# 11. LITTER

Discarded can, Portrush, Co Antrim

## Key messages

- Marine litter is present in significant amounts and does not appear to be reducing.
- The main forms of litter are packaging and plastics.
- Litter can only be effectively tackled at source and by a change in attitude and behaviour.
- Survey techniques need to be standardised to assess whether management action is effective.
- Litter is an ecological as well as an aesthetic issue.

## What is marine litter and where does it come from?

Marine litter consists of items arising from human activity, deliberately discarded or unintentionally lost, which end up in the sea and on beaches. Typical examples are plastics, wood, metals, glass, rubber, fishing gear, clothing and paper. Semi-solid remains of various oils and other chemicals sometimes occur in the sea and on the shore but these are not defined as litter.

Litter comes from a variety of sources, including direct littering by beach visitors, discarded or lost gear from fishing vessels, illegal dumping by ships and small marine craft, discharges from combined sewer overflows and fly-tipping. Rivers and streams also carry litter into coastal waters, so urban areas can make a significant contribution to marine litter. Much of the litter is deposited by incoming tides along the shoreline, whilst sand dunes, groynes, rocky areas and promenades also act as traps, allowing wind-blown litter to accumulate. Litter may be transported over long distances by currents and the wind.

## Are there any litter surveys of our coastline?

There are two main datasets for coastal litter in Northern Ireland, one held by NIEA and the other by the charity, the Marine Conservation Society (MCS). Tidy Northen Ireland, a DOE sponsored organisation, also works to change behaviour towards litter. They also work specifically with councils to address beach litter through awards like the Blue Flag scheme. www.tidynorthernireland.org/beaches/

NIEA carries out surveys of identified bathing beaches throughout the bathing season which runs from 1st June through to the 15th September. The survey is conducted

Discarded gloves at Ardglass, Co Down

using a rapid scan technique of counting and categorising litter while the bathing water sample is being collected. The evidence from this programme neither shows improvement nor reduction in the quantities of litter on our beaches (Figure 11.1). This programme has been in place since 1999. Over that time, an average of 8,198 items have been recorded annually, 42% of which was packaging (food wrappers, carrier bags, paper and plastic wrapping) and 39% was plastic (Figure 11.2).

MCS data are derived from a 1-day annual survey by volunteers called Beachwatch Big Weekend. This is undertaken on the third weekend in September every year and has been carried out annually since 1993. Volunteers select a length of coastline which they would like to clean, and record the numbers and categories of litter during the clean-up operation. MCS gets excellent media coverage for the coastal clean-up, raising awareness of the problems marine litter causes for wildlife, while taking direct action to address the problem. In 2009 a total of 11,893 items of litter were collected on 13 of Northern Ireland's beaches, covering a total length of 6.7 kilometres. On average 1,775 items per kilometre were recorded, slightly lower than the UK average (1849 items per kilometre).

MCS found that over 60% of all litter is plastic. MCS reports can be accessed through its website[1].
http://www.mcsuk.org/downloads/pollution/beachwatch/

### Is there any information about litter on the seafloor around Northern Ireland?

In 2009, AFBI and NIEA completed a litter survey during fisheries trawl surveys of the Irish Sea (Figure 11.3). This provides a useful snapshot and demonstrates that the problem with marine litter is not restricted to our coastline.

The litter was broadly categorised and the result again shows that over 60% of all litter is plastic (Figure 11.4).

### Does litter harm marine life?

Wildlife is endangered by becoming entangled in marine litter or by eating it. Worldwide at least 267 species of birds, turtles and marine mammals have been affected by plastic litter. Plastic bags are often found in the guts of Leatherback turtles *Dermochelys coriacea* washed up on the UK's shores. When dead North Sea Fulmars *Fulmaris glacialis* were examined, 96% were found to have pieces of plastic in their stomachs[2].

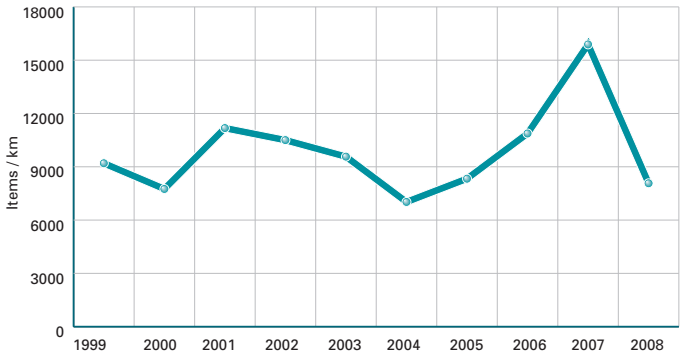


Figure 11.1 Average number of items surveyed per kilometre on Northern Ireland bathing beaches 1999–2008[3]

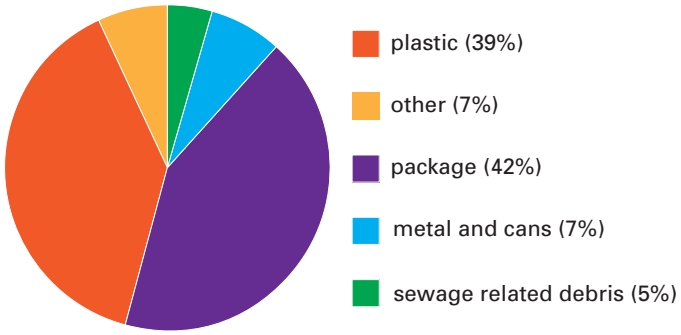


Figure 11.2 Percentage breakdown of litter collected on bathing beaches N. Ireland 1999 – 2008 [3]

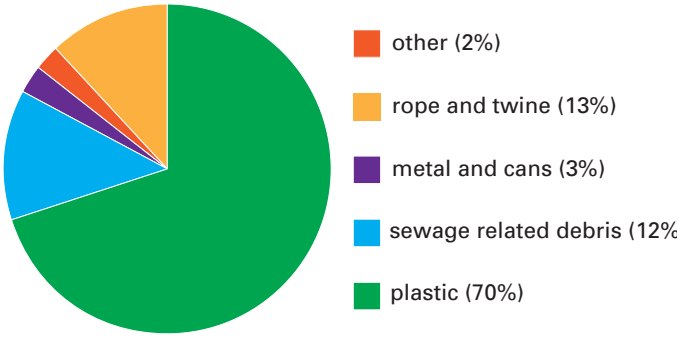


Figure 11.4 Percentage breakdown of litter caught in trawl nets in the Irish Sea March-April 2009 [3]

Once in the environment, plastic gradually breaks down into ever smaller pieces which persist for many years, so that they will continually build up as time goes by. Added together, all these tiny pieces offer a huge surface area that can absorb chemical substances from the seawater. Marine life may mistake plastic particles for their natural food and in this way, potentially hazardous chemicals enter the marine and ultimately human food chain.

The movement of litter within ocean currents has contributed to the invasion of alien

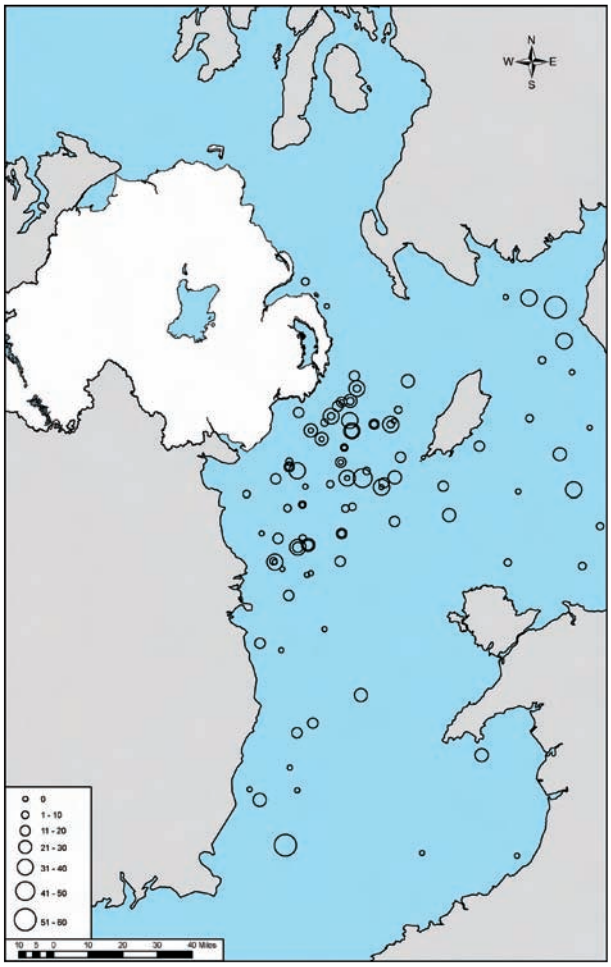


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Figure 11.3 The number of items found per km2 of Irish Sea during fisheries trawl surveys in 2009 [3]

species all over the world. The slow movement of currents means animals and plants attached to litter are not subject to temperature shocks as they cross climate zones allowing them to survive and settle outside their natural range[4]. In addition to harming marine life, large items of litter can damage fishing gear and vessels through collisions. Smaller items can block seawater intakes and evaporators resulting in engine failure, costly repairs and in some cases perhaps life-threatening situations.

## Forward look and further work

In order to prevent items from becoming litter, it is important to tackle the problem at its source. Reactive measures, such as beach cleaning, are useful in the short-term but do not provide any long-term solutions to the problem. These measures are only economically viable on amenity beaches where tourist revenue is important. It is also important to realise that marine litter is not simply an aesthetic problem but has environmental, ecological and economic impacts.

Local authorities, water authorities, industry and Government all play their part to reduce and clean up litter. Members of the public, however, must also accept individual responsibility to minimise their impact on the whole environment. National legislative measures and educational initiatives can also reduce litter at source.

Although we have quite a reasonable knowledge of the amount of litter on our beaches, monitoring should be continued to help assess whether management measures are effective.

Continued monitoring of the seafloor litter could prove useful, particularly where this can be combined with existing trawling activities. The standardisation of assessment criteria would improve the robustness and comparability of assessments. Consideration should also be given to programmes like 'Fishing for Litter', where litter gathered in trawls is actually collected and brought onshore for appropriate disposal[5]. NIEA needs to continue to work with Tidy Northern Ireland to address coastline litter.

| Legislation | |
|---|---|
| Marine Strategy Framework Directive Descriptor 10<br>Properties and quantities of marine litter do not cause harm to the coastal and marine environment | |
| Other relevant EC Directives<br>(full references and corresponding regulations – Appendix ) | |
| Urban Waste Water Treatment Directive | Driving tighter standards in sewage treatment & some industrial effluents. UK national guidance notes make recommendations for minimum screening requirements for both waste water treatment works and sewerage systems to minimise sewage related debris entering the environment |
| Waste Framework Directive | Requiring ports to develop waste management plans and provide reception facilities for waste |
| Bathing Water Directives | Require the visual inspection of bathing waters for pollution such as tarry residues, glass, plastic, rubber or any other waste. When such pollution is found management measures must be undertaken |
| International Agreements | |
| MARPOL (Marine Pollution) Convention for the Prevention of Pollution from Ships | Preventing pollution from oil, chemicals harmful substances in the packaged for, sewage and garbage. These are implemented in the UK by Merchant Shipping Regulations |
| National legislation | |
| Litter (Northern Ireland) Order 1994 | Placing a statutory duty on local authorities in Northern Ireland to remove litter from amenity beaches |
| Clean Neighbourhoods (Northern Ireland) Bill | A further Bill is currently going through the Assembly process. This Bill will improve the powers of local authorities to control litter |

## References

(1) Marine Conservation Society 2009 Beachwatch Big Weekend 2009, Methods and Full Results, www.mcsuk.org/downloads/pollution/beachwatch/

(2) CSSEG 2009 Assessment of the Clean and Safe Status of UK Seas, Chapter 8 Litter

(3) O'Neill, F 2009 A survey of marine litter in the Irish Sea 2009. (Unpublished University of Ulster undergraduate dissertation)

(4) Minchin, D 2007 A checklist of alien and cryptogenic aquatic species in Ireland. Aquatic Invasions Volume 2, Issue 4: 341-366

(5) www.fishingforlitter.org/MarineLitter.aspx