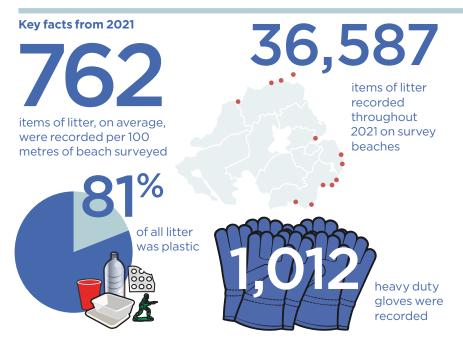


Executive summary

This report summarises the key findings on marine litter observed on twelve reference beaches around Northern Ireland in 2021. Data has been collected since 2012 using the internationally recognised OSPAR methodology.¹

Marine litter is an issue that we all face today and will continue to face until we start to make a change to the way we behave and the way we live. It is only in recent times that marine litter has been recognised as a serious global issue and as a result become prominent in the media. The restrictions experienced throughout 2020 and 2021 as a result of COVID-19 pandemic has resulted in more people using their local parks and beaches to exercise, take in fresh air and get away from daily stresses. Sadly, people are increasingly faced with these local beauty spots being desecrated by litter and the problem isn't going away anytime soon.

In 2010 the OSPAR protocol was adopted in the North East Atlantic area to assess the impact of marine litter.² This report details the amount of litter observed on 12 reference beaches in Northern Ireland during the 2021 calendar year. The 2020 Marine Litter Report left us with some optimism as it identified a slight downward trend in litter found within our beautiful beaches.



Unfortunately, we have seen a doubling of the amount of litter recorded in 2021 on the 12 reference beaches indicating there is a real need for everyone to revaluate how we should tackle the issue of marine litter.

The COVID-19 pandemic has created a lot of challenges over the past two years. One such challenge includes our reliance on Single Use Plastics as a safety precaution to reduce the spread of COVID-19. Within Northern Ireland a total of **758,055,575** core PPE items were distributed to health and social care services from 6th March 2020 to 28th January 2022. This includes aprons, face masks, visors, gloves and gowns which all must be disposed of after use.³

In 2021 plastics continue to be the most commonly recorded item making up 81% of all litter counted during surveys (up from 67% in 2020). On average 77 drinks containers and 61 caps and lids were found per 100 meters surveyed.

Additionally, short pieces of string, cord and rope were found across all beaches with an average of 217 lengths of string (<1cm diameter) and 101 lengths of rope (>1cm diameter) counter per survey. 1012 heavy duty gloves were recorded in 2021, double 2020's figure. These are most commonly associated with fishing gear.

Foreword

Welcome to the Marine Litter report covering results from 2021.

Sadly the following pages reveal a situation that has worsened considerably in terms of marine litter, even when taking into consideration events such as the lively Spring storm that dumped a lot of plastic onshore. The bottom line is that this is the worst year since recording began back in 2012.

Storms come and go, but we certainly can't blame one-off meteorological events for the upsurge in items like rubber gloves and drinks containers. We started noticing a downward trend in the number of rubber gloves observed in 2017 but that has been reversed in this latest report. Similarly, drinks containers now make up 8% of all litter items counted and that doesn't include those which have already broken down into tiny, less observable pieces. These tiny fragments of plastic and the even smaller micro particles they eventually break down into, are accumulating at a very worrying rate on our beaches and in the sea, causing untold damage to the marine environment.

So, you get the idea. Things have gone downhill; despite all the campaigning; and despite all the hundreds of volunteer groups out doing their best to improve their local beaches. A minority of people (34% according to our most recent Cognisense research) continue to litter,

despite 75% of people surveyed stating that they felt this behaviour to be unacceptable. Clearly we need to think more carefully about the mindset behind the behaviour and to find more effective ways to communicate its consequences to the widest possible numbers of people.

I recently listened to a psychologist who clearly laid out the need to focus campaigns on how we make people think and feel, rather than constantly 'telling' them how to act. This behavioural specialist drew parallels with road safety psychology – observations show that many drivers slow down when they see a speed camera only to speed up again once they have driven past; the point being that forced compliance doesn't really work. We must focus on shifting the cultural norm. How do we make people feel differently about the environment and its protection? How do we align with people's values of caring, as we so readily did during the worst of the pandemic? And how do we successfully challenge those who are littering? It is a complex issue with no magic wand to solve it.

A multi-faceted approach is required, including education, awareness raising, community engagement, capacity building and enforcement. We need to invest in all aspects of this inter-related web of incentives and dis-incentives if we are to have a real chance of changing attitudes.

Thankfully the traction of the Live Here Love Here partnership initiative, building civic and community pride, is increasing steadily, particularly through added investment from DAERA that has helped it punch well above its weight. Al, the 'disgusted' puppet of our public engagement campaign and his antilittering focus is central to reducing all littering behaviour. We now need to look carefully at using the recognition levels the campaign has won to further influence people's thinking and to effectively target our messaging at that 34% of people who admit to littering.

I hope this report is of use to everyone who works so hard to combat littering. It's important to have evidence to hand when we talk about the subject and when explaining why education and engagement work remains so vital. And to all those volunteers who give their time regularly to remove marine litter and who do so much to keep Northern Ireland beautiful, thank you. Keep up the great work.



Dr. lan
Humphreys
CHIEF EXECUTIVE,
KEEP NORTHERN
IRELAND BEAUTIFUL

What is the Marine Litter Survey?



In 2012 Keep Northern
Ireland Beautiful started
recording marine litter on a
number of beaches across
Northern Ireland. The survey
method was designed by
OSPAR to standardise the
monitoring of litter on
beaches across countries
bordering the North Atlantic.

Currently 12 beaches are being surveyed in Northern Ireland for all types of litter (see page 9).

OSPAR is the mechanism by which 15 Governments and the EU cooperate to protect the marine environment of the North-East Atlantic.

Northern Ireland shares the OSPAR objective to substantially reduce marine litter, in the OSPAR Maritime Area, to levels where the properties and quantities of marine litter do not cause harm to the coastal and marine environment.

You can view the data for all OSPAR sites by visiting https://odims.ospar.org/

The aim is that updated assessments of all the OSPAR marine litter indicators will be included in the next OSPAR Quality Status Report in 2023.

Although the UK has now officially left the European Union we will still be working towards the goals of OSPAR and continue to work with other European Countries to report on marine litter.

Image: two of our volunteers, Gareth and Paul, carrying out a survey...

Methodology

The OSPAR Commission designed the marine litter survey guidelines to assist countries with recording and tackling the marine litter problem on both a local and North East Atlantic level.

The information collected from each beach is fed into a central database which shows trends in the types of litter found in the marine environment.

Surveyors record all litter found on the beach under different categories to help describe the different groups and items of litter observed.

When selecting beaches to be surveyed the following criteria were 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 kilometre in length;
- Be free of 'buildings' all year round; ideally not be subject to any other litter collection activities

Two sampling units are used 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 kilometre: for identifying objects generally larger than 50 centimetres.

The survey periods are as follows:

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

To ensure that the marine litter being recorded during each of the surveys isn't duplicated the survey beaches are cleaned within two weeks of the survey.

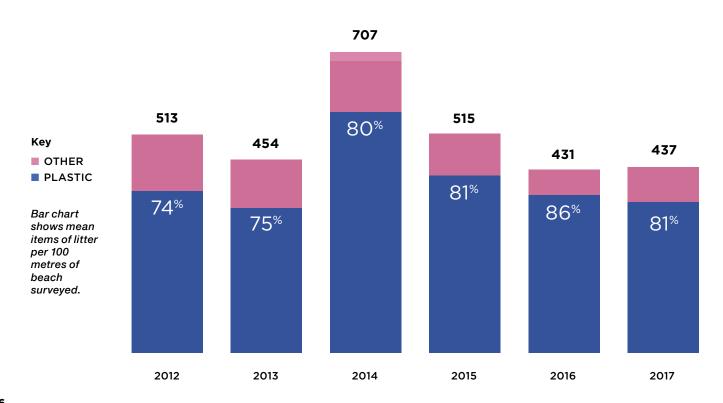
Once all data has been collected it is collated into one form and uploaded to the OSPAR database. This data is also uploaded to the Keep Northern Ireland Beautiful website and can be viewed at: www.keepnorthernireland beautiful.org/marinelitter

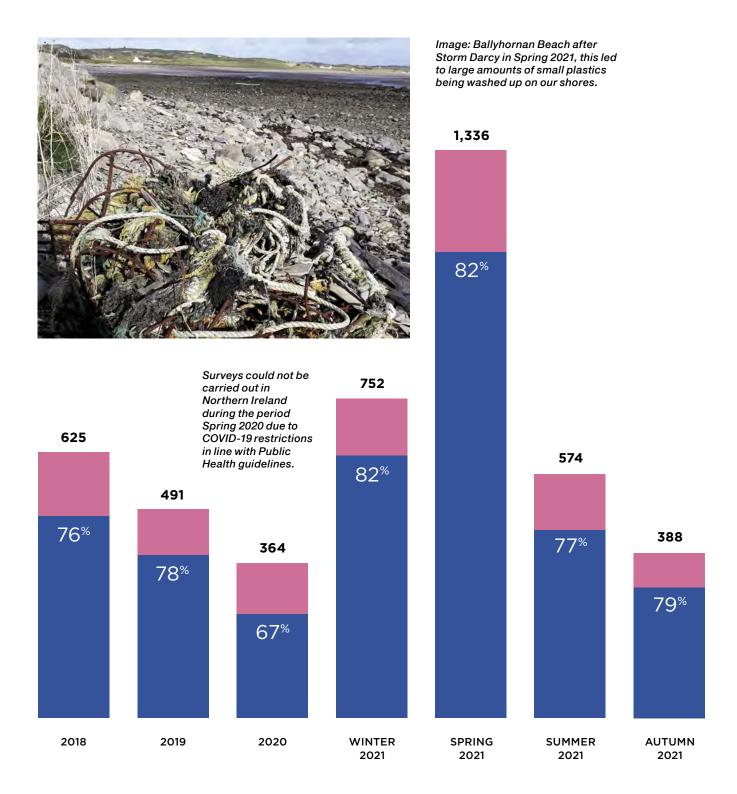
Image: Ballyhornan beach, one of the Marine Survey's twelve beaches.

The plastic problem

In 2021, 81% of the visible litter found on the beaches in Northern Ireland was made of plastic. 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 the impact it has on our environment.

One off events, such as the winter storms of 2014, can skew the data. It can also be influenced by very good weather, or if there has been a recent clean up. Surveys were not carried out in Northern Ireland during the period Spring-Autumn 2015.





2021 Terrible Ten

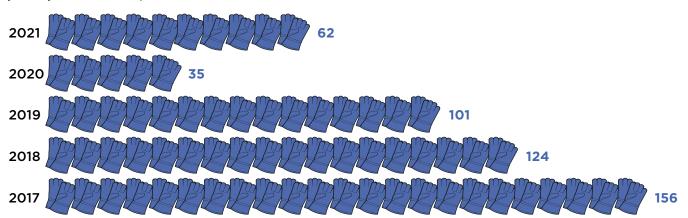
It will come as no surprise that plastic is still the most common material found on the survey beaches. It is recorded in the form of single use plastics such as food and drinks containers as well as string, rope and cord.

The graph below details the average number of pieces of each type of litter found within the 100m survey.

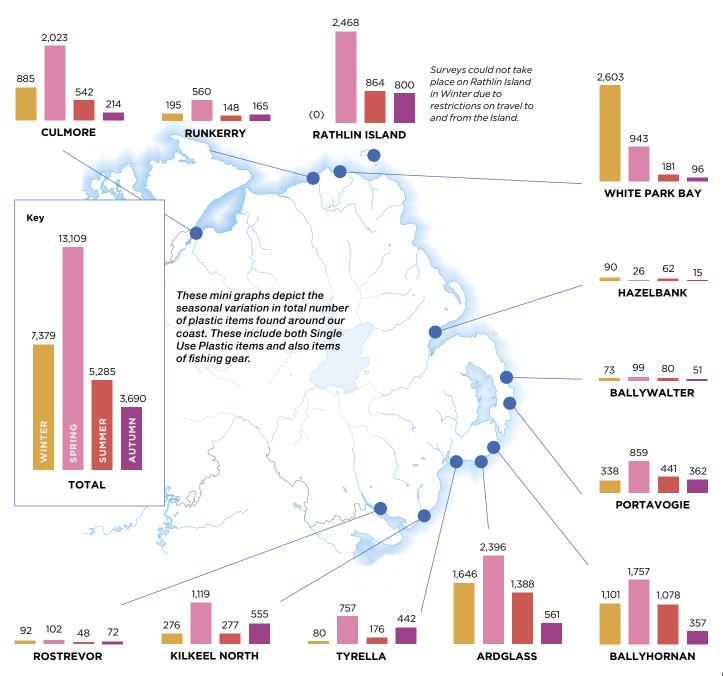


Heavy duty gloves found per 1,000 metres of surveyed coastline.

Although we have seen a rise in the average number of gloves from in 2021 compared to 2020 we are still seeing a steady decrease year on year. We would hope for this trend to continue in this downward direction.



Plastic around our coast



Marine litter in Northern Ireland

2021 saw the highest number of items of litter counted since recording began back in 2012, with an average of 764 items recorded per 100 metres. This equates to approximately 8 pieces of litter per step.

2021 has been an interesting year in many ways. In 2020 the number of items recorded was at an all time low but this result has now reversed and the numbers for 2021 are the worst we have ever seen. These massive increases may be due to a number of factors, from everyone returning to pre-COVID-19 restrictions, to winter storms or to people becoming busy again and having less time to carry out clean-ups. Whatever the reason, these results are a very concerning trend in the wrong direction.

As with previous years we are still seeing the "usual suspects" being the most recorded items across the survey beaches, with the main culprit being Single Use Plastics (SUPs). As you have seen in page eight, six of the top ten items were single use plastics, two of the categories would be commonly associated with fishing activity and the last two were broken glass and metal drink cans.

Six of the top ten are common shopbought items such as plastic bottles, cans and glass bottles, echoing the fact that consumerism is a big part of the



problem. This was also reflected in items beyond our top ten - plastic food containers, portable barbeques and clothing items were all recorded on our beaches. We have been tackling the issue of marine litter since 2011 but much more work needs to be done on the issue of behavioural change.

Many of the items which are being discarded not only cause an immediate issue to the marine environment but also have a medium to long term impact as they break down into smaller pieces of plastic. As seen on the survey beaches small pieces of plastic and polystyrene that are less than 2.5 centimetres make up 12% of all litter we record. These small items are very difficult to manage and cannot simply be removed from the environment. As a result, they can enter the food chain.

This has been the highest recorded amount of litter since surveys began in Northern Ireland and is a major cause for concern. The scale of this issue is immense and solutions to the problem need to reflect this. Local and central government, NGOs, businesses and the public need to work together to tackle the problem of marine litter.

Image: Rostrevor Beach, items of litter of domestic origin have included large toys and water barrels.

What's the problem? The psychology of litter

We are aware of the issue of marine litter but why isn't anything changing?

Litter is a major and constantly growing global environmental issue with several million tonnes of litter currently entering the ocean annually from different sources.4 Due to the large amounts of litter within our marine environment the shoreline is regularly used for litter monitoring because of its connection to the land-based sources.⁵ Marine litter. and in particular beach litter, is not only an important topic in marine pollution but it also can affect economic sectors such as tourism.6 Global and continual research efforts to understand the amount of litter and its impacts on our ecosystems is occurring but what is actually being done to make a difference?

Studies on beach pollution focus mainly on the abundance and composition of litter. Among the most abundant type of litter are various forms of plastic which make up a staggering proportion of 50-90% of total litter counts.⁷ Tourism is another significant source of beach litter as those beaches that are frequented by tourists and people engaging in recreational activities tend to draw hospitality businesses, which in turn generates more litter.⁷ As the issue continues to grow more work and effort has to be put in to controlling the amount

of litter that is entering marine ecosystems. This is not an easy task. In a study by Currie and Stack8 it was found that policy alone is not effective at reducing litter on beaches. They stated that any policy used for reducing litter must be accompanied with appropriate outreach, as increased education and outreach has been previously shown as an effective method for reducing littering rates.9 This outreach can extend from delivery of education workshops to schools and the public to having a range of signage and information boards around local areas explaining the impact of the litter they are leaving behind.

Another way to tackle the issue of litter on beaches is through voluntary work and in particular beach clean-up events. These can be effective ways to remove any immediate litter threats on the beach although items collected during clean-ups are often only the largest and most visible items (e.g. bottles, large bags etc.) therefore smaller items are expected to remain buried or embedded depending on the beach. Ultimately these events do reduce the number of items that will enter our oceans but the priority should very much focus on stopping items entering our oceans.

The most important thing we must change are people's attitudes towards littering. There is a good social norm that most adhere to which encourages them

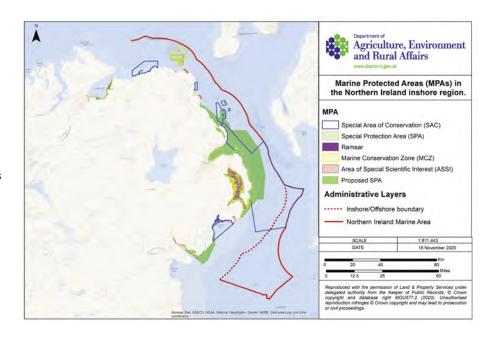
to take their litter away with them when they visit public places. However, there are those who don't. This may be due to a lack of care for the environment or it being "too much hassle" to find a bin. Whatever the reason these are the individuals we need to continue to try and nudge in the right direction towards making better decisions with their waste.

What's the problem? Ecosystem impact / habitat focus

The conservation of the marine ecosystems we rely on is extremely important to help protect our marine wildlife.

As the extent of human impact increases on marine ecosystems so does the need for long-term protection of these habitats and the species that live within them. Marine Protected Areas (MPAs) are increasingly being established to help fill that gap of long-term protection and to reduce further declines in global marine wildlife.11 MPAs are spatially defined and managed through legal or other effective means to provide meaningful long-term protection and conservation of marine ecosystems.¹² As previously mentioned this protection isn't just beneficial to wildlife it also has socio-economic benefits for humans as we rely on these marine ecosystems for food, tourism and recreation.

In the United Kingdom we have a range of marine protected areas with differing conservation goals, including Marine Conservation Zones, Nature Conservation Marine Protected Areas, Special Area of Conservation and Specially Protected Areas to name a few.¹³ The total number of areas protected due to MPAs in the UK has grown in recent years from 2% of UK seas in 2008



to 25% in 2019.¹³ One study by S.E.Nelms et al.,¹³ discovered that there is no difference in the amount of litter that is recorded on beaches inside and outside of MPAs. So although we spend a lot of time, money and efforts in protecting certain aspects of the marine environment these areas are still suffering from the impact of plastic pollution.

In Northern Ireland the current MPA network is made up of 48 MPAs covering 38% of the inshore region with even further areas identified for future designations. Although this is very positive for our marine environment there

is still more work that needs to be done in the terrestrial areas to prevent litter reaching our oceans and eventually these protected areas.

Read more about MPAs https://www.daera-ni.gov.uk/articles/marine-protected-areas

Above: Map showing the range and types of protected areas around the coast of Northern Ireland.

Tacking textiles

Every washing machine load sends hundreds of thousands of plastic microfibres down the drain.

The big picture

How we make and consume clothing and textiles has changed dramatically over the last 20 years.

Sustainable Apparel Materials has estimated that production of clothing has increased by 400% with over 150 billion garments produced globally each year.14 In the words of one local person interviewed during our recent research on textiles and clothing - "it is suffocating to think of that volume of clothing." More production leads to more waste and pollution. Across the UK, we throw away over one million tonnes of textile waste each year with up to 300,000 tonnes ending up in Landfill.15 According to fashion industry pollution statistics, the fashion industry is responsible for 8 to 10% of global carbon emissions.16

Our local research

In 2021, Keep Northern Ireland Beautiful undertook research on clothing and textile consumption habits in Northern Ireland. This included talking to people through focus groups and an omnibus survey. Most people who took part did not see how our consumption of clothing was having a negative effect on our environment. Knowledge and awareness of the issue is low.



Plastic in our clothing

A 2021 report from the Royal Society for Arts, Manufactures and Commerce (RSA) found that almost half of clothing sold by online fashion companies, Boohoo and ASOS, is made from virgin plastic.17 Most people in our survey did not realise now much of our clothes are made from plastic (synthetic fibres such as polyester). During the washing process, clothing undergoes mechanical and chemical stress in washing machines, releasing thousands of microfibres. The first study to investigate the quantity of microfibres being released estimated that just one load of washing (6kg) when washed in a machine could cause over 700.000 microfibres to detach.18

What can we do?

Through our local Fashion Forever campaign, we want to raise awareness around these issues and provide advice and tips on how to dispose of clothing and reduce the amount of clothing we purchase. We hope to encourage people to fall back in love with the clothes they already have in their wardrobes and reuse, repair and re-imagine.

Fashion Forever https://www.instagram.com/fashionforeverni/?hl=en

Love your Clothes (WRAP) https://www.loveyourclothes.org.uk/

Charity Retail Association https://www.charityretail.org.uk/find-a-charity-shop/?
postcode=&charity=&search=postcode

HARU https://www.haru.co.uk/

Tackling marine litter through environmental leadership

Foyle College doing their bit to help the environment and tackle marine litter.

Foyle College students have been putting a lot of work into collecting litter around their local beaches but could not have done this all without the support of their teacher who would like to say a bit about their work.

"I have had great support from students of all ages. Some venture out once or twice, others religiously never miss a month! We initially travelled to Magilligan Point and Benone on request from staff and students, but as the marine plastic problem gained momentum more people were willing to grab a bag and fill it thus

Students feel empowered that they have made a tangible difference

we decided to reduce our carbon footprint and work locally. After 3 years we adopted Culmore Point with Live Here Love Here, working towards our Green Flag school status. We brave the elements once a month to ensure our local beauty spot and other places along the banks of the Foyle are clean but are always astounded as to the volume of rubbish we collect. From car bumpers, traffic cones, trolleys, wire supermarket cages, children's toys and bikes, flickers, clay pigeon casing and pellets, to prams and even a fridge freezer. I would



confidently state that we would have collected a tonne of rubbish along the banks of our river since we started. The majority of rubbish we collect is comprised of plastic bottles, microplastics, horrible polystyrene and other food packaging. Culmore Point is a natural collection point for rubbish as it is on the upstream side of a mini spit. Our Environment Club have had great support and resources from LHLH. Gareth Lamrock, Seamus Cradden (DCSDC), local businesses who laid on a lunch for us at the end of the year last year (after our last litter pick in June) and the local people themselves who are so delighted to have their little strip of sand maintained. We would hope that we would see a rejuvenation of wildlife at Culmore which is already home to two

swans and their beautiful cygnets. Some of our students log their time with us for the DAERA Award Scheme Volunteering. Through our club, students feel empowered that they have made a tangible difference, have contributed to the health of our planet and are revolutionising their peers. They are more responsible global citizens and are aware of the impact our waste can have on our local environment, wider ecosystems and planet as a whole. I commend them all for the tireless work they do, proud to chaperone them every month."

Image: Foyle College students are constantly expanding their eco activity, recently becoming one of the first schools in Northern Ireland to complete a new Carbon Smart Students course.

The Northern Ireland Fishery Harbour Authority (NIFHA) who manage NI's commercial fishing harbours of Ardglass, Kilkeel and Portavogie were granted funding for the 'Marine Litter Management Project' in 2020 in response to the pressing issue of marine litter and a desire to improve. NIFHA employed an Environment Officer, Jenny Lau, and these are a few of the projects she has been up to in 2021.

Fishing For Litter

When fishing crew catch litter in their nets, they put it in a bag and land it where it is disposed of responsibly. They are uniquely placed to actively remove litter offshore. Approximately 40 fishers are registered in NI with more taking part informally, and in 2021, they removed 5.7 tonnes of litter from the sea!





Beach cleans

NIFHA (co)organised 17 beach cleans in 2021 with the community, corporate groups and with schools. Through 404 hard-working volunteer hours, we removed 1.9 tonnes of litter from our coastline!

Education

Working with local schools and with fishers to foster a greater understanding of the marine litter and plastic problem. 'Happy Harbours' coastal and classroom sessions are hosted with P4 – 5 in harbour towns, and online sessions were hosted with the public. NIFHA contribute to training provided to fishers and hosted marine litter days to highlight these issues within the industry.

Sweepers

NIFHA secured additional funding for sweeper machines for Ardglass and Portavogie harbours to make sure the small bits of litter can be quickly picked up before getting into the sea. This funding was made available through the Marine Litter Capital Grants scheme.

NIFHA work with fishers' organisations, schools, community groups, Ulster Wildlife, Keep Northern Ireland Beautiful and others, because we share the goal of improving the marine environment for future generations. Get in touch with NIFHA if you want to get involved with any of these projects!

What can you do to make a difference?



With Keep Northern Ireland Beautiful and Live Here Love Here there is a lot you can do to get involved in projects in your local marine environments.

Coastal Schools Workshop

The Coastal Schools Workshop is a programme designed to teach students about the problem of marine litter here in Northern Ireland and discuss the impact it has and how we can make a difference to reduce this impact. The workshop programme focuses on beaches close to both primary and secondary schools. Pupils complete marine litter surveys, a microplastic survey and finish with a clean up. The results are collated and used to produce a number of reports,

including this one. If you would like to get involved please contact **eco-schools@ keepnorthernirelandbeautiful.org**

Adopt A Spot

Interested in doing something to help reduce the amount of litter we see on our beaches? Through the Adopt A Spot programme you can select an area that you appreciate and like to visit regularly and help pick up the litter there. With your pledge you will be given litter pickers, gloves, first aid kit, sharps box, bags and a bucket and all we ask for in return is that you commit to four clean-ups throughout the year and let us know how many bags of litter you were able to pick up. If you are interested in joining the wide team of voluntary Adopt A Spot members then please download the Live Here Love Here app from your mobile app store and sign up today.

Marine Litter Capital Grants

The Marine Litter Capital Grants programme, funded by DAERA, opened on 30th June 2021. This was the first year of a continuing four-year programme. The aim of the grant programme is to enable groups to purchase items to prevent litter and plastic pollution from entering the marine environment, as well as improving the health and wellbeing of communities and marine biodiversity. It is hoped that access to the grants is also changing behaviour and attitudes by inspiring local creativity to reduce the incidence of littering.

The funding is available for any organisation responsible for managing a free-to-access public space.

Judging of applications is conducted by a panel of five independent judges and two Live Here Love Here staff members. The scheme is open throughout summer 2022 and will close again on 16th September.

Image: Children from Sullivan Upper School Preparatory Dept. take part in the Coastal Schools Workshop at Holywood seafront in February 2022.

Think global, act local

Contactless water fill system for Antrim & Newtownabbey

Antrim and Newtownabbey installed new water refill stations as well as new solar powered bins and community litter pick boards with the intention of reducing the amount of litter making its way into the sea. It is hoped that the Ecofill contactless water filling stations will save around 65,000 plastic bottles every year. The project was funded by a £40,000 marine litter capital grant.





Donaghadee schools get together

Four schools in Donaghadee teamed up with the local Community Development Association and Ards and North Down Borough Council to run a marine litter project. Each school was allocated an area of coastline and attractive new litter pick stations were installed. On every beach visit students gathered and analysed litter according to type, size and weight. They also collected water samples for analysis and will record and compare their findings over time. It is hoped the project will run for several years.

The USSCC Sea Cave Clean-up

A group of cavers from the Ulster Speleological Society and Caving Club identified a cave on the North Coast as being heavily polluted with litter and knew they had to do something about it. With the help of Live Here Love Here grants they were able to train up enough of their voluntary team in single rope technique which will allow them to enter and clean the sea cave safely as well as future sea caves all aroundthe coast.

Images: Antrim & Newtownabbey contactless water fill system (left), Donaghadee schools marine litter project (top).

Killyleagh Clean Team

Killyleagh Community Association, a volunteer-led group in Co Down set up their 'Clean Team' in late August 2021 and since then have organised a weekly litter pick for village residents of all ages. Up to 20 people meet each Sunday to litter pick around the village, shoreline and country roads. Between August and March they collected 1.6 tonnes of discarded rubbish, including drinks cans, take away containers, plastic bags and confectionary wrappers as well as marine litter collected at low tide. The group benefited from £16,000 of grant assistance from Live Here Love Here to install new bins around the village.

Cloughey water bottle filling station

The Cloughey & District Community
Association with the help of the marine
litter capital grants were able to have a
water bottle filling station installed at the
toilet block in Cloughey. They had seen a
real issue with discarded bottles of water,
especially in the summer with increased
visitors. They are hoping the addition of a
water filling station would result in them
spending less time having to pick up
plastic bottles!

Splash not Trash!

The Love Lecale, Hate Litter group have been working hard on inspiring and establishing local residents' connection with their beaches and seas. They saw an opportunity to spread awareness of the issues with marine litter and the impact we are having on our seas through shared experiences and



education. The long-term aim of the project is to promote education and behavioural change on waste and recycling initiatives, providing volunteering opportunities for local people, the creation of an attractive and interactive waste reduction initiatives in the heart of the village, including craft and mindfulness class, ballot bins, and repair cafes.

Rubbish Bubbles

The Blackwater community barge project started with the idea of providing people with a purpose built wide beam canal boat built to suit the specific needs of user groups and operates on the River Blackwater. After being inspired by an idea which was born in the Netherlands the community group decided it would be great idea to install a bubble curtain in



the River Blackwater. This will be placed in a hard to reach area along the river for cleaning and will create a wall of bubbles constantly rising from the bottom of the river forcing all litter that passes through it to the surface making it easier to clean.

Images: Killyleagh Clean Team, part of the local community association meet for weekly litter lifts in their village and along the shore.

References

- OSPAR Commission (2010) Guideline for Monitoring Marine Litter on the Beaches in the OSPAR Maritime Area. 84pp
- OSPAR Commission, 2010 Guideline for Monitoring Marine Litter on the Beaches in the OSPAR Maritime Area. OSPAR Commission (2010)
- HSC Business Services Organisation (2022) PaLS PPE Statistics (COVID-19). https://hscbusiness.hscni.net/ services/3190.htm. Accessed 18th February 2022
- Jambeck, J.R., Geyer, R., Wilcox, C., Siegler, T.R., Perryman, M., Andrady, A., Law, K.L., 2015. Plastic waste inputs from land into the ocean. Science 347 (6223), 768–771.
- GESAMP, 2019. Guidelines for the monitoring and assessment of plastic litter and microplastics in the ocean, 130pp. In: Kershaw, P.J., Turra, A., Galgani, F. (Eds.), GESAMP Reports and Studies, No. 99. GESAMP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection, London, UK. https://doi.org/10.25607/OBP-435.
- Houston, J.R., 2018. The economic value of America's beaches—a 2018 update. Shore & Beach 86 (2), 3-13.

- 7. Chen, Y., 2021. Measuring litter distribution on UK beaches. Marine Policy 130.
- 8. Currie, J, J. and Stack, S, H., 2021. Getting butts of the beach: Policy alone is not effective at reducing cigarette filter litter on beaches in Maui, Hawaii. Marine Pollution Bulletin. Vol. 173 Part A.
- Campbell, M.L., Paterson de Heer, C., Kinslow, A., 2014. Littering dynamics in a coastal industrial setting: the influence of non-resident populations. Mar. Pollut. Bull. 80, 179-185. https://doi.org/10.1016/j. marpolbul.2014.01.015
- Asensio-Montesinos, F., Anfuso, G.,
 Williams, A.T., Sanz-Lazaro, C. 2021.
 Litter behaviour on Mediterranean cobble beaches, SE Spain. Marine Pollution Bulletin, 173.
- Ban, N.C., Davies, T.E., Aguilera, S.E., Brooks, C., Cox, M., Epstein, G., Evans, L.S., Maxwell, S.M., Nenadovic, M., 2017. Social and ecological effectiveness of large marine protected areas. Global Environ. Change 43, 82e91. https://doi. org/10.1016/j.gloenvcha.2017.01.003.
- Day, J., Dudley, N., Hockings, M., Holmes, G., Laffoley, D., Stolton, S., Wells, S., 2012. Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas, vol. 36.

- 13. Nelms, S. E., Eyles, L., Godley, B. J., Richardson, P. B., Selley, H., Solandt, J., Witt, M. J., 2020. Investigating the distribution and regional occurrence of anthropogenic litter in English marine protected areas using 25 years of citizenscience beach clean data. Environmental Pollution, 263.
- 14. https://www.fashionrevolution.org/about/ why-do-we-need-a-fashion-revolution/
- 15. 2017 statistics published by Parliament. The report can be found here.
- UN Environment Programme (https:// fashiondiscounts.uk/fashion-industrystatistics/)
- 17. https://www.thersa.org/press/ releases/2021/half-of-fast-fashionentirely-made-of-new-plastics-study
- Napper, I.E. and Thompson, R.C. (2016). Release of Synthetic Microplastic Plastic Fibres from Domestic Washing machines: Effects of Fabric Type and Washing Conditions. Marine Pollution Bulletin, 112(1-2), pp.39-45.



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enquiries@keepnorthernirelandbeautiful.org

T 028 9073 6920

www.keepnorthernirelandbeautiful.org

