

Marine Litter Report 2018

KEEP
NORTHERN
IRELAND
BEAUTIFUL



MARINE
SURVEY

Executive summary

This report summarises the key findings on marine litter found on ten reference beaches around Northern Ireland. Data has been collected since 2012 using the internationally recognised OSPAR methodology.¹

In 2018 the average number of litter items per 100m of beach surveyed was 625, the highest number recorded since the surveys began in 2012.

This year the report focuses on the harm litter and plastics in particular, pose to marine wildlife. Between 5-13 million tonnes of plastic waste are entering our oceans every year from terrestrial or land based sources.²

Society's adoption of plastics as a substitute for traditional materials has expanded almost exponentially since the 1950s, when large-scale plastic production began.³

One of the best-known properties of plastic is its durability. This is also the reason why it persists in the oceans for an unknown time after being produced both as recognisable items and degraded as microplastics. The large quantities of plastics now in the ocean are there as a result of failure to deal with plastics in a more considered and sustainable manner.

This year 78% of items recorded were of plastic,* with the remaining 22% accounting for all other materials. Single Use Plastic, where items are used once and thrown away were common; including on average 28 drinks containers and 40 caps and lids per 100m survey. Short pieces of string and cord which are likely to have come from fishing nets and pots were also a significant source with an average of 60 lengths of <1cm diameter string and 25 lengths of >1cm diameter rope observed on each survey.

The impact of microplastics, pieces of plastic smaller than 5mm in diameter, are a major cause for concern. Some studies suggest that the amount reaching our oceans is equivalent to every person in the world throwing a plastic bag into the sea every week.⁴

509 people have donated over 118 hours in 2018 cleaning the survey beaches. Together they have removed 749 bags of litter; protecting the environment and improving the quality of beaches in Northern Ireland. Volunteers remove all litter from beaches following each quarterly Marine Litter Survey, helping to protect the local environment and ensuring the validity and reliability of data collection.

Volunteers have removed over 1,000,000 pieces of litter from survey beaches since the surveys began in 2012.

Photo: Black Guillemot entangled in a dog poo bag by Mary Lappin.
Cover photo: Microplastics collected and photographed by Lesley Crawshaw one of our dedicated volunteer marine litter surveyors.

* 76% of items are recorded as plastic using OSPAR methodology and an additional 2% were sanitary which were also plastic items - mainly cottonbud sticks.

Foreword

A growing body of scientific evidence is accumulating that shows plastic pollution is now everywhere: it is in the air we breathe, the water we drink and the food we eat.

It is in us. Plastic is being found in ever larger numbers of animals: even in shrimps in the deepest oceanic trenches⁵ and nearly every Fulmar stomach contains post-consumer plastic.⁶

Micro-plastics also act as conveyors of toxic chemicals into organisms. According to researchers at Nottingham University, plastic chemicals which are used widely in homes, and persistent PCBs (polychlorinated biphenyl's) which although banned globally, can still be found in our food, cause sperm damage, and could have contributed to the 50% reduction in sperm quality globally over the past 80 years.⁷

So it is frightening to think of the trajectory we are on when this report shows the situation regarding litter, and particularly plastic pollution, is worsening around our coastline, with the highest ever counts since we started recording in 2012. On average surveyors found six pieces of litter for every step they took. Our ocean biodiversity is at risk of drowning in plastics.

On the big environmental issues David Attenborough says *"Time has gone"* and *"If we prevaricate, for even a few more*

years, we have lost the game." Yet he retains an optimism that is shared by many of the volunteers helping carry out this survey and the subsequent clean-ups. In Blue Planet II, David himself tipped the balance and ensured plastic pollution would be kept high on the agenda. The EU Single Use Plastic Directive is just one encouraging example of how subsequent legislation is helping drive change. Government, businesses and schools are now responding to the challenge and so must every one of us. Yet the recent strike action by school students over lack of action on climate change is a clear sign we are not doing enough.

We know what we must do. There is a moral requirement to find out what difference each of us can make and to then change our behaviours accordingly. We must dare to go further faster in moving away from our single use consumer habits.

The reward? A future for ourselves and our children where we can continue to enjoy seeing life in the sea.



Dr. Ian Humphreys

CHIEF EXECUTIVE,
KEEP NORTHERN
IRELAND BEAUTIFUL



Marine Litter during our survey on Ballyhorman Beach April 2018 (top). Fulmar in flight (above).

Sources

80%

of marine litter is estimated to come from land

MARINE



Litter dropped on beaches and recreational zones blown by wind or washed into the sea



Litter dropped in countryside, towns and cities



Waste from combined sewer overflows



Poorly managed landfill sites



Items inappropriately flushed down toilets



Lost or discarded fishing gear



Lost at sea from ships



Overflowing rubbish from bins



Microplastics from synthetic clothes and textiles



Fly tipping especially into our rivers and waterways



Microplastics from vehicle tyres, brake pads and road markings

c. 5-13 million tonnes of plastic end up in our oceans **every year** and make up 80% of all marine debris from surface waters to deep-sea sediments²



Industrial waste discharges/spills
e.g. plastic pellets (nurdles)

LITTER

£36m

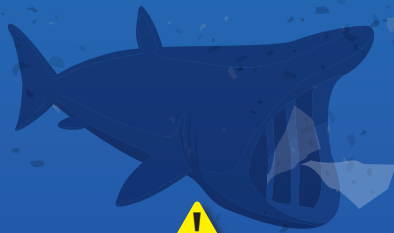
Estimated annual loss⁸ to Northern Ireland beach amenity value from marine debris

Littered coastal areas leads to loss of revenue and reputation

Impacts

UPTO
£19k

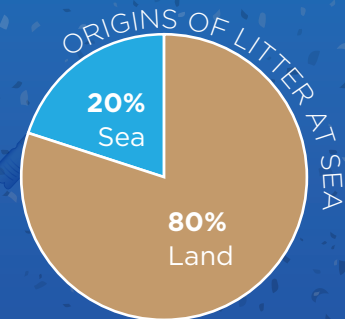
Estimated cost per fishing vessel due to marine litter⁹



Ingestion

Marine life often eat plastic mistaking it for food

Plastic pollution has a significant social, economic and ecological impact. Marine plastics threaten ocean health, human health, food safety and coastal tourism as well as contributing to climate change¹⁰



Entanglement

Marine species can become entangled in litter such as netting, sheet plastic and packing materials



Invasion

Transport of invasive species



Smothering

Discarded litter creates a suffocating cover on the seabed, damaging vital ecosystems

Harm to wildlife

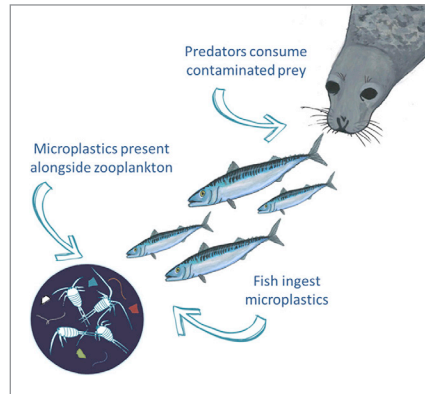
Despite an increase in awareness around the issue of marine litter, it remains a considerable threat to marine wildlife, with plastic the main offender. Recent research has uncovered the impact not only of large pieces but also the tiny ones.

As shown in this report, over three quarters of all litter found on our beaches was made of plastic.



Seals

Seals not only eat plastics accidentally, but they are also at risk of absorbing microplastics which have been eaten by their prey such as mackerel.¹¹ They are also at risk of entanglement, especially young more curious seals in fisheries related gear such as pots or lost nets.¹² Increasingly there are examples of seals becoming entangled in other plastic items such as this grey seal (above) which has become entangled in a hessian sack off Rathlin Island.



Whales

Large marine mammals are affected just as badly as their smaller counterparts. In late 2018 a whale washed up in Indonesia with 115 plastic cups and 2 flip flops in its stomach. Early in 2019 a Curvier beaked whale washed up in the Philippines with 40kg of plastic in its stomach. In the U.K. it has been discovered that due to the large amount of polychlorinated biphenyls (PCBs) our population of killer whales has reduced to just eight and there have been no calves in 25 years.¹³ PCBs are highly toxic, carcinogenic and very fat soluble so they are stored in the Orca's blubber. If an Orca does manage to calve the PCBs are passed on to the calf in the fat-rich milk. PCBs have been banned for decades but they are very persistent in remaining in our seas. Plastics can release a wide range of chemicals and we are only beginning to understand the impacts on our wildlife and us.

Birds

Of the 69 seabird species that commonly occur in the north eastern Atlantic, 25 are known to ingest plastic.¹⁴ For the majority of seabirds we don't have the data yet on plastic ingestion, however for the species we do, plastic can cause effects such as blocking their digestive tracts and reducing reproductive rates.

Herring gulls and lesser black-backed gulls in Belfast and the Copeland Islands and also European shags on the Maidens are known to incorporate plastic in their nests however most species have not been investigated yet.¹⁵

Lost fishing gear is also an entanglement risk but plastics from land are also a danger such as this plastic strapping in this gulls beak (below).



Microplastics

Microplastics are pieces of plastic which are less than 5mm in diameter and can be from primary sources: manufactured to be a small size such as pre-production pellets (nurdles) or secondary sources where they have broken down from bigger plastic items such as bottles or packaging.

A 2017 OSPAR report¹⁶ investigating land-based inputs of microplastics to waters in the North East Atlantic estimated that particles from tyre wear and plastic litter were the largest sources of microplastics with an estimate of around 100,000 tons/year each.

Microplastics are everywhere. In the air that we breathe,¹⁷ water that we drink¹⁸ and food that we eat.¹⁹ The potential impacts on our health from plastics are currently being explored. Many shellfish such as *Nephrops*²⁰

(Scampi) and Mussels (*Mytilus*) are known to bioaccumulate plastic particles which can impact them and pass on to us in our food. The rate of bioaccumulation in mussels means they are often used in bioremediation projects and they could be used to monitor microplastic pollution around our coasts.²¹ However, recent research has found microplastics in the guts of every marine mammal washed up on Britain's shores.²²

The killer whale or orca is a toothed whale belonging to the oceanic dolphin family, of which it is the largest member. In the U.K. it has been discovered that the population of killer whales has been greatly impacted by the amount of polychlorinated biphenyls (PCBs) found in the ocean.



OSPAR, methods and beaches

The OSPAR Commission designed the marine litter survey guidelines to assist countries with recording and tackling the marine litter issue on both a local and global scale.



Ballyhornan Beach.

The information collected from each beach is fed into a central database which shows trends and types of litter found in the marine environment. Surveyors record all marine litter found on the beaches under different categories to help describe the different groups of litter as well as individual types of litter.

When selecting beaches to be surveyed the following criteria was used. The beach must:

- Be composed of sand or gravel and exposed to the open sea;
- Be accessible to surveyors all year round;
- Be accessible for ease of marine litter removal;
- Be a minimum length of 100 metres and if possible over 1 km in length;

- Be free of 'buildings' all year round; ideally not be subject to any other litter collection activities.

Two sampling units are used along the beach to measure a fixed section of the beach between the water's edge and the back of the beach. These units are:

- 100 metres: for identifying all marine litter items;
- 1 km: for identifying objects generally larger than 50 cm.

The survey periods are as follows:

- Winter: Mid-December–mid-January
- Spring: April
- Summer: Mid-June–mid-July
- Autumn: Mid-September–mid-October



Surveyors Conor, Jess & Paul on Rathlin Island, January 2019.

Volunteers

RUNKERRY STRAND

- Include Youth
- Northern Ireland Environment Support Team
- Causeway Coast and Glens Heritage Trust
- Mars Wrigley Confectionery

👤 187 🕒 251 🗑️ 497

WHITE PARK BAY

- Friends of White Park Bay (multiple clean ups)
- Danske Bank
- Causeway Coast and Glens Heritage Trust

👤 316 🕒 726 🗑️ 298

RATHLIN ISLAND

- Rathlin Island Community and Development Association (multiple clean ups)
- St Mary's Primary School
- Marine Conservation Society

👤 290 🕒 564 🗑️ 272

BALLYWALTER

- Strathearn College
- Ballywalter Community Action Group (multiple clean ups)
- Include Youth

👤 257 🕒 608 🗑️ 320

PORTAVOGIE

- Glastry College
- Portavogie Action Group
- St Columba's
- Strangford College

👤 311 🕒 713 🗑️ 465

BALLYHORNAN

- Ballyhornan Community Association
- Strangford Lough and Lecale Partnership Volunteers
- Surfers Against Sewage
- Coca-Cola HBC

👤 343 🕒 770 🗑️ 637

Key

All data for 2013-2018

BEACH SURVEYED

- Volunteer groups who cleaned survey beaches in 2018

- 👤 Number of volunteers
- 🕒 Total volunteer hours
- 🗑️ Bags of litter

Total (for 10 beaches)

👤 2,920
🕒 6,941
🗑️ 5,067

OUR BEACH SURVEYS AND POST CLEAN UPS ARE CARRIED OUT BY AMAZING DEDICATED VOLUNTEERS AND WE COULDN'T COMPLETE THIS VITAL WORK WITHOUT THEM

ROSTREVOR

- Love Your Lough
- Probation Board NI (multiple clean ups)
- Cahir Linn Oysters Limited

👤 221 🕒 493 🗑️ 403

KILKEEL NORTH

- Mourne Heritage Trust Youth Rangers
- Team CITO
- Probation Board NI (multiple clean ups)

👤 356 🕒 1,054 🗑️ 1,109

TYRELLA

- Danske Bank
- Clanrye Group
- Hamilton Cooper Family
- McDonalds Downpatrick

👤 414 🕒 1,029 🗑️ 761

ARDGLASS

- Citi Belfast
- Strangford Lough and Lecale Partnership Volunteers
- Fishing for Litter Volunteers (multiple clean ups)

👤 225 🕒 487 🗑️ 551

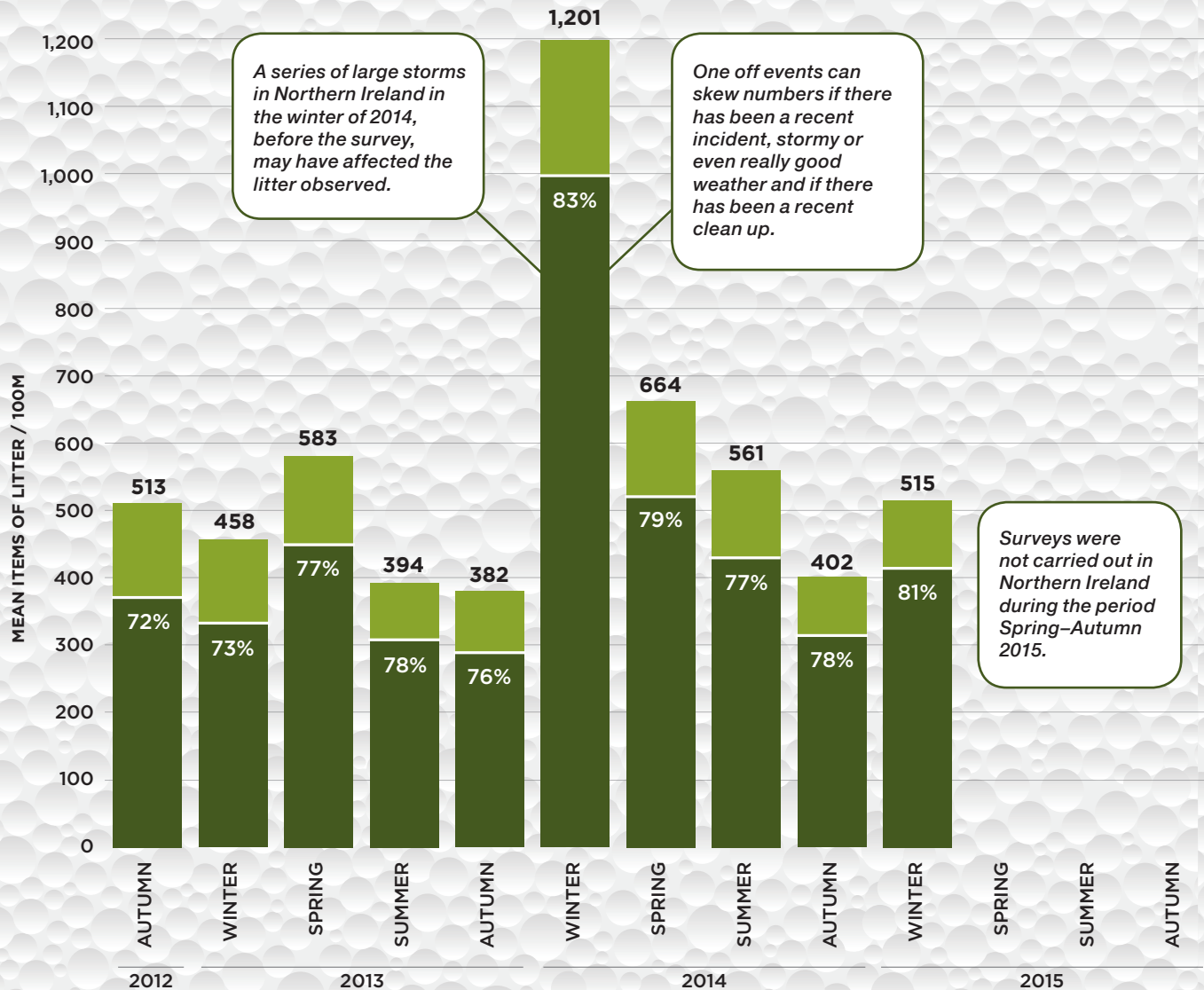
The plastic problem

In 2012, 74% of the litter found on the beaches in Northern Ireland was made of plastic. This year, that figure is sitting at 78% (76% if you remove the cotton bud sticks that count as sanitary items under

OSPAR recording). As the volume of plastic being produced grows every year, we need to become more responsible with how we dispose of it and more aware of its effects on our environment.

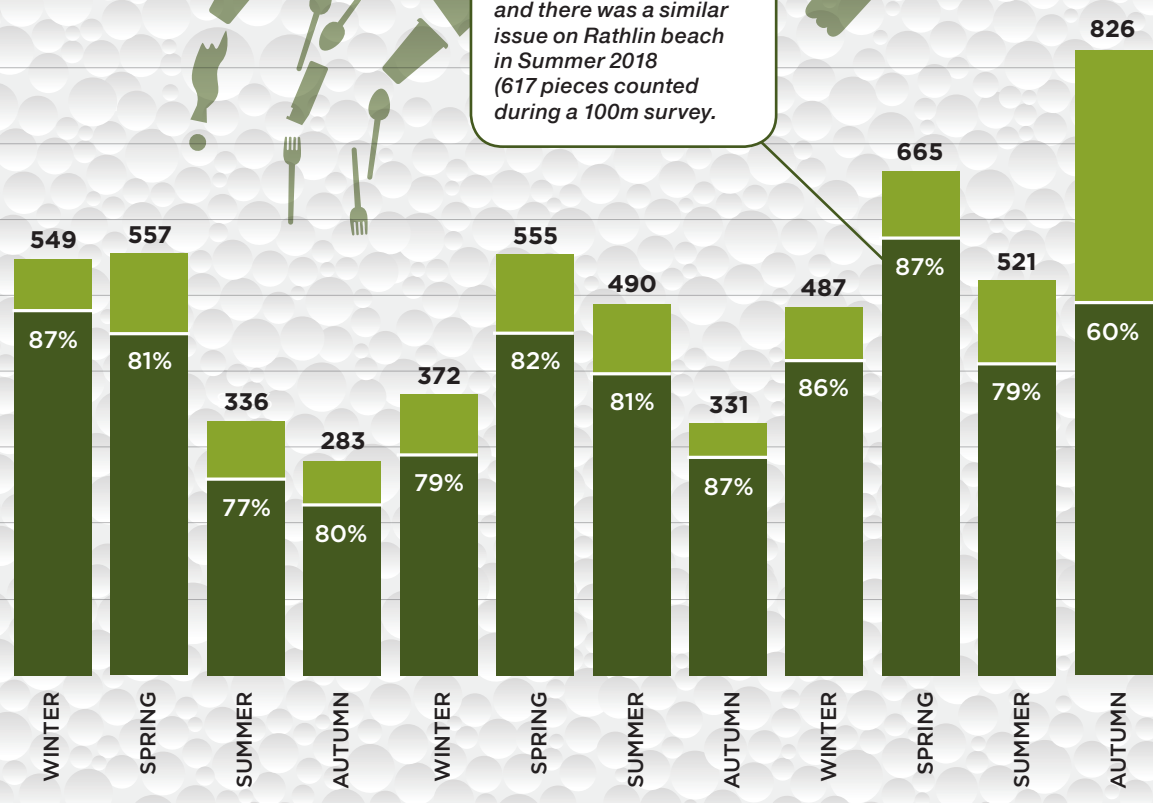
Key

- PLASTIC
- OTHER





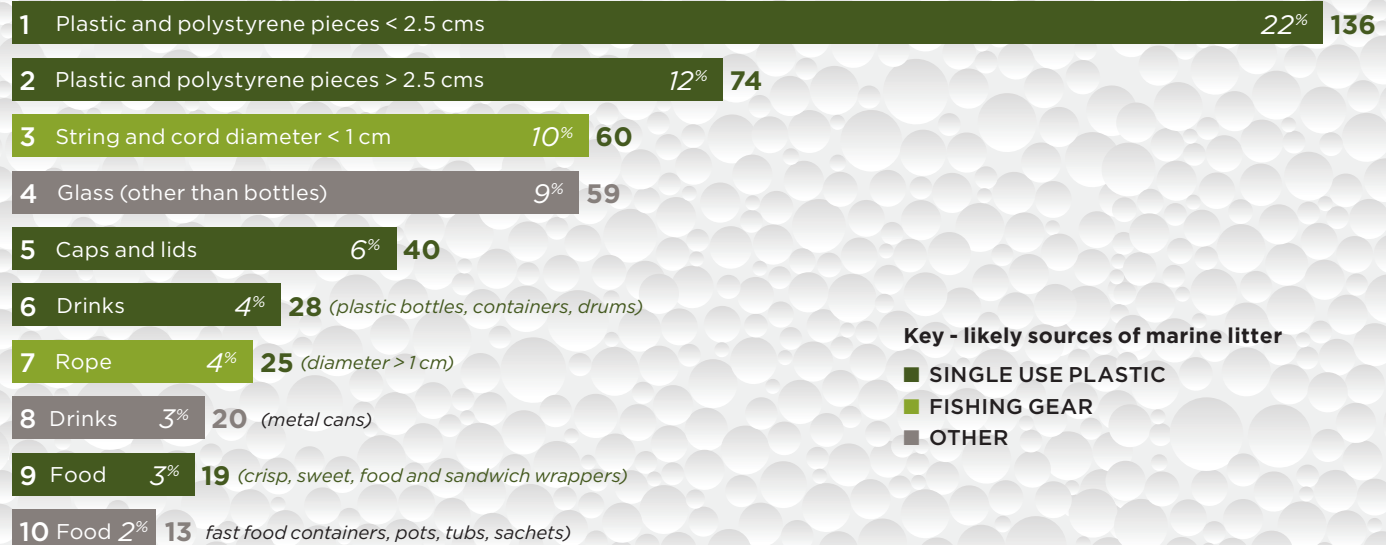
The issue of tiny pieces of plastic was significantly higher on White Park Bay in Spring 2018 as there were lots of polystyrene balls in the tide line (865 counted in 100m) and there was a similar issue on Rathlin beach in Summer 2018 (617 pieces counted during a 100m survey.



The reason plastic falls to 60% of the average number of items per beach in Autumn 2018 is that there were 2,000 pieces of broken glass on Ardglass beach which has skewed the averages across all the beaches. This is the highest number recorded by far on any of the beaches this year.

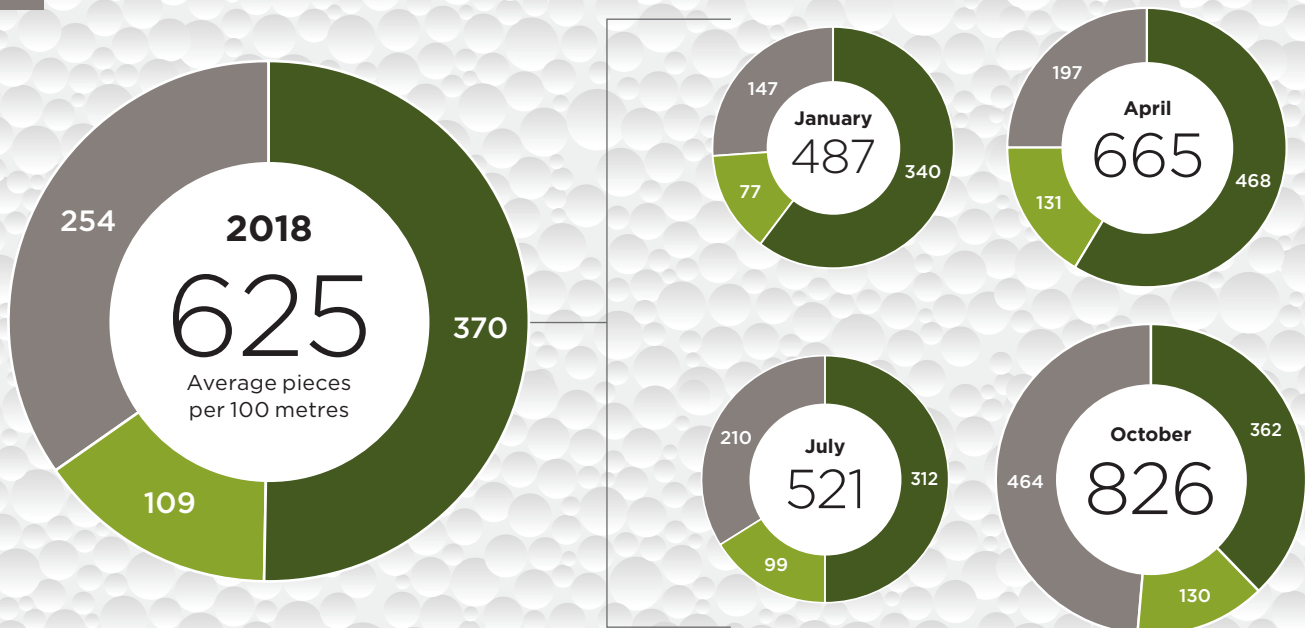
2018 Terrible Ten

Plastic continues to dominate the most common items found on the survey beaches both as Single Use Plastic such as food and drinks containers and also the ropes and cord. Graph shows litter types, average pieces per 100 metres and % of total.

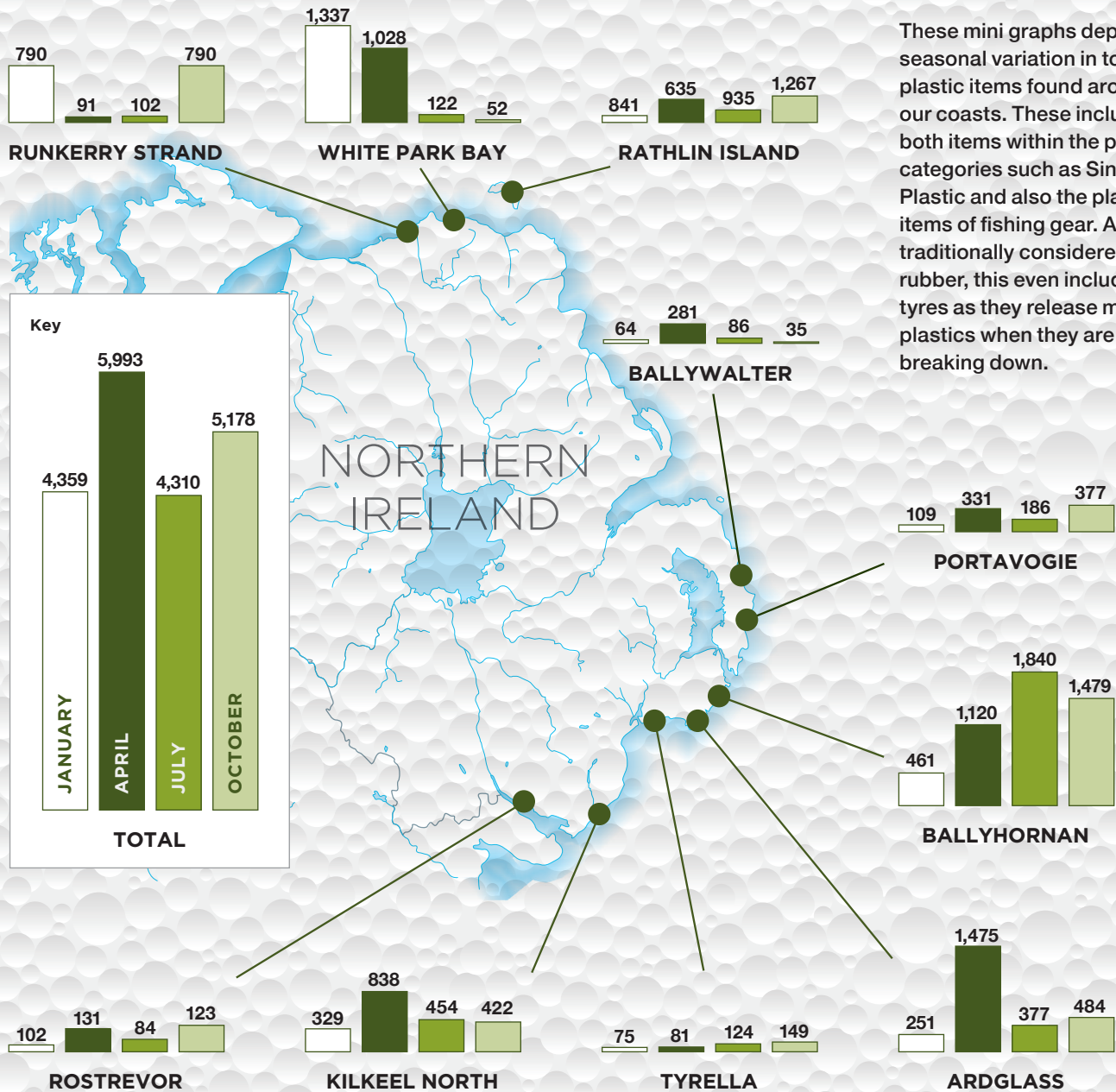


Key - likely sources of marine litter

- SINGLE USE PLASTIC
- FISHING GEAR
- OTHER



Plastic around our coast



These mini graphs depict the seasonal variation in total plastic items found around our coasts. These include both items within the plastics categories such as Single Use Plastic and also the plastic items of fishing gear. Although traditionally considered rubber, this even includes tyres as they release micro plastics when they are breaking down.

Tackling marine litter through environmental leadership

We all need to work together to tackle marine litter.

The UK Government signed up to the OSPAR objective in 2010 to “*substantially reduce marine litter in the OSPAR maritime area to levels where properties and quantities do not cause harm to the marine environment (by 2020)*”. There is an OSPAR Regional Action Plan for Marine Litter²³ which has 55 collective and national actions for land and seas sources of litter which focus on:

- Port reception facilities
- Waste from fishing industry
- Fines for littering at sea
- Fishing for Litter
- Abandoned and lost fishing gear
- Floating litter hotspots
- Education and outreach
- Improved waste management
- Sewage/stormwater run-off
- Reduction of single use items
- Removal of microplastics from products/ zero pellet loss
- Redesign of harmful products

In Northern Ireland there are increasing numbers of people and organisations stepping up to provide environmental leadership to tackle litter before it reaches the sea.



Anna Neal with her brothers and mother, on one of the 13 beach cleans she organised in 2018.

Winner of Lisburn and Castlereagh City Council Litter Heroes Award: Anna Neal

Anna created www.protectourpristine seas.com, to share her passion for our oceans with others. She organised 13 beach cleans in 2018, the most recent of which attracted over 30 people to help including her two younger brothers Ben, who helps drag all the big stuff along the beach and Conor, who fills bags with fisherman’s gloves. Anna has turned her passion for the oceans into

action, has raised awareness and gathered the community together, including the harbour authorities who joined their most recent clean. Anna was on the eco- committee at St Joseph’s Primary School in Carryduff and wrote to the teacher asking if an eco-committee trip could take place and the 30 strong group went to Tyrella for a clean up. The school have now decided to run this as an annual event and promote Protect Our Pristine Seas within the school.

One million pieces of litter collected

The millionth piece of litter from our survey beaches was collected in 2018 by volunteers from MCL Consulting and their families with Michael McAliskey from DAERA on Rostrevor beach (right).

Ulidia lead the way on plastic reduction

Peter Mullan from Ulidia Integrated College, as the Youth Ambassador for Northern Ireland (sponsored by DAERA), participated in the Ministerial Symposium on Marine Litter held in Scotland in February 2019. Ulidia is the first post-primary school to achieve zero waste to landfill and it also runs both an eco-mentoring scheme and an eco-club. Peter learnt how politicians carry out their work and how marine litter affects our environment, climate and livelihoods.

Sea Bins in Ards and North Down

Ards and North Down Council installed the first Seabin in Northern Ireland into Bangor Harbour in November 2018 (right). Seabins can collect up to half a ton of debris each year including large plastic items, microplastics, and even oils and pollutants floating on the water surface.

If proven successful, further Seabins will be purchased for other marinas and harbours. This project is one of many to be paid for by the Council's Recycling Community Investment Fund (RCIF), established in 2016 as a thank you to residents for their recycling efforts and to help promote the fact that 'recycling pays'. Each year it is being used to fund a variety of projects that directly benefit local communities.



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