter message to would-be waste chuckers. The boat will also complement ongoing MWI projects like the Commonwealth Pledge, in which waterside businesses are encouraged to clean up their act to earn Bronze, Silver and Gold awards.

"I don't think you'll ever stop people chucking stuff in the canals," says Terry Evans. "But the litter boat certainly makes it easier and faster to remove."

Reproduced from "Campaigner" - A magazine of the Mersey Basin Campaign. www.merseybasin.org.uk

Alpha Taxonomy

The essential foundation of all studies of applied biology and of biodiversity and its conservation

By Henry Disney

TODAY alpha (species level) taxonomy is commonly regarded as yesterday's science. This is surprising for various reasons. Concern over the urgent need to take more effective measures to conserve as much as we can of the world's biodiversity is currently hampered by the fact that the best estimates suggest that only between 10 and 20% of the species on planet earth are known to science. The smaller a species the less likely it is to be known. For example, I study scuttle flies (Diptera, Phoridae), which are mostly between 1 and 5 mm in length, and I continue to turn up species new to science in my suburban garden in Cambridge. Furthermore, I have just published a paper on the 75 species of scuttle fly I identified in a recent collection made in Buckingham Palace Garden in the middle of London, and one of these flies proved to be new to science! Collections I am sent from more exotic places are typically dominated by undescribed species.

One of the species that is common in Buckingham Palace Garden is an introduced warm-climate species (which is probably escaping frosts by breeding in the warm hearts of heaps of rotting lawn mowings). This occurrence underlines a growing problem. Mankind is, unwittingly, increasingly transporting species around the world. For other examples, I only have to cite a paper in press on the scuttle flies of Tasmania. This includes four 'European'' species. Three of these were undoubtedly accidentally introduced from Europe. However, while the fourth was described from Europe (and is common in Buckingham Palace Garden today), its closest relative is an endemic species of Tasmania. I infer, therefore, that it was accidentally introduced to Europe from Tasmania.

During the 18th and 19th Centuries the foundations of our knowledge of the world's species were laid. In the 20th Century our knowledge of economically and medically important species, as well as of popular groups with amateurs (such as flowers, birds and butterflies), advanced rapidly. The increasing use of the compound microscope and the scanning electron microscope revealed that many species that were regarded as being widely distributed and/or diverse in their habits were found to be complexes of sibling (or cryptic) species. Other advances in genetics, cytology and in particular molecular biology, not only contributed new sources of data for the taxonomist but further contributed to the revision of species level taxonomy. These sibling/cryptic species may resemble each other in appearance but be found to differ at the microscopic (micromorphological) level or molecular (nanomorphological) level.

Growing evidence suggests that the destruction and degradation of habitats by mankind has caused a steep rise in the rate of species extinctions. Species confronted with change to their habitat are confronted with only three options: emigration, adaptation or extinction. Emigration requires accessible suitable alternative habitats. Adaptation requires time for evolution (adaptive shifts in the frequency of genes in populations over several generations). While a selection pressure such as a pesticide may bring about a relatively rapid evolution of resistance in many insects, a greater number seem doomed to fail to adapt before local extinction overtakes them. The current rates and extent of habitat destruction and degradation seem to be increasingly tipping the balance in favour of extinction.

In view of these extinctions, I am sometimes asked whether all the effort aimed at the documentation of the world's species matters? By way of an answer I offer the following observations:Taxonomy is an integral part of biology. Like the rest of biology it proceeds by advancing hypotheses to explain its observations on individual organisms. A typical example of a failure to appreciate that taxonomists, like other scientists, are dealing in hypotheses is to be found in a scholarly book on bumblebees. This stated that the scuttle fly *Gymnoptera vitripennis* is to be found in the nests of bumblebees. In support of this statement it cites a paper published in 1933. The author then adds that the same species of fly has been reared from pupae found on an exhumed human corpse, citing a paper of 1924. While these biological observations are sound the identity of the fly is incorrect in both cases. How come? In 1933 a second paper was published in which it was pointed out that two sibling species were being confused under the name *Gymnoptera vitripennis*. The newly recognised species was named *G. longicostalis*. It then turned out that it is the latter species that is found in bumblebee nests. *G. vitripennis* is the species found in wasp nests instead. The specimens from the exhumed human corpse had been deposited in the Natural History Museum in London. These were re-examined and it was reported in a paper of 1954 that they had been misidentified. They proved to be coffin flies, *Conicera tibialis*. The genus Conicera is closely related to Gymnoptera.

I have recounted these confusions to highlight a growing problem with current textbooks and computer data bases. Data are being reproduced in these without any realisation that every identification of a specimen is an hypothesis. Every designation of a new species or newly recognised synonym is an hypothesis. Every assignment of a species to a genus is an hypothesis based upon a set of interlinked hypotheses relating to the supposed affinities of the included species.

The chief source of error in textbooks, data bases and scientific papers is the misidentification of specimens. Yes, I did say 'and scientific papers'. I have a growing collection of papers with intriguing ecological data, which, however, I have been obliged to file in my nonsense file - because it is obvious that the underlying taxonomy is up the pole. For example, an otherwise admirable paper on the scuttle fly pests of the cultivated oyster mushrooms in India is in this file. The reason is that the authors named their specimens using the manual on the pests of cultivated mushrooms of Europe. They made no reference to the monograph on the scuttle flies of the Oriental Region. I have now collaborated with three teams of Indian colleagues and sorted out the taxonomy of the pest species of their cultivated mushrooms. In their oyster mushrooms they have three species, two of which proved to be new to science (and one of which has recently turned up on two oyster mushroom farms in Poland!) and the third is not in the manual on European pests. In the familiar button mushrooms their pest is a species better known from America.

We require correct species identification in order to collate the known biological data on a species and to apply appropriate control measures in the case of a pest species. Thus one of the European species incorrectly reported to occur in India can be simply controlled by keeping mushroom cultures in the dark, as its females will only oviposit in the light. Its control, therefore, requires no use of pesticides, unlike the introduced American pest species.

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Sponsoring the Environment

"Red Squirrel"
Pat Sutton, New Ross, Co. Wexford.
(2nd Prize - Amateur Category - Animal Wonder)

SHERKIN Island Marine Station investigates ESB's approach to sponsorship of the environment. In an interview earlier this year, the Company's Public Relations Manager, *Barney Whelan* outlined the rationale, the results and the benefits.

ESB, the country's main electricity supplier sponsors a number of environmental initiatives which have received public acclaim and the endorsement of environmental campaigners such as David Bellamy.

ESB's present activity, current and future investment programme and future revenue stream are inextricably linked with the country's economic development. As one of the key drivers of this development, the generation, supply and use of energy poses significant challenges to our environment and that of our neighbours.

It is of crucial importance to ESB, and indeed other generators, that the debate about environment and development be conducted in a structured and informed manner. ESB was one of the first companies in Ireland to publish an Environmental Policy and Guidelines. The company has also published an Environmental Report on its interaction with the environment.

The company has developed a portfolio of sponsorships which target all age groups, cover a broad spectrum of activity, use a variety of communication channels and deal with many of the key issues facing us.

In assembling such a portfolio of activity the companies key objectives were to:

- Position ESB as an organisation which is encouraging structured and informed debate on the issues of environment and development among all ages and various sectors of society.
- Encourage a positive attitude shift towards ESB.
- To support the implementation of ESB's Corporate Environmental Policy and guidelines which seeks to demonstrate the company's stewardship of environmental matters.

In implementing this sponsorship activity ESB set out to actively engage with audiences of all ages, schools, individuals and committees. In doing so the company aimed to encourage those who participated to focus on the detail of our interaction with the environment. Throughout the programme the company publicised its involvement with each sponsored initiative.

Included amongst the many initiatives which ESB sponsors are:

- ESB Environmental Photography Awards
- ESB Primary Schools Environmental Awareness Awards
- ESB Community Environment Awards
- ESB and Down to Earth Theatre Company
- ESB Landscape 2000
- ESB Lough Ree Environmental Summer School

"Floating"
Rory Curtis, Kilcoole, Co. Wicklow.
(1st Prize - Youth Category - Waterworld)

"Curraghchase - Winter Evening" - Pat Canavan, Raheen, Co. Limerick (3rd Prize - Amateur Category - Wild World)

- ESB Lanesboro Angling Festival
- ESB and Birdwatch Ireland
- ESB Euro Life Demo Project

And last but of growing importance Sherkin Island Marine Station's own schools programme and its Cork Harbour Initiative.

Always mindful of a return on what is a significant investment, ESB has been researching the impact of this sponsoring activity over many years. The results indicate a significant impact on attitudes towards ESB.

The results demonstrate the impact of an integrated approach to sponsorship, not only in terms of the actual activities but also in terms of design, awareness-building collateral distribution and advertising. The key outcome remains that ESB customers do care about the environment in which they live and they are willing to show this through their actions. In participating they and their children and neighbours have learned about the intricacies of the issues surrounding environment and development - something which faces ESB every day.

"Altmount 2000"
Cliff Hutchinson, Firhouse, Dublin (Amateur Category - Animal Wonder)

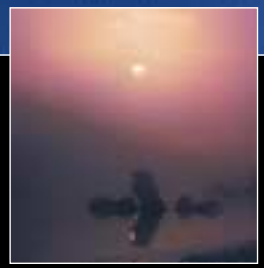
Barney Whelan is well known for his involvement in ESB's Brand activity over the last 6 years, being responsible for ESB's award-winning "Where do we get the Energy" campaign. He also managed ESB's extensive Sponsorship portfolio, receiving the prestigious "Sponsorship Manager of the Year" at the National Sales and Marketing Awards earlier this year. His brief at ESB also included media relations, the company's internal newspaper "Electric Mail", design, ESB's web presence and event management. Barney has now been appointed as Director of Marketing and Communications for SafeFood, The Food Safety Promotion Board, one of the six North/South Implementation Bodies.

ESB Environmental Photography Awards 2001

"Sammy Seal" - Richard Hooton, Mallow, Co. Cork.
(1st Prize - Junior Category - Animal Wonders)

"Energy Over Energy" - Shane Molloy, Tramore, Co. Waterford.
(2nd Prize - Youth Category - Where do we get our energy?)

"Gannet in Flight" - Michael Steciuk, Cheshire, England. (International Category - Animal Wonders)



"Reflections at Sunset"
Gerard Hannon, Ballygar, Co. Galway.
(3rd Prize - Youth Category - Waterworld)

"Finlough, Co. Mayo" - Sean Tomkins, Galway. (Professional Category - Wild World)

"Rock Bubbles" - Tim Durham, Killucan, Co. Westmeath. (Professional Category - Form & Composition)

"Nice Ducks!" - Aidan Whelan, Springhill, Co. Carlow.
(2nd Prize - Junior Category - Animal Wonders)

Ray Keary (right), with Mick Geoghegan, on a research trip.

Mapping

By Ray Keary

THE Seabed Survey which the Geological Survey is undertaking is proceeding well. According to plan, the main data-acquisition activity will be completed this year. This, of course still leaves an enormous amount of work to carry out. Ground truthing must be carried out and interpretation of the results must be completed. In addition to the actual seabed mapping, which is the prime object of the exercise, there are a number of other data sets being collected, which may be regarded as equally important. These include magnetic and gravity measurements and shallow seismic sub-bottom profiling. All the above are geological in nature but in addition temperature-salinity profiles of the water column are being collected and observations are made on birds and cetaceans. When interpretation is complete, (if it ever can be said to be complete), the real work must begin. This will consist of a design stage for the next phase. What use will we make of the information? Will we put it to productive purposes or will it be allowed to gather dust on a shelf. This will not be decided by the scientific and technical people involved but by our great leaders and elected officials.

I have heard various people refer to the Seabed Mapping Project as a scientific research project. I do not believe that it should be regarded as science in the strict sense. Rather it is a preliminary to science. It is exploration. The hills and valleys of the seafloor, the areas of rock outcrop and the plains and sediment deposits are being mapped for the first time. When it is finished we will have an appreciation of the geography of our country, which we never had before. It will also be possible to claim that we have a better knowledge of our national seafloor than any other nation on earth. Most important probably, we will have some appreciation of the interaction of the water masses with the sea floor.

There is a danger that people, in positions of influence, will regard the project as an end in itself. When it is finished they may attempt to draw a line under it and try to divert funds away from marine science, not realising that the project is a beginning not an end.

When the plan for the project was being formulated, we did not regard it as a self-contained entity, rather as a starting point from which a multi-disciplinary programme of study could arise. There is very little point in trying to map the distribution of organisms if you cannot say whether they live in exposed or sheltered areas, among strong currents or in deep muddy deposits.

The geography of the seabed has an influence on the paths taken by currents. The currents control the distribution of sediments. The presence or absence of sediments determines the type and density of the fauna.

At present we are living in a period of global change. We do not know just what they will be or how the physical and biological systems will react. This is complicated by other, superimposed factors.

For example, any middle-aged person who has hand lined for mackerel, will have noticed that over the last thirty years the fish have got smaller. You do not need to consult ICES (International Council for the Exploration of the Sea) publications to come to the conclusion that their population is decreasing.

Photos: © Geological Survey of Ireland

RSV Bligh, Primary survey vessel, GOTECH Ltd, alongside at waterford

The fish do not get an opportunity to grow to full size before being caught. The sea contains a complex fauna and flora, which form a food pyramid. This is not a simple structure. Within it are contained many smaller systems and subsystems. Some of them may be able to continue to function if the major system collapses, others may not. The details of this structure, locally, will be influenced by the shape and nature of the sea floor.

If you take a horizontal layer out of the middle of a pyramid the top will fall down. If you seriously erode a horizontal layer, the whole superimposed structure may not collapse, but it will function well below its optimum. If you continue to take away the critical layer it will eventually reach a threshold point. Quantitative changes suddenly become qualitative, you tip over an edge, and reversal of the trend is probably impossible. I suggest that this may be happening today in the oceans, with the active assistance of government agencies and international bodies such as the E.U.

We could probably presume that, sometime in the late eighteen hundreds or before the first World War, the biology of the oceans was in equilibrium. Fishing still depended on sail, steam and muscle power. Electronics had made no impact. ICES was founded about that time and has done a lot to create an understanding of the dynamics of the fish population.

Much of what is known and available is, at best underused. Each year the European fisheries Ministers meet to allocate quotas. In this they pay lip service to the scientific input of the Fisheries Laboratories. In reality they are forced to make decisions on a political basis.

Conservation of the Environment is the fashionable jargon phrase of our time but in reality the decisions made are on short term, short sighted, economic and political arguments.

The EU issues directives. These are interpreted and turned into laws by the National Government Offices. These are influenced by the political attitudes of their Ministers, the economic demands of their budget offices and by ideologies and theories which are well meaning but have little basis in physical fact.

The ocean must be taken as a whole, in which each of its parts are interrelated just as are the organs in a body. To understand the interrelationships of the parts, it is necessary to have some appreciation of the overall corpus. In Ireland we will soon have an overall view of our submarine geography and geology. And as I have already mentioned, an important by-product of the seabed mapping we will also have an unparalleled series of temperature and salinity profiles through the water column. These were taken as sound velocity profiles, a necessary measure when carrying out multi-beam sounding. In addition there will be an amount of sampling and dredging which will yield bottom samples.

The seabed topography and the water column profiles in particular, could be of use in attempting to predict the cycles and dynamics of important economic fish species. The water column profiles will also be useful in attempts to interpret the effects of global warming on the oceanic circulation.

However, there are several important questions which have to be answered. First of all what will happen to the ocean if the important food fish species are effectively wiped out?

Leaving out the economic and nutritional effects on humanity, will the Oceans stagnate or will some new system of cycles develop?

Just suppose we succeeded in persuading the Irish Government to begin looking at the Ocean in a logical and scientific way, would it have any effect on a world wide scale?

If the European Union followed suit it would be significant as far as the North Atlantic the Mediterranean, the Baltic and the North Sea goes. What effect would this have on the rest of the World's Oceans?

Some time ago the Canadian Government got worried about cod stocks and constrained fishing in the Grand Banks area. It was, apparently, in time to have a good effect. Many years before that the Icelanders began to worry about their own cod stocks and in the face of bullying tactics from the British they persisted and won the right to control their own stocks.

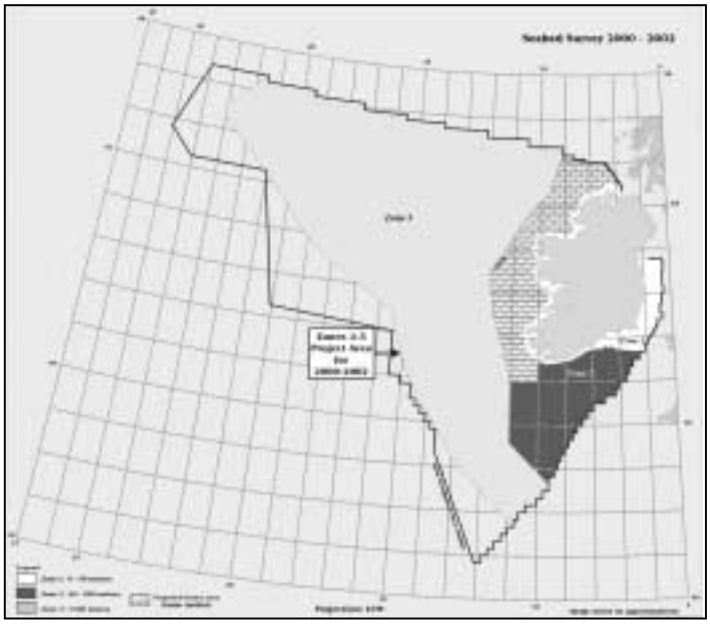
There is an interest in the sea in Ireland. This has been demonstrated by the reconstruction of the famine ships, Dunbrody and Jennie Johnston. This interest could, with education, be redirected into more pressing topics. In fact the sailing ships could be used to carry out many routine oceanographic tasks. It is important to realise that having mapped the sea floor and the water-masses it is necessary to continue to keep an eye on what is happening, especially in the water-mass. A sailing ship could, if outfitted cheaply, carry out a series of routine water temperature, salinity and plankton measurements on a series of predetermined stations, at regular intervals. This could be combined with a sail-training and navigation programme.

This type of operation would need to be continued for a number of years without a break in order to collect a meaningful time series. This is the type of activity that does not fit easily into the research programmes of universities or even of some government laboratories. They are forced by the current economic ideologies to opt for programmes with well defined beginnings, middles and ends. The natural world does not fit in with these short term ideologies and suffers as a result.

There needs to be a big rethink on this matter. Some coordination between official bodies is necessary. On the one hand the fish stocks are reaching dangerously low levels while super trawlers are supported. On the other hand another branch of the public service interprets E.U. directives in such a way that exploitation of sea-bed resources which are neither unique nor rare are refused. While it is essential to prevent the ultimate oceanic catastrophe, it is also necessary to exploit exploitable resources within acceptable limits.

Until we know what these limits are we are wandering in the dark and present policies will not result in light.

the Future



3d image of west porcupine area

Ray Keary is largely responsible for the approval of the ongoing National Seabed Survey being managed by his employers - the Geological Survey of Ireland (GSI) - until his retirement.

Sherkin Island Marine Station Environmental Award 2001

I AM firstly going back to 1869 when the greatest marine scientist of any century explored the waters off Ireland's west coast. This scientist, Charles Wyville Thomson, who then held the Chair of Geology at Belfast University and the Chair of Natural History at Belfast and Cork, disproved the belief that there was no life below 300 fathoms in the waters off Ireland's west coast. He organised the successful Porcupine Expedition and dredged animals from 2435 fathoms and established that there were coral reefs present. It took over 130 years to re-discover these in 2001.

Thomson went on to organise the expedition on the HMS Challenger for a grand three and a half year voyage that took them across 68,890 nautical miles of ocean from the North Atlantic to the South Pacific. 715 new genera and 4717 new species of ocean life forms were found. They registered a depth of 26,850ft in the Marina Trench.

Nearly 100 years on in 1962 a young geologist, Ray Keary, was appointed as Assistant Junior Lecturer at University College Galway.

In 1975 he was invited to become the first marine geologist at the Geological Survey of Ireland. Ray at last started to put his dreams into practice - to explore Ireland's seabed.

In 1983 I invited Ray and five other scientists from Irish Research Institutions to Sherkin to discuss marine research in Ireland. The station published the ideas of the group under my name because none of the participants could sign their name to it without submitting it for approval to their bosses, whom we knew would not give their imprimatur. I have re-read this in the past few days, especially Ray's contribution on exploring Ireland's seabed. Yes, in the next 20 years Ray delivered his dreams. He was instrumental in the GSI carrying out the ongoing National Seabed Survey.

I have no hesitation in saying that Ray Keary is in the mould of Charles Wyville Thomson. If Ray was alive a century ago he would have been on the Porcupine and Challenger Expeditions. Ray Keary is that unique Irish naturalist. His determination, his stubbornness, his courage and his wonderful ability to play ducks and drakes with authority to get his way means that in a hundred years hence, historians researching the great Irish naturalists of the past and their contribution to Ireland's marine research will write about Ray Keary's legacy. So I am delighted Ray has accepted our Environmental Award for 2001.

- Matt Murphy

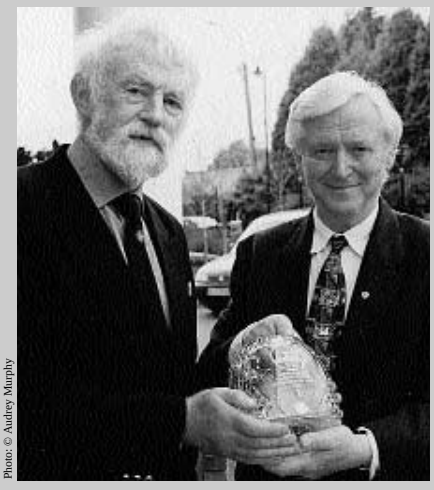


Photo: © Audrey Murphy

The award was presented to Ray Keary (left) by Matt Murphy, Director, Sherkin Island Marine Station.

Medieval Dublin

St. Patrick's Cathedral from the north. The Minot Tower dates from c. 1370 and its spire only from 1749. Much of the external fabric is modern.

HAVE you ever wondered where exactly the medieval town was located, or why the modern Irish name for Dublin is Baile Átha Cliath, or why there were two cathedrals in the Middle Ages, or why St. Stephen's Green is so called? Medieval Dublin lies mainly hidden from view, yet the signs are there for those who know how to interpret them. Enfo's ten-point guide to the more important visible remains can be used either as a collection of individual items or as a continuous sequence.

1. Áth Cliath

The principal north-south axis of the modern city is represented by O'Connell Street and Grafton Street. A suitable starting-point for this journey into and through the past takes us well to the west of this, to the junction of Thomas Street, Cornmarket, St. Augustine Street and Francis Street. Here almost certainly was the crossing of three great long distance routeways: the Slige Mor to the west, the Slige Midluachra to the north and the Slige Chualann to the south. At low tide travellers on the northern route forded the River Liffey with the help of rafts of hurdle-work deposited on the mud flats, hence the ancient place-name Ath Cliath (= Hurdleford). The baile prefix is first documented in 1368.

When Christianity came to this district, the inhabitants built for themselves a church dedicated to St. Colum Cille (Latin Columba). Its site is more familiar to us as that of Protestant St. Audeon's. The present nave dates from the first half of the thirteenth century, but new windows were inserted in the fifteenth century. The now roofless portions give some indication of the size of what was the biggest parish church in late medieval Dublin.

2. Cornmarket

South-west of St. Audeon's, across the busy modern thoroughfare, you will observe a large and rather forlorn piece of medieval masonry. This was part of the defensive town wall. The great western gateway, known as Newgate, featured two three storey towers and contained the town prison.

Beyond the external defensive ditch, which measured about 40 feet wide and up to 19 feet deep, lay a mainly unbuilt plot of ground where the annual fair lasted for a fortnight each summer. Here merchants from elsewhere in Ireland and from abroad would gather to buy and sell, to haggle and strike bargains, to quarrel and seek justice. By an interesting coincidence part of this plot was later occupied by the Iveagh Markets.

Keeping the town wall on your right go down Back Lane, the street formerly at the back of the wall. Dublin's position as an important centre of international trade was reflected in the older name, Rochel Street, derived from La Rochelle in western France. The medieval Tailors' Hall, incidentally, was located in a different part of the town (Winetavern Street) and the present building dates from 1706.

3. St. Patrick's Cathedral

Where Nicholas Street turns into Patrick Street stood the main southern gateway of the medieval town, St. Nicholas's. The walled area, even when enlarged in the thirteenth and early fourteenth century, was remarkably small (about 44 acres) and beyond the defenses stretched suburbs in every direction. Nevertheless many of the later monasteries, as well as St. Patrick's Cathedral, had their own walled enclosures, whilst in the fifteenth century several 'extramural' gateways were provided so as to close off access to the town at night and in times of danger. These gateways were a substitute for an outer town wall to protect the suburbs, of the kind that was built for many continental towns. One of these extramural gates, St. James's, later gave its name to a famous brewery.

Before us now stands the largest cathedral in medieval Ireland, situated with breathtaking boldness well outside the town wall. The man responsible for its creation c. 1220 was Henry of London, the second Anglo-Norman archbishop of Dublin and a masterly politician in his own right. So important was he that his name comes second in the list of witnesses to Magna Carta, the great charter of liberties presented to King John of England in 1215.

St. Patrick's was served for religious purposes by secular canons, some of whom were resident in houses nearby and all of whom were endowed with some part of the archbishop's estate. The cathedral chapter was headed by a dean, whose counterpart at Christ Church Cathedral was the prior of Holy Trinity. The present deanery stands near the site of its medieval predecessors and dates from 1781.

During the Middle Ages the ground around St. Patrick's Cathedral constituted one of a number of 'liberties' of Dublin, that is to say, areas of private jurisdiction not subject either to the king's or to the town's writ.

4. Dubhlinn

There may have been a church on the site of St. Patrick's, between two branches of the River Poddle, from early Christian times and a fourth long-distance routeway, the Slige Dlia, came down The Coombe towards the Poddle crossing. The stream flowing down the valley may have been a major source of drinking water in early times.

The Slige Dala from Munster continued a short distance eastwards as the approach road to an ecclesiastical enclosure, whose characteristic shape is still preserved in the street alignment from Peter Row round to Johnson Place (now broken by a modern block of flats). This was probably the burial ground and inner sanctum of a monastic settlement founded in the sixth century and called Dubhlinn (= Blackpool). The last recorded abbot, Siadal, died in the year 790.

Part of this ancient enclosure was occupied in Anglo-Norman times by St. Stephen's Hospital for lepers. Leper houses were usually located on the edge of medieval towns, since charity towards the sufferers was mingled with fear of the disease itself. St. Stephen's Green was the common pasture for animals kept by the townspeople.

5. The Castle

Dubhlinn took its name from a dark-coloured pool (Irish linn dubh) in the lower reaches of the Poddle. Open ground due south of the castle still marks its site and is probably of great archaeological potential. For this was the pool that attracted the Vikings of Dyflinn (as they called it). Here in this tidal pool they could protect their ships from seaward storms and from landward attacks.

The Vikings' defensive enclosure (Irish longphort), first constructed in 841, may have occupied the eastern end of the ridge on which the medieval town was eventually to grow. An alternative site would have been somewhere near the great ninth-century cemetery at Islandbridge-Kilmainham.

Viking Dublin was probably the biggest slave market in western Europe, where men and women of mainly Celtic blood awaited their fate in places as far apart as newly colonized Iceland and Arabic Spain.

6. Christ Church Cathedral

Little Ship Street (medieval Sheep Street) presents us with a fine stretch of town wall and we re-enter the defenses via the site of the Pole (= Pool) Gate at the bottom of Werburgh Street. Right in the middle of the medieval town we find the old cathedral of the Holy Trinity, better known as Christ Church. This was founded c. 1030 by King Sitric Silkbeard and Bishop Dunan, and the late twelfth century crypt is the oldest standing building in Dublin.

For most of the Middle Ages Christ Church was served not by secular canons but by regular canons of the Augustinian order, the ruins of whose chapterhouse may still be seen immediately to the south.

The floor of this room represents ground level as it was in the thirteenth century. The constant accumulation of household rubbish and the regular rebuilding of wooden houses by successive generations of Dubliners caused this level to rise, hence the wealth of archaeological material that lies beneath our feet in many parts of the medieval core.

With the conversion of St. Patrick's Church to cathedral status, Dublin became the only diocese in Latin Christdom with two cathedrals co-existing in the same town - one secular and the other monastic.

Information on points 7. Cook Street, 8. John's Lane, 9. Fishamble Street, 10. St. Mary's Abbey, is available on the "Medieval Dublin" fact sheet which, along with other fact sheets, is available from ENFO - The Environmental Information Service, 17 St. Andrew Street, Dublin 2. Tel 1890200191 (price of local call) Fax 01-8882946 Email: info@enfo.ie Fact sheets are also available at their Website: www.enfo.ie

A Salmon Farm and the Environment

By Jane Twelves

THE anti fish farming lobby frequently criticises the industry for 'ruining the environment'. I have been running a salmon farm, Salar Ltd, with my husband, Eric, in Loch Carnan, South Uist, since 1983, but our involvement in salmon farming goes back to 1974 when Eric set up the first salmon farm in South Uist for Booker McConnell, and we see no evidence to back this claim.

When Amnesic Shellfish Poisoning (ASP) was first found in scallops in 1999 one of the 'conservation' organisations said that fish farms were to blame. We immediately went diving and collected scallops in 2 places, in Loch Carnan close to our fish farm and in Loch Eynort where there are no fin fish farms. We gave the scallops to the Environmental Health Officer of Western Isles Council who sent them for analysis at FRS Marine Laboratory in Aberdeen. The ASP level in Loch Carnan was found to be 4 ug/g and in Loch Eynort it was 5 ug/g. There is no correlation between ASP and fish farms; this conclusion is borne out by research at Dunstaffnage Marine Laboratory in Oban.

Photo: © Jane Twelves

Otter holt close to salmon cages in South Uist

At Salar we have always been careful to monitor the environment of Loch Carnan to ensure that our activities do not have a detrimental effect. Since May 1998 we have regularly sent samples of mussels which grow under our fish cages to the Environmental Health Officer of Western Isles Council to be analysed. As a consequence Loch Carnan is classified as Grade A with respect to mussels and the results of tests for PSP, DSP and ASP in the mussels have been consistently below the maximum permitted levels.

Our family has fished for crabs, both green crabs and velvets, in the loch and around the cages for the past 19 years, from a year before the fish farm began. There has been no reduction in catches over this period of time which can be attributed to the fish farm - indeed the fishermen have recently enjoyed bumper catches.

The local scallop divers find their best catches close to fish farms, they have a theory that scallop spat settle on the cage nets, grow and fall to the seabed where they continue to grow to commercial size.

The two freshwater lochs where we rear the young salmon have been constantly monitored, first by the Environment Monitoring Unit at Stirling University and then by the Scottish Environmental Protection Agency (SEPA). From the information we get back regarding nutrients, we have regulated our usage of the lochs at sustainable levels. We have used these lochs since 1986 and 1988 respectively.

There are otters holts close to all our sea cages and otters use the freshwater lochs where we also have cages. I have monitored the otter population in the vicinity of fish farms in South Uist since 1974 when the first salmon farm was being set up. There has been no reduction in holt usage by the otters over the years, despite some fish cages being merely a few metres from holts. Otters are the top predators in the ecosystems and any adverse effects would be immediately reflected in their numbers.

Common seals inhabit the relatively sheltered waters of the east coast of Uist. They can be seen every day in the vicinity of fish farms and I have counted haul-outs of over 60 seals at the mouth of Loch Carnan. Very occasionally a seal may attack a fish farm, but the number involved, as a proportion of the population as a whole, is negligible.

We regularly see many different species of sea birds, waders and other birds, including avian predators, around the cages and herons and other birds nest close by.

It has been suggested that where fish cages are sited in the vicinity of reefs, as ours are, they are beneficial to the biodiversity of the reefs because the nutrients from the fish farm replace those which are removed from the ecosystem in the form of fish and shellfish.

The largest source of organic pollution in the seas off northern Scotland is dead and dying seaweed. The largest standing forest of seaweed in Europe occurs off the west coast of the Hebrides. Each year many millions of tonnes of these algae are torn from the seabed by winter gales or fall off during the annual May cast (deciduous seaweeds drop their fronds in May). The nutrients are re-cycled in the natural course of events and the seas have mechanisms to do this. Dead seaweed and other marine matter accumulate in hollows and dips in the seabed where they rot down often anaerobically in localised sites of natural 'pollution' and the nutrients are released. It is essential for the dynamics of the marine ecosystem that nutrients are recycled, otherwise the seas will slowly die.

Each year many millions of tonnes of nutrients are removed from the sea in the form of fish and shellfish, and there has to be some replacement.

Today salmon farms are better regulated than almost any other industry. SEPA regulates and monitors the amount of fish food that can be used so that when nutrients, in the form of fish food, are introduced back into the marine ecosystem there is little adverse impact in the vicinity of the farm. SEPA has the power to close down any salmon farm which does not conform to it's standards.

Salmon farms turn low grade fish into delicious and highly nutritious fish.

Salmon are demanding fish. They will not survive in anything other than a high quality fresh water or marine environment. Salmon farmers have to operate to the highest standards, they have to respect the environments in which they grow their fish – otherwise their fish won't grow and they will go out of business. Simple as that.

The reason that critics of the industry are wrong to say that salmon farming has caused massive environmental damage is that the otters, seals, birds, crabs and scallops would have disappeared long ago from areas around salmon farms if it had.

Jane Twelves, Salar, The Pier, LochCarnan, South Uist, Outer Hebrides HS8 5PD, Scotland.

Publications of Interest

Flora Hibernica

J. Pilcher & V. Hall

Collins Press, 2001

ISBN: 1-903464-03-X

€31.75(hb)

Anyone who has explored the Irish countryside will know how beautiful and diverse the flora is. This natural assemblage is the product of succession since the end of the last glacial period and this book discusses the flora with reference to this in a clear and concise format. After a detailed introduction and timeline outlining the events of the past 10,000 years, each chapter describes a different habitat and the main species associated with them, accompanying this text are excellently shot photos, capturing the beauty of landscapes and specific species.

Groundwater and Society : Resources, Tensions and Opportunities

J.J. Burke & M.H. Moench

United Nations, 2000

ISBN: 92-1-104485-5

US$19.00

To most communities and societies groundwater is the only source of water they may have, making groundwater a very important discussion issue. Groundwater is significant not only due to water's use in and around the home, but also for it's use in industry and more importantly, agriculture. Thus declining water tables and polluted aquifers are having a huge impact on society and the environment. This book discusses in depth the roles and problems behind the issues, discussing adaptations by many communities, then giving guidelines, possible solutions and case studies. This is a well laid out book and the wide use of diagrams and tables gives a very interesting and thought provoking discussion.

Collins Wild guide – Dinosaurs – The essential beginners guide

Adam Yates

HarperCollins Publishers, 2002

ISBN : 0-00-712286-1

£8.99stg

This colourful guide is highly informative and imaginatively illustrated and includes 120 genera of dinosaurs. The animals are grouped into 3 sections covering different periods of the Mesozoic era. Each genera has an accompanying ID fact file, which includes details such as diet, distribution and body weight. The guide additionally provides a brief introduction to the evolution and biology of the dinosaurs as well as a thorough list of web sites and other references for further information. This essential beginners guide is suitable for older children and adults as it is a descriptive and easily understood introduction to dinosaurs.

Collins Wild guide – The essential beginners guide to British wildlife

HarperCollins Publishers, 2002

ISBN: 0-00-713716-8

£12.99stg

This book is an introductory guide to the flora and fauna of Britain and covers a large number of bird, flower, tree, mammal, reptile, amphibian, fish and insect species.

Beautifully photographed, this simple guide provides the reader with several important basic facts on nearly 500 species, including behaviour and range. There is also a month by month guide describing when you can expect to see the species and where to watch the wildlife.

The book comes complete with a protective plastic cover as it is intended to be taken out in the field to help with identification. With over 500 pages, the Collins Essential Guide to British Wildlife would be a perfect companion to the nature lover.

Enjoying moths

R. Leverton

T. & A.D. Poyser, 2001

ISBN: 0-85661-124-7

£26.95stg

This beautifully illustrated and photographed book provides a comprehensive guide to 'mothing'. For any enthusiast who wishes to study and enjoy moths in their natural habitat there are sections on finding moths in the daytime and at night with the responsible use of light traps. Techniques for finding and rearing caterpillars in captivity are described and useful hints on how to photograph the colourful group provided. The book provides a wealth of information and techniques to enable any moth enthusiast to enjoy this fascinating group as fully as possible.

The Natural History of Moths

M. Young

T. & A.D. Poyser, 2001

ISBN: 0-85661-103-4

£31.95stg

The use of many diverse and fascinating examples of moth biology and ecology taken from both the amateur lepidopterist and recent scientific research make this a comprehensive guide to moth natural history. Feeding, distribution and life history to pheromone attraction of mates and anti-predator responses are illustrated fully. The conservation problems faced by moths and the causes of species declines are put forward with possible preservation techniques. The combination on enthusiasm, general knowledge and scientific research has produced a book that includes something of interest for all moth lovers.

Nature Conservation

Peter Marren

HarperCollins Publishers, 2002

ISBN: 0-00-711306-4

£34.99(hb) & £19.99(pb)

Nature Conservation is a modern naturalist book, giving a valuable insight into the different aspects of conservation today. It enables the reader to gain a clear picture of the progression of nature conservation from 1970 through to modern day. It is effectively divided into three parts offering the opportunity to obtain knowledge on the societies responsible, the different wildlife habitats and mans attitudes towards wildlife using interesting and informative language and high quality photographs.

Guidelines for Marine Protected Areas

Adrian Phillips

IUCN, 1999

IUCN Publications Services Unit, 219c Huntingdon Road, Cambridge CB3 ODL, UK.

ISBN: 2-8317-0505-3

£16.50

These guidelines aim to show the various steps that countries should take to help conserve their coastal line, sub-tidal and terrain. The set up of these protected areas are essential if we are to conserve declining numbers of wildlife, especially our over fished oceans and seas. Also the management of man is as important as the decrease of species, as this goes hand in hand. This book shows the legal implications, with the planning and management of such sites. Giving ideas on how to fund and manage, this book is a must for anyone interested in marine protected areas.

Vision for water and nature

IUCN, World Water Vision, WWC CME

IUCN, 2000

ISBN: 2-8317-0578-9

£12.00stg

This book is a compilation of 3 workshops, entitled 'Of the Development of the Vision for Water and Nature', held in Zimbabwe, Thailand and Costa Rica in 1999. All focusing on management of the freshwater ecosystem, each bore a different impact issue respectively. These were social security, economic security and environmental security. Physically we cannot survive without water and, as discussed, with 50% of our wetlands having disappeared within the last century, it is time we took action against anymore loss and thus managed our water consumption. This compilation discusses the issues of our increasing water intake and our inability to replenish what we are taking. Overall very informative and educating about a topic that we must tackle.

Conifers

Aljos Farjon & Christopher N. Page

IUCN, 1999

ISBN: 2-8317-0465-0

Price: £15.00stg

As part of the IUCN's Plant Action Plan and funded by numerous international bodies, the book aims to provide an "Action Plan to address conservation issues of conifers on a global scale". Regional issues are addressed, mainly with reference to the taxa featured in the global red list of conifers. Ten historical overviews are provided and backed up by many tables, diagrams and photographs, which enable the reader to easily understand the threats and strategies required for sustainable management of forest systems. This book offers an extremely interesting account of the importance of conifer ecosystems in terms of global biodiversity and as a human resource.

Climate, biodiversity, and forests

Paige Brown

World Resources Institute and IUCN, 1998

ISBN: 1-56973-285-X

£13.50stg

Climate, biodiversity, and forests offers the opportunity for the reader to gain a greater understanding of Kyoto Protocol, the first international agreement, placing legally binding limits upon greenhouse gas emissions from developed countries. The intriguing report gives a step by step discussion of the project, with vital aspects and key events clearly boxed off. The tables and graphs enable the reader to gain a greater understanding of the informative text. Throughout this report it offers opportunities for tackling problems that will arise and encouraging future action.

Trees of Britain and Northern Europe

Alan Mitchell & J. Wilkinson

HarperCollins Publishers, 2001

ISBN: 0-00-219857-6

£14.99stg

Once again Collins publications have produced an excellent guide to field taxonomy. Using the same easy-to-use keys as their other pocket guides, the format allows both the professional and amateur botanist to easily identify a tree in the field. The book covers a wide range of habitats; woodland, hedges, parks, gardens and town streets, and geographical locations within Northern Europe. For all species excellent drawings of crown, bark, shoot, leaf, flower and fruit are provided along with detailed descriptions designed for identifications and general interest.

Flowers at my feet

Bob Gibbons & D. Woodfall

HarperCollins Publishers, 2002

ISBN : 0-00-220213-1

£24.99stg

This book provides a botanical tour around much of England and Wales, Scotland and Ireland. The book concentrates on areas where native wild flowers have a foothold, despite their constantly shrinking habitats. It also gives examples, however, of wild flowers can make successful comebacks, such as the recolonisation of former pitheads in County Durham, England.

The book is divided into sections representing the different areas, with an introduction by a famous contributor, for example Magnus Magnusson introduces Scotland

Cambridge Illustrated glossary of Botanical terms

M. Hickey & C. King

Cambridge University Press, 2000

ISBN: 0-521-79401-3

£18.95stg

This book achieves it's goal of de-mystifying the botanical terminology used in the description of vascular plants very well. It comprises of two complementary parts. The first part is a glossary of terminology. This cross references to the second part of the book which comprises beautifully illustrated examples of many of the glossary terms.

This combination provides for a much more accessible book of terminology than many other glossaries or dictionaries of botany. This makes the book perfect for those embarking on a career in botany and for those who simply wish to expand their knowledge of wild or garden plants.

Recent EPA Publications received

Air Quality Monitoring - Annual Report 2000 (2002) €20

Ireland's Environment - Envirotrends - Facts on Five Key Issues .....Free

European Waste Catalogue and Hazardous Waste List (2002) €7

Water Quality in Ireland 1998-2000

(including River Quality Map & Lake Quality Map)(2002).....€30

Water Quality in Ireland 1998-2000 Statistical Compendium of

River Quality Data (diskette) (2002) €10

Water Quality in Ireland 1998-2000 - River Quality Map (2002).....€10

Water Quality in Ireland 1998-2000 - Lake Quality Map (2002).....€10

Expert Group on Lead in Silvermines, Co. Tipperary: Interim Report (2002) €10

EPA 2001 - A Review .....Free

The Quality of Bathing Water in Ireland 2001 (2002) .....€ 7

Guidelines on the information to be contained in

Environmental Impact Statements (2002).....€13

All available from:

EPA Publications, EPA Regional Inspectorate, Richview, Clonskeagh Road, Dublin 14.

Tel: 01-268 0100; Fax: 01-268 0199; Email: info@epa.ie; **Website: www.epa.ie**

A cheque or postal order should be enclosed for the price quoted. Credit Cards accepted.

The Dunes at Tramore

Photos: © Declan McGrath.

By Matt Murphy

TRAMORE (Co. Waterford) and its beaches have been a mecca to holidaymakers for many decades. What many do not realise is that this beautiful area has a very distinctive flora and fauna, and its impressive sand dunes are an important feature of the south coast in general. Natural sand dunes are a limited resource, comprising only about 0.2% of the surface of the country. They are of great scientific interest because of the distinctive flora they contain.

The bay is an almost rectangular basin with around 1000 hectares of water between the cliffs on either side. On its landward side the five-kilometre beach runs the length of the inner bay.

Tramore has been designated as a Special Area of Conservation (SAC) due to the presence of Priority Habitat and Fixed Dunes with Herbaceous Vegetation (Grey Dunes), where rare and threatened flora and fauna are present. The flora of Tramore contains four Red Data species: sea kale, spring vetch, sharp-leaved fluellen and bee orchid.

The depth of its natural history is contained in Declan McGrath's "Tramore Bay, Dunes and Backstrand" - a book of immense detail and fascinating in its description of the geology, plants and animals of Tramore Bay.

In the flora section of the book the author explains how the blown sand on dunes and mud on salt marshes provides the ground necessary for plants to germinate, grow and mature. We learn that the ground is invaded by colonists, usually in the form of seeds brought in by wind, animals or even the sea, but plant fragments can also suffice for some species for which the sea is an agent of dispersal.

Most plants require special adaptations to survive in these difficult conditions. Many dune plants have long root systems, sometimes extending to over one metre in order to maintain a constant water supply.

There are wonderful descriptions of some of the plants. The sea sandwort, a small low growing perennial plant, the sea rocket, which depends on the sea for dispersal of its seed, the prickly saltwort, groundsel, sea beet, spear thistle, sea mayweed are but a few of the many dozens of plants to read about with lichen, mosses and fungi.

The Tramore area, and especially the Backstrand, is important for three types of birds: waders (shorebirds who wade about in the mud in search of food), wildfowl (mainly ducks and geese at Tramore but also grebes and swans) and seabirds. Landbirds also occur in some numbers at times. The vast majority of the birds seen at Tramore do not breed there and are present in the winter months only, though numbers gradually increase in autumn and slowly decrease in spring.

Food availability is the main attraction of all birds for areas like Tramore, though factors like the open nature of the area, its relative inaccessibility, the availability of safe roosting sites and freedom from attack by predators are also of importance. The birds find food in the form of invertebrates in the mud and sand, edible plant material on the mud surface and fish in the channels, the Bay and the Backstrand, and each species has special adaptations when searching for food in its own particular niche. Tramore is internationally important for one particular wintering species, the brent goose, and is nationally important for several others.

Main picture: Looking across the Backstrand towards the Malcolmson embankments;
Top left: Sea Campion; Top Right: Shelduck;
Above: A map of Tramore Bay, the dunes and Backstrand.

"Natural sand dunes are a limited resource, comprising only about 0.2% of the surface of the country."

The account of the dump (landfill), which began in 1939, makes one wonder who allowed such a development in this wonderful amenity area in the first place. That it is still in use is even more mind-boggling. The annual waste input is estimated at 10,600 tonnes. A draft license was issued by the EPA in April 2001 for three years only - with the proviso that dumping can only take place vertically and that no lateral extension is allowed.

The treatment of sewage at Tramore is archaic. Waterford County Council drew up plans in 1990 and three outfalls were considered. The one chosen met with local objectors, who included the Salleen's Awareness Group, the Tramore Environment and Tidy Town Groups, and especially Maureen O'Carroll, the Tramore Town Councillor. They succeeded in having the outfall discharging 2000 metres into the bay.

This book is a wonderful source of information on the precious heritage of Tramore Bay. Anyone visiting the area will find it will give them an insight into its natural habitats. I highly recommend Declan McGrath's book and I have no doubt that people who live in Tramore will have a better understanding, when they read the book, as to why their area is an area designated as a Special Area of Conservation and needs special care.

"A Guide to Tramore: Bay, Dunes and Backstrand"
by Declan McGrath. Price €14.00.
ISBN: 0-9541062-0-2

Matt Murphy, Editor, Sherkin Comment and Director, Sherkin Island Marine Station.

Allium giganteum **(Family beds)**

Summer at Glasnevin

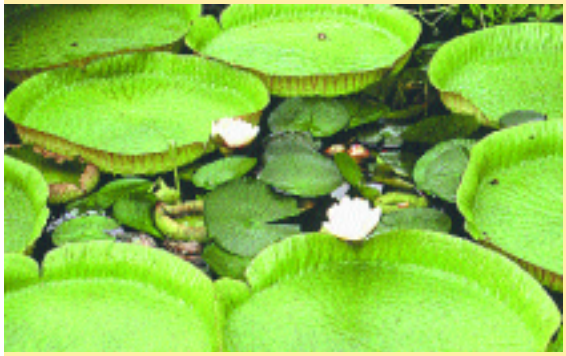
By Donal Synnott

AMONG the glories of the National Botanic Gardens in summer are its herbaceous borders. The cherries, magnolias, tulips, daffodils, bluebells, anemones, wallflowers and rare alpine plants of spring have shed their flowers and are building up reserves for the next season. Summer is the season of the geranium, delphinium, aconite, poppy, crocosmia and the several hundred herbaceous perennials that make up the traditional herbaceous borders. In recent years a new exotic summer border has been put in place as an additional if temporary summer feature. These borders have featured decorative vegetables like Swiss chard, kale and red lettuce, as well as sunflowers and other exotics. The exotic look has been enhanced by Canna lilies from South Africa and banana plants from Japan. Early summer sees a burst of flowering trees and shrubs. The handkerchief tree (*Davidia involucrata*) and the Foxglove tree (*Paulownia tomentosa*), both from China are spectacular in May. Garden hawthorns and apple blossoms follow on. Laburnum blooms as Wisteria fades. The first roses burst into bloom. Variation in the green colour of the spring leaves becomes less as the luxuriance of summer replaces the freshness of spring. Summer is when the gardener reaps the rewards of winter and spring effort. Preparation and planning now has its rewards. Each season is different. Last year the bearded irises were at their best. This year *Lilium henrii* is spectacular, celebrating that most famous of Irish plant hunters, Augustine Henry. The giant Himalayan lily (*Cardiocrinum giganteum*) will flower at Glasnevin in the summer, commemorating its very first flowering in cultivation also at Glasnevin one hundred and fifty years ago. The Chatham Island Forget-me-not (*Myosotidium hortense*) has overwintered in superb condition. Its striated dark green glossy heart-shaped leaves are spectacular, promising a feast of beautiful blue flowers. Nearby, blue poppies from Nepal will vie for the visitor's attention and strange saxifrage relatives challenge our botanical knowledge. Summer is a busy time for the botanist as well as for the gardener. Summer is when the majority of plants flower and fruit and are capable of identification. Specimens of the unidentified are collected and pressed for further study if required. Photographs are taken and illustrations made. Notes for publication and for further use are carefully filed. The constant effort to keep plant labelling up to date proceeds apace. Meanwhile behind the scenes the nursery is busy with the season's cuttings. Plants are constantly being replaced. Some die of old age or disease, from competition or extremes of climate. Some just outlive their relevance or are victims of fad or fashion. Some will be required next season in new plantings at Glasnevin or in one or more of the gardens in State care. Some will be grown for the horticultural shows where Glasnevin has exhibits. In the glasshouses there are continuous displays of exotics. The alpine house continues to have colourful displays though the flush of spring alpine plants has long passed. Some Vireya rhododendrons extend the flowering season in the west wing of the Turner House while the South African bulbs, heathers and proteas vie with Australian wattles and waxy gum trees in the East wing. Primitive conifers and cycads in the centre remind us of the age of dinosaurs. The giant Amazon Water-lily produces its extraordinary large dish-shaped leaves from mid May to mid October. Succulents from the Old and New Worlds demonstrate parallel evolution in different plant groups and illustrate evolutionary responses to stressful living conditions in the arid lands of the world. The Great Palm House of 1884 is being restored and will be a building site for the next two years. The palms, orchids and other tropicals are stored in every conceivable space in the Nursery area. Building projects apart, summer at Glasnevin is a delight. The sun and rain of an Irish summer conspire to keep the plant displays fresh and colourful in a setting of lush green lawns.

Photos: © Grace Pasley

Herbaceous border

Eremurus x isabellinus **'Cleopatra' (Car Park planting)**



Victoria amazonica **(Water House)**

Sempervivum guiseppi **(Family beds)**

Donal Synnott, National Botanic Gardens, Glasnevin, Dublin 9, Ireland.

An old Pear blooms in a traditional Saxon farmyard.

Photos: © John Akeroyd

Protecting Romania's Lost World

By John Akeroyd

A FEW weeks ago I sat on a rustic bench in front of a small country pub, beneath an old pear tree. Before me spread a timeless village scene at the quiet end of a summer's day. The wide dusty street was unpaved and flanked by narrow greens on which chickens, turkeys, geese, ducks and guinea-fowl scratched and grazed. The pavement alongside the houses was of rounded cobbles. A wooden hay-laden wagon pulled by a strong brown horse stopped and the carter ordered a bottle of beer. He chatted and joked with passing friends as he drank from his perch on the wagon. As I too enjoyed the last of the fine summer evening, a procession of cows, horses and goats came up the street from pasture, each beast peeling off as it came to its own yard door. It was an almost medieval scene, certainly one from the novels of Thomas Hardy. Even the wayside weeds were of a sort now rare – but widespread in pre-industrial Europe.

I was in Romania, in Transylvania, a land of rolling hills clasped within the southern bend of the Carpathian Mountains. Some of the countryside has been modernised, but unspoilt landscapes survive. Southern Transylvania is like a backdrop to the stories of the Brothers Grimm – old settlements, arable plots, grassland and woods of hornbeam and oak where wolves and bears still roam. Fortified churches erected by medieval German settlers guard sleepy red-tiled villages surrounded by a summer garden of massed wildflowers that colour road-verges, hay-meadows, pastures and hillsides. It is a place of vampires and legend, home of Bram Stoker's blood-sucking Count Dracula. In fact, 15th century warlord Vlad the Impaler, on whom Dracula was based, was far more vicious, spearing Turkish prisoners and political opponents on sharpened stakes. The old walled city of Sighisoara, Vlad's birthplace, lies in Saxon Transylvania, a district extending south and south-east to Sibiu and Brasov. To this remote region, while we English were invading Ireland, came robust, hard-working immigrants from Germany to defend Hungary's eastern marches against enemies from the east, of whom the most terrible were the Tartars and Turks. Tartar raids ceased only in the 18th century!

My Romanian visit was with colleagues from the Mihai Eminescu Trust, a UK charity that works with local Transylvanian people to conserve the ancient churches and village farm-houses, and to promote traditional building, local crafts and country products. Much village architecture dates from the 18th century – "flattened cart entrances, shingled lynch-gates, hipped roofs and rows of gables … here and there with a rather daring frill of baroque", as travel-writer Patrick Leigh Fermor noted in the 1930s. Alas Saxon numbers today are diminished, most having returned to Germany – after 800 years – in an exodus fueled during the 1980s and 90s by German government financial incentives. Most of their houses are taken over by Romanians and Gypsies, so village life continues, but it needs support and investment.

My contribution has been a botanical survey in and around the villages of Viscri and Malâncrav. I am astounded at the sheer richness of plant diversity – the Trust's 100-hectare orchard at Malâncrav holds more than 200 wildflowers! Transylvania's flowery meadows comprise a significant cultural element, integral to the churches and villages. And they are undoubtedly the best lowland meadows to survive in Europe. A colourful mix of wiry grasses and 20–30 yellow, pink and purple peaflowers – sainfoin, dwarf brooms, clovers and vetches – dominate the sward. White Ox-eye Daisies and Dropwort and crimson Charterhouse Pink, known locally as 'Blood of the Holy Virgin', dot the grassland. On steeper slopes grow true steppe plants: magenta Russian Viper's-bugloss, Yellow Flax and Nodding Sage, with tall bowed purple spikes. Blue, brown, copper and fritillary butterflies flutter over the flowers; lizards and slow-worms wriggle between grass tussocks. Everywhere is the hum of insects, and towards evening crickets shrill noisily. Corncrakes, whose crek-crek fishing-reel rasp is almost gone from Ireland, creep through longer grass, from where their evocative call joins the pwhet-my-lips liquid of numerous quail. Flooded cart-ruts are home to Fire-bellied Toads, whose presence in EU countries merits immediate Special Area for Conservation (SAC) status! It is all magical but so terribly fragile.

The Trust and Romanian conservation groups have joined forces in the "Sustainable Sighisoara" campaign: to halt Dracula Land theme park, a grandiose scheme backed by politicians, including Romania's Minister of Tourism. Not only would the park damage ancient woods and wood-pasture, but also this district has few roads, hotels or other tourism infrastructure. Dracula Park, so its supporters claim, will attract tourists, jobs and prosperity – but the proposals are unfeasible and the sums don't add up. Nor would it benefit local people, slowly rebuilding their lives after the Communist era. The Saxon lands need sustainable activities: organic farming, traditional but living crafts, and village tourism – harnessing the skills of local people. The villages will regenerate and prosper only if we encourage small-scale economic and tourist development in sympathy with the landscape, its intangible sense of place and atmosphere of history.

Dr John Akeroyd, who is still active in Sherkin Island Marine Station's wild plant surveys, has been visiting Transylvania since 2000. For more information visit: www.sighisoara.com and www.eminescu.org.uk

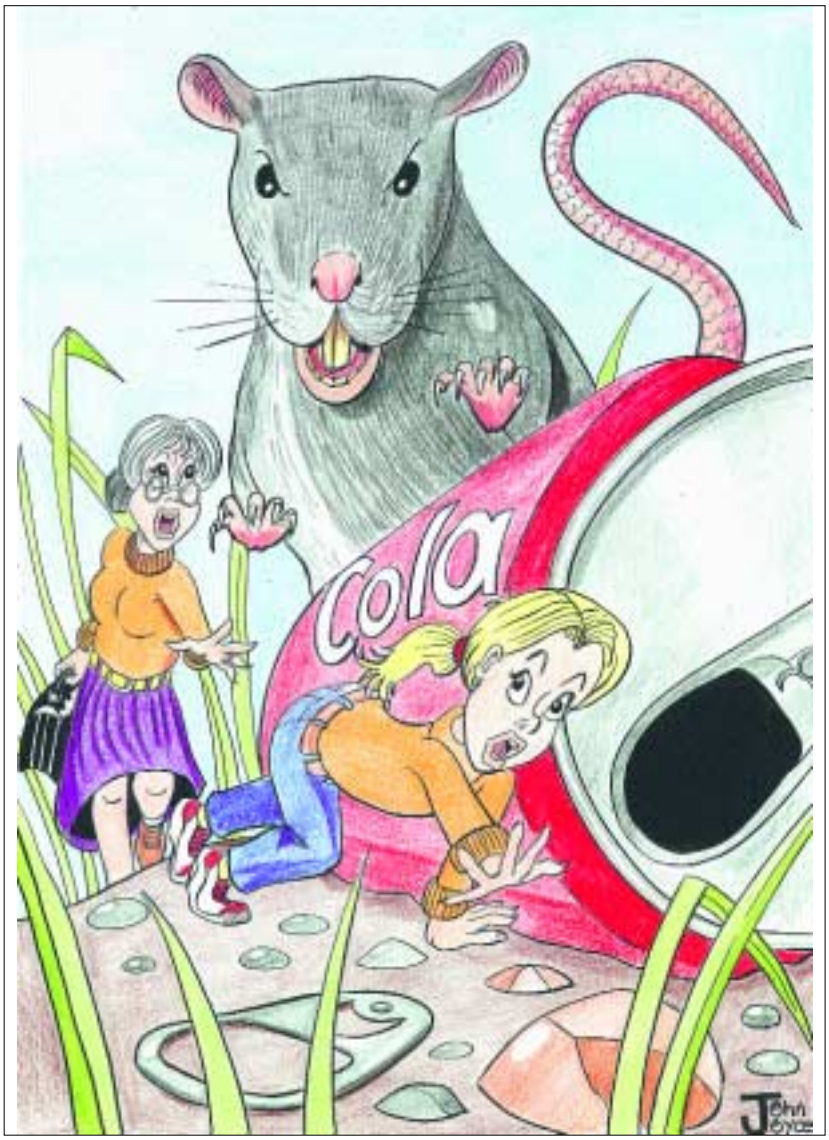
Flowery grassland, arable and woods form a wildlife-rich mosaic.

Street scene in Viscri, with unpaved road and Saxon houses – each a small farm with yard and barns through gates to rear.

Hornbeam woods, still home to wolves and bears, extend to edges of villages.

Captain Cockle and The Pond

Abridged in four parts - *Episode Two - The Land of The Giants*



Sketch: © John Joyce

By John Joyce

The story so far: Captain Cockle - retired submariner and inventor of the Cormorant - an amazing flying submarine that can shrink to the size of a sausage at the touch of a button - has crashed into a lake after being struck by lightning. Together with his wife Dr Catherine Cockle, and their grandchildren Jenny and William, they were trying to repair the Cormorant when a giant fish, bigger than anything ever seen before or since, burst out of the darkness, swallowed Captain Cockle's ROVER robot camera and turned on the rest of the crew . . .

Captain Cockle struggled free of the weeds and glanced back at the gigantic pike. How had this happened? The lightning bolt must have energised the special metal wires inside the outer hull of the submarine - shrinking the Cormorant until it was less than a metre long, and himself a little over five centimetres tall!

Good Lord! At that size the pike could chop him in two with one bite of its enormous jaws! All at once, out of the corner of his eye, Captain Cockle caught sight of a spinning, flashing metal object whizzing towards him at great speed. The pike saw it too! It jerked to one side, opened its terrible jaws and . . . snap! . . . all hell broke loose!

The pike twisted, spun and jerked, thrashing up billowing clouds of mud. Captain Cockle suddenly knew what the spinning metal thing was. It was a fisherman's lure, with a deadly three pronged hook, now firmly stuck in the pike's jaw!

"The pike has been caught by an angler. It's being dragged out of the water. We're saved!"

"But what about ROVER?" called William over the radio.

Captain Cockle swam to the surface and looked up.

Far away in the distance, a giant man as tall as the tallest skyscraper was hauling on a fishing rod that seemed to soar up and pierce the clouds. The giant pike broke the surface, bursting towards the sky, twisted and fell back into the water in an explosion of spray like a leaping whale. Again and again it rose and fell, until the giant reached out with a landing net as big as the biggest fishing trawler ever carried, and pulled the struggling, wriggling fish out onto the headland of the tall, tall cliff that was only the bank of a pond!

Away in the distance, miles away it seemed, Jenny could make out a farmhouse on the top of a wide track. The giant picked up the fish and strode towards it, his footsteps thumping though the water like earthquakes.

"He's taken ROVER," cried Jenny. "What ever will we do?"

"We're in a right old mess this time!" admitted Captain Cockle, back aboard the Cormorant. "Unless we can get enough electricity to expand to full size we'll be stuck like this!"

"But where are we going to get electricity from?" asked William.

"There are all sorts of things we could tap into if we could get up off the bottom and onto the shore. Even the power from a couple of torch batteries would give us enough electricity to run the motors and fly like a helicopter for a while, since we are so small."

So Captain Cockle brought the Cormorant to the surface and steered for the shore to hide the Cormorant in the drain leading down from the house. A tall mountain of piled rushes rose out of the water and reached up to a level with the tall cliff that was the edge of the pond.

"Right Catherine, you stay here with Jenny while I take William off to get a battery or something and look for ROVER. We won't be gone long."

"Just a minute Horatio," said Dr Cockle, crossing her arms. "Jenny is a wildlife expert and I am a doctor. We will go and try to get help and find Rover, while you stay here. You know it makes sense."

And she stepped out onto the deck of the Cormorant, taking Jenny to climb the reed pile into the terrifying monster world.

After what seemed like a hundred nervous miles, the great block of the farmhouse loomed close on the horizon. The path broadened out into a flat plain, and across the plain an enormous red door split the rear wall of the farmhouse in two.

To the left of the door two mountainous black refuse sacks leaned drunkenly against the wall. The bottom of one was ripped. Torn food wrappers, old potato peelings and a few crushed tin cans spilled out onto the concrete.

"Hmmm. Very messy!" observed Dr Cockle. "I wonder what did that?" But she didn't have long to wait to find out, because suddenly, from the middle of the tear in the bag, out popped the head of an enormous rat.

"Granny! Run!"

Grabbing her grandmother's hand Jenny pulled her to safety, through the triangular opening of an empty can of Cola!

For a moment there was silence, and then suddenly the hairy snout of the rat rammed itself through the opening, two huge teeth locked on the edge of the metal, and the rat began to bite through the soft aluminium!

Will Dr Cockle and Jenny escape the giant rats?

Find out in the next episode - Attack of the Swans - only in *Sherkin Comment*.

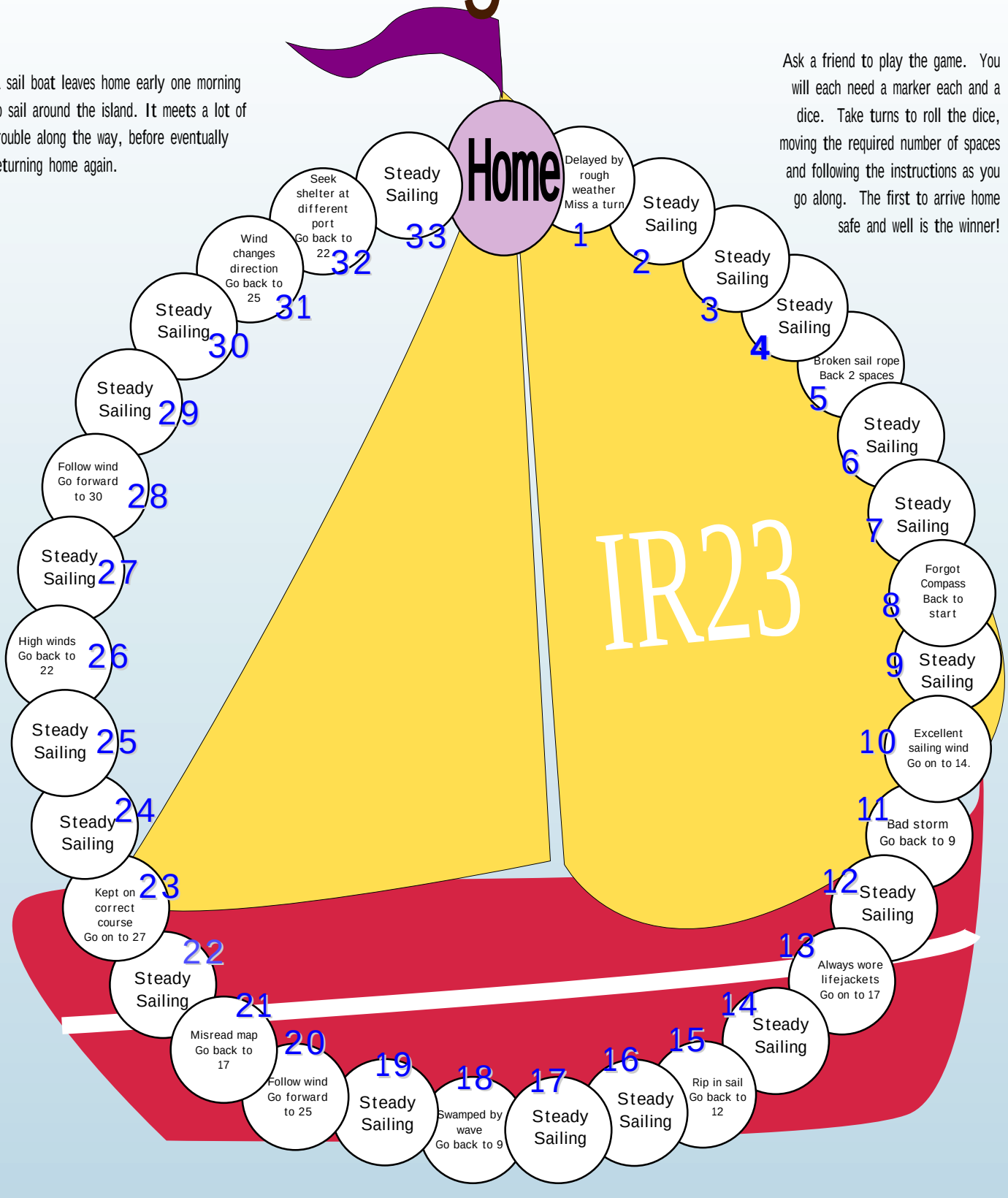
Abridged by the author from "Captain Cockle and the Pond" published in Ireland by Poolbeg Press and available from all good bookshops.

Visit Captain Cockle and friends online at www.cockle.com

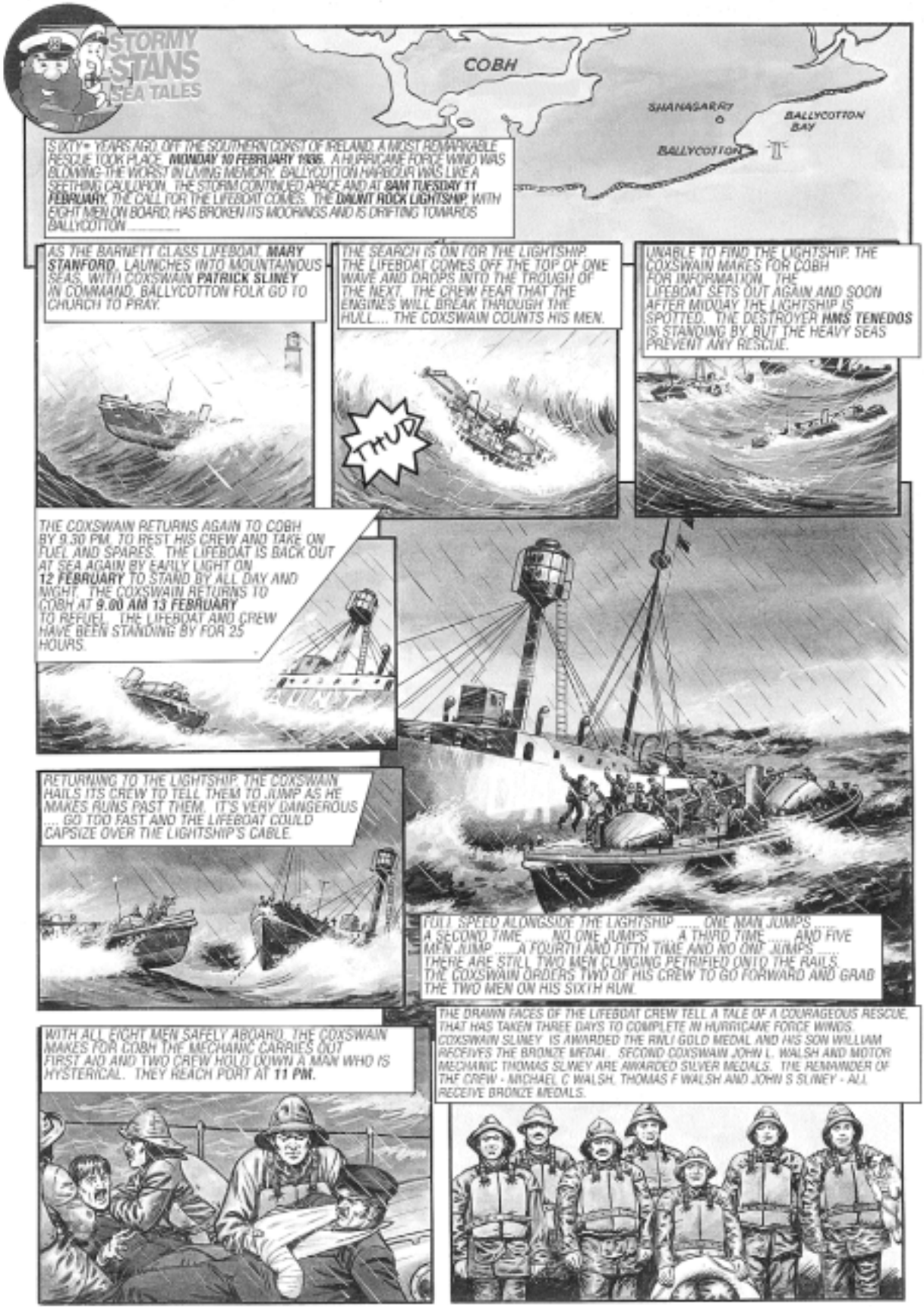
Weathering the Storm

A sail boat leaves home early one morning to sail around the island. It meets a lot of trouble along the way, before eventually returning home again.

Ask a friend to play the game. You will each need a marker each and a dice. Take turns to roll the dice, moving the required number of spaces and following the instructions as you go along. The first to arrive home safe and well is the winner!



A Story of Great Courage from the RNLI

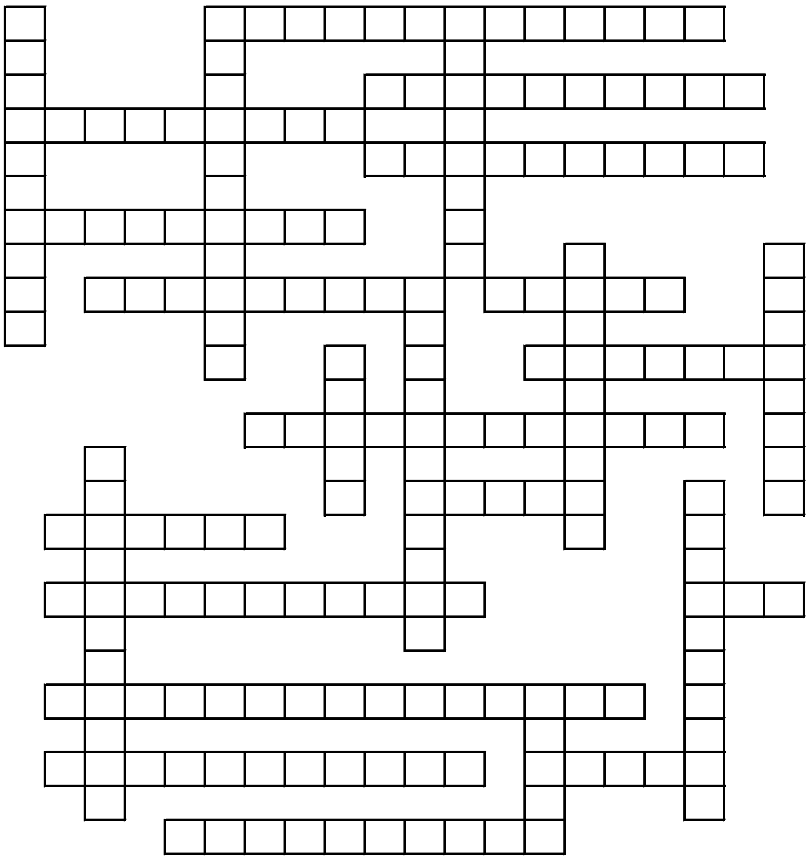


Join "Storm Force", the RNLI's club for young people, and you will be sent an exciting members' pack filled with lots of goodies. Four times a year you will receive the action packed *Storm Force News* magazine full of exciting stories, paintings, ideas or jokes from Storm Force headquarters.

To join just send your name and address, with a cheque/P.O. for €6.35 to: Storm Force HQ, RNLI, 15 Windsor Terrace, Dun Laoghaire, Co. Dublin.
Tel: (01) 2845050
Fax: (01) 2845052
Email: info@rnli.org.uk
Web: www.rnli.org.uk

Reproduced from "Storm Force News", the RNLI junior members magazine.

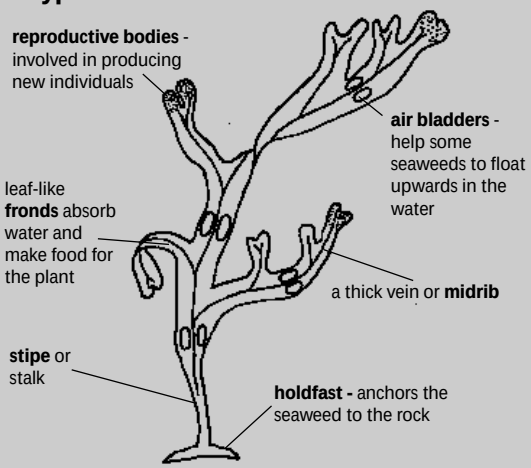
Seaweeds



Everyone is familiar with the plants that grow on land, but plants also grow in the sea. These plants are called seaweeds and they belong to a group known as Algae. Seaweeds play an important role on the shore, providing food and shelter for many animals.

Though there are many shapes and sizes of seaweeds, they are divided into three main groups, depending on their colour. These groups are the greens, the browns and the reds. All three groups can be found on the shore, although sometimes the brown seaweeds are so much bigger that they often hide the smaller reds and greens.

A typical seaweed



AIR BLADDER
ALGAE
BOOTLACE WEED
BROWN
CHANNELLED WRACK
CORAL WEED
DULSE
EEL GRASS
ENCRUSTING
FROND
GREEN
HOLDFAST
LINK FROND
LOWER SHORE
MAIDENS HAIR
MIDRIB
MIDDLE SHORE
OARWEED
PEPPER DULSE
PURPLE DULSE
RED
SEA LETTUCE
SERRATED WRACK
SPIRAL WRACK
SUGAR KELP
THONG WEED
VELVET HORN

Hidden Treasure

With the help of the clues, find the answers to the puzzle. Then fill in the well-known saying below using the letters from the puzzle. *Answers on page 31*

	A	B	C	D	
1	S				It protects your foot
2	P				Two of a kind
3	I				One you look up to
4	R				"...falls mainly on the plain"
5	A				Land lacks moisture
6	L				A body of water inland
7	W				The force behind the sail
8	R				A precious stone
9	A				A burning substance
10	C				Nearly or completely motionless
11	K				A frame flying on a string

C11	B1	D6

A7	C3	A8	C10	D7

B11	A1

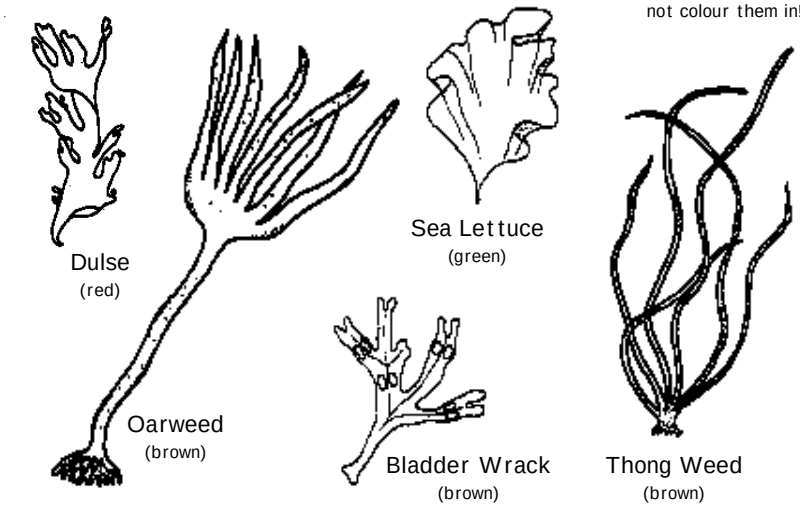
D10	D8

C1	D8	A1	C11	D11	B5

Fill the words on the left into the grid above. *Answers on page 31*

Plants of the Sea

All seaweeds belong to one of three groups: green, brown and red. Underneath each seaweed is their colour and group. Why not colour them in!



Gold Venture Project to earn a Gold Award

President Mary McAleese, accompanied by her husband, presenting Gaisce awards to Sandra Wright (second from left), Rachel Moloney and Kevin Boyd.

Sandra Wright is from Ballinspittle in County Cork, is a student at the College of Commerce in Cork and is very active in the local community as a youth and 'tidy towns' leader. She is proficient at playing the flute, has participated in the local musical and keeps fit at the leisure centre with swimming. Sandra has displayed her caring skills by helping at an orphanage in Romania and by raising £10,000 to buy much needed supplies. Sandra was named as "Kinsale Young Person of The Year".

Sandra's President Award Leader was Ursula McWhinney from Kinsale Community School. This is Sandra's story.

By Sandra Wright

Preparation

For three years I was a Gaisce participant and I received my Gold Award in February 2001. As part of the award I had to complete a venture project. The requirement to complete this is stated on the information booklet as a 'hiking journey' or as a 'cycle'. As I felt that charity was, and still is, such a worthy and needy cause I took it upon myself to ask a teacher within my school if perhaps I could venture with her to Romania and work as a volunteer. We discussed this and realised that this should be a good challenge to use as a Gold Award venture project and also an excellent experience - one that I could share with other students.

In relation to this we started to prepare for our trip. This, in itself, was a set challenge for me and I had to think long and hard about fundraising activities. Within time, ideas came about and a number of events took place. My co-ordinator and I held an Easter raffle, within the school, and many prizes were sponsored. A total of about £500 was raised. Mairead Healy, the teacher I would be accompanying to Romania, also held a cake sale for the people of Kinsale. On the 25th of June I held a church collection in my local area and raised at total of £550 towards our journey. This made people very aware of my venture and the reasons for it and to my delight many people very generously donated sums of money to the fund - which, of course, were not rejected! I also got together about £200 worth of children's clothes, which, although they had been worn, were still in great condition. Some medical supplies were also collected. Over all, with funds left over from previous years, we left for Romania with a total of about £10,000.

Following this, we organised our flights and all went well. We got a good deal and we flew out for a cost of about £360. This money I scraped together by childminding and working around my home throughout the year. After this it was just a matter of time before my venture and challenge would begin.

The Venture of My Life

Once the time had come I was, I must admit, very nervous about the trip, as I really had no idea of what to expect. As we flew over I found myself almost at the stage where I thought I would possibly turn around and come home again. I found this very strange as nothing even remotely like this had ever happened to me before. However, I made it to Bucharest but the strangeness I felt would not go away at all. My first impression was the amazing beauty - it was night time but the lack of green in the grass - which I noticed even though it was dark - really surprised me.

On the first day we travelled to 'metro' - that was like a large shop where you could buy in bulk and where everything was great value. We bought 45 pillows for a psychiatric hospital located up in Galazts. The following day we travelled up, in the mini bus, which we had the use of during our entire stay in Galazts. We visited the Child Protection Agency - this was necessary in order to get permission to see the children and to ascertain just what might be needed. In doing this we had a bit of difficulty but soon they were glad to see us once they realised just what our intentions were.

An account was taken of what was needed at each orphanage and this was purchased in Bucharest.

In Galazts there were three orphanages with approximately thirty-five children in each. Prior to this, only months earlier, all these children were in Nekerest - which we also went to visit. It was a dump of a place where one hundred and twenty children all lived together with no hot water, where hygiene would have certainly been a problem and where a lot a love would have been needed. The place was very bad and the toilets!! I could not even bare to look at them. To me no matter how many bad things I could say about the place - it was that and three times worse. But to them this may not have been the case. However, when we went to visit the three in Galazts, which is where I first went, living condition were very good but because it was my first visit I was shocked by what I viewed and could not believe my eyes. I did cry but I was able to hold back the tears until I left the building. I realised that although I was overwhelmed by it I loved it.

On the next visit to the second orphanage I was able to contain myself a lot better. This place, however, had the most effect on me and would draw me back there over and over again! Here there were thirteen babies, most of whom were healthy, and these babies were swaying in their cots - for stimulation. I saw one child of about two years of age scrape all her stomach and another bang her nose and make it bleed just for attention and this really shocked me.

Photos: © Sandra Wright

In the third orphanage there were older teenagers - but they looked about ten or eleven years of age. There were also some really ill children with hepatitis 'b' and 'c' etc. During our visits we took account of what was needed and a list was made which consisted of all forms of clothing, boilers - as there was no hot water, playroom equipment (as no playrooms existed), books, a lot of medicines, things like soap and shampoo etc, outdoor play equipment, helmets for children who bang their heads off walls and also washing machines - the list was endless!

We travelled back down to Bucharest - three hours away - so that we could go about looking for all of the items required. We went to the metro again and bought many of the toys and playroom equipment. The money, which I had fundraised, paid for these. We returned to Galazts again - this trip was done over and over again; all in all, we travelled for about five days of our trip. It took us well into the following week to get the things to their rightful place as all the relevant forms etc had to be filled in properly to ensure that nothing would go astray once we left. We also went to the psychiatric hospital and at this hospital there was one newly built section, which was beautiful - but to be honest the old one now consists of three to a bed with lots of leaky walls and very little light within the building. The people who run it are doing their best - it is just the way it has turned out.

The food over there was the nicest I have ever tasted. The weather had me melting it was so hot and the people seemed quite nice. However, I found the language to be the hardest I have ever heard in my life. For the two weeks I was there (from the 1st to the 14th of August) I learnt very little of the language. Overall I really enjoyed my trip and would love to go again as I found it to be a real experience and most definitely a challenging challenge!

I would like to thank everyone who offered me help and assistance to achieve this venture.

Further information on The President's Award – Gaisce can be had from: John Murphy, President's Award – Gaisce, Dublin Castle, Dublin 2. Tel: 01 4758746. Or look up the web site: www.p-award.net click on "Profiles".

Apple and Spice Baked Seafood

Autumn flavours and a plentiful sea harvest make this a great "back to school" dish.

Ingredients

700g/1½ lbs cod fillet
2 cloves garlic - crushed
1 tablespoon curry paste
1 tablespoon chutney
1 small apple - grated

Yoghurt Sauce

1 small carton natural yoghurt mixed with 1 tablespoon skinned, diced, cucumber and the zest and juice of half a lime
Salt and freshly milled black pepper

Method

Add garlic, apple and chutney to curry paste
Coat fish and chill for 10 minutes
Bake fish for 15-20 minutes at 190°C/375°F/Gas 5
Serve with yoghurt sauce
You can substitute any firm fleshed white fish - pollock, monk or gurnard

Serves 4

Bord Iascaigh Mhara
Irish Sea Fisheries Board

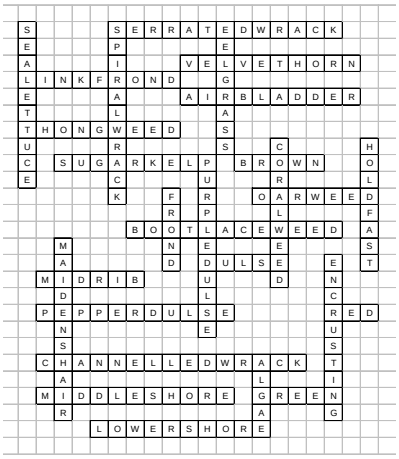
Visit the
Sherkin Island Marine Station website
http://homepage.eircom.net/~sherkinmarine

ANSWERS FROM PAGE 29

Hidden Treasure >

1. sole; 2. pair; 3. idol; 4. rain; 5. arid; 6. lake; 7. wind; 8. ruby; 9. acid; 10. calm; 11. kite.
Well-known saying: "The world is my oyster"

< Seaweeds



Learning to Fly Fish

By Peter O'Reilly

CATCHING fish is not fishing, it is hunting. So there is a difference between learning to fish and learning to catch fish. First, you must acquire the appropriate rod and line for the kind of fishing you are going to do and then learn the various techniques of casting a line.

I have not yet met an all-round angler, who has fished for salmon, trout, coarse fish or pike or sea fish, that after having mastered all types of tackle and fishing methods, did not prefer to fish with a fly where it was practical. To the best of my knowledge, there have been no exceptions to that statement.

What is it that makes fly fishing so interesting? When fishing other types of tackle, lets say deep sea fishing for example, it is very much a team effort. An error on the part of the skipper may mean a lost fish or may be no fish at all. In coarse fishing, companions help make the trip or at least add greatly to the enjoyment.

But with fly casting and fly fishing, the fishing is very much your own responsibility - and pleasure. You must be able to see/spot the fish or know where it is lying, make the cast, control the fly movement, hook the fly and play and land it all by yourself. Coupled with that is the satisfaction you get out of fly casting. Using a spinning rod may be fun but fly casting is pure pleasure. I have often likened fly casting to the game of bowls. Both allow you to watch in a sort of slow motion as either the bowl or the fly moves towards the target. But unlike in bowling when you have to walk up to retrieve the bowl, in fly fishing, you make another cast.

Unfortunately, a lot of the older fly fishermen in the past fostered the myth that unless you were an extremely gifted and talented person you could never learn to fly fish well. Nothing could be further from the truth. Any normally co-ordinated person who wants to learn can master the basics of fly casting in a few lessons with a competent instructor. Of course there is always something new to learn; new casts and different techniques. This is one of the fascinations of the sport. But, to be able to use a fly rod to catch a fish - game, coarse or sea - requires only a few hours of good instruction followed up by plenty of practice in the subsequent days and weeks.

So where do you begin. First you must get yourself a suitable fly fishing outfit. When selecting a fly rod line and reel, the wisest method is to bring someone along whom you know is competent to advise you. Even then, it is a good idea to know and understand what to look for. We are looking for matched tackle. A a fly outfit must always be matched.

The fly line is a long flexible weight that unrolls when it is cast, carrying the fly on the end of it. You would not try to carry a heavy piece of machinery on a small pickup truck, nor would there be any sense in using a 16 wheel low-loader truck to carry a piece of light furniture. So it is with fly lines. A light line is not capable of transporting a heavy fly to the target, nor is it practical to use a very heavy outfit to cast small flies.

For example, if you are spring salmon fishing in January and using a heavy 3 inch brass tube fly, a small A.F.T.M. No. 4 double taper line just could not carry the fly out over the river. And a heavy floating line such as a double taper No. 12 used with a little dry fly would develop so much speed and land on the water with such a crashing impact that it would defeat the whole purpose of using a tiny fly.

Most people select their fly fishing tackle in reverse order. They first buy the fly rod, then the reel and the line and finally the flies. That is wrong! What should first be determined is the size of the flies that are to be used. Then choose the weight of line that will comfortably transport them. Lines are weighed by calculating in grams the first thirty feet of each, not counting the front taper. Thus a double taper number 5 floatling line (DT5F) will be much lighter than a double taper number 12 floatling line (DT12F). The A.F.T.M. scale of lines now goes from 1 to 15.

Photo by Rod Calbrade: © *Flyfishing in Ireland*

Fishing the Dry Fly for River Trout

Basic guidelines suggest that if you are going to be using small flies trout fishing, where delicate presentation is necessary to avoid frightening the trout, then you will need light lines such as a number 4 or 5 line. If you are lough fishing and using a three fly cast, then common sense suggests that you will need a heavier line, say a size 6 or 7. But if you are salmon fishing, using big heavy flies, tube flies or Waddington shanks, then you will need a number 11 or 12 line to do the job efficiently.

The rod is the next consideration and must be matched to the line. You could not cast a 5 ounce weight with a light spinning rod. A rod designed for casting a 5 ounce weight will not load up with a 10 gram Flying "C". The same applies to fly rods. The rod is matched to a specific weight of line but almost all well designed rods will handle a line one weight lighter or heavier than the one that matches it perfectly.

On almost all modern fly rods, there is a label affixed above the handle that says the rod is matched to a No. 5 line or a No. 10 line - or whatever. Once you have determined what flies and line you need, then look at the label to select a matching rod.

At least, that's the theory!

Peter O'Reilly is author of "Flyfishing in Ireland"
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Price: €25.39