COASTWATCH AUTUMN 2019 SURVEY RESULTS
All Ireland
Marine Litter

Coastwatch

February 2020

Department of Civil, Structural and Environmental Engineering,
Museum Building, Trinity College Dublin, Dublin 2,
www.coastwatch.org

Coastwatch Autumn 2019 Annual Survey Results
All Ireland

Marine Litter

As reported by volunteer citizen scientists

Overall survey planning, coordination, verification and reporting
Karin Dubsky and Ángel Duarte Campos with Michael Walsh and regional coordinators

Data management and GIS mapping
Ángel Duarte Campos

February 2020

Coastwatch

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Acknowledgements

Coastwatch Surveyors Autumn 2019

Names are only included where permission to publish was granted. The space for names on the form is limited, so one name represents groups and schools.

Adam Horgan
Aine Walsh
Aisa Cooper
Alison Adamson
Andrew Cox
Andy Kelly
Anita Clarke
Anita Daly
Ann Maguire PCA
Anna Aherne
Anna Connelly
Anne McGill
Anthony Knott
Anthony Walsh
Aoife Ní Rathaille
Ardscoil Ris
Arklow Rowing Club
Arthur Healy PCA
Athena Michaelides
Belmullet VTOS
Bernadette Connolly
Bethan Goodridge
Blackrock Tidy Towns
Brendan McSherry
Brian Curran
Carlingford Tidy Towns
Caroline Crowley
Cathal Copeland
Cathal Kelly
Catherine Walsh
Cathy Lee
Christine Simpson
Ciara Connelly
Ciara O'Brien
Cilian Roden
Colm Maguire
Conor McMahon
Cordula Maguire
Cormac Nolan
D'hondt family
Darach Ó Murchú
David Costello
David Flynn
David West
Debbie Doyle
Debbie Reid
Derek Harrington
Diane Orr

Dympna Dunworth
Eamonn Kavanagh
Eithne Hamill
Elisabeth Pendergrass
Elizabeth Ewing
Ella O'Reilly
Emily Fair
Emily Shakespeare
Enok Nagy Ferenc
Eoin Mooney
Erasmus group
Eva Reilly
Eva West
Fegan family
Ferenc Enok Nagy
Fergal O'Dowd
Fergus McCaffery
Fran Sheahy
Frank O'Reilly
Freddie Drohan
Friends of The Raven
Friends of The Wren
Gemma Hooper-Jones
Glenarm Wildlife Group
Grace O'Sullivan
Grania Glynn
Heidi Bedell
Helen Deacon
Ian Beaney
Iona Crawford Topp
Iseult Cummins
Jack Berry
James Cassidy
Jeanette Bloor
Jim Shealy
Joe Aherne
John Bociek
Jonathan Mason
Jonnie Goyer
Julia Dubsky
Julien Beuken
Karen Meikle
Karin Dubsky
Katie Houlihan
Liam MacNamara
Lily Grimes
Linda O'Dwyer
Liz O'Brien

Louise Farrell
Love Your Lough
Lynda Sheahy
Malahide Sea Scouts
Malcom Starmar
Maria McGuinness
Mark Daly
Martina
Martyn Simpson
Mary Cassidy
Mary Grimes
Mary Looby
Mary McDonald
Matty Maddocks
Maura O'Shea
Maurice Murphy
Megan Lee
Michael Bloor
Michael Cox
Michael Glynn
Michael McGovern
Michael Walsh
Michele O'Connor-Connolly
Mick Berry
Molly O'Shea
Nancy Quinn
Noel McKeown
O'Brien Family
Olivia McCartan
Paddy Houlihan
Pat Healy PCA
Patricia Goodbody
Patrick Doyle
Patrick Jackson
Paul Dubsky
Paul Inglis
Paul Quigley
Paul Woodlock
PCA Beach Committee
Pearson family
Peta Taafe
Phil O'Callaghan PCA
Philomena Cahill
Prim Duplessis
Pringle family
Rebecca Stokes
Rigney grandchildren

Rita Hagan
Robert Anthony
Robert Kennedy
Robert Nicholson
Rosemary Watkins
Roslyn Shaw
S. N. Na Naomh Uile
Sabine Springer
Sanja Budinski
Sarah Hegarty
Save this beach Group
Seán Barry
Séan Jordan
Senan O'Reilly
Sharon Nallen
Shay Horan PCA
Shem Berry
St Francis' School
Susan Enticknap
TCD Envir. Society
Terry
Timoleague National School
Tommy Breen
Trish Murphy
Val Freeman
Veryan Scott-Hayward
Vicky White
Wicklow School
Wild Bunch
YouthTrain Ctc

Content

1. Introduction

The Coastwatch survey involves volunteers going out to any shore they have booked online or with regional coordinators and completing a survey form per 500 m of shore around low tide. This is referred to as a survey unit or s.u. in the report.

The citizen scientists then return their results online, or by post to the Coastwatch office in Trinity College Dublin, augmented by photos and video clips giving a snapshot of the coast of Ireland North and South in the September 15th to October 15th survey period.

For detailed method and full survey form please see www.coastwatch.org and review survey materials. The Marine litter and context questions are provided in Annex 1.

For new surveyors training is provided. Training typically focusses on shore functioning, tides and biodiversity in layman's language - who might live or visit what habitat or area and what they need. Regarding marine litter the more unusual or less obvious materials are pointed out – such as wet wipe ropes, geotextiles, mussel rope.

2. Data gathered and used

Data was organised and cleaned, duplicates used for cross checks and the form with more detailed information used. Inaccessible sites were separated out.

In the autumn 2019 survey over 570 survey units were returned by surveyors in Ireland North and South. After eliminating inaccessible and duplicate sites, 540 survey units were used in the marine litter analyses presented in these results. Other reports cover biodiversity, shore character and water quality.

Results are presented starting with largest waste items, followed by select litter counts, then smaller litter found and finally presence/absence of micro litter. Context of how this compares to previous shore visits, whether the shore was recently cleaned, and threat of dumping were also included.

When comparing results with those from recent years, it should be noted that the number of survey sites is similar to 2016 and 2017 and marginally below 2018. There was a slight shift towards urban and East coast sites in 2019. The largest number of returns came from Fingal, then Wexford, Cork, Waterford, Kerry and Sligo as figure 1 shows.
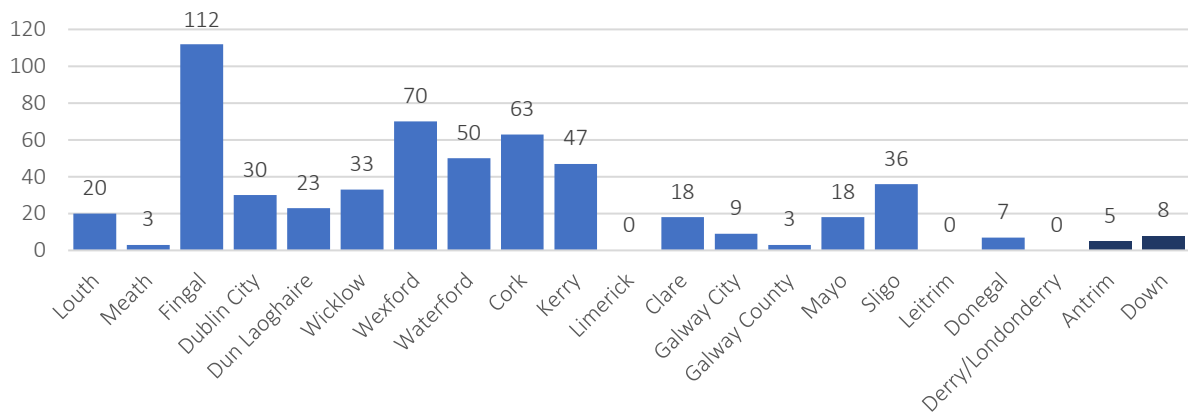
Figure 1. Number of survey unit surveyed per county in the All Ireland in Coastwatch 2019 results, presented in clockwise direction from Co Louth. (N = 540)

3. Large Waste and Shipwrecks

Q: Tick which large waste types you found in your 500 m survey unit and if it doesn't fit into any of the 7 categories, tick 'other' and describe.

Results are shown in figure 2 as percentage of survey units where the category of waste was recorded. The bars are colour coded as improvement (green), worsening by 2 or more % points (orange) or no change ± 1 % (grey) in comparison with 2018 data.

Surveyor reports of large waste show an improvement of 2 or more % for all categories except abandoned machinery, compared to the previous year.
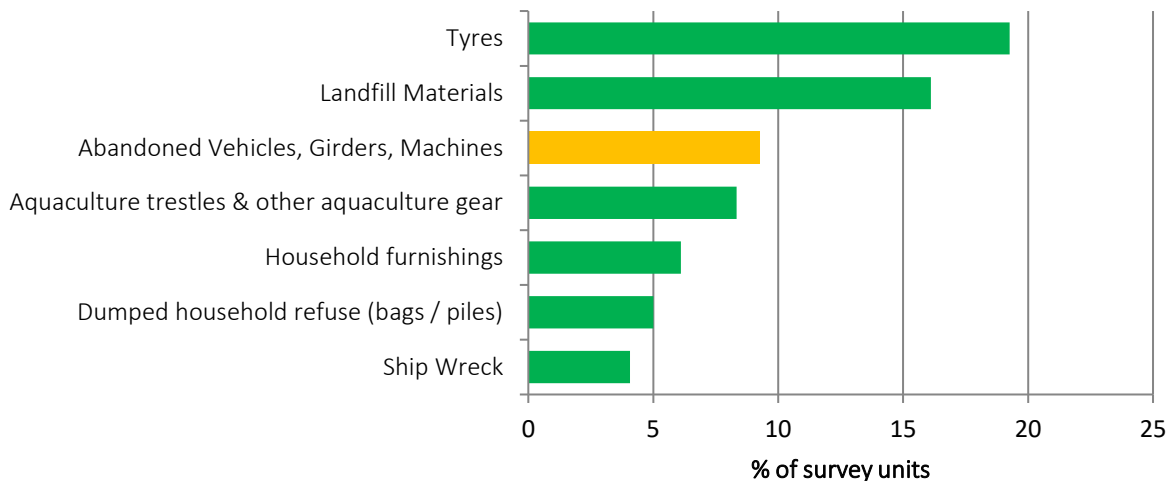
Figure 2. Large Waste recorded on the shore in the autumn 2019 Coastwatch survey expressed as percentage of 500m s.u. with waste. Green indicates a decrease in waste recorded from previous years and orange a slight increase (of <2%.)N=540.

In almost 20% of s.u., surveyors noted one or several large objects which they thought did not fit into the seven large waste categories we provided on the questionnaire. In 35 s.u. the 'Other' large waste items came from land, like a shopping trolley. Next most frequent was construction and demolition waste recorded in 35 sites, then came miscellaneous items from water based activities. Large fishing gear, like nets which you could not lift and pots were found in 9 sites. The categories are shown in figure 3 below.

2
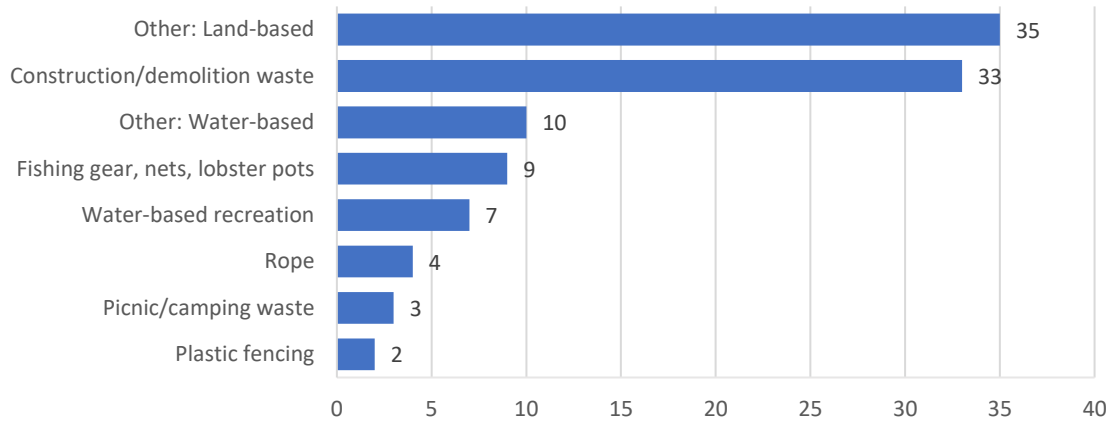
Figure 3. Type of 'Other' large waste surveyors found on the shore (N=540) 2019 Coastwatch autumn survey.

3.1. Shipwrecks

Shipwrecks were observed in 4% of survey units and included historic fishing boats which are now part of heritage. Surveyors noted modern abandoned kayaks, broken plastic dinghies and paddles under 'Other' and not as shipwreck. In Figure 3 above, these were grouped as waste from water-based recreation.

Where the ghost ship MV Alta, which Storm Dennis brought, will be in our Coastwatch data in autumn 2020 remains to be seen.

Picture 1. MV Alta Merchant ship stranded on rocks near Ballycotton Feb 16th 2020. Photo Mary Looby

3.2. Dumped household refuse

Bags, boxes and even loose heaps of household refuse were recorded in 5% of surveyed sites. This frequently overlaps with areas where household furnishings were recorded and areas where surveyors noted that there was a threat of dumping. The threat map (figure 4) suggests that coastal dumping is worst in inlets. In several site comments and observations from previous years highlight that there is an ongoing dumping problem in one spot or along a short stretch of coast with easy but secluded car access.

Picture 2. Dumped large waste in Inner Malahide estuary. Photo Gemma Hooper.

Dumped household refuse
in bags or piles of rubish
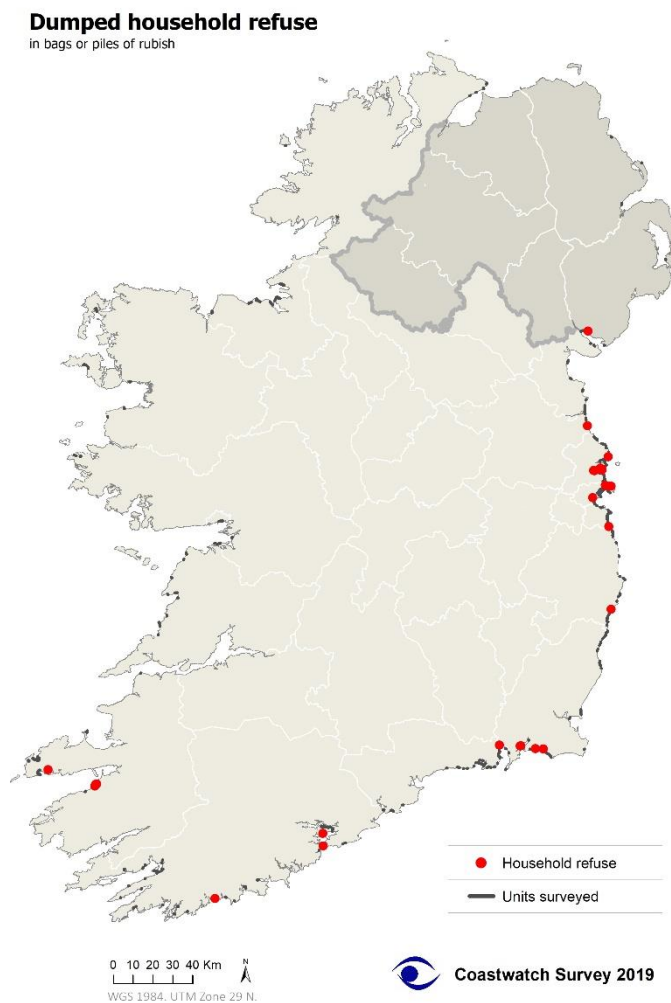
Figure 4. Sites mapped where on surveyor opinion, there is a threat of dumping or landfilling in the survey unit. 2019 survey.

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3.3. Large Aquaculture Waste and Abandoned Gear

This waste was found in 8.5% of the sites surveyed in 2019. While this appears to be a decrease over the peak year of 2018, GIS mapping of results showed that the 2019 survey does not include several aquaculture areas surveyed previously in 2018 in Cork, Wexford and Donegal. Once that is taken into account there is no improvement. As a general observation, large aquaculture waste typically stays very near to, or in the aquaculture operation areas and is often accompanied by small aquaculture waste – see map figure 6.

Several surveyors suggested that where there is shellfish aquaculture you are likely to find large waste as in abandoned, broken trestles, long line floats or sorting equipment on shores nearby, along with smaller plastic waste like netlon bags and hooks. There is no independent study of this and no annual license compliance reports to use as crosscheck for this observation.

Figure 5. Presence of large aquaculture gear on the shore over the last 6 annual Coastwatch surveys (N= 500 – 600 s.u. per survey, with less aquaculture areas included in 2019)

Figure 6. Map of Aquaculture Waste- large and small - found on the Shore in the 2019 Coastwatch survey.

3.4. Abandoned vehicles, girders and machines

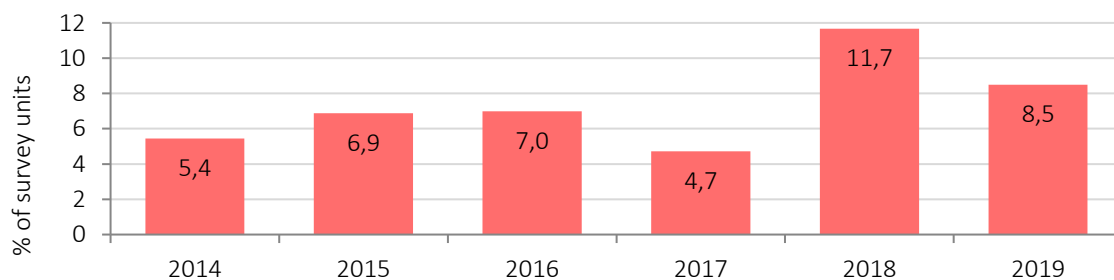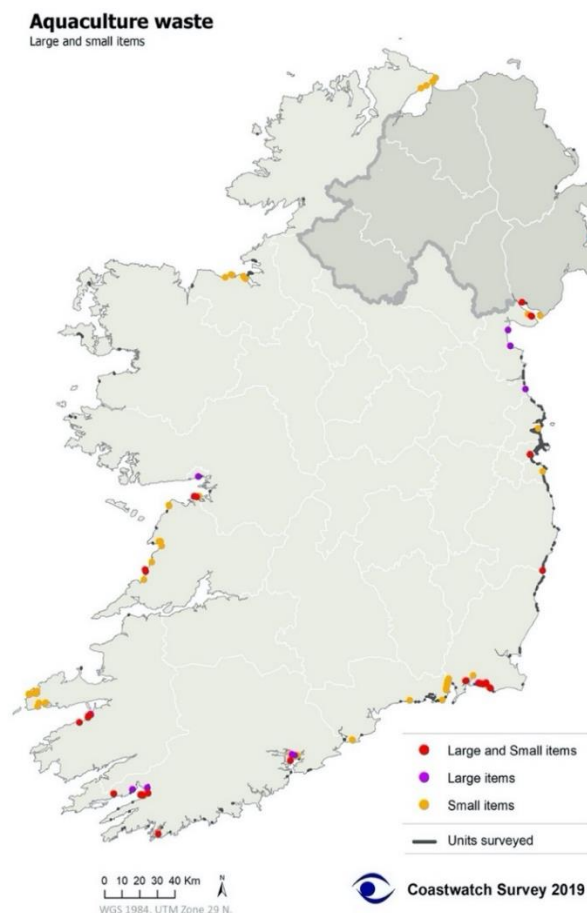This waste category which also included large machine parts was noted on 9.2% of shores and was the only waste category which had risen slightly. Some cases are linked to erosion, where an old dump is being washed out as beside Bray harbour and at least one is linked to part of a building falling down onto the shore at Kilmichael Point Co Wexford. Others are linked to aquaculture and lost vehicles.

3.5. Landfill materials

Landfill materials were recorded on 16.3% of shores. The map of locations where Landfill materials were reported (figure 7 below) shows this is widespread. The majority of infill or infill surface is made up of earth, stones and vegetation.

One 2019 oddity being followed up was reported in Courtown harbour, where earth appears to be dredge spoil piled onto land adjacent to the shore the previous year and is now eroding, revealing some waste but also fine harbour silt (see photo).

In 33 sites (6.6% of shores) surveyors noted that the earth and stone landfill included construction/demolition waste, or appeared to consist mainly of construction/demolition waste as mapped in figures 7 and 8 below. Surveyor photos include lumps of tarmac, walls with polystyrene insultation and wiring.

Picture 3. Sea eroding dredge spoil placed on shore as beneficial reuse. Courtown.
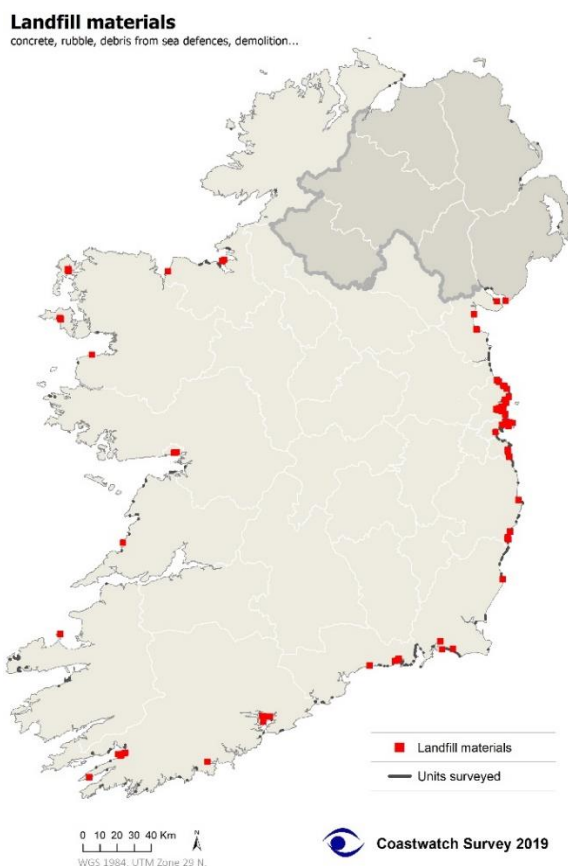

Figure 7. Landfill materials, including C&D waste recorded on the shore Coastwatch survey 2019.
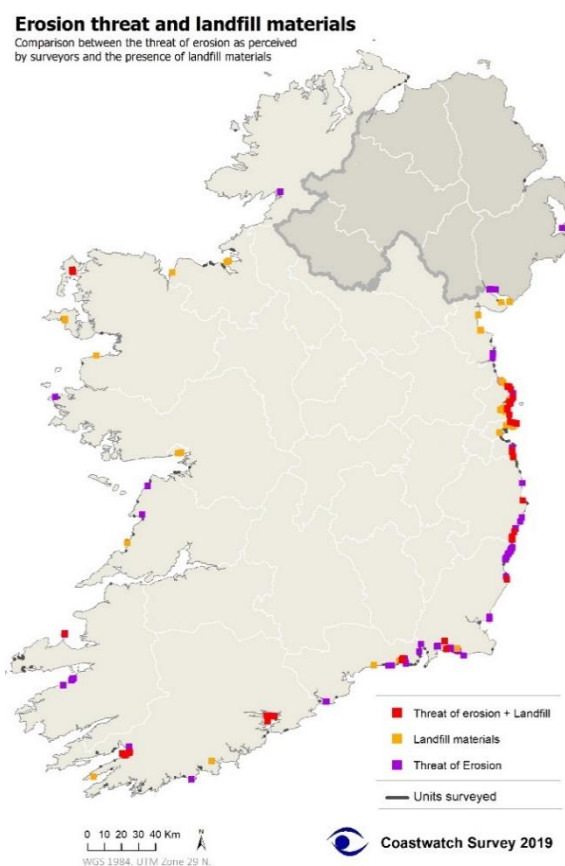

Figure 8. Sites with land fill materials mapped with sites deemed threatened by erosion in opinion of surveyors. Coastwatch autumn survey 2019

Ireland does not have an erosion management policy. With climate change awareness of potential and real coastal erosion and flood risk is growing, earth and stones appear to be a simple benign mitigation method, also used by some authorities. While permission is required to tackle erosion in this way, it is not easy to establish whether a foreshore license and/or planning permission are required or indeed should have been sought when the material arrives without permit. Law enforcement is difficult and there is no central register of what is licensed under the Foreshore Act or granted planning permission, or granted retention with conditions.

In figure 8 above, the surveyor report of imminent threat of erosion is overlaid onto the map where landfill was recorded. The map highlights that in Fingal, south Wexford and Cork surveyors often recorded both a threat of erosion and presence of landfill materials, while elsewhere this was rare.

3.6. Tyres

Tyres were found on 19% of shores and surveyors counted 877 tyres with distribution shown in figure 9. Areas with less than 5 tyres are typically associated with either dumping, or lost boat or harbour fenders. Larger clusters of tyres are strongly related to areas where they are placed in lines into the intertidal close to seaweed as shown in photo below. This is to catch peeler crabs for sale. None of these tyre traps are authorised. Most are in Natura 2000 sites.
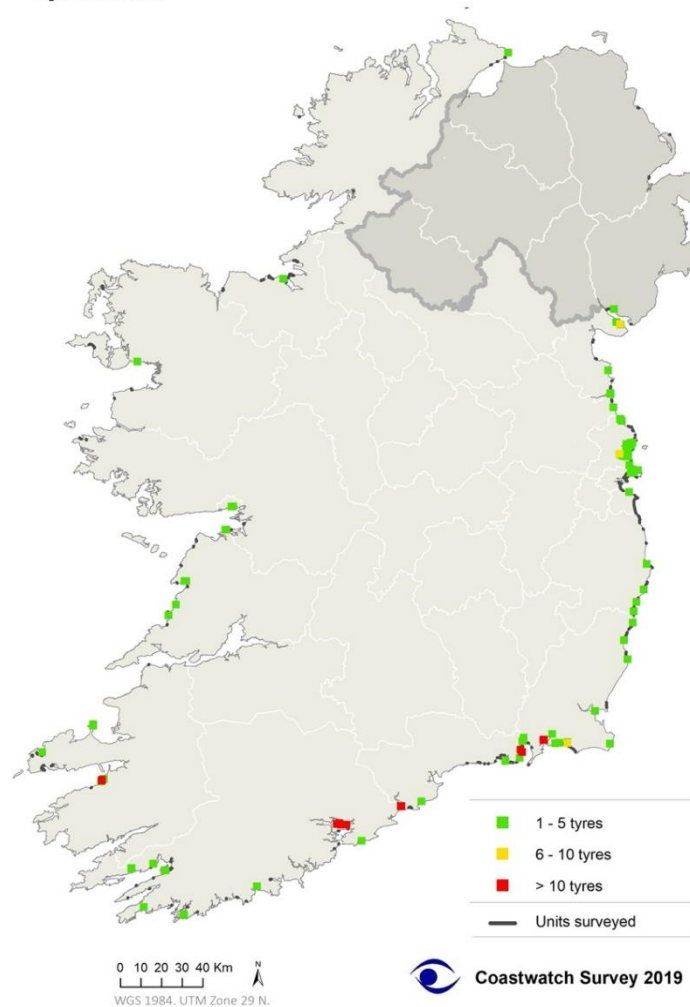

Figure 9. Waste tyre distribution on the shore, grouped as 1-5 tyres, 6-10 tyres and > 10 tyres/su. Coastwatch survey 2019

TYRE TRAPS

When crabs moult, they are very vulnerable to predation and normally hide under seaweed or stones. If tyres are offered, they appear to prefer these perhaps as warmer or perceived save. It is much easier for gatherers to collect the peeler crabs by sweeping a hand around the inner rim of the car tyre than to look under stones and seaweed.

It is unauthorised and unsightly and the lack of limit to the number of tyres set and frequency of collection appears to reduce the local crab population. In some areas, like Wexford harbour, we also see tyres sinking into soft mud and in the past as they disappear, new ones were added.

Action:

In Cobh, Co Cork, a substantial number of tyres were removed by the local Coastwatchers under direction of Anna Ahern and with help of a farmer's tractor; then collected by Cork county council.

In 2019 only some of the core tyre trap areas were surveyed. A map with 4 years of counts (figure 10), however covers the known hotspots: The tyre trap problem appears to be concentrated in the south of the country. Coastwatch is asking readers for information on further trap lines which we may not be including in our survey areas (figure 10 below) at present as government is set to now tackle the problem with us in spring and summer 2020.

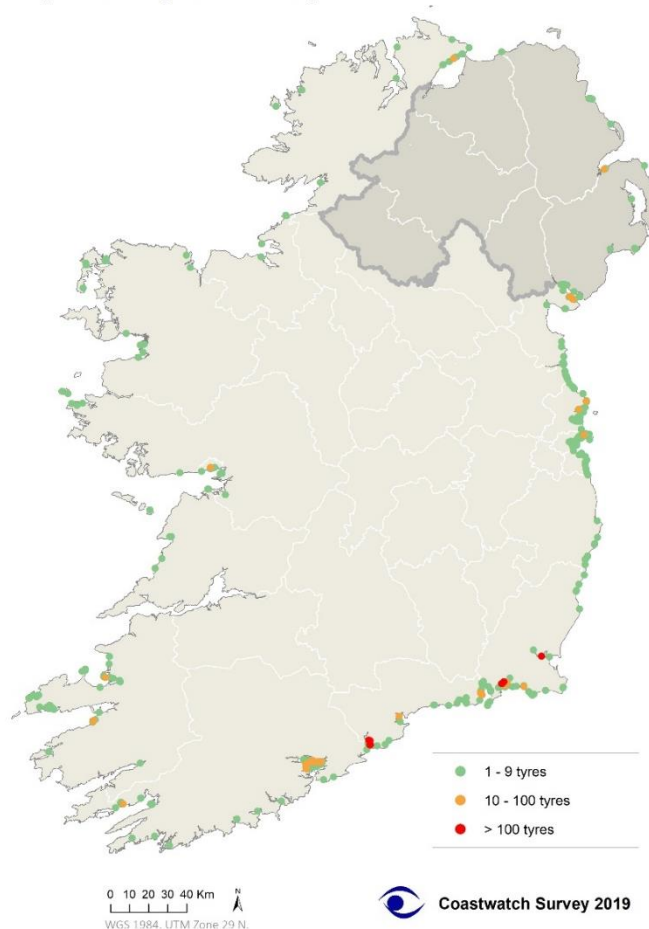Picture 4. Photo of Tractor tyre and other gear in Castlemain harbour protected site.

Figure 10. Composite map showing the tyre hotspots from 2016 to 2019.

3.7. Comparing the Fingal (N=111) and Cork (N=62) county surveys with the national average.

Tyres are the most frequently reported large waste in both counties, which is in-keeping with the national picture. While in Fingal the tyres were reported in small numbers, most likely associated with dumping and loss from vessels, in Cork some large clusters of tyres were reported, which were used as tyre traps. Landfill materials were the next highest reported in Fingal, where much more urbanised coast was included in the survey. It ranked fourth in Cork. Aquaculture waste ranked third in Cork, but did not feature at all in Fingal. Dumped household refuse was more frequent on the more urbanised Fingal coast (8%) while keeping to the national average (5%) in Cork.

Large Waste and Ship Wrecks 2019 in Fingal (N=111)

Category	%
Tyres	47
Landfill Materials	30
Abandoned Vehicles, Girders, Machines	15
Household Furnishings	10
Other	10
Ship Wreck	9
Dumped household refuse (bags / piles)	8
Aquaculture trestles & other gear	0

% of survey units

Figure 11. Large Waste recorded on the Fingal shore in the autumn 2019 Coastwatch survey expressed as percentage of 500m s.u. with waste.(N=111)

Large Waste and Ship wrecks recorded in Cork 2019

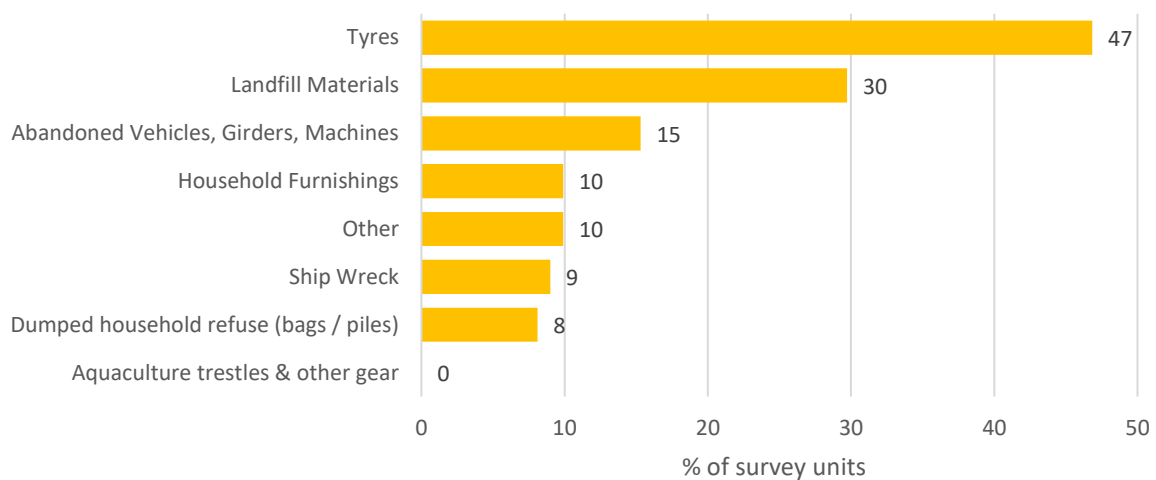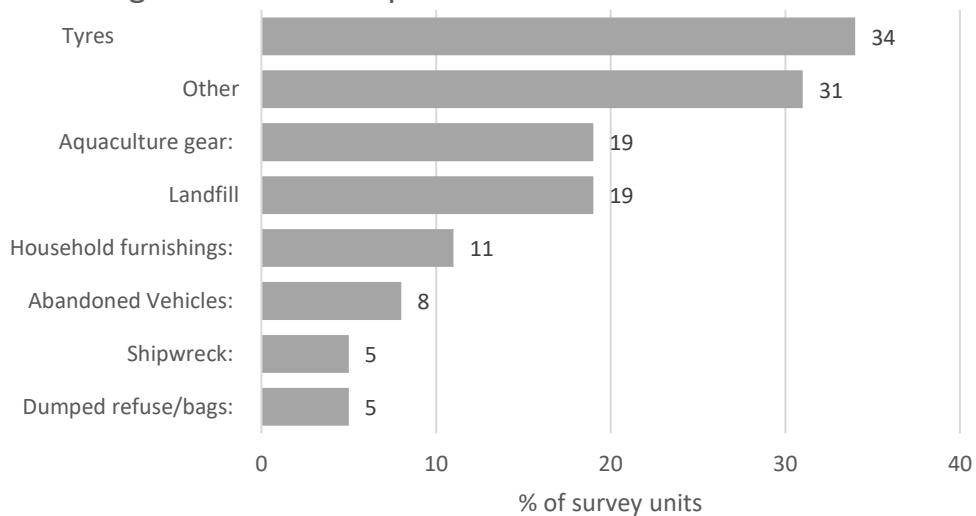| Category	%
Tyres	34
Other	31
Aquaculture gear:	19
Landfill	19
Household furnishings:	11
Abandoned Vehicles:	8
Shipwreck:	5
Dumped refuse/bags:	5

% of survey units

Figure 12. Large Waste recorded on the Cork shore in the autumn 2019 Coastwatch survey expressed as percentage of 500m s.u. with waste.

4. Litter Counts - Drinks Containers, Plastic Bags and Wet wipes

In question E 2 surveyors were asked to look out for and count a selection of drinks containers. Plastic drinks container litter was still the most widespread macro litter found around Ireland with plastic bottles recorded on 73% of survey sites as peak litter item, metal cans recorded on 60% and bottle lids on 52% of surveyed shores. However, all categories of drinks container litter were less widespread this year than last, continuing a welcome downward trend which started 4 years ago.

The only category which increased was 'Other' which is comprised of items which surveyors chose to count. Here single use cups were picked out for counting in 6% of survey units, followed by cotton bud plastic sticks seen in (5%) followed closely by cigarette butts and wrappers. Balloons, golf balls, farm plastic and full dog pooh bags also featured in several survey units.

In 2018 single use cups had been counted separately but as there had been considerable sewage issues in 2019, the cups were substituted for wet wipes in 2019 and surveyors were told where to look and how to identify them.
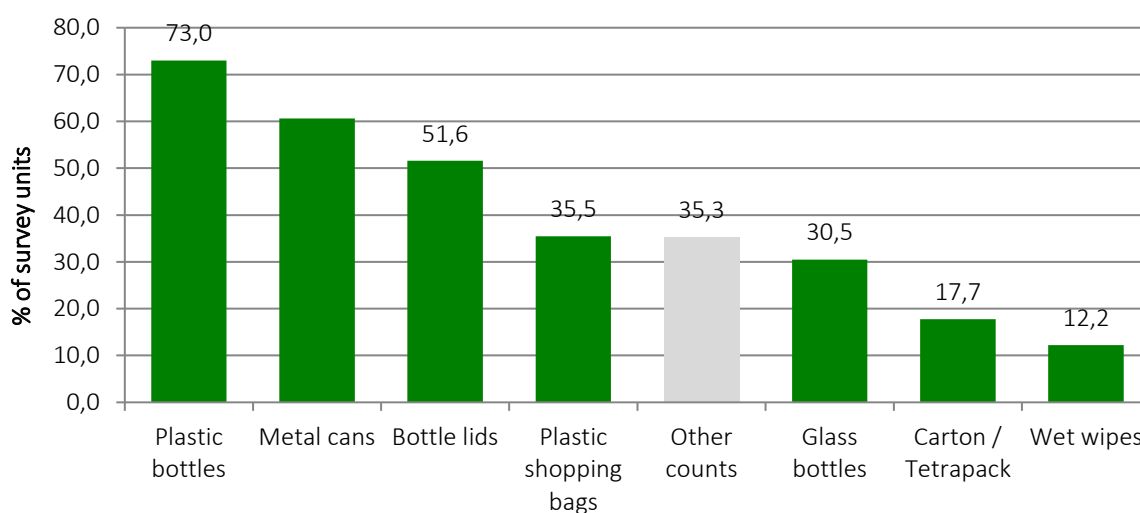
Figure 13. Percentage of shores surveyed in 2019 where drinks container litter, plastic shopping bag and wet wipe litter were recorded (Coastwatch autumn survey N = 540).

The **drinks container spread** varied as expected. Surveyors reported plastic bottles on 78% of the more urbanised and accessible Fingal coast surveyed and only 69% of the more rural remote Cork coast.

4.1. Drinks Container Counts

As shown in figure 14 below, the average number of plastic drinks bottles on the shore was 6.2 per 500m survey unit, with a lid count of 5.2 /s.u. and 3.6 /s.u. metal cans.

All other counted items averaged at 1 or less per survey unit. In figure 14 and 15 the results for 2018 can be compare with those of 2019.

Figure 14 Average number of counted small litter per 500m of shore 2019 survey colour coded with red = plastic, orange is metal and green glass

Figure 15. Average number of counted small litter per 500m of shore 2018 survey colour coded with red = plastic, orange is metal and green glass
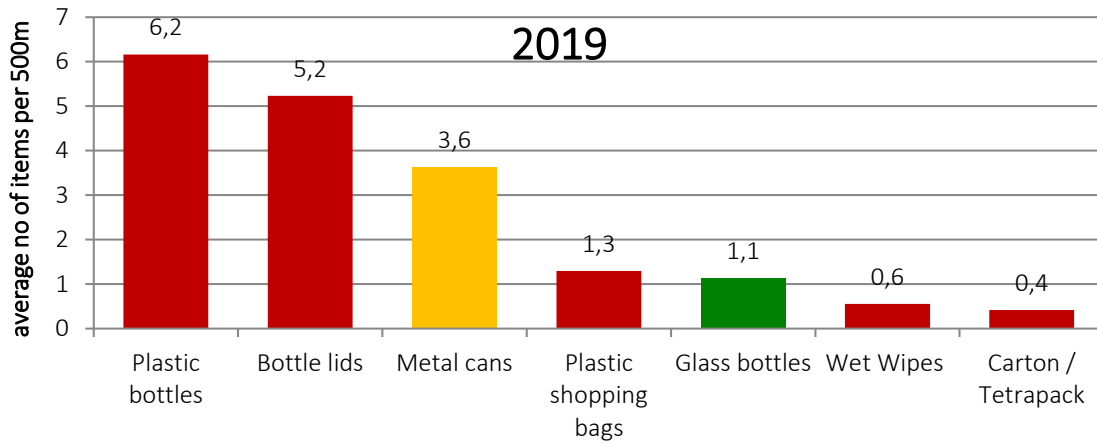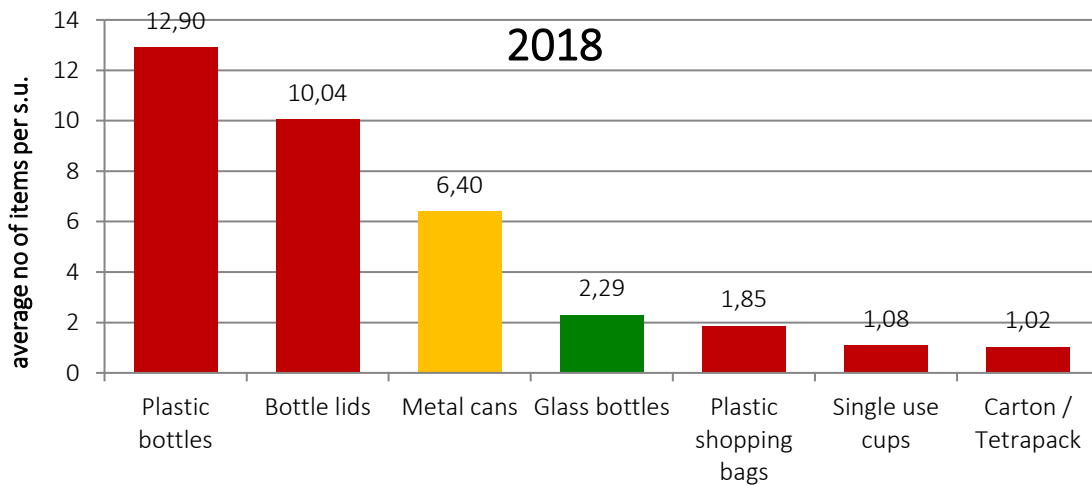
The most dramatic change in the Coastwatch survey results 2019 were seen in the drinks container counts which halved in one year.
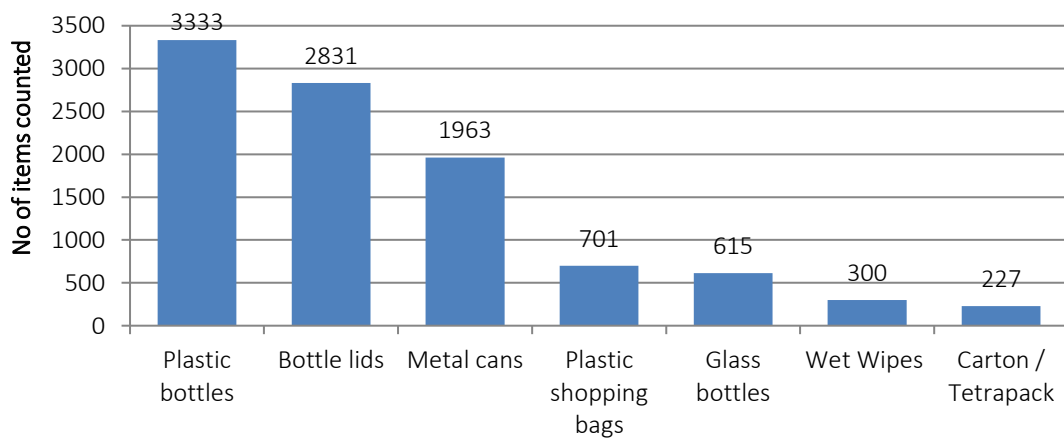

Figure 16. Number of items recorded in small litter counts. Coastwatch 2019 survey (N=540 su)

While this is the biggest reduction ever over a year and bringing us the lowest plastic bottle counts since surveys started, the actual counts shown in figure 16, with 3333 bottles, 2831 lids and 227 tetra packs is still a lot of drinks related plastic. It must also be borne in mind that count is only a one visit in 541 survey units. It is a fraction of what is collected in weekly and daily shore cleans all over the island on over 7300 km. Sadly no counts are available for these collections.

Picture 5. Photo Paddy Houlihan with surveyor Robert Troy finishing a Coastwatch survey with a litter clean up.

4.2. Mapping drinks container density

The map below (figure 17) combines all drinks container related litter counts in each survey unit and shows the drinks litter density in colour coded categories comparable to those of recent years. Green is used for up to 10 items, yellow for 11 to 150 and red for >150 items.

The map shows that the drinks container litter reduction is island wide with only a few deposition or dump hotspots. Green dominates on the West coast with only one red s.u.

Good Status

When we asked a small group of Coastwatchers what would they consider clean or 'good status' in terms of shore drinks container litter, the majority agreed on no more than 1 drinks container item including lid per 100m of shore or 5 items in our 500m s.u. There was less agreement on what would be a 'needs action but not awful' orange band. Given this initial feedback the data was remapped reserving green for 0-5 drinks items per 500m survey unit, orange for 6 to 50 and red for more than 50 drinks items. This higher shore cleanliness ambition map (figure 18) suggests that considerable litter problems remain along the East and South coast, but elsewhere the majority maintains its green status or has only just slipped into orange.

This exploratory data mapping using different thresholds brings us to EC law including the MSFD and what is 'Good Status' for the Marine Litter Descriptor? The latest official marine litter expert group suggests 13 macro litter items/100m of shore. Neither Coastwatch nor the

marine litter expert group have yet tested public views on how much litter is acceptable in 100m to still deem a shore 'clean' to settle on internationally useful cleanliness categories for various types of litter.

Figure 17. Drinks Litter density map created using a low ambition of cleanliness traffic light system. Drinks container and lid counts in three litter level categories (0 to 10, 11 to 150 and more than 150 items). Coastwatch survey 2019

DRINKS CONTAINERS
Plastic bottles + cans + glass bottles + bottle lids

1 South Louth, Meath, Fingal, Dublin City and Dun Laoghaire
2 Kilmore Quay to Tramore
3 Cork / Cobh
4 Dingle Peninsula

No of items per 500m

— 0 - 5   — 6 - 50   — > 50

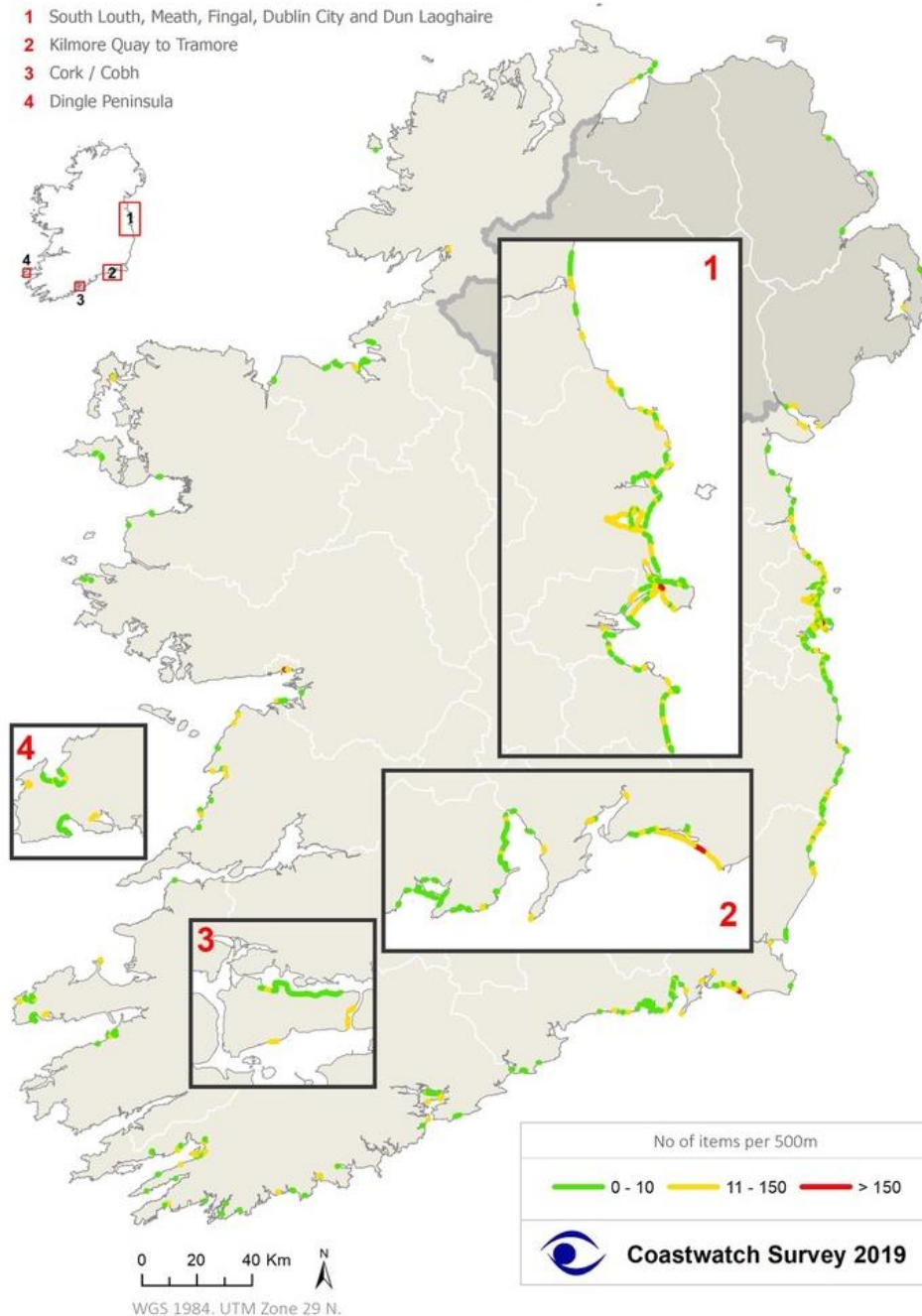**Coastwatch Survey 2019**

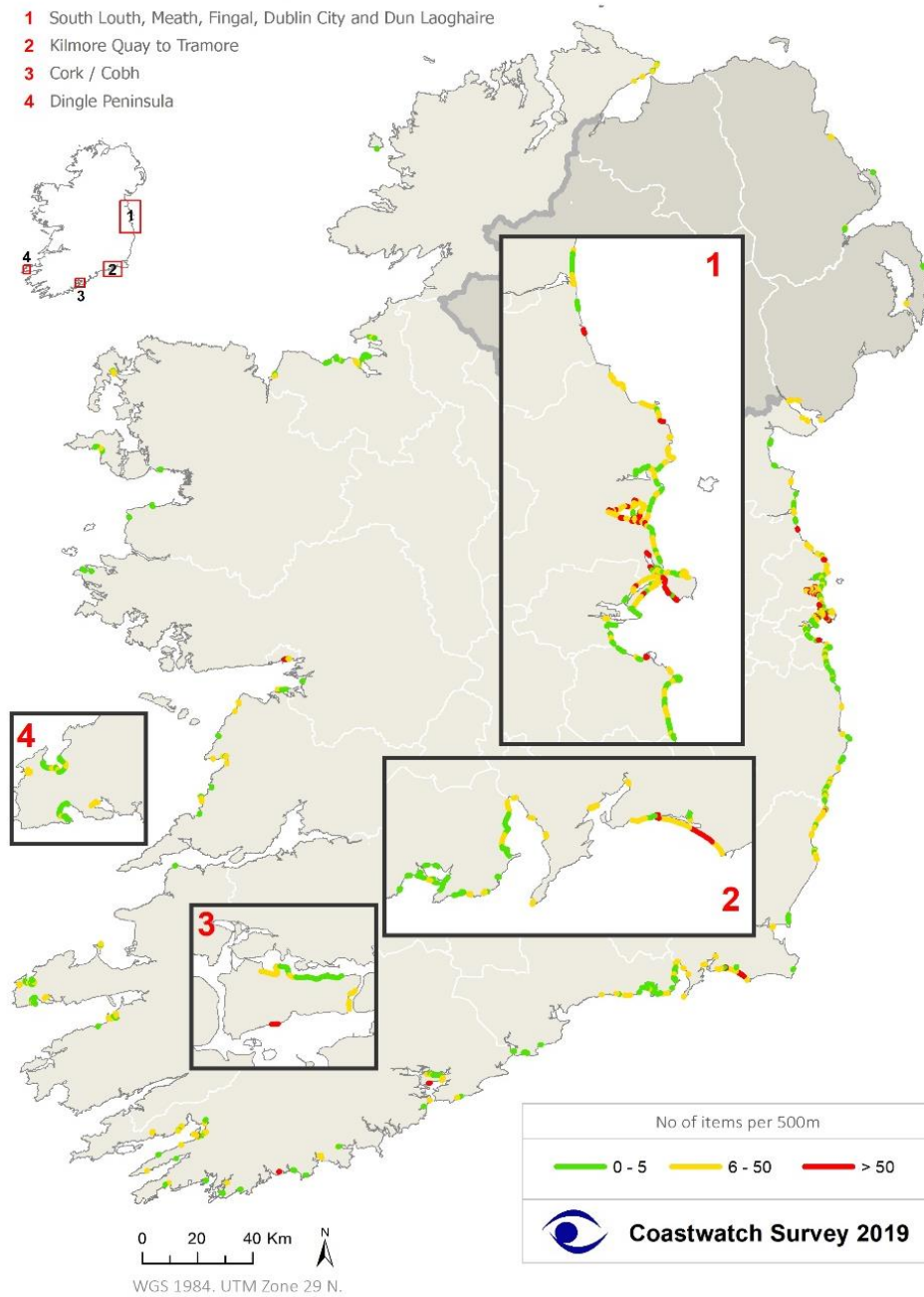0   20   40 Km

WGS 1984. UTM Zone 29 N.

Figure 18. Drinks litter density map using a high cleanliness ambition traffic light system. Drinks container and lid counts in three litter level categories (0 to 5, 6 to 50 and more than 50 items). Coastwatch survey 2019

Picture 6. Drinks container litter

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4.3. Wet Wipes

Wet wipes are not easy to find if mixed up in seaweed. So finding one or more on 12.2 % of surveyed sites (Figure 13) is of concern. The sites where they were reported were concentrated around Dublin, but also found in almost every other county – see figure 19 below.

Surveyors were also asked to count wet wipes in 2019 as a new pilot initiative. The result was judged unreliable from surveyor feedback and almost certainly a significant underestimate. Once wet wipes form ropes, it is impossible to count them, while those released onto a beach as free floating wipes tend to lie down flat like a plaster on the sand and then get quickly covered by more sediment. A different measure of density will have to be found to be useful.

Judging by shelf space now allocated to wet wipes, they are the latest single use plastic success story. A popular alternative to traditional soap and water, or cloth for many cleaning jobs from car to dog paws. Those used in the bathroom, replacing or augmenting toilet paper are the most problematic as an unknown number get flushed down the toilet. The increase in sewer blockages, stormwater overflows and treatment plant breakdowns are a consequence which explains the frequent overlap with presence of other sewage indicators.

A recent study exploring the potential for certain materials to be considered as exempt from the Single Use Plastics Directive, focussed on man-made cellulosic fibres, on the **definition of plastics, exemptions to the new Single Use Plastics (SUP) Directive and a series of loopholes and material substitutions which could significantly undermine its goal**.

In the case of wet wipes they flagged the potential of substitution with alternative materials (lyocell and viscose), focuses on polymers covered, or not, by the term 'plastic'. They noted that '**Exempting materials with similar environmental impacts from the Directive's scope, could incentivise manufacturers to opt for material substitutions which would absolve them from having to finance the cost of litter clean-up, transport and treatment, and the cost of awareness-raising activities**. (Eunomia Research & Consulting: What is plastic?)

Picture 7. It doesn't help that some wet wipes are sold as flushable. The Aldi sample pictured, carries a tiny font that is not suitable for septic tanks.

Picture 8.: (L) pipe has spewed sewage including wet wipes into a shellfish rich area and (R) wet wipes mixed with green algae on a bathing beach.
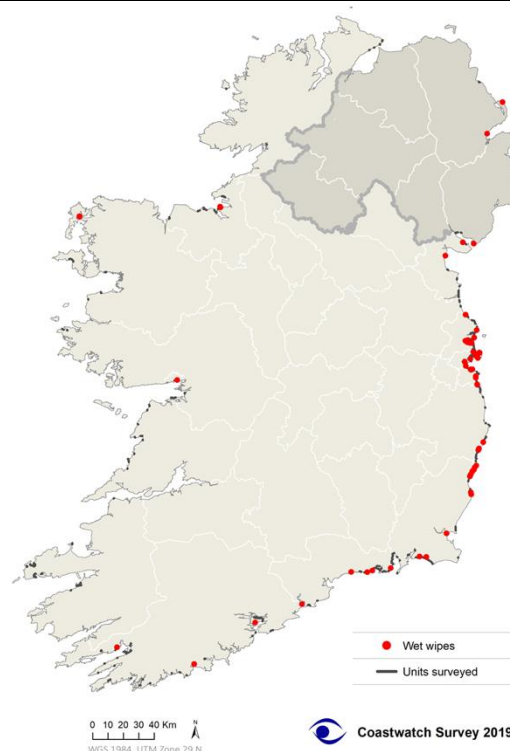

Figure 19. Shores where Wet wipes were recorded during the Coastwatch survey 2019.

4.4. Other Counts

Annually 20-30% of surveyors count some other macro litter item or items of concern, while the occasional group like the sea scouts in Malahide in 2019 carries out an entire shore macro litter count.

Picture 9.

Both the full sweep where everything found is counted and the more frequent small number of chosen items counted provide valuable insight into litter and what annoys or concerns surveyors. Occasionally it is only a single item like the tar on this stone.

A list of own choice litter count items was made, and this list condensed to those which at least 5 other surveyors had counted. In some cases, the counts were grouped. – e.g. plastic forks added to plastic cutlery. The own choice litter categories were then ranked by number of survey sites where they were counted. Figure 20 shows the top 15 own choice litter items. The vast majority were plastic and dominated by items listed in the new Single Use Plastic EU law, commonly referred to as the SUP Directive https://eur-lex.europa.eu/eli/dir/2019/904/oj .

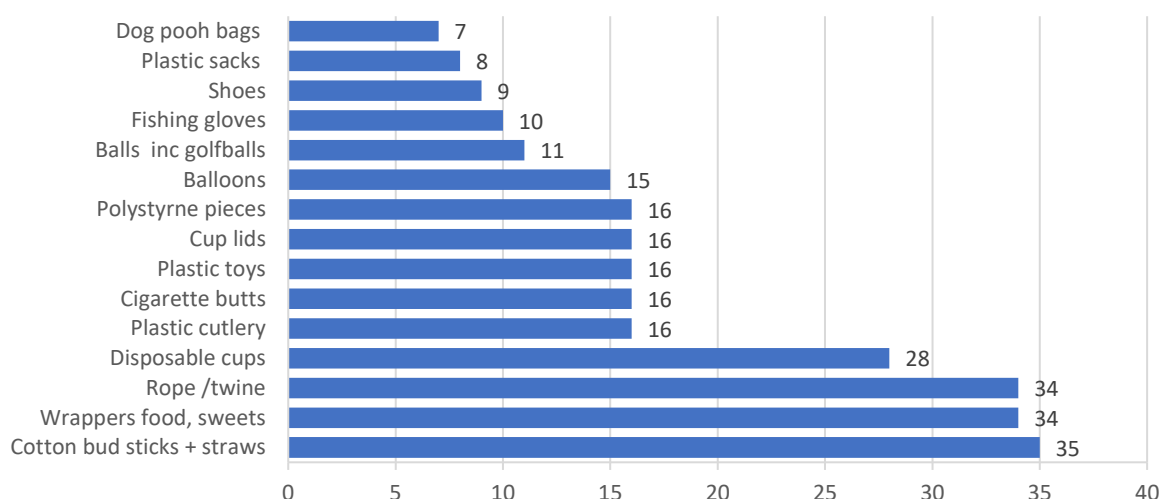### Number of Sites where the item was counted

Figure 20. The top ten items which surveyors counted as own initiative extra. Coastwatch 2019 survey.

In first position with 35 s.u. were **cotton bud sticks**. However, this figure may be an exaggeration due to an occasional misuse of the word 'straw'. Some surveyors listed cotton bud sticks as 'cotton bud straws' and there were several > 20 and > 50 'straws', which on contacting surveyors turned out to be cotton bud sticks, not drinks straws. In up to 5 of these sites where we did not check, 1 or 2 real drink straws were counted rather than cotton bud sticks and hence the category is named cotton bud sticks and straws.

Food wrappers and **Rope/twine** came second, both counted in 34su and both seen as broad categories including all kinds of sweet and sandwich wrappers and in the case of rope/twine anything from several m length to the frequently

Picture 10. Twine.

counted and more numerous twin/rope/net pieces a few cm long. **Disposable cups** ranked third, counted in 28 s.u. with a total count of only 71disposable cups and most surveyors reporting 2 cups/s.u. We do not know how many of these cups had **lids**. Separate cup lids were counted in 16 s.u.

Picture 11. single use cup with lid and straw as well as food wrapper all carefully placed just at the beach entrance about 20 m from a bin.

Also tied for 16 sites were polystyrene items or pieces, plastic toys and cigarette buds. Polystyrene is of particular concern as it breaks into bird bite size beads. As Alison Mc Kenna put it on the Fingal coast:

"I counted 168 small ±5cmx5cm/8x8 cm square pieces of polystyrene, probably broken up from one box or crate, but each piece will eventually break into a 100 more small pieces. I picked up as much as I could."

Toys such as sand baking forms and little spades are easy to see and almost like a trophy, with a maximum count of 6 found. If intact they are often taken home for reuse or left at the beach entrance. In contrast the cigarette butts are easily missed unless seen in a cluster. In 13 of the 16 su were cigarette butt counts were recorded, 6 or more butts were counted and in 9 of these sites there were over 20 butts.

Balloons were counted in 15 sites and tend to come with string presenting a choking and entanglement hazard. See Coastwatch balloon position paper www.coastwatch.org

Balls were counted in 11 su, with golf balls in three of these and occurring in large numbers – 80-100 in one site Dublin Bay below Elm park stream. Like toys intact balls tend to be picked up and reused.

The heavy duty gloves used mainly in the fishing and aquaculture industry were counted in 10 sites. All other own initiative counts occurred in < 10 survey units including shoes (9su) plastic fertiliser and coal bags (8su), dog poo bags (7su), syringes (4su) etc.

The items counted most frequently may be included in the next Coastwatch survey as a named count category. Wet wipes were included in the 2019 survey after turning up more frequently than coffee cups in own choice counts and comments in the previous 2 years.

4.5. Litter Level Mapping – A Coastwatch proposal

A grand total of counted macro litter items can be produced for each 500m survey unit by adding all items surveyors reported in the set counts, as well as the items counted as own initiative - see table 1 below.

Count Type	Actual Count	Comment	Mapping:
Tyres	Tyres	Simple to count large	Mapping the counts in traffic light code categories of:

0-10 items green
11- 50 items orange
>50 red |
Drinks related	Bottles + Lids + Cans + Tetrapacks	At core to reduce in the SUP Directive	
Plastic shop. bags	Plastic shopping bags	Covered by Irish eco tax and in EU law	
Wet Wipes	Wet Wipes	Covered in SUP Directive only by label and producer responsibility	
Wild Card: Other own initiative - dominant or of concern	Typical beach litter, polystyrene, cigarette butts, fishing and aquaculture related waste,	This provides flexibility to count as many different items as are of concern in present wording. But most count only 1 or 2 items.	

Table 1. An overview of items counted per 500m of shore.

These litter counts can then be mapped as shown below (Figure 21), where litter counts of up to 10 litter items are deemed clean and shown in green, some littering is flagged when surveyors found 11-50 items, marked orange and the shore was deemed littered at > 50 items) and marked in red.

These litter counts can then be mapped as shown below (Figure 21), where litter counts of up to 10 litter items are deemed clean and shown in green, some littering is flagged when surveyors found 11-50 items, marked orange and the shore was deemed littered at > 50 items) and marked in red.

5. Small Litter Recorded

Question E 3 asks Tick which of the following items of general litter or pollution you found
Surveyors then checked the shore from splashzone to water's edge and placed a tick where they saw one or more items of fishing gear, rope, hard plastic containers etc.

While drinks container litter improvements are significant, the results picture is much more mixed when one looks at presence/absence of many other small litter categories in figure 20 below. Here 7 litter categories coloured yellow were found more frequently than in 2018, six remained the same (±1 % difference) while only 3 – other plastic, glass and non-drinks cans – were found less frequently than the previous year.

Rope and string were found most frequently followed by 'other plastic' and a large textile clothing and shoes category.
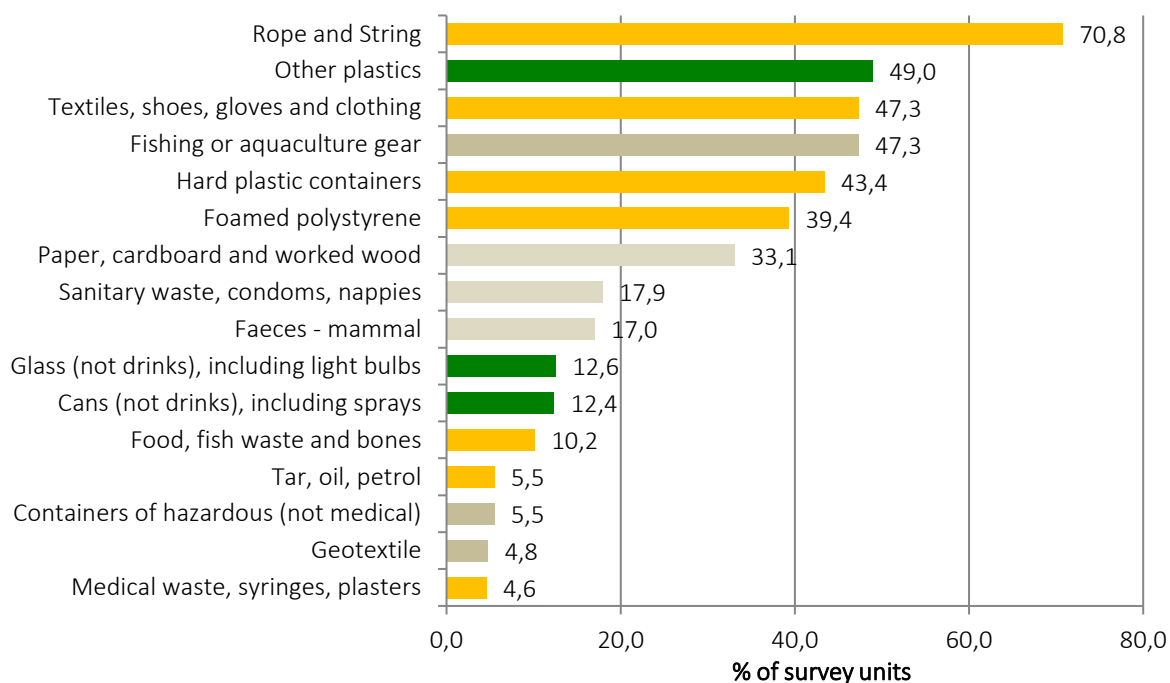

Figure 21. Small litter found on the shore - presence in percentage of survey units and colour coded by increase, decrease or remain the same as in 2018.

5.1 Rope and string

As figure 21 below shows, rope and string litter have increased over the last 6 years. Recorded on 59% of shores in 2014 to 70% ± 2 in the last 4 years. Rope and string have only been set into a category on their own in 2014. Before that they were pooled with fishing and aquaculture gear, even if at times the source may have been agriculture or other marine sources.
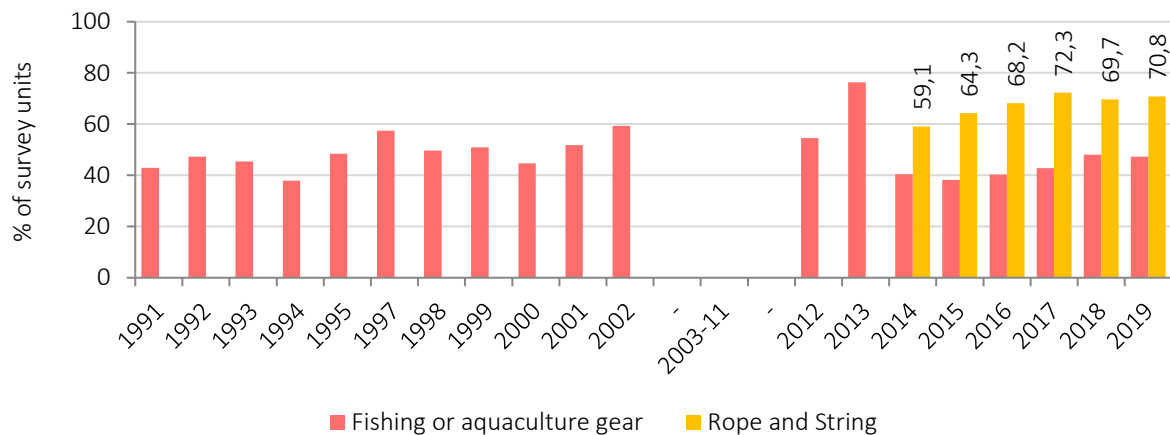

Figure 22, Fishing litter (including rope/string) or aquaculture gear and Rope/string over the years.

5.2 Fishing, Angling and Aquaculture litter

There were 397 records of fishing, aquaculture and/or angling gear litter on the shore, distributed over 256 s.u. From surveyor information and comments, fishing and angling waste are still most frequent around harbours and piers, while aquaculture gear is concentrated around aquaculture areas as noted for large waste above.

When we look at the relative contribution of the 3 litter sources as depicted in the pi chart below (figure 22) fishing nets and net pieces were most frequent (38%) followed by aquaculture waste, with traps making up 24% and angling waste least frequent, but still accounting for 18% of the litter records.

The source may be clear as in a bag of salmon feed in Connemara, but less clear for some netting which we here assume to be fishing related.
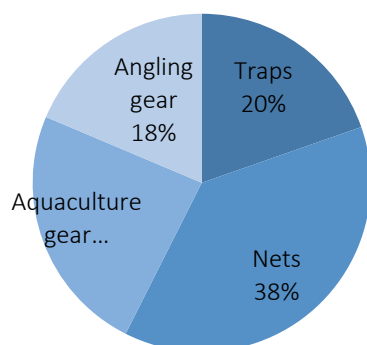

Figure 23. Contribution of different fishing and aquaculture litter sources to the fishing aquaculture load. Coastwatch survey 2019
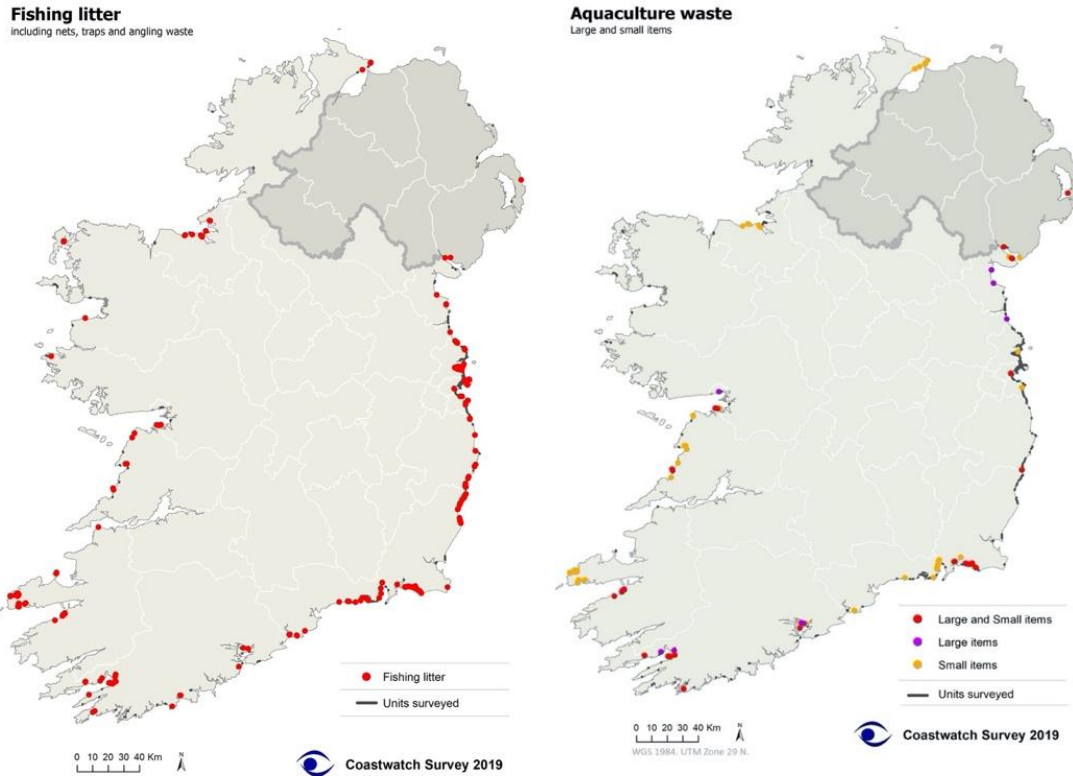
20

Figure 24.(a) Distribution of fishing waste on the shore 2019 and (b) Aquaculture waste Coastwatch 2019 survey

The 2019 reduction in aquaculture areas covered, is likely to be the reason for a slight reduction in aquaculture waste. The GIS maps highlight this shift. Dungarvan spit, Woodstown beach Waterford and Lough Foyle Donegal coast - known as aquaculture litter hotspots in the past - were badly littered once more from surveyor comments. Metal hooks, rubber gloves, netlon bags and rubber with hooks are typical for areas of trestle grown Gigas oysters.

Picture 12. Photo of Gigas aquaculture in the low intertidal and sublittoral with trestle ties washed up on the shore.

In Lough Foyle the use of plastic in aquaculture appears higher than elsewhere as surveyors posted in plastic hooks and plastic cable ties used as netlon bag closures and securement, which appears to be simply cut open when needed and either discarded or lost. The density reported south of Quigley's point was around 1 per metre of tide mark. None of the Lough Foyle farms have licenses, so enforcement by license review is not applicable.

5.3. Foamed Polystyrene

Polystyrene objects and more frequently pieces were recorded on 39.4 % of shores surveyed which is an increase over 2018 and the second highest record in the last 7 years since polystyrene was recorded as a separate litter material (moving polyurethane into 'other')

Single polystyrene beads are recorded separately as micro litter and are of particular concern as picked up by birds presumably mistaking it for food.

Surveyors are not asked to note the polystyrene source, but polystyrene packaging especially boxes appear on several photos and in comments take away packaging is also mentioned.

When drawing up recommendations (May 2019) some uses like pontoon floats were deemed to be particularly high risk.
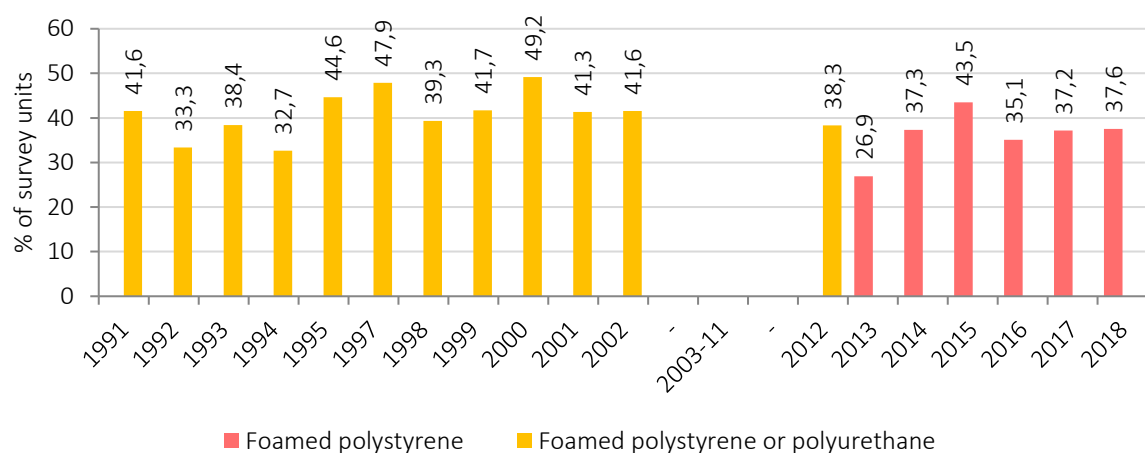

Figure 25. Polystyrene and polyurethane macro litter on the shore as reported in Coastwatch survey 1991 to 2019

Picture 13. Photos of Polystyrene block and pieces, breaking down to beads – bite size for birds to pick up.

5.4.   Sanitary Waste

In the 1980s and 90s sanitary waste found on the shore comprised of the expected toilet flush material with additives like tampons, sanitary pads, cotton bud sticks and the odd condom which really belong into a bathroom bin.

State and volume of this tide line litter gave recreational sea users an indication of sewer outfall locations and where recent wind/tide/current had brought sewage. With massive investments in sewage treatment this type of litter sewage indicator became less frequent.

In the 2012-14 Coastwatch surveys sanitary litter was reported on 12-14 % of shores. However, despite of even further treatment plant improvements – there has been increase in sanitary material reported in the last 5 years as depicted in Figure 25. In 2019 surveyors recorded it on the same number of shores as in 2018 - **17.9%** of s.u.

The state of our small inflows as carriers of sewage has also disapproved. There is growing evidence that wet wipes play a key role in this deterioration. Action options are presented in the Coastwatch recommendations document – www.coastwatch.com.
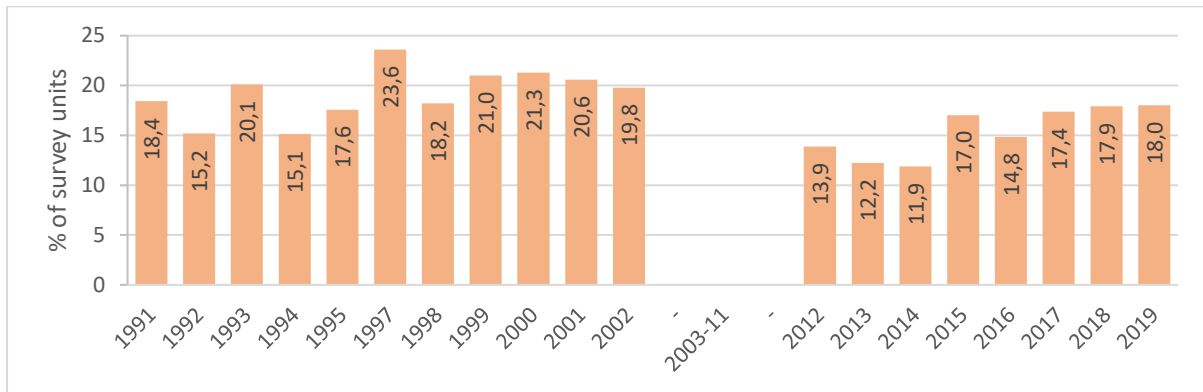

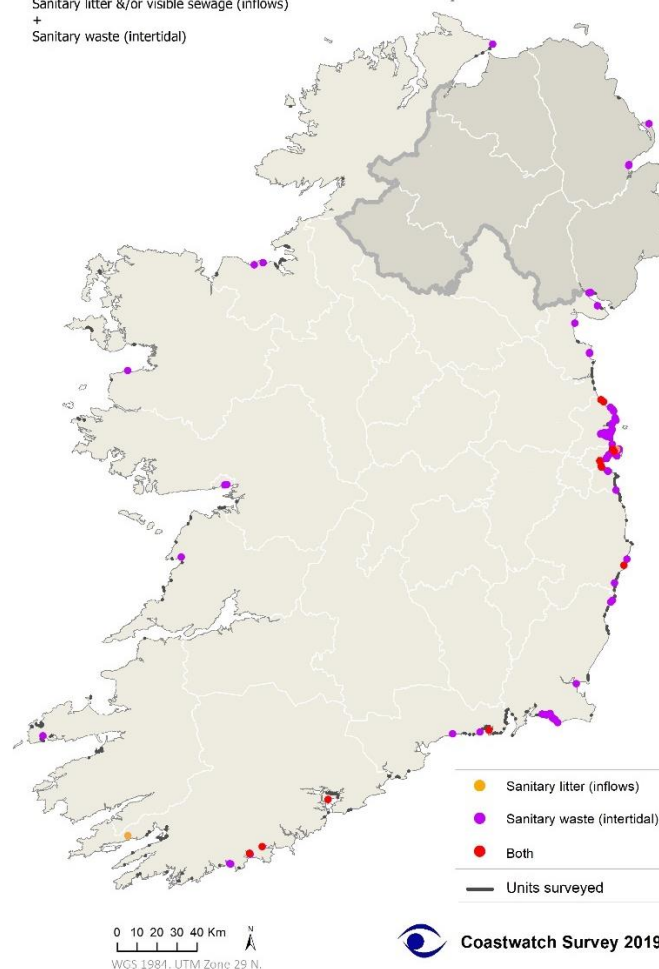*Figure 26. Sanitary waste on the shore over time 1991 to 2019*

Figure 27. Sanitary Waste found on the shore and in small inflows in the 2019 Coastwatch survey.

23

5.5.   Other Small Litter and Other Counts

Picture 14.

6. Micro litter

Surveyors were asked to look out for micro litter visible to the naked eye and also had the option of using the Coastwatch micro litter app to record type and volume plus location.

The two data sets are still in the process of being merged.

Half of the surveyors (278 out of 541) answered this question, with more saying that they did not see any – see map figure 27. If all the others who did not respond to this question also didn't see any micro litter, then in this best case scenario, micro litter was seen on 20% of shores surveyed.

Picture 15

Depending on material form and weight polystyrene beads for example tend to fly high up into the splashzone/hinterland interphase, while heavy nurdles stay on the tideline. Micro litter tends to accumulate in certain areas often the corner of a beach which may be missed by a surveyor zig zagging the 500m of shore. We are beginning to understand micro litter better with some shores between Tramore and Dunmore East in Co Waterford for example reporting nurdles more frequently than many others.

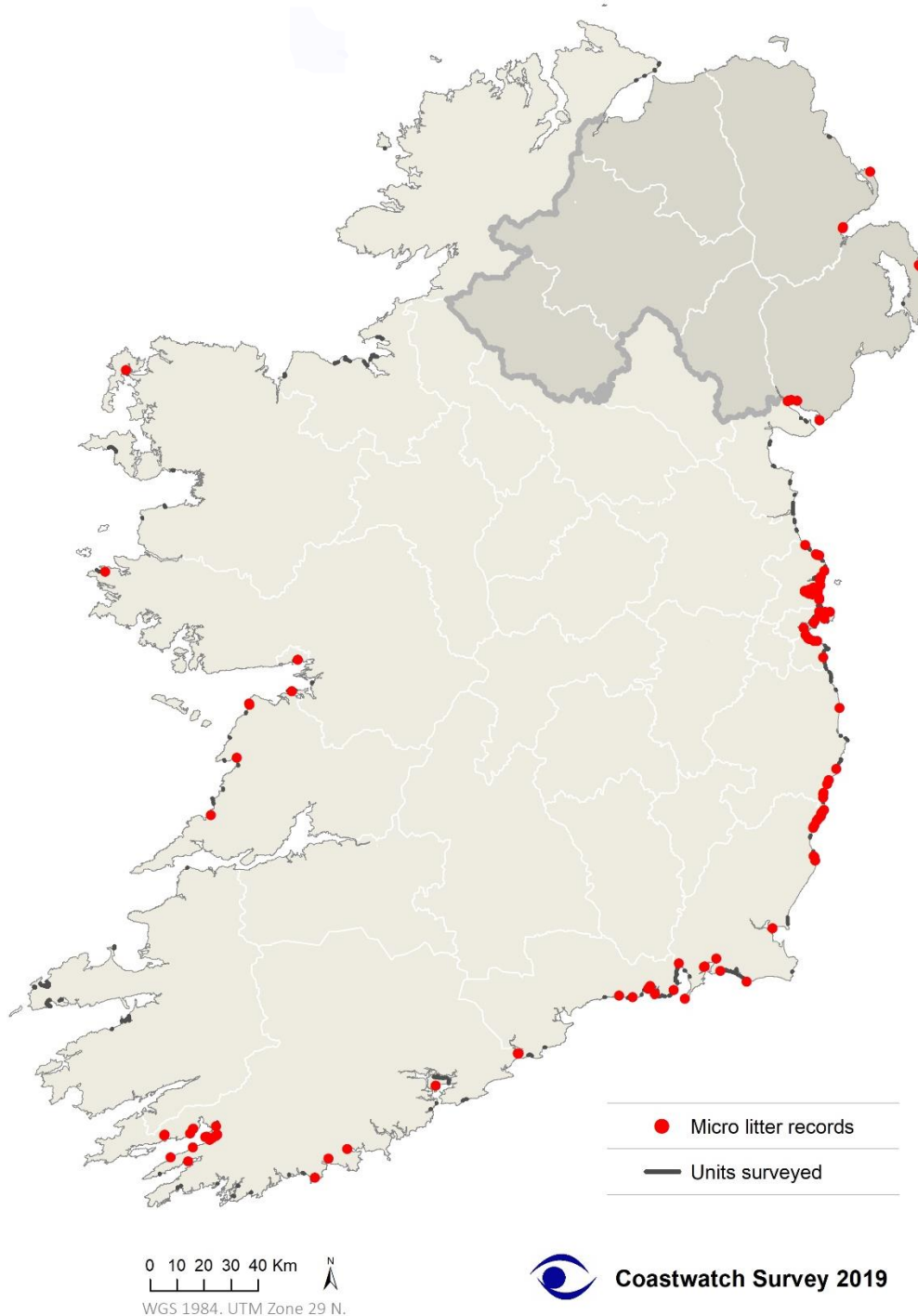More work has to be done on surveyor guidance.

Figure 28. Map showing survey units where micro litter was found on the shore. Coastwatch 2019 survey.

7. Littering in Context

Surveyors are asked in questions E5, F1 and F2 to provide context to the litter levels found on the day.

In E 5 surveyors were asked to look back and say which area was most littered. In 69% of answers, surveyors found most litter in the splashzone, followed by the tidemark (26%) and only 5% intertidal see chart figure 28 below. Surveyors also described the litter as accumulating in pockets or areas in 41 % of the shores, while in 59% it appeared to be spread evenly.
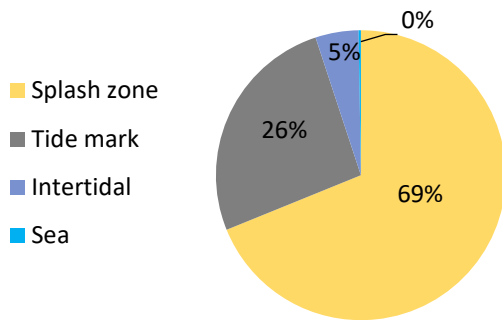

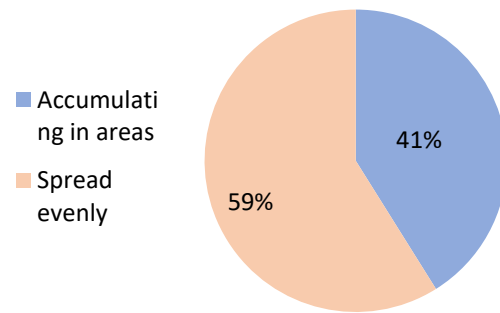*Figure 29. Which area is most littered at time of survey?*

Figure 30. How is the litter distributed

Question F1 seeks to establish whether recent weather has made the shore look cleaner, worse or similar to other times visited. Surveyors who know the shore are asked to respond.

Figure 30 shows that 47% did not think it looked differently, while 29% answered that they did not know, 15% thought it looked cleaner and 9% that recent weather added to the litter load. That is a slight increase in the number saying that it looked cleaner than usual which is in keeping with the good weather which we enjoyed over most of the survey period Sept 15th to Oct 15th.
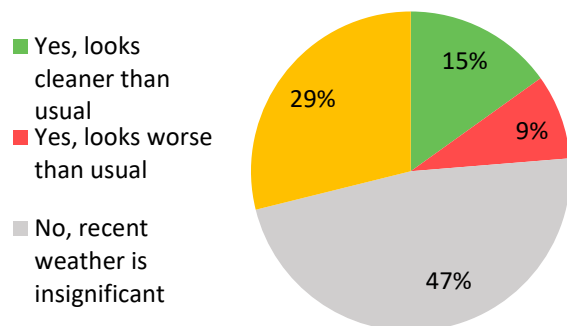

Figure 31. Has weather changed the appearance of your s.u.?

Question F 2 asked whether the shore had been cleaned within the last week. Surprisingly, only 15% said that it had been cleaned (Figure 31) but then many more than previously commented that cleaning is now a daily year round activity. Also some of those who said no, did comment that there was a recent clean up, but not within the last week. So while there appears to be an increase in cleaning effort in comments, our question does not give a good representation of that increase in cleaning effort.
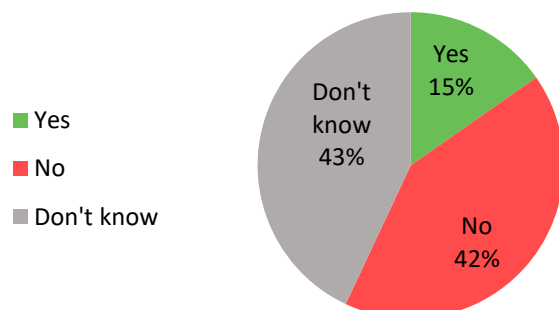

Figure 32. Has the Shore been cleaned in the last week?

8. Way Forward

The excellent improvements in drinks container litter observed gives us new impetus to follow up action on this and many other types of litter.

The Single Use Plastics Directive came into law in June 2019 and now governments are introducing legal and economic measures to prevent and manage plastic consumer waste as well as addressing fishing and aquaculture waste. Ten single use consumer items will be banned and others controlled.

Among the full page of marine litter questions in the Coastwatch survey, we have some which relate directly to these items and which will now be addressed by member states including Ireland as they implement the Directive. Additionally, monitoring of marine litter as a Descriptor of Ocean state under the Marine Strategy Framework Directive is being reviewed.

Coastwatchers prepared a litter recommendations document in workshops hosted in spring 2019 and will now revisit that document and update same in light of new findings with view to producing a joint Coastwatch Europe report and recommendations on litter monitoring, waste and material management and new law for an international exhibition in the European Parliament in May 2020 hosted by Grace O'Sullivan MEP.

Additionally, we are participating in EC and international NGO work to tackle particular waste streams such as fishing and aquaculture waste.

_____

Glossary

Co – County

EC – European Commission

EU – European Union

GIS – Geographic Information System (the way your data is now mapped)

Good Status –

MEP - Member of the European Parliament

MSFD – Marine Strategy Framework Directive – see

N 2000 – Protected areas under the EU Habitats and/or Birds Directive

NGO – Non Government Organisation (eNGO specifies environmental NGO

s.u. – Survey unit or 500 m of shore as estimated along high water .

👁 E   LITTER, WASTE AND POLLUTION (at all shore levels)

> If near a harbour, see harbour survey form

E1   Tick major item(s) found on your survey unit anywhere from start of hinterland to water
Give any extra information in F6, take pictures if possible and note location if this requires follow up work.

	Landfill Materials (e.g. concrete, rubble, debris from sea defences, demolition…)
	Abandoned Vehicles, Girders, Machines
	Household furnishings (e.g. beds, carpets, pieces of furniture etc.)
	Dumped household refuse in bags or piles of rubbish
	Ship wreck, or parts of ship wreckage
	Tyres. Please count if more than 1 →
	Aquaculture trestles and other large abandoned aquaculture gear
	Other. Please specify……………………………………………………………………………

E2   LITTER Count: Drinks containers and other items found anywhere on the shore.

If there is too much to count, please estimate. If you didn't have time to count mark NC.

Drinks Containers:	Count	Drinks & Other Litter	Count
Plastic Bottles		Bottle Lids	
Metal Cans		Wet Wipes	
Glass Bottles		Plastic Shopping Bags	
Cartons/Tetra pack		Other*	

*Look out for plastic straws, balloon sticks, cutlery, plates & polystyrene cups - see single use plastics directive.

E3   Tick which of the following items of general litter or pollution you found on your unit.

☐ Fishing or aquaculture gear; tick source(s) →	☐ Traps ☐ Nets ☐ Aquaculture ☐ Angling
☐ Rope and String	☐ Geotextiles (new question see ID notes)
☐ Hard Plastic containers like crates, buckets	☐ Textiles, shoes, gloves and clothing
📷 ☐ Foamed Polystyrene items or pieces (beads → E4)	☐ Paper, cardboard and worked wood
☐ Sanitary waste, cotton buds, condoms, nappies	☐ Food, fish waste and bones
☐ Medical Waste - syringes, plasters …	☐ Faeces - mammal (e.g. dog, human)
☐ Container(s) of hazardous but not medical substance (e.g. chemical drums empty or full)	☐ Glass (not drinks), including light bulbs
☐ Other plastics (not any of above, e.g. crisps)	☐ Cans (not drinks), including sprays
☐ Tar, oil, petrol. If found, describe in F6. If action needed, contact & Coastwatch.	☐ Other (balloons, plastic cutlery, dog poo bag).. …………………………………………………

E4   Micro litter pilot: Is there an area where you see tiny litter threads, bits, polystyrene beads?

📷 ☐ Yes ☐ No   **If yes**, please use the **Coastwatch micro litter app** which puts photo & location on line.

or describe: ……

E5   Looking back, which area was most littered? If several, tick more than one.

☐ Splash zone   ☐ Tide mark   ☐ Intertidal   ☐ Sea

Was that litter: ☐ accumulating in area(s)   or   ☐ was it spread more or less evenly?

THANK YOU!!! All the nasty litter stuff done. Onward to the last page of the main questionnaire …

4

⊙ F   GENERAL OBSERVATIONS

F1   Has recent weather made the appearance of your coastal unit change?

☐ Yes, looks cleaner than usual   ☐ No, recent weather is insignificant

☐ Yes, looks worse than usual   ☐ Don't know

If there are other reasons for changed appearance, please note space at F6 below.

F2   Has the shore been cleaned within the last week?

☐ Yes   ☐ No   ☐ Don't know

F3   Is there any planned change of character (positive or negative) which is imminent for this coastal unit? (If 'yes' describe in F6)

☐ Yes   ☐ No   ☐ Don't know

F4   *Tick* if you have evidence of a <u>serious risk</u> and/or <u>imminent planned change for the worse</u> from any of the threats/activities listed below to your s.u. or adjacent sea/land.
ACTION: In case of threat which requires immediate action, call relevant authority or Coastwatch.

☐ Erosion   ☐ <u>Water pollution</u> by ──────→ ☐ Sewage

☐ Flooding   ☐ Recreational abuse   ──→ ☐ Oil

☐ Mining/quarrying   ☐ Aquaculture   ──→ ☐ Agricultural or industrial farming

☐ Construction/sealing ☐ Invasive Alien Species (IAS) ──→ ☐ Industrial pollution

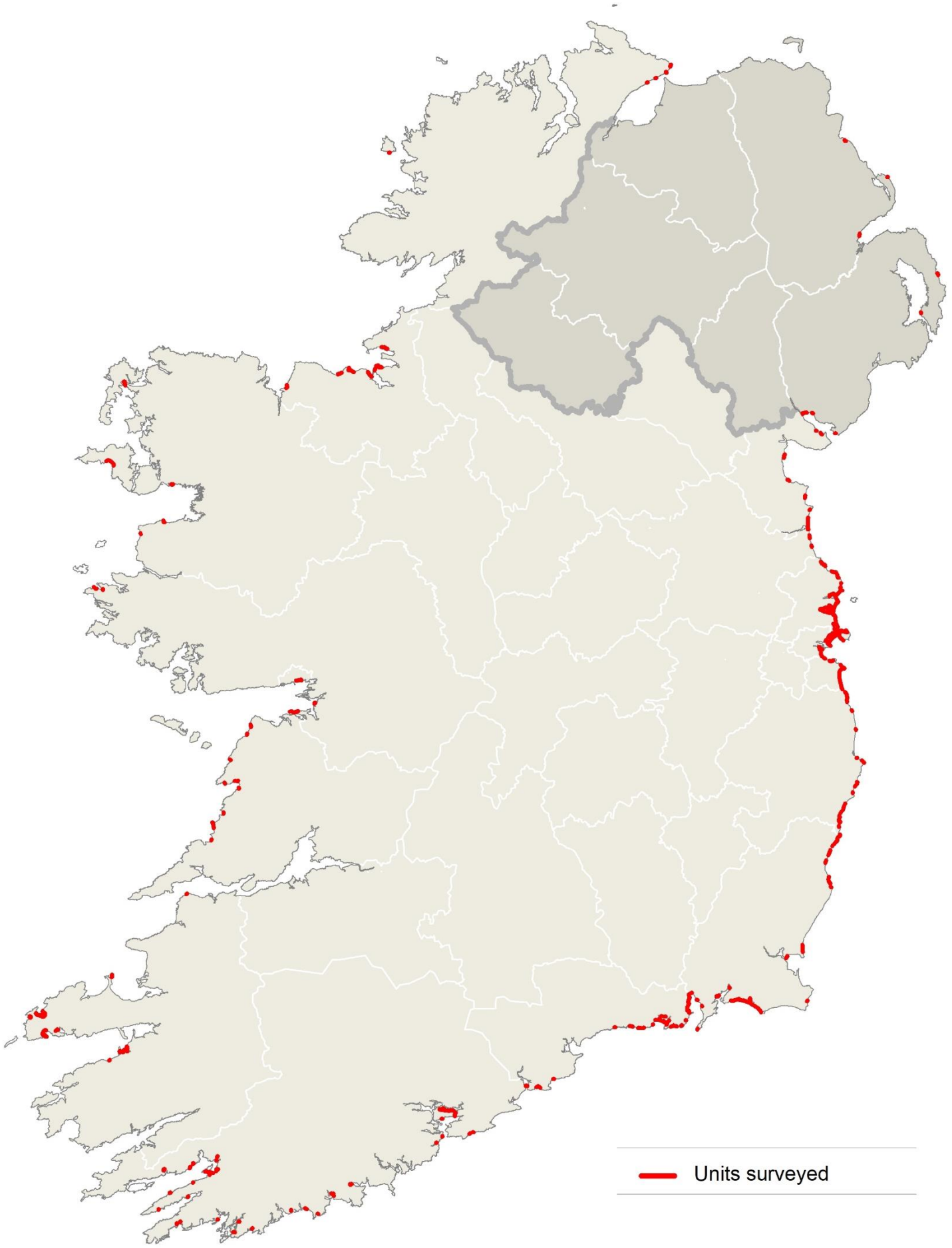☐ Dumping, tipping, infill ☐ Loss of Biodiversity   ☐ **Other** …………………………………

F5   Is there something or things <u>you really like or love</u> about this survey unit? Tell us:

[   ]

F6   Comments or observations:

[   ]

Thank you so much for all your work! If interested, there is more: <u>Extra Nature & shore use</u> questions PTO
A harbour questionnaire and a seaweed pilot useful for biology and geography class are also on our website.
Please submit results (ideally online) as soon as possible and no later than October 20th.
Data return, comment and queries? Go to **www.coastwatch.org** or your regional coordinator, send an
email to **survey@coastwatch.org** or if urgent Karin **kdubsky@coastwatch.org** 00353 (0)86 8111 684.

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Units surveyed