

DRAFT

Autumn 2018 Results

Island of Ireland

Coastal Character, Biodiversity and Marine Spatial Planning

Compiled from Coastwatch volunteer survey reports by

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**An Roinn Tithíochta,
Pleanála agus Rialtais Áitiúil**
Department of Housing,
Planning and Local Government

Coastwatch Coordination

hosted by

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Regional and National Coordinators

Regional Coordinators in clockwise order, starting from County Louth

REGION	COORDINATOR
REPUBLIC OF IRELAND	
Louth	Brendan McSherry
Meath	Frank O Reilly
Dublin - Fingal	Michael Walsh
Dublin City	Kelda Minjon James Arnold
Dun Laoghaire	Roslyn Shaw
Wicklow	Pat O'Suilleabhain Deirdre Burns
Wexford	Karin Dubsy
Waterford	Alan Walshe Paddy Houlihan
Cork	Bernie Connolly
Kerry	Dr. David McCormick
Clare	Hugh Galloway
Galway County	Elaine O'Riordan
Galway City	Kelda Minjon
Mayo	Rory Keatinge
Donegal East	Dr. Trish Murphy
NORTHERN IRELAND	
NORTHERN IRELAND	Dave Wall

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Thank you to Dr Robert Wilkes EPA for advice on seaweed and seagrass monitoring and identification help and to Wexford County Council for supporting schools and Coastwatch in their Science fest.

Surveyors, regional and national coordinators listed below worked gratis or integrated the survey into their official work load. We would like to thank all for their citizen science contributions in the autumn 2018 survey and indeed in follow up work since then. Thank you for the over 1500 photos which were submitted, to be shown at result events and invaluable identification aid. Names of regional coordinators and surveyors/team leaders for those who indicated names could be published are listed on following pages.

Coastwatch Surveyors Group Leaders Autumn 2018 Survey

Names are only included, where permission to publish was granted.

Aimee Farrell	Diane Orr	Liam Ryan	Philip Murphy
Áine Walsh	Donna Weiner	Linda Matcham	Prim Duplessis
Alan Walshe	Dundalk Tidy Towns	Linda O'dwyer	Rachel O'Malley
Aleksandra Mamczarz	Eileen O'Malley	LINK Pfizer Little Island	Reuben Throne
Andrew Cox	Eilis Sheehy,	Lissy Bauer	Richie Houlihan
Angela O'Flynn	Elizabeth Donnelly	Liz Lawler	Robert Halpin
Anita Such	Emer Kenny	Louis McLoughlin	Rosemary Watkins
Anna Aherne	Emma O Rourke	Lucy Taylor	Rosie Watkins
Anne Dale	Erik Stingl	Lynda Shealy	Roslyn Shaw
Aodeen Buckley	Finbar Quigley	Maeve Foley	Ruth Ennis
Ardscoil Ris	Francois Gunning	Maeve O' Sullivan	Ruth Ring Cobh Tidy
Arklow group -Linda	Frank O'Reilly	Manuela Dei Grand	Towns
Sheahy	Freddie Drohan	Margaret Somers	S.N. Na Naomh Uile
Arklow Sea Scouts	Gail Cranfield	Marie Louise	Sadhbh Quinn
Ashlin Orrell	Gairmscoil Mhic	Heffernan	Sandrine Daly
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Bernie Connolly	Gerry Moore	Meath group part of	Scott Kirwan
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Breda Enright	Glenarm Wildlife Group	Megan Rothwell	Sean Corbett
Brendan McSherry	Good Energies Alliance	Melanie O'Driscoll	Sharon Kearney
Brendan O Connor	Grace O'Sullivan	Michael Karn	Skerries Community
Brian Carroll	Greystones Girl Guides	Michael McCourt	College
Brian McDonagh	Hannah McQuillan	Michael McGovern	Sophia Meeres
Brid Colhoun	Heir Island Wildlife	Michael Walsh	St Kevin's NS
Caroline Goucher	Project	Shem Berry	Stephanie O'Donoghue
Catelyn Casey	Hugh Burke	Monty Lowe	Stephen Forbes
Catherine Byrne	Hugh Galloway friends	Myra Collins	Tara Hill N.S.
Catherine Wilson	Emilie Roberts	Nancy Quinn and	Tess Peters
Cathy Lee and friends	Ian McHardy	group Nancy Rose	The Maguires
Chris O'Dell	Isaac Freeman-Kishida	Creech	Thomas Canavan
Christian O'Morchoe	Joe Gatins	Niall Burke	Tim Stevens
Christine Loughlin	Jim Hurley and friends	Niamh O'Mahon	Tish McAtee
Christopher Throne	Jimmy Arnold	Nikki Keeling	Tom Hannigan
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Ciara Aherne	Joao Frias	Ognyan Yosifov	Tommy Breen
Ciara O'Brien	Joe Tobin	Paddy Houlihan	Tony Lawton
Claire Horan	John Barimo	Pamela Milani	Tony Miller
Clare Kelly	John J Cotter	Pat O'Suilleabhain	Trevor Orr
Clare Morrissey	John Sherry	Patricia Goodbody	Trish Murphy
Cobh Tidy Towns	John Walker	Patrick Doyle	Ulster Wildlife
Colaiste Phobail	Jonathan Mason	Patrick Jackson	volunteers
Cholmcille	Karin Dubsy	Patrick Sammon	Val Freeman
Conor McMahon	Kathleen	Patrick Veale	Veronica Heywood
Conor Porter	Keith	Pauhla McGrane	Victor Fusco
Cósta Álainn	Kellie Heney	Paul Blanchard	Vincent Fahy
Daria Ulijaszky	Kevin Mc Loughlin	Paul Dubsy	Waterford I.T.
Dave Wall	Kilmore National	Paul Hadland	Weronika Borek
David Freeman	School	Paul McKinley	Wild Bunch
David Horkan	Kristin Laubach	Paul Quigley	Willie Morrogh
Declan Collins	Laura Wiggins	PCA Brendan Colreavy	Youth Train CTC
Deirdre McDermott	Ihamo Fitzsimons	Peig McAufield	Wexford
Deirdre Ryan	Liam and friends	Phil Guerin	Yvanna Greene
Derek Harrington	Liam Powen	Phil Callaghan	

Chapter 1. Introduction

The Coastwatch Survey is carried out by members of the public from all walks of life, especially citizens living in the coastal zone who know their area well, recreational users schools, scouts and in some areas fishermen and other traditional users.

It involves walking a chosen piece of coast once around low tide. The surveyors are asked to fill in a questionnaire for each survey site, designed to give an overview of the state of the coast – see www.coastwatch.org

A 'survey site' or 'survey unit' (s.u.) is a stretch of shore \pm 500m long as measured along mean high tide mark. The width covers the sea shore from start of the hinterland down to the edge of shallow water at low tide. Each s.u. was given a unique code based on the EC NUTCODE system, with counties numbered in clockwise direction, then the 5 km block in each county again in clockwise direction and finally the survey units within each block. Smaller islands around Ireland have been digitised on request.

Coastwatch started with hand marking of maps, then in 2012 changed to GIS maps using the Harvard University base. But there were mounting difficulties of map display failures during the survey. In 2018 a switch to the ArcGIS system was accomplished by the technical coordinator with minor disadvantages of display but major dependability gains.

Method

From August 15th surveyors were targeted through the existing network from previous surveys, as well as canvassing via media and social media. Those seeking our survey areas were able to go onto the Coastwatch website to the booking form, click on the live link to the digitised Coastwatch survey map (linked [here](#)) and zoom in on a potential survey area. The shore is hugged by a line with marked blue and white increments which denote a 500m s.u. - see example in photo above.

Volunteers click on a chosen blue or white segment which then turns turquoise and brings up the survey unit identification code. This is copied onto the survey questionnaire and is notified to Coastwatch to update the bookings map. To avoid duplication, booked sites are manually marked yellow and once data is returned, they are changed to green.

Fieldwork aid

Volunteers are advised to photograph their map as there may be no internet connection on the shore. They can then refer to the map photo on their phone to zoom in and out and 'geolocate' features while doing fieldwork. It is useful to photograph a map view with several s.u. just in case the volunteers want to continue surveying the next s.u.

Materials

The materials for the Coastwatch Survey 2018 were available online www.coastwatch.org and were also distributed through the regional coordinators or posted out on request. They included:

- Survey questionnaire 2018 (online and hard copy). Most questions remain the same year on year. One significant new question piloted in the 2018 survey - was on Maritime Spatial Planning. This very last question on the form was well flagged to alert surveyors to the EC Directive, the Irish MSP initiative and their chance to engage directly or via our survey form in the public consultation.
- Survey Guide notes: (online and hard copy), with detailed explanatory notes from preparatory, over survey to return of data.
- A data input form so surveyors could upload their information and photos on return to wifi.
- As 'Extra Materials' which could be used year round. surveyors had:

- Nitrate test kits requested when booking for checking any freshwater inflow they came across
- A Harbour Waste Management Questionnaire updated if the s.u. was in a harbour, marina or included a working pier.
- A Coastwatch Micro-litter App: to collect information about visible microlitter (location, type, source...)
- Other Coastwatch materials available online and on request as hard copy were seashell poster, some coastal invasive alien species encountered around Ireland, jellyfish with 'stingometer,' seaweed poster and survey module.

Coordination and Communication

Regional coordinators – see table in Acknowledgements - worked imaginatively to invite participants and answer surveyor questions in 'their county'. They supported survey site allocation to those who were unable to go online and many held or even distributed materials or ran training events supported by Coastwatch HQ. Some also did extensive survey work themselves.

Training

After discussing their preferred locations over the phone, training sessions were organised especially where a larger area may be covered and divided up between surveyor pairs, school classes or scouts. Due to Department of Housing support and an extra water project organised by Cork regional coordinator with LAWCO support, 27 training sessions were held covering almost all counties.

Training included planning the survey, health and safety, nature protection while surveying including invasive alien species spread prevention and then actual low tide surveying field trips with hard copies of survey forms, paper and phone copy map of an area. With Ireland's coast just full of magic the shore biodiversity exploration was just training and such enjoyment and learning all in one.

Data compilation and analysis

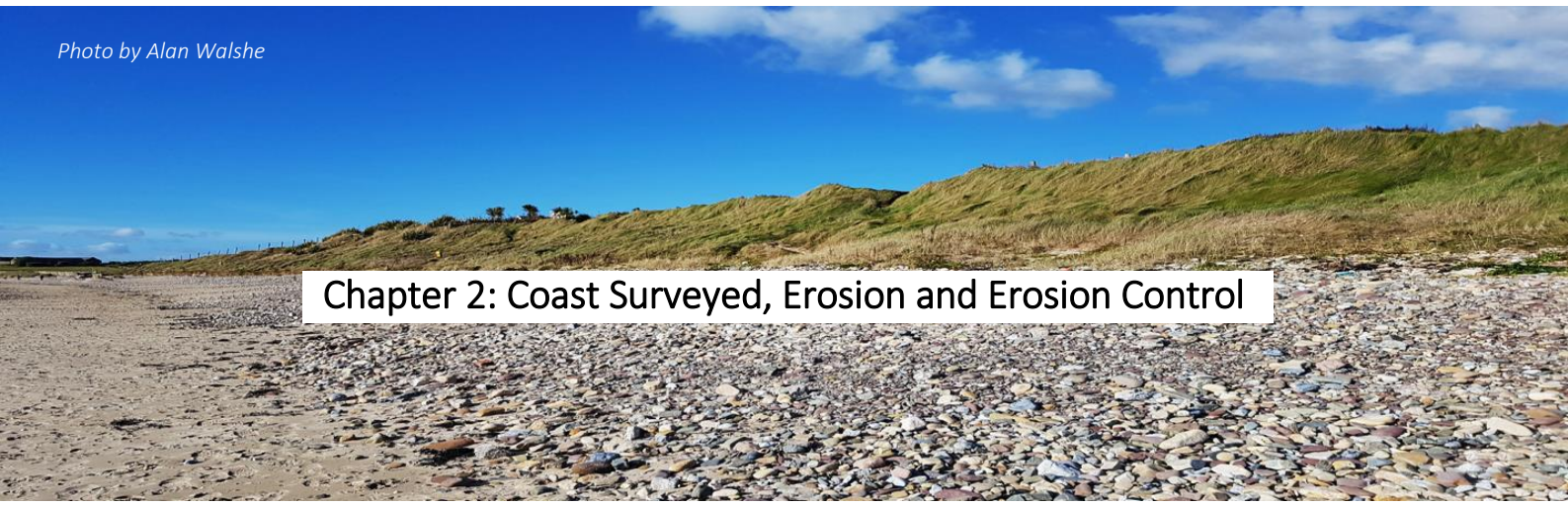
Surveyors could either return the completed questionnaires for input by volunteers in HQ or enter their data directly online via an input form on the Coastwatch website. The second option was chosen by over 80% of surveyors in 2018. After the data was inputted it was transformed into an excel spreadsheet, then checked and analysed.

Verification

As some survey units are surveyed several times, the duplicates are compared giving a sense of variability of observations for habitats species such as barnacles. Unusual findings or quantities of biota were checked for surveyor comments, photos and/or field verification in case of seagrass. A more detailed formal validation of seagrass records was also carried out with trained team and site visits with surveyors who had sent in the record of growing *Zostera*.

Follow up

Follow up work took many forms. In county Wexford the local authority invited two schools to present their findings from opposite ends of the county at Wex science fest which drew a huge crowd. Advice was provided where a surveyor discovered something which required prompt action. Often surveyors were planning action themselves but wanted to know where to look for official information or who had responsibility to enforce legislation. Most answers were provided by Coastwatch coordination, occasionally augmented or confirmed by government and/or legal advisor. Some follow up work will be published in the full report as case studies.



Chapter 2: Coast Surveyed, Erosion and Erosion Control

2.1. Shore Access

In section A8 of the Coastwatch surveys were asked about the accessibility of the shores they were surveying. Considering surveyor comments, the categories on this question have been changed in 2018 to better describe shore accessibility. Surveyors were asked if the shore was accessible by vehicle, by foot or by wheelchair. Additionally, they were given the opportunity to indicate if shore access was private, partially inaccessible or completely inaccessible by land (see figure 2.2). Access by foot was overwhelmingly the most common result (92%) followed by access by vehicle (32%). In terms of prohibitive access partially inaccessible was the most numerous (18.5%). To note, inaccessibility can be due to many factors such as erosion control, private property commercial use and coastal makeup (rocky, cliff, erosion). This data is in line with results from previous years, see figure 2.3.

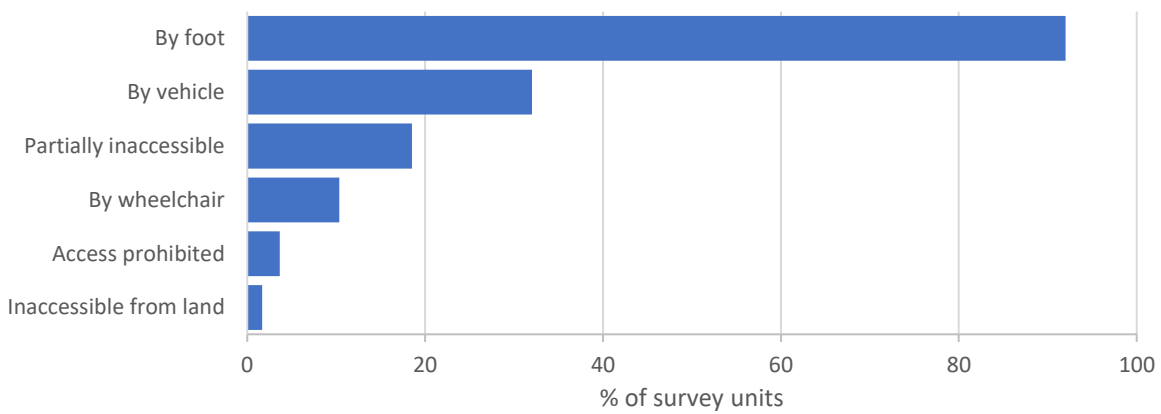


Figure 1. Shore access as describe by surveyors (in percentage of survey units)

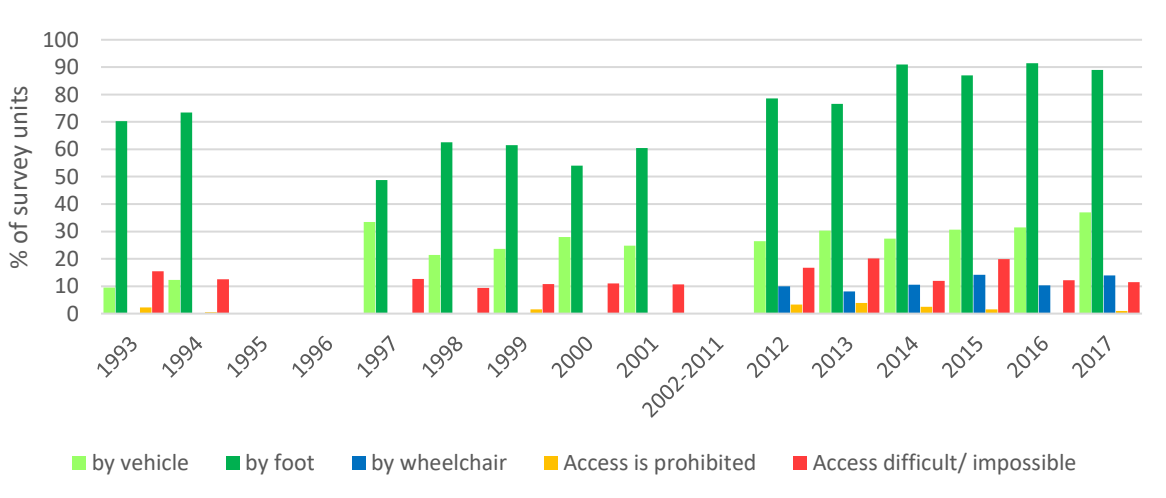


Figure 2. Shore access in previous Coastwatch Surveys (the category "access by wheelchair" was introduced after 2002).

2.2. Threats to the coast

"It always feels good to be part of keeping an eye on the environment and hopefully helping it"

Clare Kelly, Durrus

Surveyors were asked to indicate in section F4 of the questionnaire if there were any imminent threats or risks to the areas surveyed. Figure 2.4 shows the total results of the threats indicated in the 591 survey units. Of the 591 survey units, imminent threats were indicated in 286 of them. Erosion was overwhelmingly considered to be the greatest threat (29.83%). This is consistent with a trend since 1989, see figure 2.5. Reports of erosion are increasing. Data is not available from 2001 through 2011.

Erosion can occur to many different types of coastlines and can be caused by numerous events such as destructive waves, rain and sediment abrasion. A map of areas where erosion was reported to be occurring can be seen in figure 2.6.

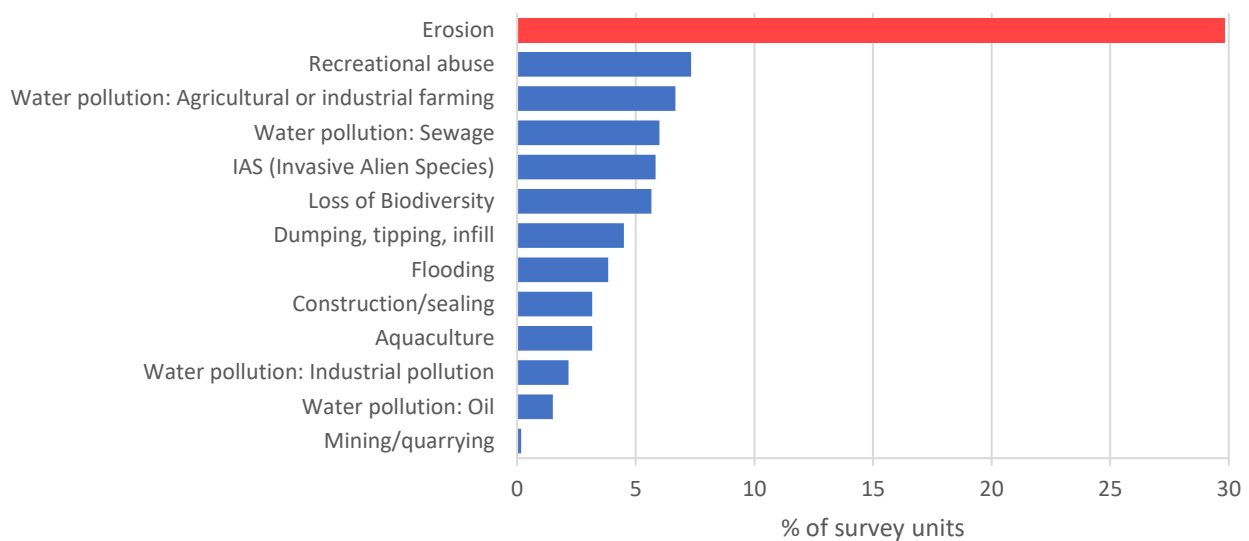


Figure 3. Threats to the shore as reported by surveyors in 2018.

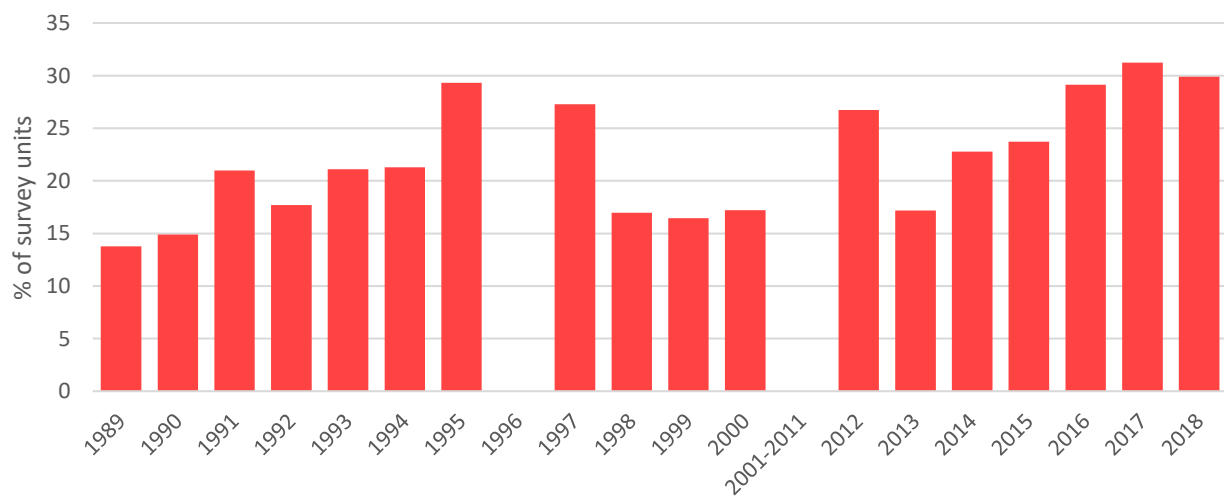


Figure 4. Reported erosion threat from 1989 to 2018.

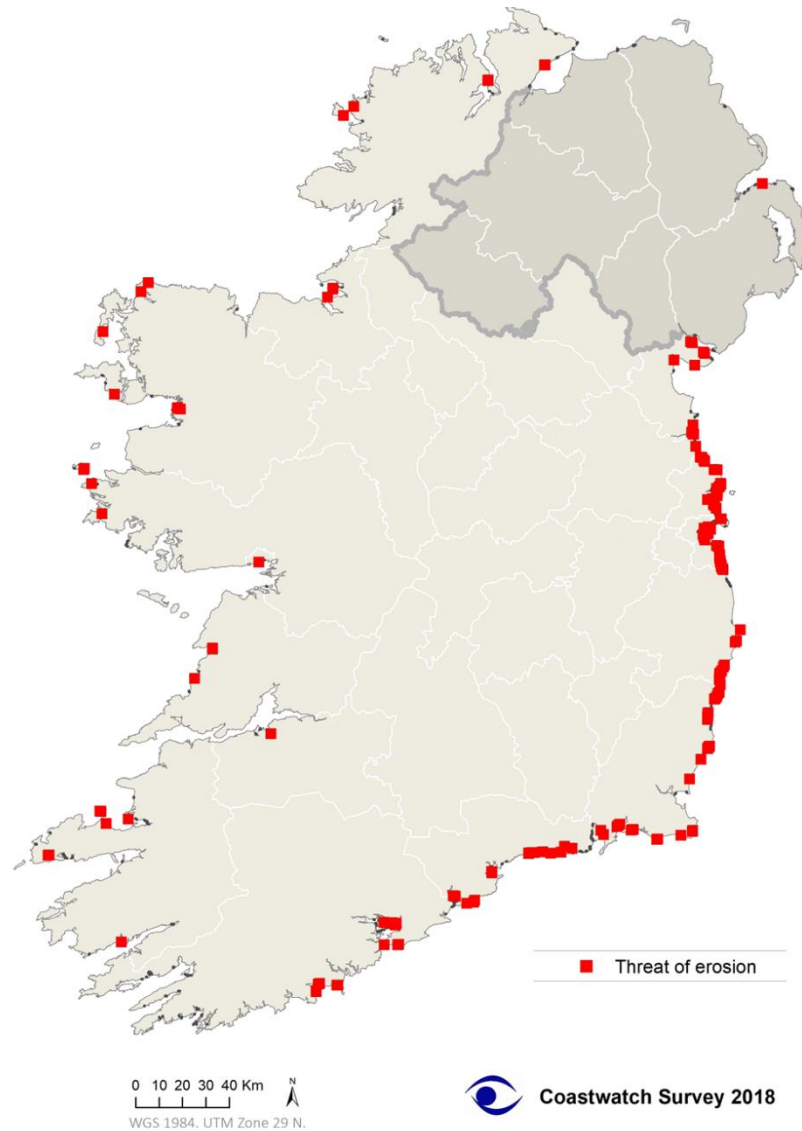


Figure 5. Map of the threat of erosion to the shore as perceived by surveyors

2.3. Hinterland

The Hinterland refers to the area behind the splash zone and intertidal zones. These environments are varied and include areas such as farmland, dunes, towns and parks. Transport (55.7%) and residential areas (37.3%) were the most commonly reported types of hinterland, see figure 2.7. Figure 2.8 shows the percent makeup of the transport section of the hinterland, road was the most commonly reported (78% of transport).



Image 1. Sand dunes eroding, Maherbeg. Photo by Mary & Ihamo Fitzsimons



Image 2. Residences on the hinterland in Quilty, Co. Clare. Photo by Nancy Rose Creech.

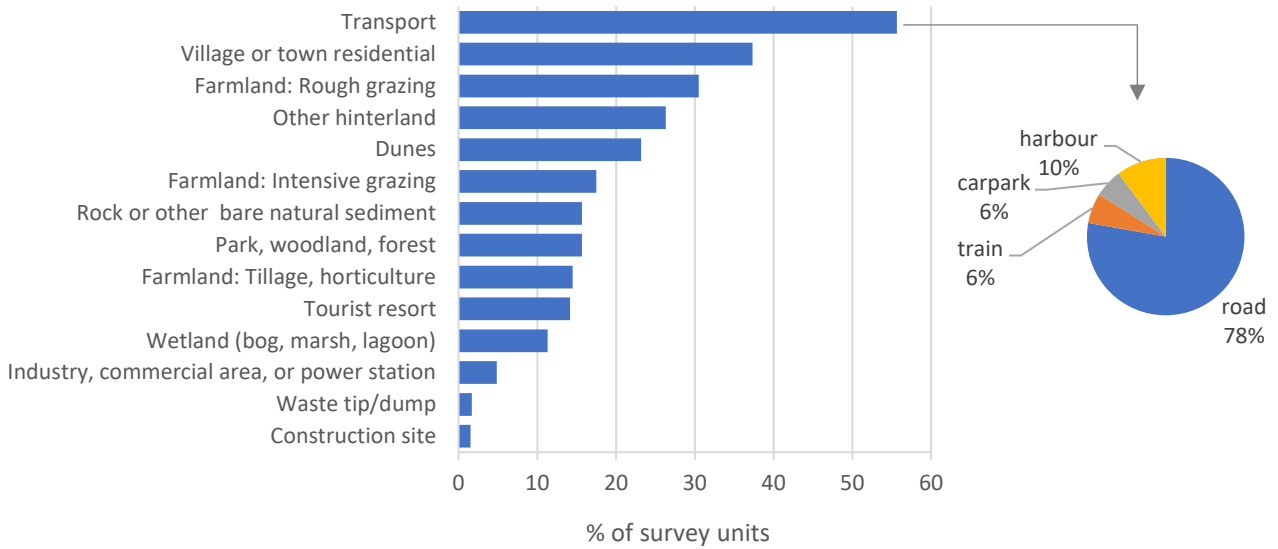


Figure 6. Reported hinterland categories in 2018 as percentage of s.u. (left) and makeup of the transport category (right).

Since 1989, surveyors reported transport and residential areas more frequently. The two of them compare as well, see figure 2.9. 2018's ranking results for transport and residential areas are expected given results from previous years. Shore access is often easier near roads and residential areas, so surveys are more common in these areas. Location of a survey plays heavily into this. For example, surveys from the Dublin or Cork areas will have more residential and transport reports in the hinterland.

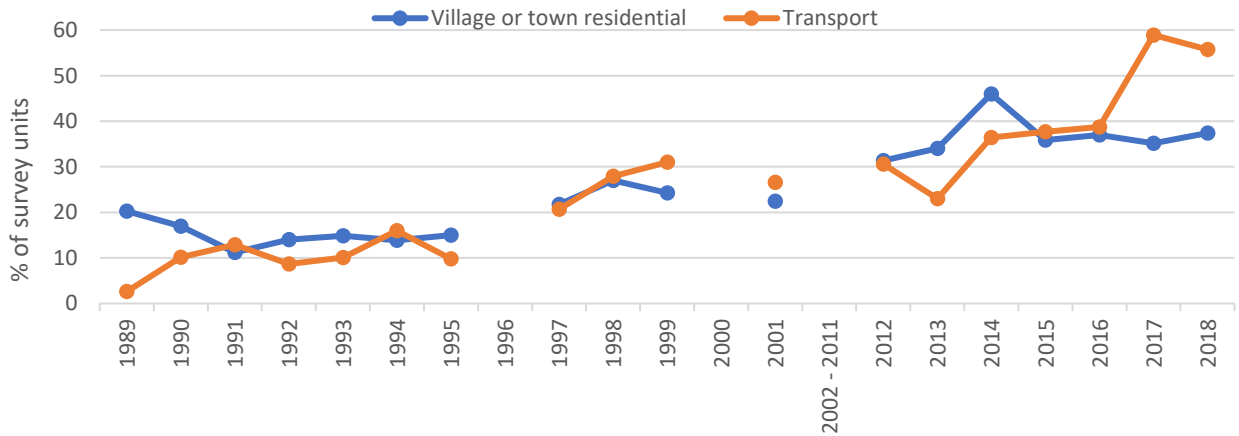


Figure 7. Percentage of transport and residential areas reported in past surveys



Image 3. Shanganagh cliff. Photo by Roslyn Shaw.

2.4. Splash Zone and Erosion Control Measures

“Erosion from storms in winter reduces the dunes every year and the splash zone continues to move closer to the fields.”- NW, Castlegory beach

In section C2 surveyors were asked to indicate what they found in the splash zone. The splash zone is referred to as “the shoreline from mean highwater up to land-spring high watermark”. Survey results were consistent with previous years’ results. Sand, gravel, stones (71.28%), hard erosion control (44.93%) and natural rock (42.74%) were the most frequently reported splash zone type, see figure 2.15. These results are expected and in line with what surveyors have reported in previous years. There is a noticeable trend in regards to the increasing number of surveyors reporting hard erosion control, see figure 2.16 and 2.17.

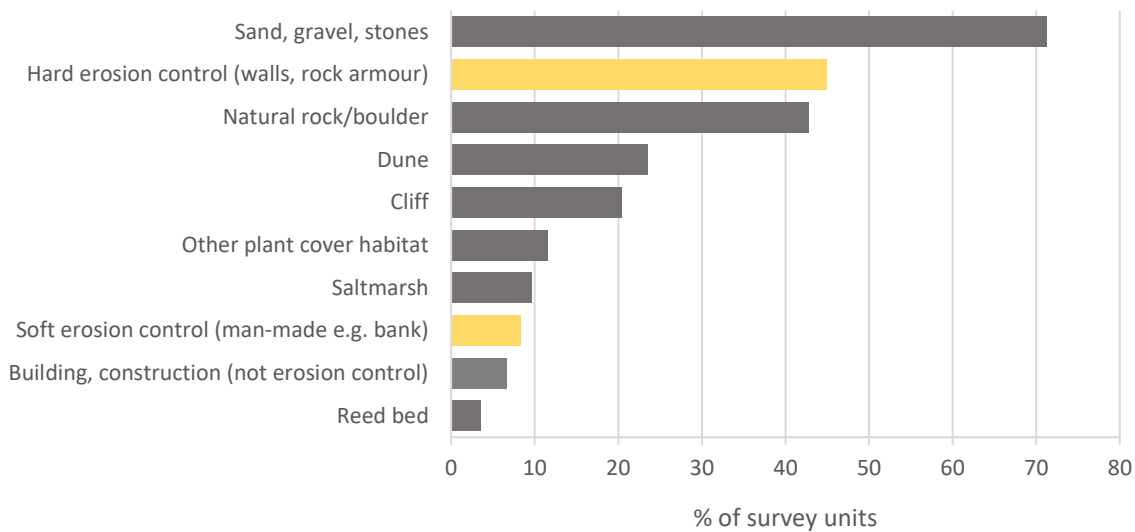


Figure 8. Make-up of the splash zone.



Image 4. (left) Photo of Motte and Bailey NW and (right) hard erosion control at Rinroe beach. Photo by Caroline Goucher

% of survey units	1989	1990	1991	1992	1993	1994	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Saltmarsh	8.2	7.5	9.0	4.2	2.2	5.7	6.1	ND	4.6	4.9	ND	4.0	9.5	7.8	8.2	8.7	6.3	9.8
Reed bed	2.9	2.9	4.9	3.4	1.4	2.8	3.0	ND	4.6	4.7	ND	2.8	4.6	3.8	5.4	5.5	2.7	4.0
Sand, gravel, stones	NA	NA	NA	37.8	51.7	53.7	52.4	ND	40.2	69.6	ND	69.5	82.0	70.5	75.9	57.8	69.7	71.1
Natural rock/boulder	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	44.3	35.6	33.7	43.2
Natural rock	NA	NA	NA	NA	NA	NA	NA	ND	18.7	39.7	ND	41.3	36.8	35.3	NA	NA	NA	NA
Bare rock/sand	63.9	63.2	64.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Building, construc. (incl. erosion control) & Rock	NA	NA	NA	32.3	19.8	16.7	15.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Building, construction (incl. erosion control)	7.2	5.7	9.2	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Building, construction (not erosion control)	NA	NA	NA	NA	NA	NA	NA	NA	5.0	9.2	7.3	8.1	5.9	8.0	9.6	9.8	6.1	10.4
Other local erosion control	NA	NA	NA	NA	0.2	3.6	3.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hard erosion control (walls, rock armour)	NA	NA	NA	NA	NA	NA	NA	ND	3.0	13.4	12.4	14.6	33.2	30.9	39.0	38.7	42.7	44.9
Soft erosion control (e.g. bank)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.9	8.0	7.8	9.1
Other vegetation incl. dune marram, ryegrass	15.4	12.6	14.1	13.0	4.2	10.5	10.8	ND	6.4	24.9	ND	23.6	33.4	20.7	NA	NA	NA	NA
Dunes	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24.9	23.6	24.0	22.6
Other plant habitat	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.2	19.7	15.2	20.6
Cliff	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18.9	21.1	17.0	23.8

Figure 2.16 Splash zone make up in previous surveys

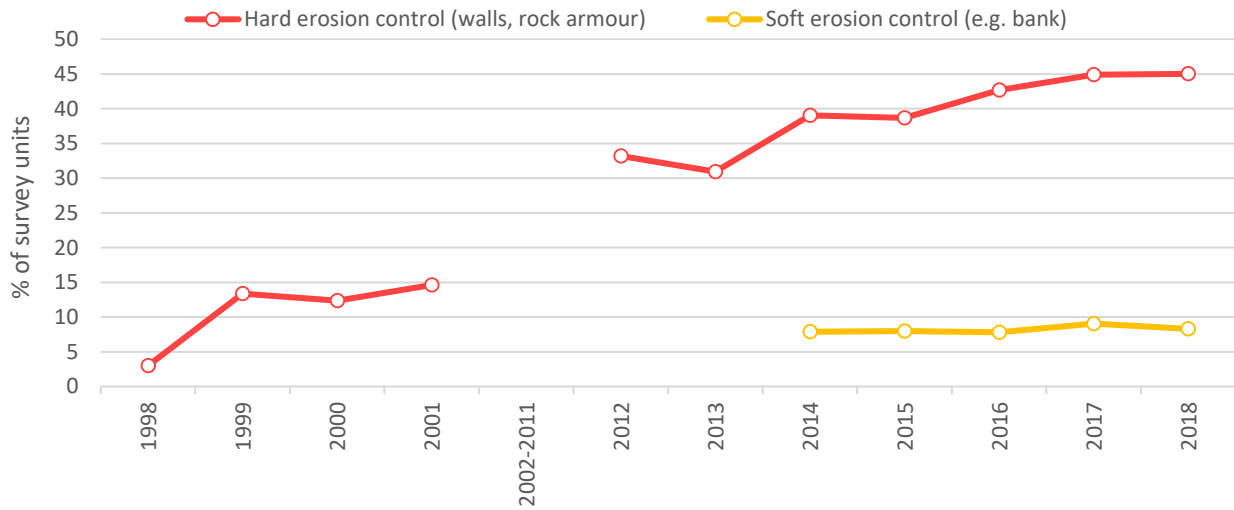


Figure 2.17 Percentage of Erosion control since 2012

Additionally, there was crossover among surveyors who reported erosion as an imminent threat and the type of erosion control in place at the splash zone. For reference, hard erosion control refers to rock armour, sea wall, gabion baskets and soft erosion control refers to earth banks and material waste. Figure 2.19 shows no erosion control was the most common (305 s.u), followed by hard erosion control (237 s.u). A small number of sites had soft erosion control (20 s.u.) or a combination of soft and hard erosion control (29 s.u).

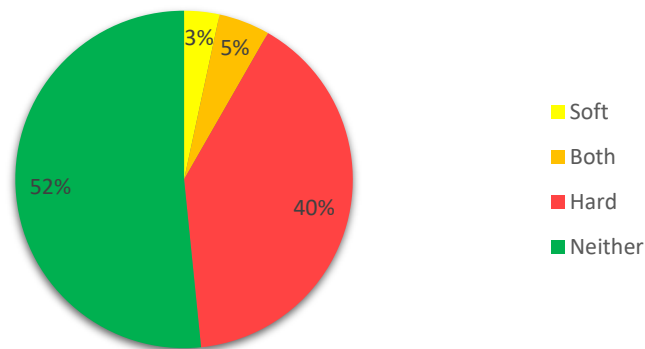


Figure 9. Percentage makeup of what type of erosion control was in place when erosion was reported as a threat 2018.



Image 5. "As with other parts of this sea wall in other units that have been surveyed in this general area there is obvious evidence of erosion with the sea wall"- Anna Aherne, Ashgrove. Photo by Anna Aherne

2.5. Intertidal Zone

The Intertidal Zone section of the Coastwatch questionnaire refers to areas that are covered at high tide and exposed at low tide. The intertidal zone can be sorted in regards to sediment type, such as boulders, sand, or gravel. Sand was the most commonly reported (76.35%) followed by gravel (50.17%) and boulders (46.11%), see figure 2.21. These results are in line with previous years' results, see figure 2.22.

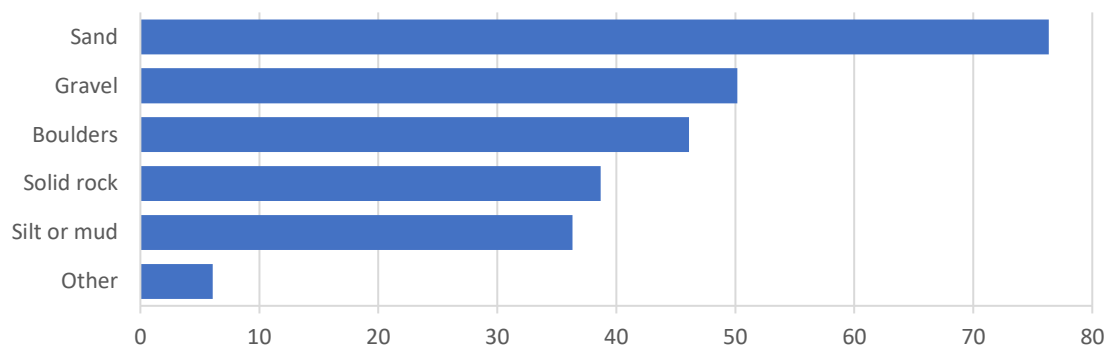


Figure 10. Intertidal zone percentages 2018

% of survey units	1989	1990	1991	1992	1993	1994	1997	1998	1999	2000	2001	2012	2013	2014	2015	2016	2017
Solid rock	28.2	29.0	25.8	24.0	13.9	25.8	ND	26.7	25.6	ND	25.1	33.9	37.1	30.8	33.7	29.7	37.7
Boulders	24.4	16.2	13.2	19.2	11.1	28.0	ND	29.9	28.3	ND	22.3	36.2	34.9	40.2	35.3	35.0	39.4
Gravel	30.4	27.8	27.8	24.3	20.4	30.7	ND	26.4	34.0	ND	37.6	48.6	37.6	51.2	46.2	47.8	48.7
Sand	37.9	38.7	43.9	48.0	33.2	45.8	ND	44.0	44.4	44.8	47.7	75.6	68.3	75.9	71.7	73.7	75.3
Silt or mud	28.7	26.0	29.4	24.8	19.3	32.0	12.0	25.6	20.9	25.7	21.9	34.7	29.7	29.0	30.3	33.5	33.4
Other_intertidal	6.9	3.1	2.1	2.1	2.2	2.7	ND	4.0	5.9	ND	4.5	12.1	8.0	7.7	6.9	8.2	10.9

Figure 11. Intertidal percentages in past surveys



Image 6. Castlegroy Beach, NW



Image 7. Photo of survey group at Churchbay beach by Aodeen Buckley. Aodeen said she enjoyed "Involving children and local clubs"

2.6. Notable Erosion Observations from Surveyors in Comments

From the 179 units reporting erosion as threat, 32 of them had comments specifically citing types of erosion, the causes of erosion, and other contributing factors. As seen in figure 2.24 , the most common reports were of cliff erosion, dune erosion, and erosion by rain. The second most numerous results came in the form of sea wall disrepair and human caused erosion (walking, running). Finally one surveyor noted that accessibility to the site was hindered due to erosion control, rock armour specifically.

"There was once one of the most beautiful beaches on Ireland's East Coast. It is now covered in ugly rock armour as a result of serious flooding in the 1990's. No effort has been made by Wicklow Co or the Department of Environment to restore the beach."-Catherine Byrne and Nancy Quinn, Arklow North Beach

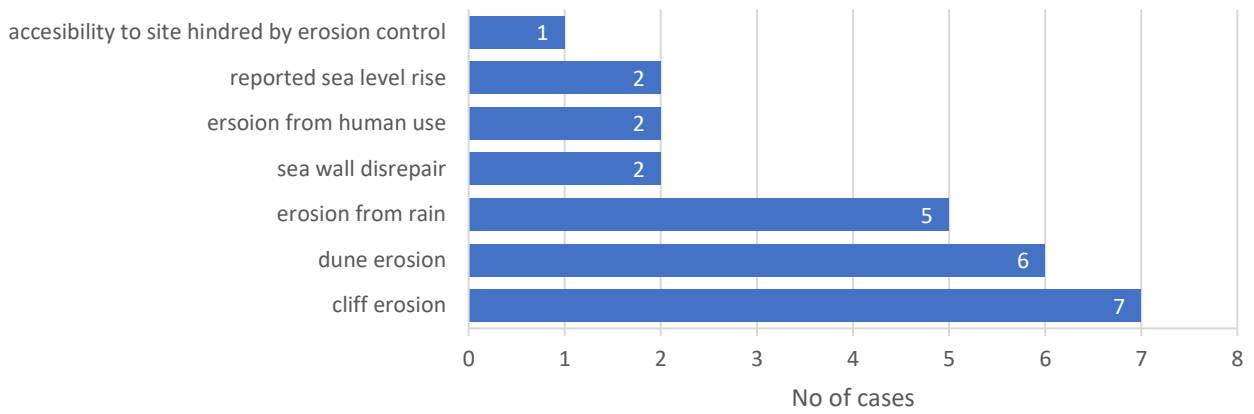


Figure 12. Observations made surveyors who reported erosion as an imminent threat



Image 8. "There is evidence of natural erosion along this SU, not caused by human activity" -Chris O'Dell, Lisheen Strand, photo by Chris O'Dell



Image 9. Photo by Paddy Houlihan- "The sand hills have been washed away and the public are also walking causing erosion"-Paddy Houlihan, Tramore Beach

Chapter 3: Biodiversity Results

Photo by

3.1 Introduction

The coast of Ireland is an incredibly diverse and rich ecosystem, and hundreds of species depend on coastal areas. It is important to maintain these environments to prevent loss of biodiversity. This will become more difficult as waters warm and sea levels rise from climate change.

Additionally included with the questionnaire was a biodiversity guide to help surveyors identify common organisms they might come across during their survey. This year, Coastwatch indicated eight groups of importance in regards to biodiversity: birds, molluscs/seashells, crabs, worms, jellyfish, marine mammals, fish, and invasive species. If surveyors came across any of these, they reported their finds. Surveyors under the threat section of the questionnaire could also mark whether they believed loss of biodiversity was an imminent threat to their survey site. Out of the 591 survey units, 5.67% indicated biodiversity loss as an imminent threat, and 5.38% indicated invasive alien species. This can be observed in figure 3.1.

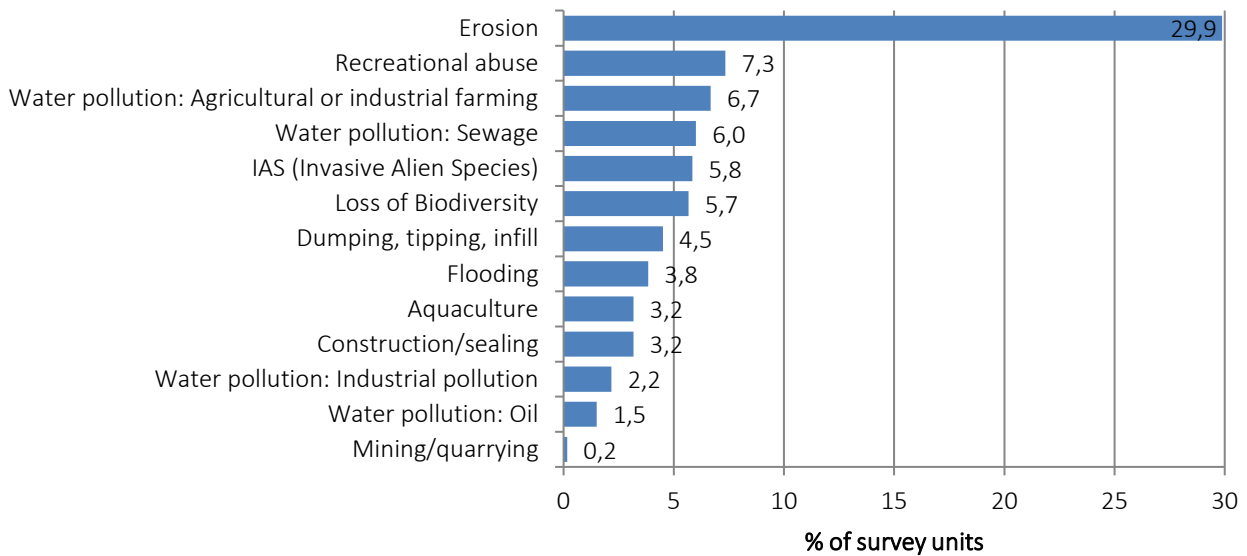


Figure 13. Threats to the shore reported by surveyors

3.2: Habitats

In 2018's Coastwatch survey form, surveyors were asked to tick off a selection of habitats that they noticed during their survey: dunes, coastal wetlands, park/woodland/forest, etc. Noting the habitats surveyed every year is incredibly important when it comes to the effect on biodiversity results as well as what we end up recommending.

This year, 139 survey units ticked dunes, 68 survey units ticked wetlands, and 94 ticked park/woodland/forest. Among those three categories, dunes were the most commonly reported at 47.8%, park/woodland/forest in second at 31.5%, and in last, wetlands with 20.8%.

3.2.1: Dunes



Image 10. Dunes at Tramore Beach. Photo by: Paddy Houlihan

Dunes are identified under the Habitat Directive in 8 different habitat types, including: embryonic shifting dunes, white dunes, grey dunes, decalcified *empetrum* dunes, decalcified dune heath, dunes with creeping willow, humid dune slacks, and machair. According to the National Parks and Wildlife Service's protected habitats status report, all types of dunes have achieved favourable conservation status.¹

This year, dune habitats were identified in 169 survey units, accounting for approximately 28.6% of surveyed areas. Where dunes were found is shown in the map below, in figure 3.1.1.

Sand dunes often serve and provide as natural forms of erosion control, and act as protective barriers. They also provide habitat for many of Ireland's coastal creatures, including different species of plants and insects. It's important to continue protecting dunes not only for their ecosystem services, but also so that the different forms of life living in them can continue to do so.

One interesting note about dunes this survey period was from Coastwatch surveyor, Áine Walsh, regarding dunes at the Baltray river wall in Louth. She said, "The dunes have rectified and re-vegetated themselves somewhat from the same period in 2017, when storm Ophelia had done some damage to them."

This is a very positive report, as with each large storm Ireland receives, habitats like sand dunes are incredibly likely to suffer and have large amounts of land be lost.

¹ National Parks and Wildlife Service, Department of the Environment, Heritage, and Local Government. "The Status of EU Protected Habitats and Species in Ireland." *The Status of EU Protected Habitats and Species in Ireland*, 2008, pp. 1–136.

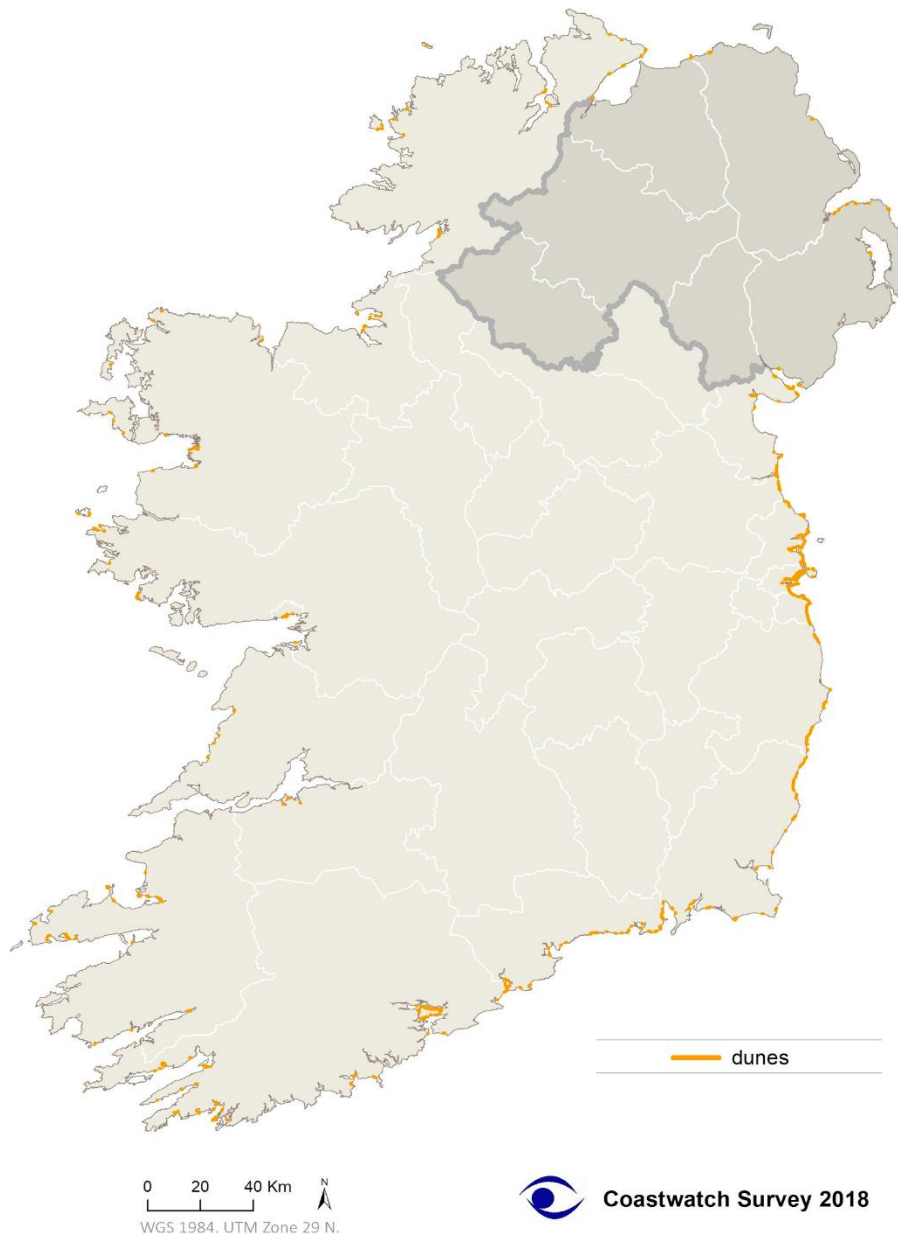


Figure 14. Map of dunes found during the survey (both in the intertidal and the splash zone)

3.2.2: Coastal Wetlands

There are three types of wetlands of importance during the annual Coastwatch survey: glasswort, saltmarsh, and reed beds. These were indicated in 162 surveys, or 27% of survey units. 90 surveyors ticked glasswort, 51 surveyors ticked saltmarsh, and 21 surveyors ticked reed beds. Similar to Coastwatch reports in years past, the maps displaying the locations of the wetlands surveyed were located in the same or in similar areas. This is due to the fact that all three types of wetlands thrive and coexist under similar conditions. This can be seen below in figure 3.2.2.

All three coastal wetland types provide incredible ecosystem services for the different kinds of life living within them. They provide natural flood control, water purification, shoreline stabilisation, sediment and nutrient retention, etc. It is beyond important to maintain them.

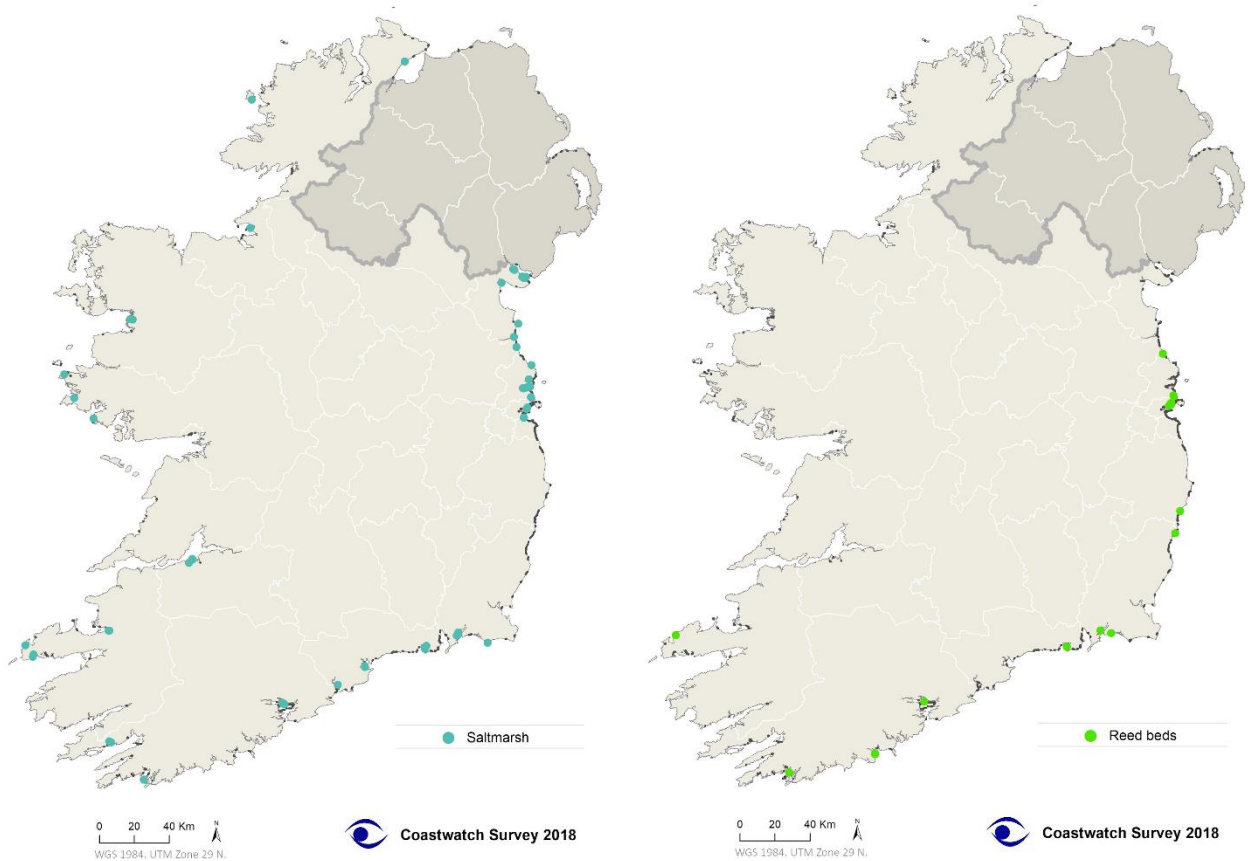


Figure 15. Maps showing the location of reed beds (left) and saltmarsh (right) reported in 2018.

3.2.3: Glasswort

In years past, surveyors did not identify *Salicornia* often in their reports. However, this year, we had more reports of it than we did the other two wetland types, as seen in figure 3.2.2. We believe that this is not due to an increase in growth, but rather an increase in surveyor knowledge.

Glasswort is a species of flowering plant that grows along the intertidal, and very much prefers saltier habitats. If kept in perfect conditions, it is also edible and can be used in a multitude of culinary dishes. *Salicornia* also practices carbon fixation, and takes in carbon dioxide from the surrounding atmosphere.

As seen below, glasswort was found on nearly every coastline of Ireland in some quantity.

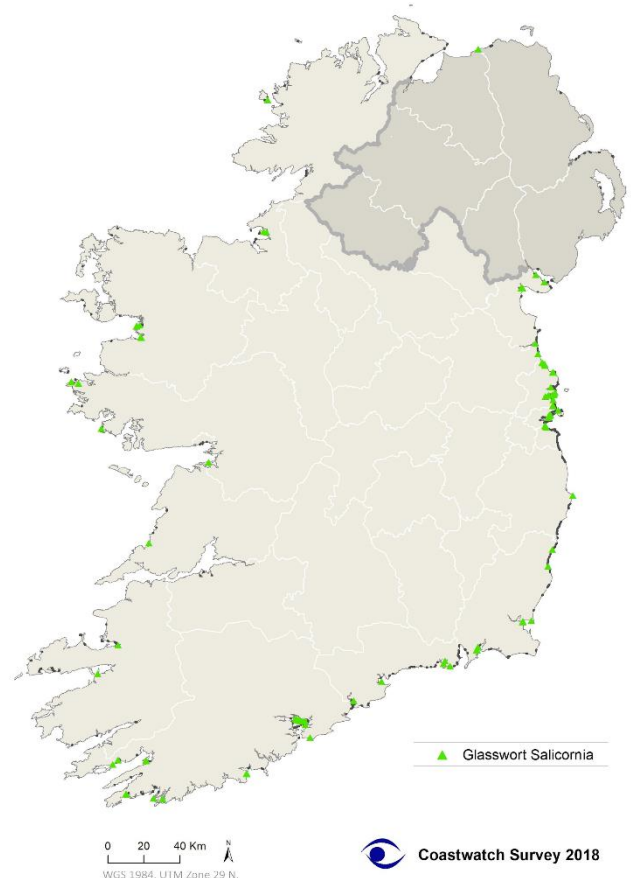


Figure 16. Map showing the location of Glasswort found in 2018.

3.3: Seaweed

Ireland is home to hundreds of different species of seaweed, including green seaweed, brown and red seaweed, cordgrass, seagrass, egg wrack, etc. This year, 75% of survey units reported brown/red seaweed, 60% reported green seaweed, 15% reported glasswort, 12.8% reported cordgrass, and 9.6% reported seagrass. This data is shown below in figure 3.3.1.

In Coastwatch surveys, it's incredibly important to note every year what condition the seaweed is found in. For example, thinner bands or small patches of green seaweed is indicative of freshwater inflows, while thicker, mushier green seaweed carpets are indicative of nutrient enrichment. This year, green seaweed carpets were found in 139 survey units (23.48%) and thin patches were found in 358 (60.47%) survey units.



Image 11. Green seaweed in Coliemore Harbour.
Photo by: Abigail Freeman-Kishida

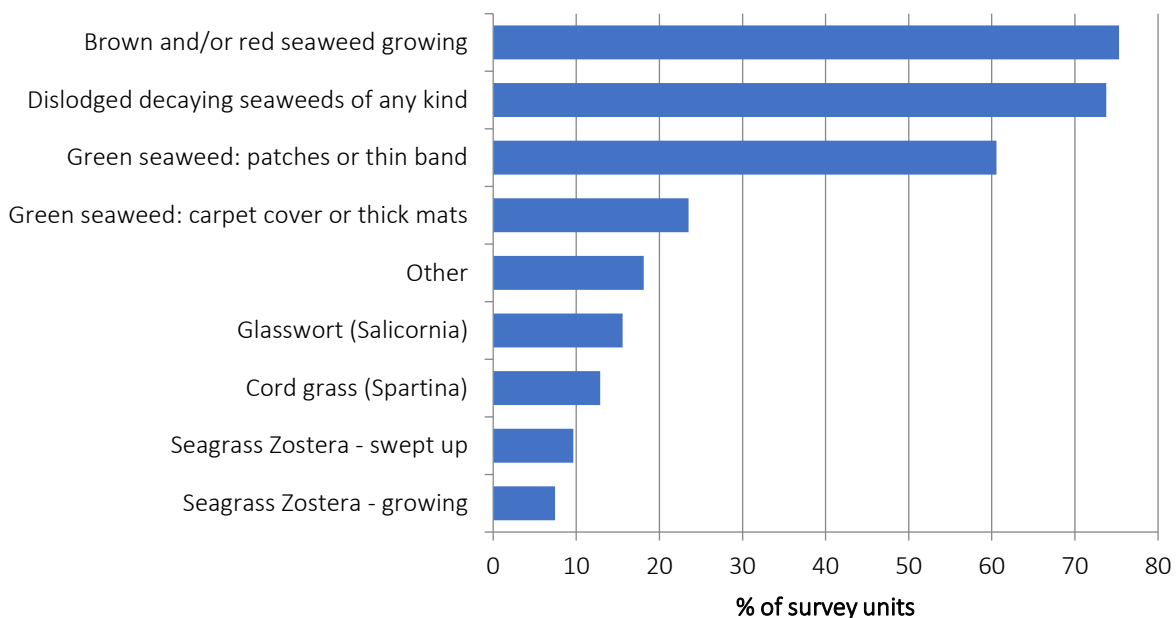


Figure 17. Plants and seaweeds reported in 2018

3.3.1: Seagrass

Zostera marina is an important species of seagrass which lives in the shallow parts of the ocean, often close to the shore. Seagrass was reported either as being swept up, still growing, or growing and swept up. In this years data, we found that 53 survey units reported swept up seagrass, 29 reported growing seagrass, and 17 mentioned both growing and swept up seagrass. It's important that zostera become more of a priority for environmental protection.

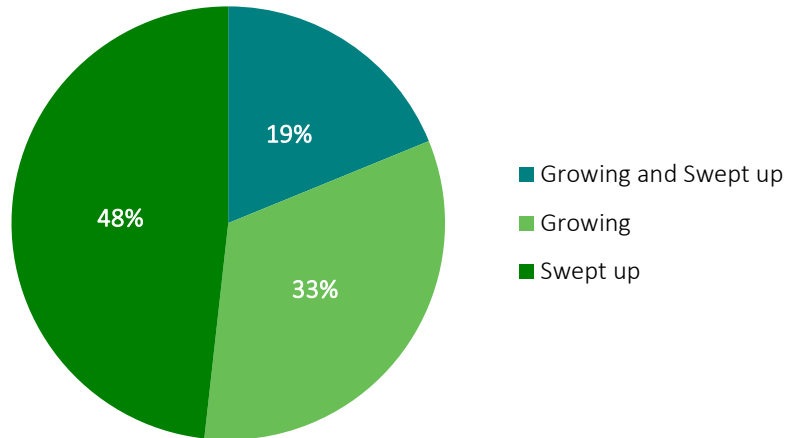


Figure 18. Pie chart displaying the survey units which reported whether the seagrass was growing, swept up, or growing and swept up

3.4: Animals

Animals were reported as present or absent from a large list of main groups. The results can be seen in the figure below.

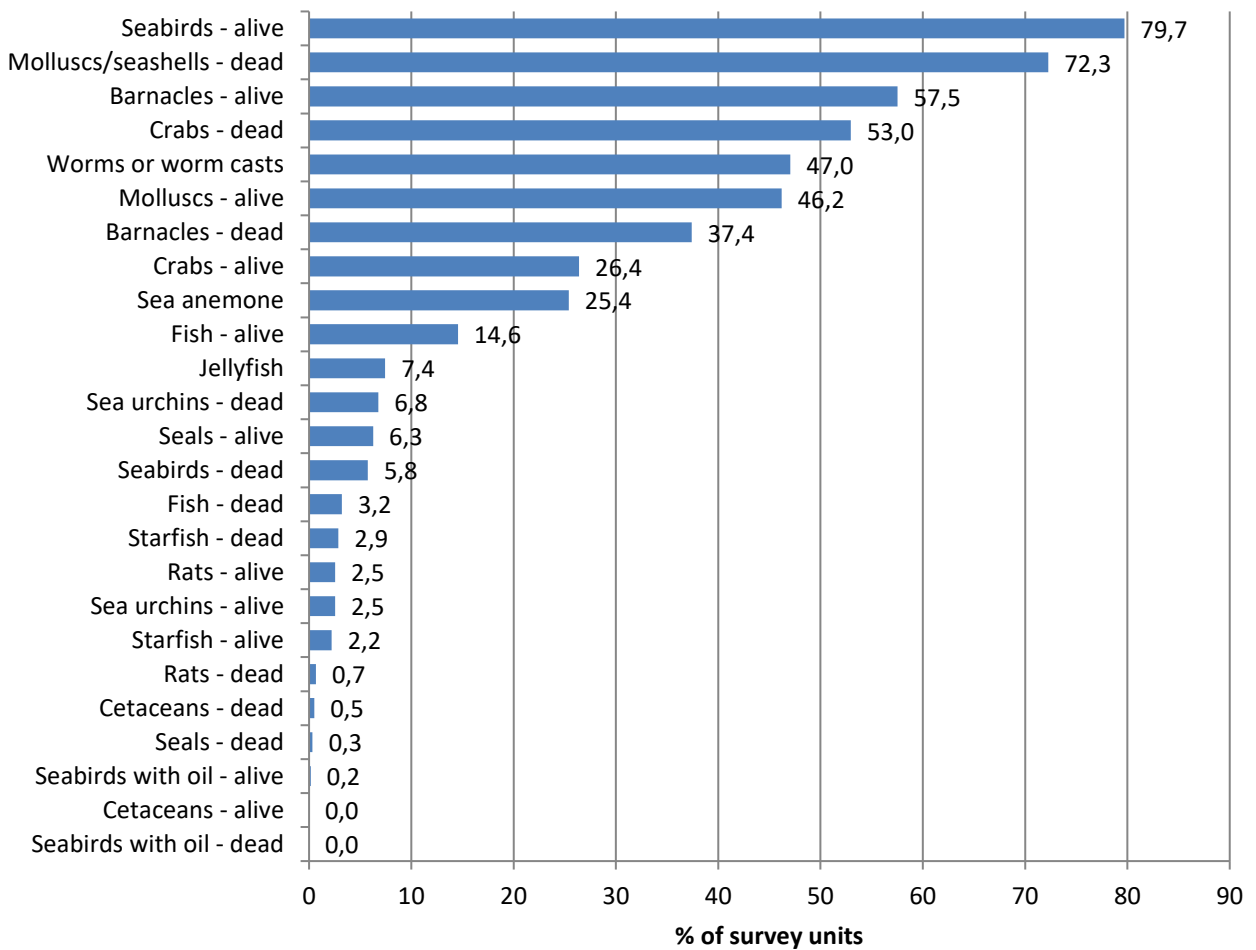


Figure 19. Animals found during the 2018 Coastwatch Survey

This year, surveyors were asked to indicate what animals they found dead or alive using a list. Animals are always a major part of Coastwatch results as one of the best indicators of climate change is what animals were present in a surveyed area, and whether or not they were alive or dead. As one of Coastwatch's main goals is to educate, we also provide identification posters to help surveyors.

3.4.2: Birds

Birds were the most commonly reported animals, appearing in approximately 472 survey reports (80% of all reports) and dead birds in 34 survey reports (6% of all reports). Only one surveyor, Tommy Breen, reported seeing one live bird with oil on it in North Beach Arklow. No dead birds with oil were reported.

Oftentimes when dead birds are found during surveying, there is not much left to the body besides feathers and beaks, which makes it hard to know what the cause of death was. This year, no surveyors recorded known causes of death.

One notable survey from Myra Collins reported a dead puffin, a species of which is facing a large decline throughout Europe, often due to increasing competition by human overfishing. See image 3.4.1 below.



Image 12. Dead puffin in Doughmore beach. Photo by Myra Collins.

There was also a strong variety of birds reported this year, including oystercatchers, egrets, swans, herons, ducks, etc. One of the questions we asked in our survey was, "Is there something you really like or love about this survey unit?"

Plenty of responses mentioned different aspects of biodiversity as their favorite part of their survey area, and the presence of seabirds for birdwatching was also very common. One comment from Veronica Heywood in Booterstown Nature Reserve said, "I love its feeling of remoteness from the bustle of the city, and the sea birds love it for the same reason... where they can feed at peace along the tide line. I particularly like the winter when pale-bellied brent geese arrive from the Canadian Arctic along with many other wintering migrants."

3.4.3: Molluscs / Seashells

As seen in figure 3.4.1, dead molluscs and seashells were the second most commonly reported biota, appearing in 72% of the survey reports. Within the Dublin biosphere, a multitude of species were seen in the results- including but not limited to mussels, slipper limpets, cockles, oysters, scallops, and whelks. Thanks to our Coastwatch seashell identification poster, we believe that surveyors have developed a better understanding of what species is which.

Live molluscs also had a large presence in survey results, appearing in 46% of reports. It can be noted that this is a slight decrease from the 2016 results, which reported 50%. This could potentially be a feature of the areas surveyed.

As for specifics, 87 total cockles were reported alive, and 299 were reported dead. 24 razor shells were reported alive, and 239 were reported dead. 5 Slipper limpets were reported alive, and 10 were reported dead. 265 Limpets were reported alive, and 265 were reported dead. The rest of the molluscs identified can be found below in figure



Image 13. Scallop shell in Mullaghroe beach.
Photo by Caroline Goucher

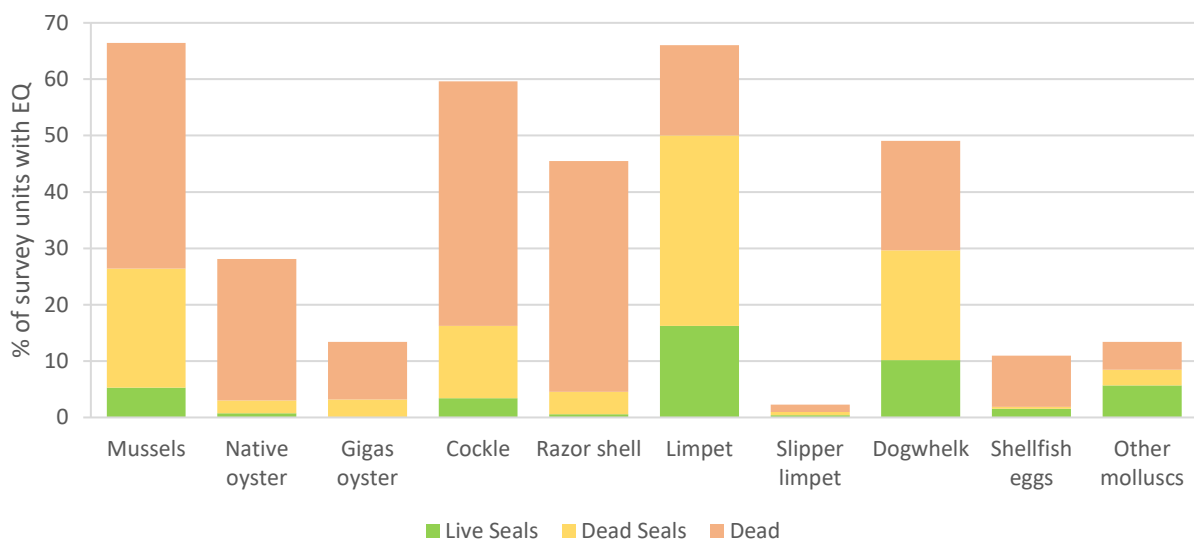


Figure 20. Molluscs and seashells reported by surveyor in the Extra Questions (N=530 s.u.)

Special Finds

This year, we had a number of incredible findings- including reports of live native oysters *Ostrea edulis*. Over 130 survey reports identified dead native oysters, 12 reported both dead and live native oysters, and 4 reported live native oysters.

According to notes from several Coastwatch surveyors, many of the dead oysters were said to have been found near old oyster beds. One comment from Patrick Sammon mentioned that his survey area, Rossnakilly, was directly on top of a native oyster bed, and that the area was traditionally harvested for shellfish. And although the reportings for native oysters were high among survey reports, it's also notable that there was also a high

number of pacific oysters, *Magellana gigas*, reported, shown in figure 4.2. For more information, please see section 4.8 on invasive alien species.

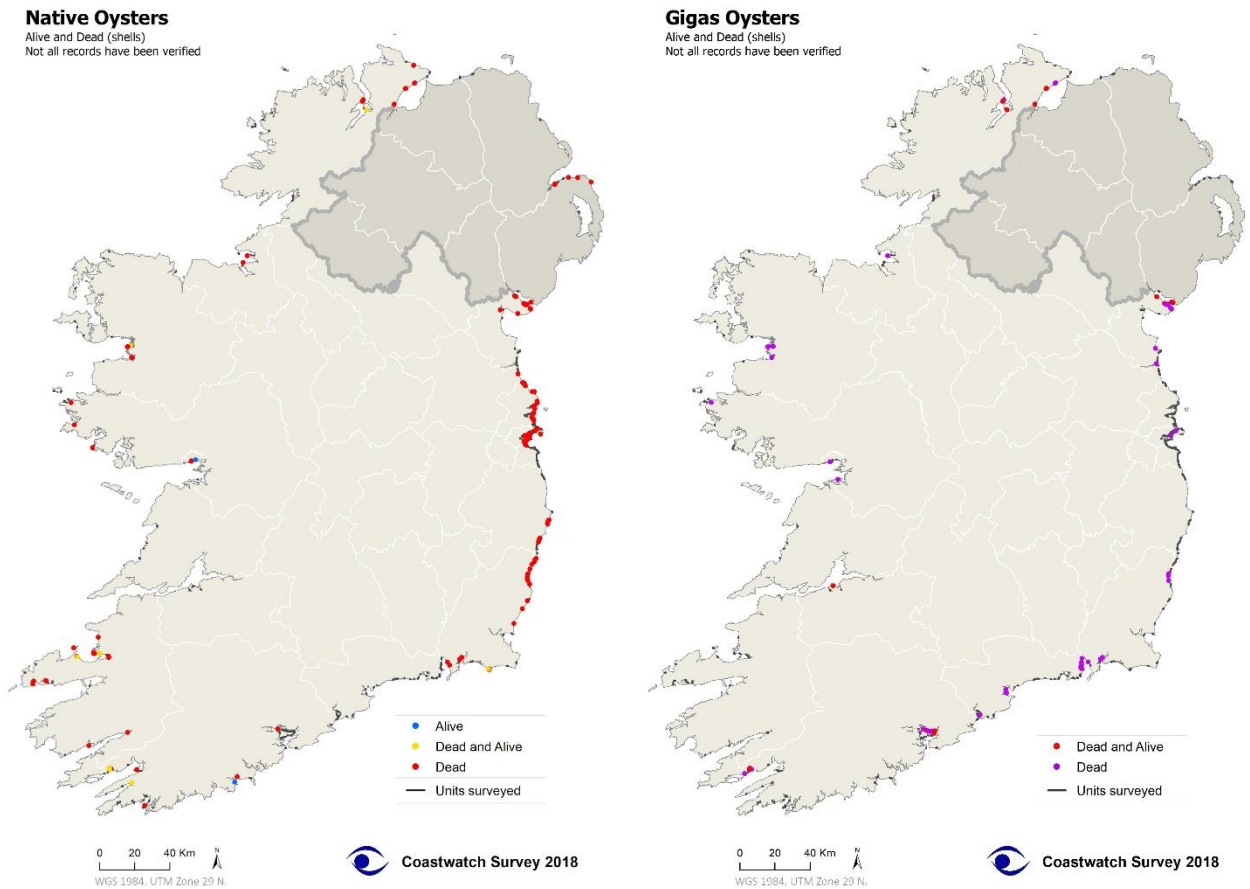


Figure 21. Map of Native Oyster (left) and Gigas Oyster sightings.

Mussels

In this year's Coastwatch results, 352 survey units mentioned the presence of mussels. Reports of nearby offshore dredging and aquaculture practices have been increasing in recent years, especially in areas such as Lough Swilly and Adrigole Harbour. This has become a problem as mussel beds continue to thin.

We also noticed that many surveys included notes about mussel aquaculture litter being present in survey sites. One comment from Chris O'Dell said, "I believe that most of the rubbish I found comes from the commercial harvesting of mussels in Roaringwater Bay. Large blue plastic floats, complete and broken, and quantities of blue polypropylene string and rope were present." This can pose a dangerous risk to the biodiversity both on and off of Ireland's shores.



Image 14. Mussel spat on a buoy in Adrigole Harbour. Photo by Bernadette Connolly.

In figure 3.4.5, our data shows that 60% of mussel reports mentioned seeing dead mussels, Figure 3.4.5: Total mussel findings with 32% seeing both dead and live mussels, and 8% seeing only live mussels.

3.4.4: Barnacles and Limpets

Live barnacles were the third most common find, appearing in 58% of survey units. Dead barnacles were found in 38% of surveys. The summer of 2018 was extremely hot and shore temperatures rose to over 30°C in several areas where Coastwatchers took temperature readings. Barnacle loss was reported with large sections falling off in the intertidal with overheating as a suspected cause. There were notes of a fresh spat fall in early autumn. Although barnacles are not endangered or in immediate risk of population loss, they are still greatly affected by climate change in the intertidal.

265 live limpets were found this year, and 265 dead limpets were reported. This could possibly have to do with the poor temperatures last year, as some comments from Coastwatchers mentioned that the limpets seemed to have moved to the shady side of rocks in order to avoid the temperature increase.



Image 15. Barnacles and limpets on a rock on Jack's Hole Beach. Photo by Yvanna Greene

3.4.5: Crabs

Ireland is home to a number of different crab species, including brown crabs (*Cancer pagurus*), spider crabs (*Maja squinado*), etc., most of which are unprotected by Irish law. 53% of 2018's Coastwatch reports included dead crabs, and 26.5% included live crabs- a large increase from 2016's survey, which only reported crab sightings in 15% of surveys.

Many comments from Coastwatch surveyors this year mentioned the presence of offshore crab and lobster aquaculture, including in Churchbay beach, Howth East Pier, and Kilmore Bay Nemestown.



Image 16. Spot the spider crabs in seaweed, Clare / Galway border. Photo by Sabine Springer.

3.4.6: Worms

In Irish marine life, lugworms, *Arenicola marina*, are commonly used as fishing bait for several types of fish, including cod and mackerel. They commonly exist within the intertidal zone as burrowing sediment consumers. Typically, the younger lugworms can be found near the top of the shore, and older lugworms are found lower down the coast. Lugworm casts were very common. Over 279 reports included worms/worm casts, accounting for 47% of the total survey results.

In recent years, it has become increasingly popular for fishermen to dig small trenches in the sand in order to pull them out and use them for bait.



Image 17. Lugworm cast, Skerries Ireland. Photo by Ewa Allusoglu

Sand masons, *Lanice conchilega*, are often found in Ireland living around the low tide mark on hard sand or sandy mud, and are considered by some to be reef-building worms when found in large congregations.² Sand mason sightings were also common, and were reported in over 100 surveys. We think that this may reflect better volunteer knowledge on where to look and a trained eye rather than necessarily an increase in sand masons.



Image 18. Dead sand masons in Belgrove East Ferry. Photo by Anna Aherne.

Honeycomb Worm Reef

Sabellaria alveolata is a biogenic reef-forming worm observed in 33 survey units this year, a very slight decrease from our 2016 report. The locations of the reefs found in the survey report this year can be seen in the figure below.

The biggest site for honeycomb reefs this year were located around Waterford, stretching from Ballymadder in Co. Wexford all the way to Whiting Bay in Ardoginna. The presence of A few reefs of Honeycomb were also noted in Dublin, Co. Kildare, Co. Cork, Co. Kerry, Co. Clare, and Co. Mayo. No new reef sites were reported this year.

² Rabaut, M., Vincx, M., Degraer, S., 2009. Do *Lanice conchilega* (sandmason) aggregations classify as reefs? Quantifying habitat modifying effects. *Helgol. Mar. Res.* 63, 37-46.

One comment from Mick & Shem Berry stated that there was a larger presence of Honeycomb reef than in 2017, which is incredibly positive. The Waterford estuary area remains the biggest haven for Honeycomb worm reefs.

Honeycomb reefs (Sabellaria)

Records not verified

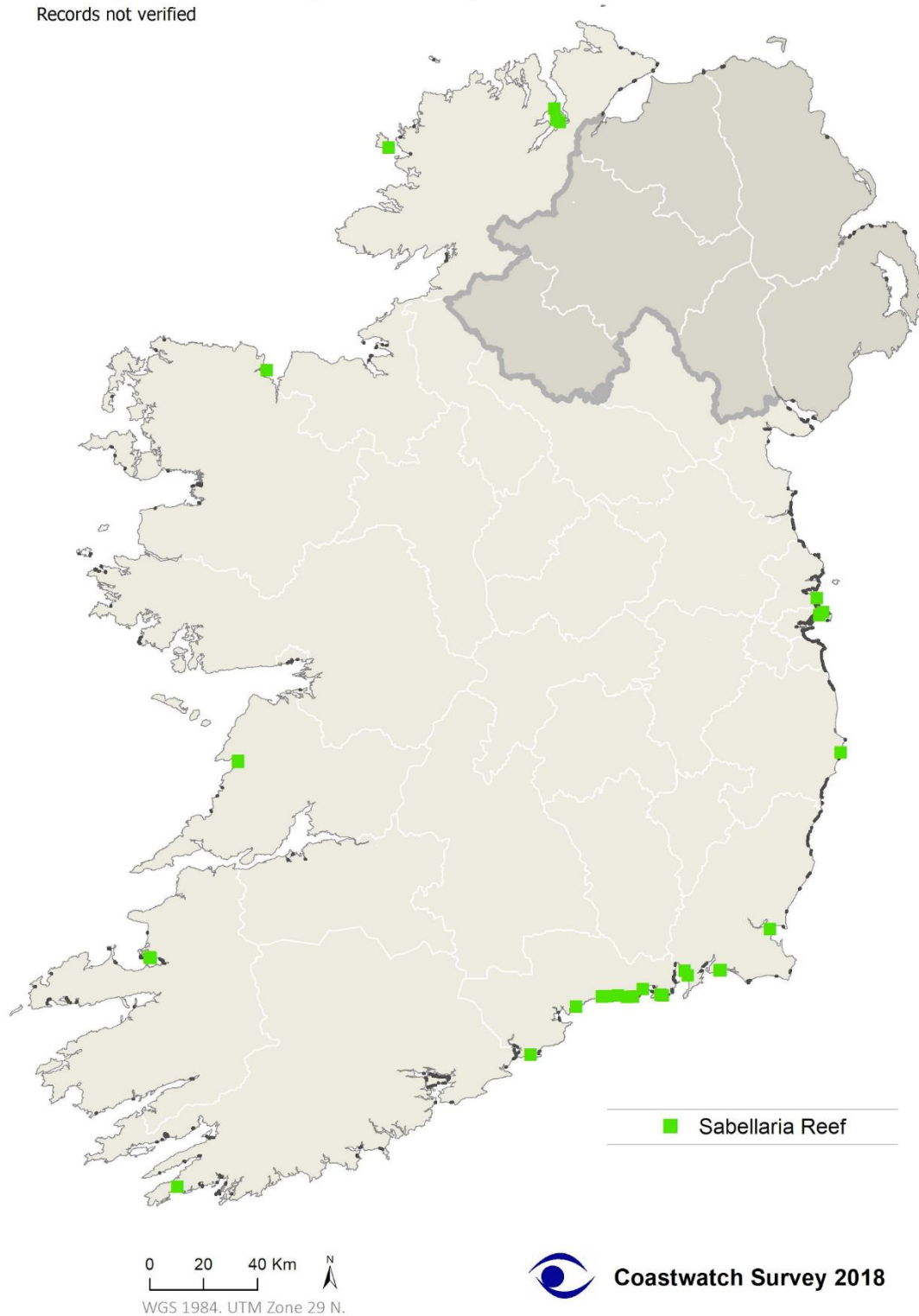


Figure 22. Honeycomb reefs found on the 2018 survey. Not all records have been verified.

3.4.7: Jellyfish

In this year's Coastwatch results, Jellyfish were reported in 7% of the survey units, a substantial decrease from years past. In 2016, harmful species like Portuguese Man O' War and Lions Mane jellyfish were so prominent on Irish beaches that 20 surveys had to be abandoned, as the sites were completely inaccessible. This year, no surveys mentioned accessibility problems due to jellyfish, but this could be attributed to the fact that jellyfish are more common in the summer than in the autumn.

However, Jellyfish were spotted on virtually every coast of Ireland this year, as seen in the map on the left. Although it's important to be aware of the risks that come from swimming in jellyfish-dwelling waters, it's just as important to note that the conservation status of jellyfish is vital to the marine ecosystems of Ireland.

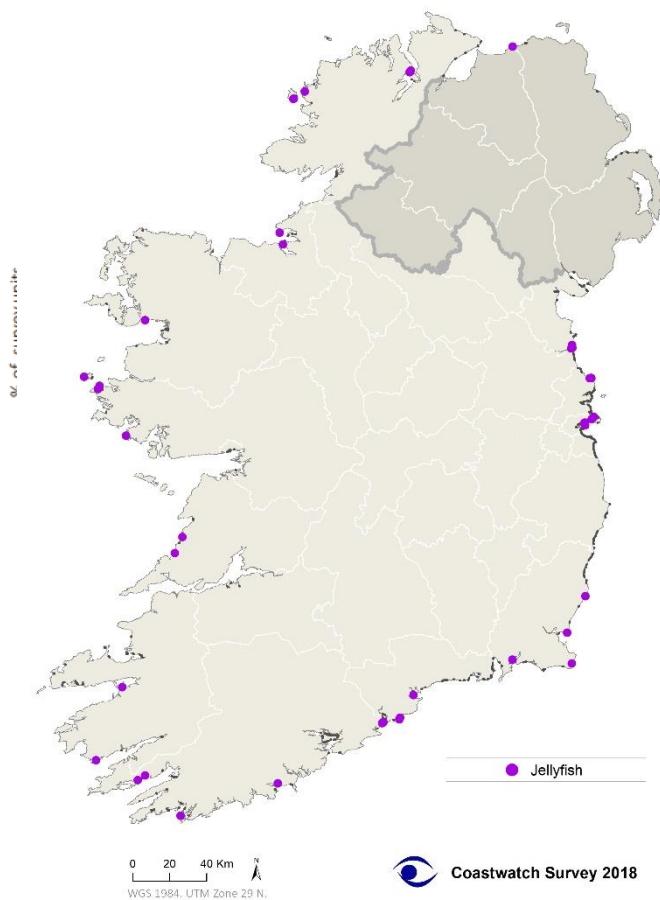


Figure 23. Locations of jellyfish found in 2018



Image 19. Compass Jellyfish perched on top of a rock in Adrigole Harbour. Photo by Bernadette Connolly.

Figure 3.4.8: Survey units mentioning jellyfish from 1989 to 2017

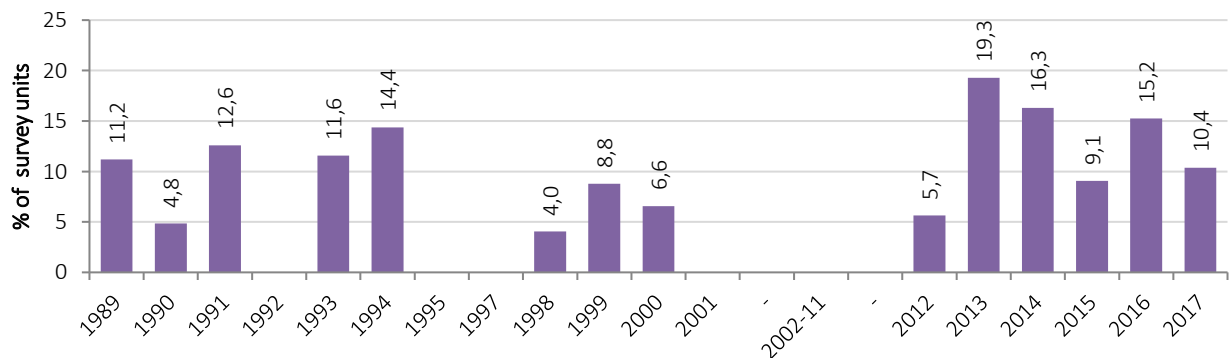


Figure 24. Percentage of survey units with reports of jellyfish from 1989 to 2017.

Image 3.4.8: Compass Jellyfish perched on top of a rock in Adrigole Harbour. Photo by Bernadette Connolly.

3.4.8: Marine Mammals

This year there was an exciting number of marine mammals reported, including a total of 130 live seals- an amazing increase from the Coastwatch 2016 report, which only reported 72 live seals. There was also a decrease in dead seals, which dropped from 9 in 2016, to 2 in 2018. One Coastwatch survey from Laytown beach reported a dead seal pup washed up on shore, and one survey from the Clogherhead strand reported one dead seal.



Image 20. A grey seal relaxing on the beach in Jack's Hole Head Land. Photo by Yvanna Greene.



Image 21. A young harbour seal swimming in White Rock beach. Photo by Robert Nicholson.

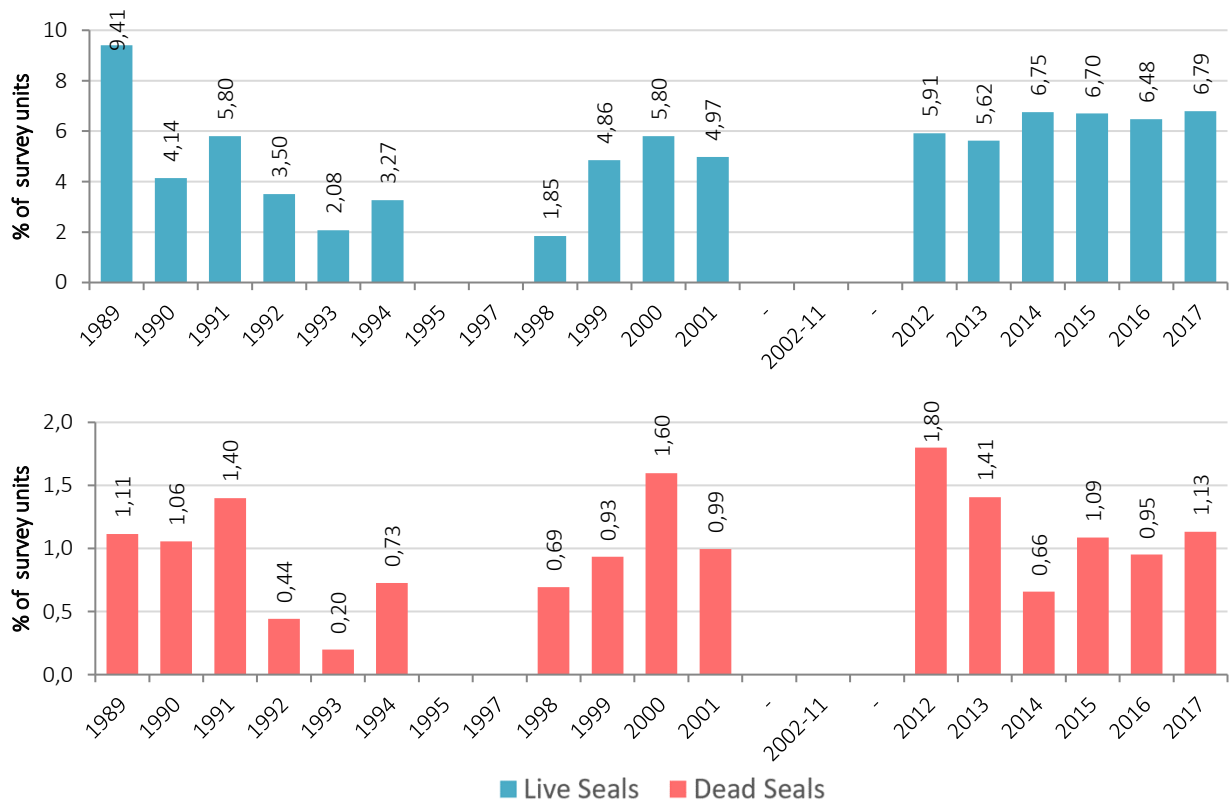


Figure 25. Percentage of survey units with records of life and dead seals from 1989 to 2017.

Cetaceans

While a good number of Coastwatch surveyors mentioned having seen live cetaceans at their various sites in the past, this round of surveys proved dismal for cetaceans, with reports showing 0 live cetacean sightings and 3 of dead cetaceans during the time of surveying.

The dead dolphins were reported in Ferriter’s Cove, Rossadillisk, and Doughmore beach. Two surveyors mentioned seeing dead dolphin carcasses and skeletons washed up on shore (including one bottlenose dolphin, which was reported to the Irish Whale and Dolphin Society). One surveyor did not specify a species.

	1992	1993	1994	1995	1997	1998	1999	2000	2001	2012	2013	2014	2015	2016	2017
Total no of individuals counted															
Live Seabirds	NA	NA	NA	NA	NA	16940	16451	10133	9800	9551	15205	16453	15238	14252	15759
Dead Seabirds	ND	89	193	ND	ND	170	199	148	173	32	67	27	41	47	89
Live oiled seabirds	NA	NA	NA	NA	NA	1	0	0	0	14	0	0	0	4	0
Dead oiled seabirds	NA	NA	NA	NA	NA	2	0	300	1	0	0	0	0	0	0
Live Seals	48	38	152	ND	61	243	265	ND	146	98	74	48	100	72	62
Dead Seals	6	2	13	ND	6	7	21	19	18	7	12	4	6	9	6
Live Dolphins	3	20	42	ND	4	0	107	400	107	NA	NA	NA	NA	NA	NA
Dead Dolphins	1	1	3	ND	ND	0	3	ND	3	NA	NA	NA	NA	NA	NA
Live Cetaceans	NA	NA	NA	NA	NA	NA	NA	NA	NA	6	2	3	3	7	8
Dead Cetaceans	NA	NA	NA	NA	NA	NA	NA	NA	NA	3	0	3	1	5	5
Live Rats	23	155	159	ND	ND	33	305	ND	145	5	12	7	8	15	29
Dead Rats	ND	51	19	ND	ND	12	29	ND	25	4	3	2	1	4	9
Live birds of prey	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dead birds of prey	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oiled seabirds (dead or alive)	ND	3	25	ND	ND	3	11	NA	NA	NA	NA	NA	NA	NA	NA

Figure 26. Animals counted from 1992 until 2017



Image 22. Dead bottlenose dolphin on Doughmore beach. Photo by Myra Collins.

3.4.9: Fish

Fish are recognized as an important biological indicator in the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD). They are therefore of great interest when they appear in the survey.

In the 2018 survey Fish could be recorded in the following sections:

- B2. Animal life in/on water (and add F if you see live Fish) – for each Inflow 1-4
Dead Fish – if yes, add a count/estimate and photograph – for each Inflow 1-4
- D5. Animals
Fish Alive or Dead

Biodiversity Extra Questions

- III. Fish
Did you see fish? No/Yes
If yes, then where?....
Count/estimate
What type: classic fish-shape/flatfish/eel-like
If you know this place, did you see fish here before? Yes/No

Therefore fish could be captured in 7 separate questions in the survey. anecdotal evidence of Fish was also collected in F5 (Something you really like), F6 (Comments/observations), and the Extra Biodiversity III section.

Fish were recorded as Alive in 86 Units and Dead in 19 (D.5), with two units having both dead and alive fish. In total this was 103 Units, or 17% of the total survey. They were also noted 110 times in the Biodiversity Extra Questions, or 18% of the total survey. In the Inflow Questions, 20 fish were seen alive in the 1st Inflow with one dead fish seen. The remaining three inflows recorded five fish alive and one more dead.



Image 23. Dead Flounder by Lauren Sheehan

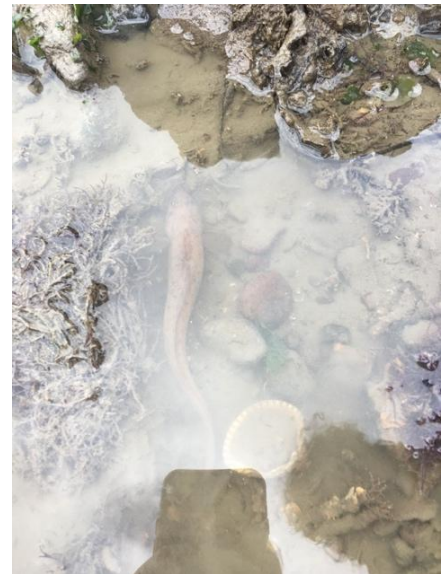


Image 24. Spot the fish! By Anna Aherne

In the Biodiversity question this year surveyors were asked to describe the fish they saw and categorise them into one of three groups. These were:

- Classic shape (finfish)
- Flatfish
- Eel shape

Classic shaped “finfish” were by far the most popular fish recorded, with 96 out of 110 fish seen classified as classic shaped. The total count of classic shaped fish was very high, with over 800 recorded in these 96 units. One surveyor estimated there were over 200 classic shaped fish seen “in a major inlet”. In 28 units surveyors counted 20 or more fish, with 5 units having 100 or more.

Trying to see fish and estimate a count is difficult – see Picture 3.4.13. This may explain the variation between the many units where no fish are recorded and some where large numbers are (20+). To the trained eye spotting fish may be easy and a very accurate count can be given. However to others no fish may be spotted at all – until you decide to go for a swim and realise you are sharing the water with a shoal of hundreds of baby minnows. For most of us fish may be seen in rock pools, or pools left behind in the sand by the low tide, and are therefore easy to count. Unless they jump out of the sea you wouldn’t know they were there; unless you know what you’re looking for! If your survey unit happened to contain the mouth of a salmon river then you might expect to see salmon holding in a tidal pool, waiting for high water in the river so they can swim upstream. If you were unaware of this you may not know to look for these pools to see if there were any salmon present. When looking at the percentage of units where fish were recorded (17%) we should consider that this probably does not represent an accurate figure, as many units may have had fish present but were not noticed. Fish are a difficult species to record.

There was great anecdotal evidence given regarding fish, despite these difficulties. Whilst many surveyors simply identified “fish”, there was a lot of detail with 23 different species identified. Many of these species were seen during the survey, but the section “seen here before” allowed for surveyor knowledge to record other species, particularly those that might not have been in season. The following is the list of species identified:

- Mullet and Grey mullet
- Dogfish
- Mackerel
- Guppies
- Goby/Sand goby
- Blenny
- Shanny
- Sand eel
- Eel
- Sea Lamprey
- Seabass/Bass
- Elvers (baby eel)
- Butterfish
- Skate
- Catfish – caught at Bantry (this should be investigated)
- Wrasse
- Cuckoo wrasse
- Pollock
- Conger eel
- Thornback Ray
- Flounder
- Salmon
- “Sprat”

Some species have been identified by more than one name, for example Sea Bass and Bass. Others have been listed as two distinct species, where there is sufficient difference between them. For example we have Shanny, which is a variety of Blenny; and a Cuckoo Wrasse which is a member of the Wrasse family. This level of detail would indicate a very high level of knowledge amongst the surveyors.

Fish Egg Cases

Fish egg cases were also recorded in the Biodiversity Extra Questions section. In total 70 units recorded egg cases. Species included skate, ray, stingray, shark, dogfish and generic white fish eggs. The distribution of fish eggs, in keeping with previous years is mainly on the east coast, with a scattering found in the south west and west – see Figure 4.7.1 below. This pattern of distribution is broadly similar to that found by Dr Sarah Varian in her ongoing work recording Mermaid’s Purse around Ireland.



Image 25. Mermaid’s Purse by Paul Quigley

Fish egg cases

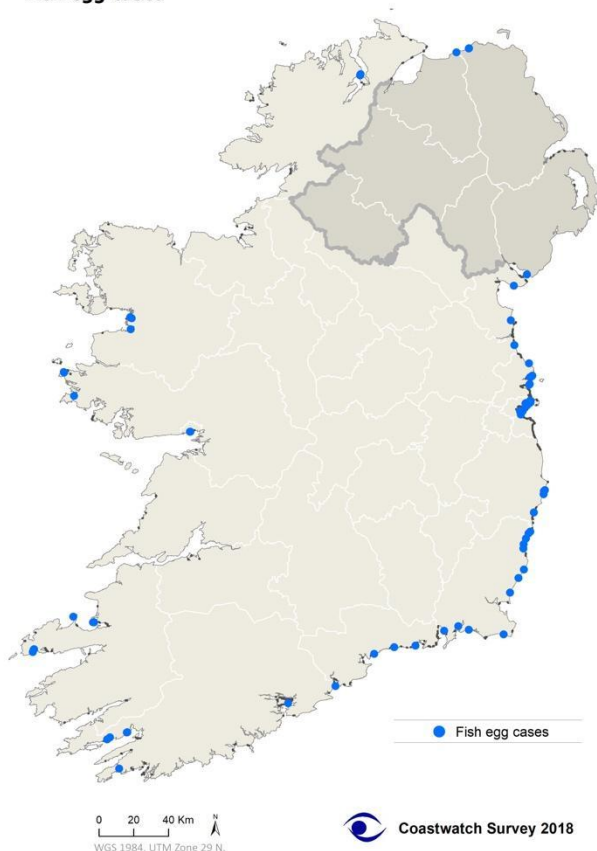


Figure 27. Fish egg cases found during the 2018 survey

2019 International Year Of The Salmon

2019 has been designated the International Year of the Salmon, an initiative of the North Atlantic Salmon Organization (NASCO) and the North Pacific Anadromous Fish Commission (NPAFC). This is in recognition of important biological and economic role salmon play throughout the Atlantic & North Pacific Oceans and the Baltic Sea, and of the many challenges and uncertainties they face, in particular from climate change.

Atlantic salmon stocks have been in decline for many years, despite the international effort to reverse this trend. Much is still unknown about the salmon's life at sea, and therefore the exact cause of the collapse of global stocks remains a mystery. It is hoped that through the International Year of the Salmon people can come together to share and develop knowledge, raise awareness and take action to help reverse the decline of this wonderful species.

In Ireland 62 of our once famous salmon rivers are now closed to angling, as the stocks are considered below a sustainable limit for any surplus for consumption. Others are open for "Catch & Release", whereby all fish caught are returned alive to the water to give them the best possible chance of survival. In total 42 rivers were fully open for salmon angling in 2019, with a further 42 open for Catch & Release and 62 closed to angling (IFI, Standing Scientific Committee, 2018).

Commercial Drift Net fishing for salmon in Ireland ended in 2007. There is still some small scale draft net salmon fishing, but the quota is small and the uptake even less. It is prohibited to sell a rod-caught salmon. Therefore wild salmon is now a truly premium and sought after product: a side of wild smoked salmon can cost over €100 (internet search, 2019).

Salmon are protected in EU law under the Habitat's directive, as an Annex II species. Many of the salmonid rivers in Ireland are also protected as a Habitat in Annex I of the same directive. However there is currently no protection for salmon at sea, and it must be noted that the most recent scientific evidence suggests that most of the threat to the salmon's survival is during its time at sea. Our knowledge of the salmon's marine phase is poor but is increasing all the time thanks to the ongoing work of organisations such as NASCO. It is now widely accepted that to give salmon the best possible chance of survival at sea we must protect and maintain their freshwater habitat; to produce strong and healthy young salmon "smolts" to begin the long migration to their feeding grounds at sea.

CASE STUDY: Salmon and the Habitat's Directive

Clondulane weir on the River Blackwater – a historical obstruction to salmon and the power of the Habitats Directive

Clondulane weir is located just below Fermoy on the River Blackwater in County Cork. The weir has been in place for over 200 years, and has been a constant source of dismay to anglers upstream who have long campaigned for its removal, as well as the environmental community. As it has acted as a barrier to fish travelling upstream, it has been of great benefit to the fisheries below it as the salmon are trapped here in low water. Not until a large flood occurs on the river can the fish get past it to continue their journey upstream. Careysville fishery immediately below the weir is recognised as "some of the best salmon fly fishing in Ireland" (www.careysville.com).

In July 2006 the then Minister for Communications, Marine and Natural Resources issued a direction requiring the removal of the Clondulane weir to allow for the free and uninterrupted passage of migratory fish, as required by national and European legislation. Lismore Realty Ltd. and Lismore Trust Ltd. brought judicial review proceedings in relation to that direction. These proceedings were settled in 2008.

Following the minister's announcement, Inland Fisheries Ireland (IFI) have been progressing this project. It was clear from a review of the legislation with regard to the environment and planning, that planning permission would be required for any works at the weir.

To date IFI have commissioned and have received reports on the following surveys:

- A Topographical survey
- An Architectural survey
- An Archaeological survey
- A Hydrological survey
- A Geomorphological survey
- A Flood risk assessment
- An Appropriate Assessment report
- A Natura Impact assessment
- An Underwater Pearl Mussel survey

Following a pre-planning meeting with Cork County Council, further surveys have been arranged. These included an Underwater Archaeological survey, a road access survey for the approval of the planning authority for the traffic management plan.

A report on all the options considered and the final design will then be produced. All of these surveys have been conducted with the assistance of the estate owners to minimise disturbance to the visiting anglers.

An information meeting was held with the Blackwater Development Trust in July 2016 to update them on progress to date. Similar information meetings will be held in the Clondulane area prior to any planning

application when more detailed information is available. A meeting is scheduled in the coming weeks with the estate owners to finalise the details of the project. An application will then be made to the Office of Public works of their authorisation for the alterations to the weir. This will be followed by a full Planning application to Cork County Council in due course.

(Inland Fisheries Ireland, 2016, online at <https://www.fisheriesireland.ie/Press-releases/removal-of-the-clondulane-weir.html>)

Once completed, the alterations to the weir should include a modern fish pass that will enable the migration of all species up and down the Blackwater in all water levels. We look forward to the project being completed soon.

3.5: Invasive Species

Species which are not native to Ireland pose a great health risk to marine ecosystems, and potentially mean endangering species which were not previously of conservation concern. One example, as mentioned previously in section 4.2, is the Pacific oyster, recently renamed *Magellana gigas*. Gigas can be translated to giant in Greek, which definitely holds true to their nature in marine life.



Image 26. Two *gigas* oysters on either side of two native oysters. Photo by Pamela Milani

This is a species native to Asia which have also become increasingly popular in Irish aquaculture. Currently, *gigas* oysters are being cultivated for human consumption in Irish oyster farms and are exported to other countries, mainly France. They are known to colonize and smother native species in the wild.³ This has also occurred in Ireland in several estuaries and bays. One way of preventing their spread into the wild is to use triploid *gigas* in aquaculture, which makes them infertile.

According to this year's reports, 54 surveyors reported dead *gigas* oysters, and 17 reported both dead and live *gigas* oysters. These results can be seen in figure 4.3. Not only do these molluscs pose a conservation risk for native oysters, but for some life on the seafloor.

³ Global Invasive Species Database (2019) Species profile: *Crassostrea gigas*. Downloaded from <http://www.iucngisd.org/gisd/species.php?sc=797> on 21-03-2019.

As seen in the figure below, during this year's survey, gigas oysters were mostly found on the Southern side of Ireland- notably in aquaculture sites.

Another invasive species reported in this year's Coastwatch results is the giant hogweed, *Heracleum mantegazzianum*. Giant hogweed is a common invasive plant species which produces a harmful sap that severely burns the skin. It is also known to cause soil erosion.⁴

One Coastwatcher reported seeing giant hogweed spreading across the Shanganagh river and into a busy access area. Although currently being treated by the DLR, it continues to spread up the lagoon and onto south bank. This is incredibly dangerous news and could cause a great deal of damage if it continues to go untreated. Another Coastwatch report stated that giant hogweed had washed up on the shore of Lough Foyle, which again is potentially very dangerous.

⁴ Colette O'Flynn and Oisín Duffy. "Giant Hogweed." *The National Biodiversity Data Centre*, The Heritage Council & The EPA STRIVE Program, Nov. 2013. www.biodiversityireland.ie/wordpress/wp-content/uploads/Giant-Hogweed.pdf.