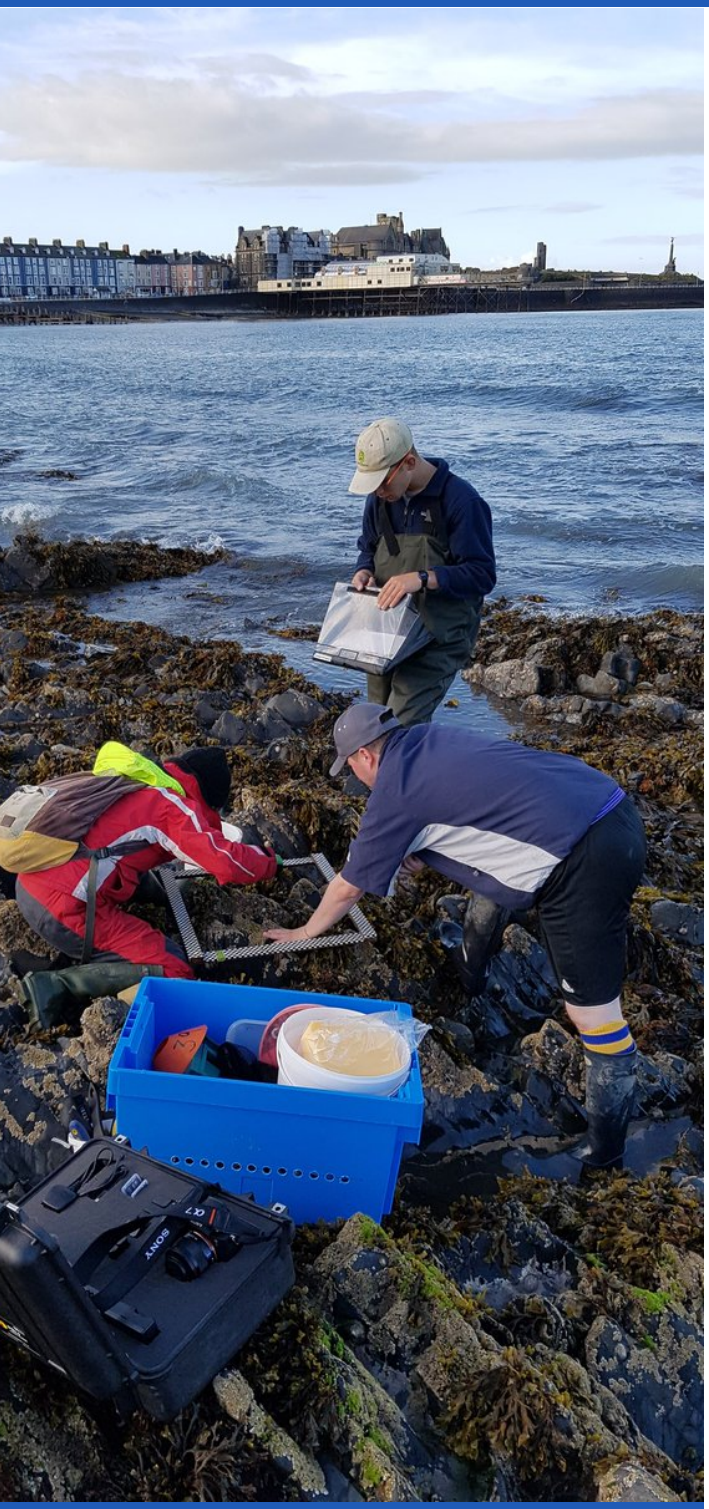

WHAT'S INSIDE THIS ISSUE

ECOSTRUCTURE
Climate Change Adaptation through Ecologically Sensitive Coastal Infrastructure

2018 Project Newsletter

HAPPY HOLIDAYS!

Over the past 12 months, the Ecostructure team's diligent work has delivered fruitful results on a range of project initiatives. This newsletter provides a snapshot of some of the year's shining moments, from stakeholder workshops to hard-nosed fieldwork. If you find yourself inspired or yearning for more information about our work, we've got you covered – simply visit our website or connect with us on social media!

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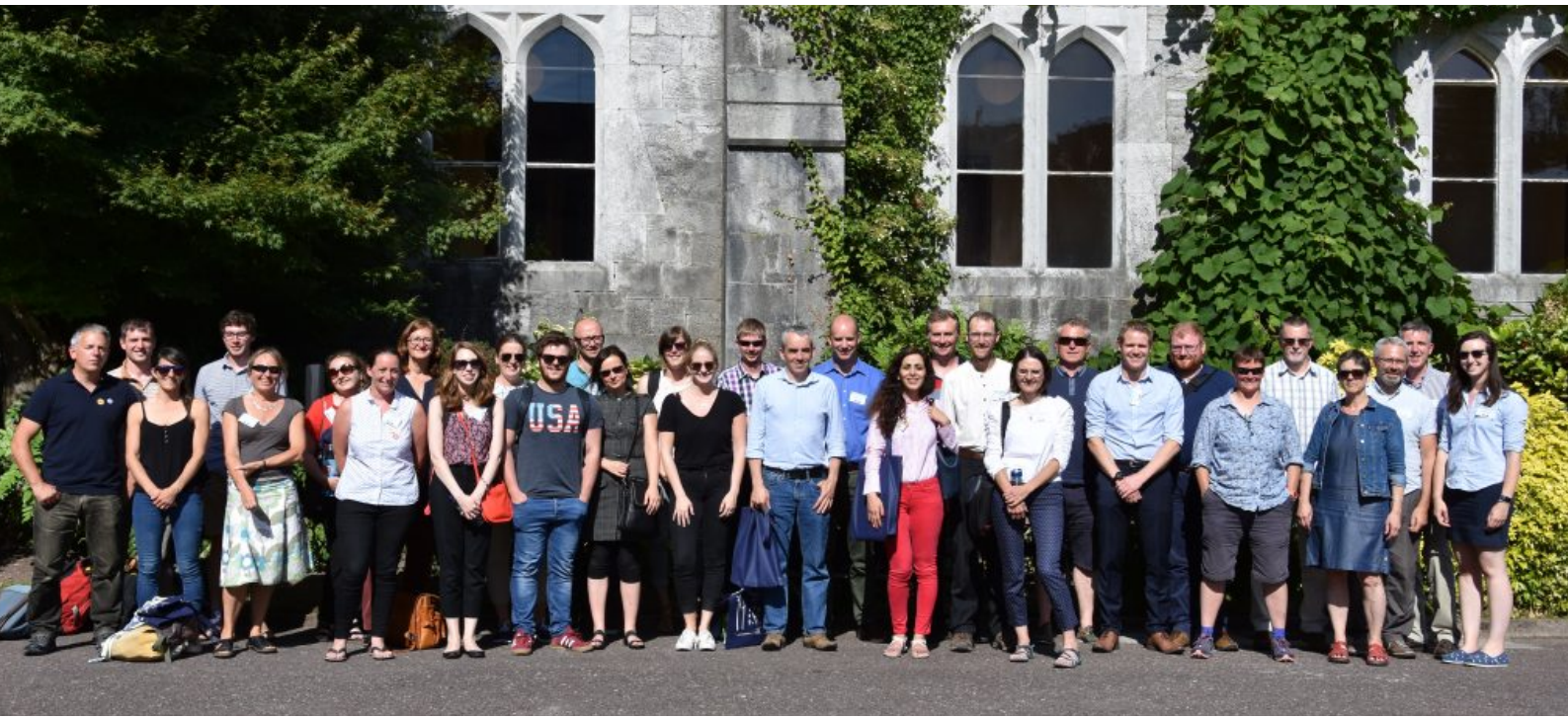
EU Funds: Ireland Wales Programme 2014-2020
Tionól Réigiúnach an Deiscirt Southern Regional Assembly
Cláir Chisti Eorpacha Struchtúrtha agus Infheistíochta na hÉireann 2014–2020
Cómhaoinithe ag Rialtas na hÉireann agus ag an Aontas Eorpach
Llywodraeth Cymru Welsh Government
Cronfa Datblygu Rhanbarthol Ewrop European Regional Development Fund



Above: Ecostructure with steering committee members at UCC.

WORKSHOPS & STAKEHOLDER MEETINGS

OVERVIEW OF 2018 ACTIVITIES

Ecostructure partners held a number of workshops & meetings in 2018, all geared at raising awareness about project deliverables and their relation to designing effective coastal eco-engineering solutions.

27 Feb – Marinas and Biosecurity Workshop

Team members from Bangor University organized a free workshop for marina owners and operators from Ireland and Wales. The workshop highlighted the significant impacts of non-native species on marinas throughout the Irish Sea. Stakeholders were briefed by Ecostructure researchers and sector experts on the restrictions, environmental regulations, current legislation, and best practices in the context of coastal biosecurity.

March – Sustainable Futures Workshop

Ecostructure partners facilitated a lively discussion at the Sustainable Futures Series in Cobh, Cork. Researchers from University College Cork's Centre for Marine and Renewable Energy and University College Dublin set the stage for eco-engineering and its role in climate change adaptation.

June – Steering Group Meeting

Ecostructure's annual steering committee and project meeting was held at MaREI UCC. The meeting was incredibly productive, affording project partners and steering committee members the opportunity to collaborate and discuss Ecostrucure's progress and future work.

November – Ecostructure Community Meeting, Kilmore Quay Harbour

Researchers from University College Dublin held a public meeting in Kilmore Quay for the soft launch of the Ecostructure Observatory -- Ecostructure's platform to engage citizens. The meeting highlighted the pressures faced by coastlines and marine biota, and provided community members with the opportunity to ask questions about project initiatives, as well as share their own opinions, knowledge, and experiences.

We love talking about our work! Engage with us via Twitter, Facebook, or our website.

CONFERENCES

Partners were able to attend and present Ecostructure activities at a wide range of meetings, workshops and conferences including:

October – International Conference on Marine Bioinvasions in Madryn, Argentina

From Oct 16-18, partners from Bangor University travelled to the International Conference on Marine Bioinvasions to present the results of a workshop completed in Feb of 2018. The results of the workshop will inform Ecostructure plans for the next two years concerning the development of biosecurity tools and protocols for marinas and ports.

October - SynerCrete18 In Madeira, Portugal

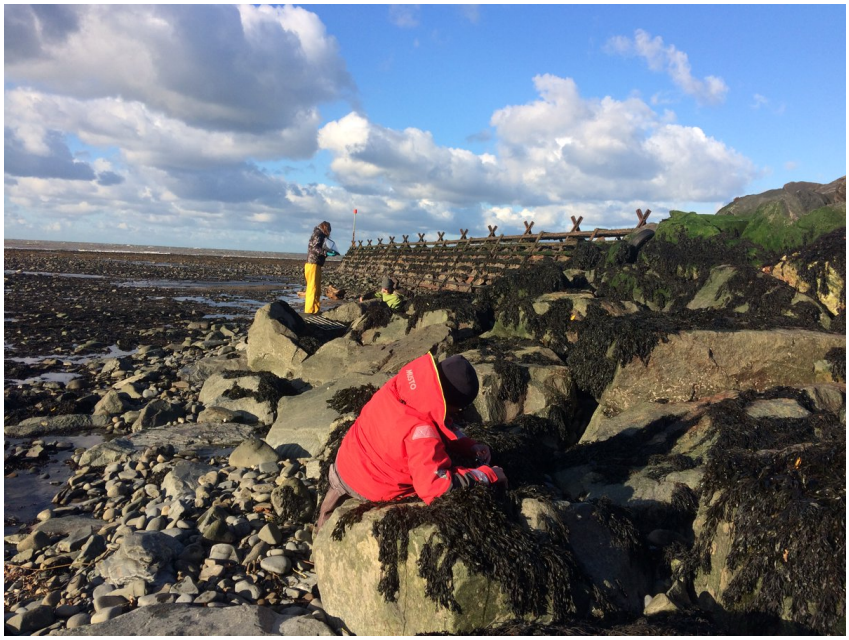
During the last week of October, Ecostructure engineers presented their work, 'A concrete home for marine micro inhabitants,' at the SynerCrete18 conference in Madeira, Portugal. The conference's interdisciplinary approach to improving the functionality of cement-based materials provided the perfect platform for project partners to iterate the importance of incorporating ecologically sensitive designs into coastal infrastructure.

PUBLICATIONS

Evans, A., Firth, L. B., Hawkins, S. J., Hall, A. E., Ironside, J. E., Thompson, R. C., Moore, P. J. (2019) From ocean sprawl to blue-green infrastructure – A UK perspective on an issue of global significance. *Env. Sci. & Pol.* 91 pp. 60-69.

RESEARCH

This year marked the start of fieldwork. Researchers from Aberystwyth University, Bangor University, Swansea University, and University College Dublin took to the Irish and Welsh coastlines in emphatic fashion, often working together. Rain or shine, our researchers collected a wide range of data on a number of topics, from invasive species to eco-engineering.



April-May Fieldwork

The first Ecostructure experiment was established in Co. Meath, Ireland, where researchers from Aberystwyth University and University College Dublin attached experimental tiles made of nine different materials to exposed and sheltered surfaces along the coastline. The work was supplemented with genetic analysis of local species, like dogwhelks and topshells, enabling researchers to understand how artificial structures influence population dynamics.

Research continued in Wales, where 180 drill-cored rock pools were installed in an array of rocky groynes along the northern coast to assess how many would be needed to enhance biodiversity on different structures.

June Fieldwork

To ensure productive public participation and engagement with Ecostructure, researchers from University College Dublin interacted with community members throughout the programme area. Ecostructure's interdisciplinary research style maximizes the societal benefits of the project by incorporating social, economic, and environmental concerns.

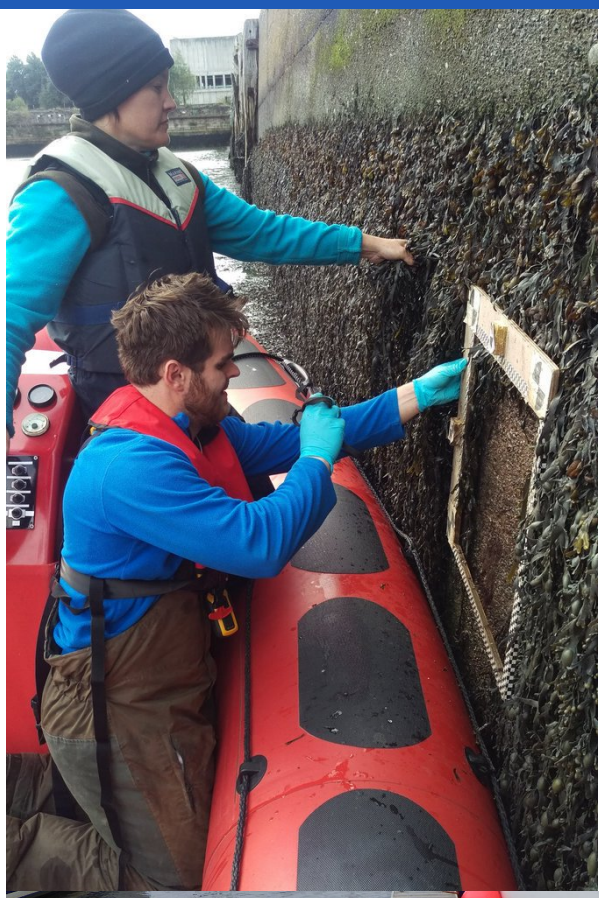
July-November Fieldwork

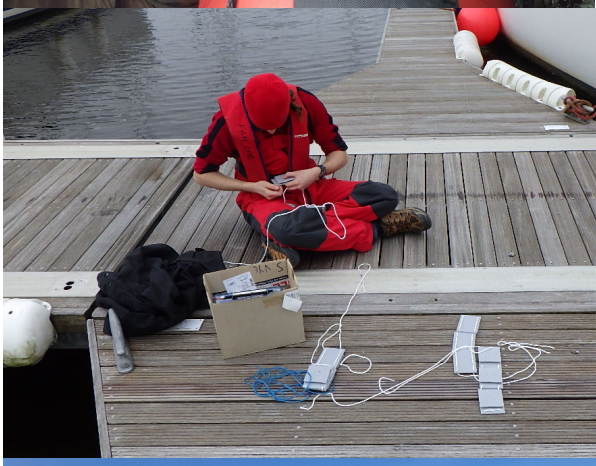
Our researchers finished the year just as strongly as they started. Partners installed the first cohort of 'Compton' model Vertipools in Kilmore Quay. The Vertipools, designed and supplied by Artecology, will be used to research various ways in which coastal structures can be fashioned with ecologically sensitive designs.

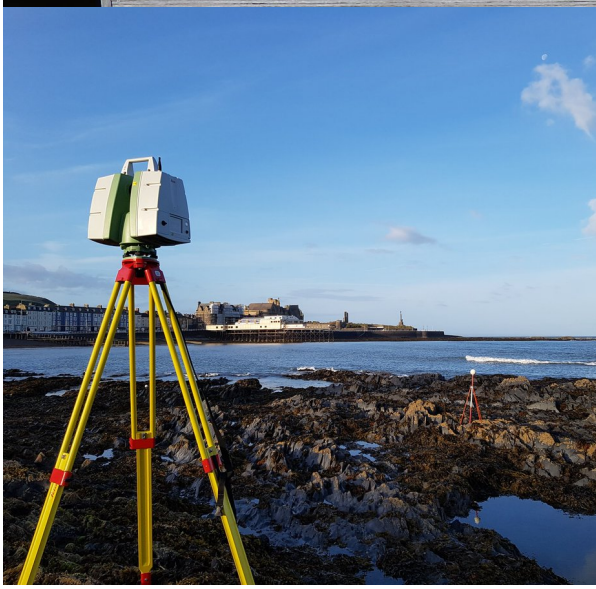
Our biophysical modellers have been developing models for different spatial scales and experimenting with particle tracking methodologies to determine the best way to model connectivity pathways between coastal structures. Once the modelling 'toolbox' has been developed, the team will be able to apply the best methods for considering particle dispersal of various species around the Irish Sea.

More genetic work was completed by researchers from UCD, who collected environmental DNA (eDNA) samples from marinas in Ireland. These samples will be used to investigate eDNA's potential as a rapid assessment tool for biodiversity and invasive species.

Christmas came early for partners who got to use state of the art remote sensing equipment, known as LiDAR, to map and build 3D models of artificial structures along Irish and Welsh coastlines. Light Detection and Ranging (LiDAR) technologies use pulses of light to measure the distance to a target, resulting in incredibly detailed imagery.







UPCOMING IN 2019

2019 is shaping up to be a busy and productive year for the Ecostructure team! Our researchers aim to complete the mapping of all artificial structures along the Irish and Welsh coastlines, and explore methods of predicting species colonization on different types of structures in different locations. This will inform us on the extent of coastal urbanization in the Irish Sea, and provide valuable tools for designing new structures with space for nature.

The team will also be deploying new eco-engineering designs, such as wall-mounted rock pools and letterbox cervices for testing. Assessing the spread of invasive species will be a priority in 2019, as researchers continue their interdisciplinary genetic and ecological experiments to help understand the impacts of climate change on invasive species in marinas and ports.

We hope you'll follow along with us in the new year, and that your 2019 promises to be as exhilarating as ours!