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MARINEFF
infrastructures maritimes biomimétiques

Edition 6
November 2020

MARINEFF

MARine INFrastructure EFFects

Sandbanks, Poole Harbour, UK

How to get involved

If you are interested in keeping up to date with all current project activities, you can subscribe to mailings, follow us on Facebook, Twitter, or LinkedIn or visit the news section of the website.

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Mailings sign-up

To sign-up to future Marineff mailings, including this quarterly newsletter, click *here*.

Please note, upon sending an email to this address, you will be automatically signed up to the Marineff mailing list and included in future newsletter communications. Information on how your data is handled can be found at:

www.ciria.org/marineff

To unsubscribe from mailings, please click *here* and enter your email. If you are subscribed, this will remove you from the database.

Further information

To find out more about the Marineff project, go to:

http://marineff-project.eu/

Artificial rockpools, Isle of Wight © Jess Bone/ Bournemouth University

IN THIS ISSUE

In a nutshell

Welcome to the sixth edition of the Marineff project's dedicated newsletter. We hope you've not faced too much disruption over the past few months and are keeping safe and well in these difficult times.

We are so thrilled to share our updates with you, of which there are many! We've been tremendously fortunate to be able to resume project activity since June, albeit in a covid-19 compliant manner, and have lots to update our readers with.

In this autumn newsletter we tell you all about the deployments of three of our four modules, with the rockpools, breakwater blocks and oyster prisms now in the water, and let you know the next steps for the Marineff project. We can also unveil photos of the completed boat mooring modules which are awaiting deployment soon. You can also find out about how we will be sharing more about the Marineff project with a live webinar in early December.

And finally, UK partner Bournemouth University share more about their Marineff team based at their Talbot campus (though mostly working from home!), their involvement in the Marineff project and their expertise within coastal ecology and eco-engineering.

The Marineff project finally descends beneath the waves

At the start of the year, the Marineff project was gearing up for a busy spring of installation activity and finalising the manufacture of its eco-engineering modules. Following some unfortunate delays due to the global pandemic, we have re-commenced our plans over the summer and have successfully deployed most of the UK-based rockpools, the oyster prisms, and half of the breakwater modules, with the remaining units and the boat mooring modules scheduled for later this autumn. We're excited to share our progress and what we've found so far.

University of Southampton deploy oyster prisms in the Solent

Earlier this spring, project Marineff partner TPC completed the manufacture of the oyster prisms, destined for immersion in historic native oyster (*Ostrea edulis*) beds on the south UK coast.

On the 1st June 2020, 26 oyster prisms sent from Cherbourg, France, made their way across the Channel to arrive safely at the National Oceanography Centre in Southampton, UK.

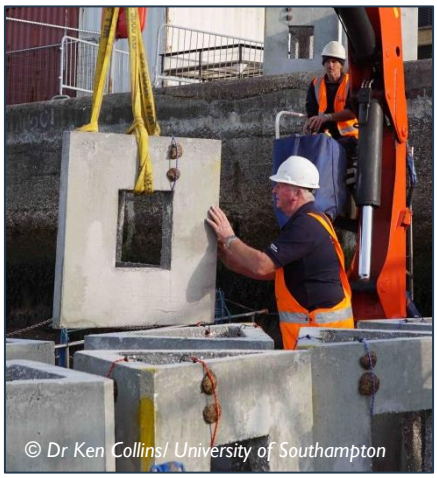
Right and bottom: Oyster prisms unloaded at Southampton.
© Dr Ken Collins/ University of Southampton.

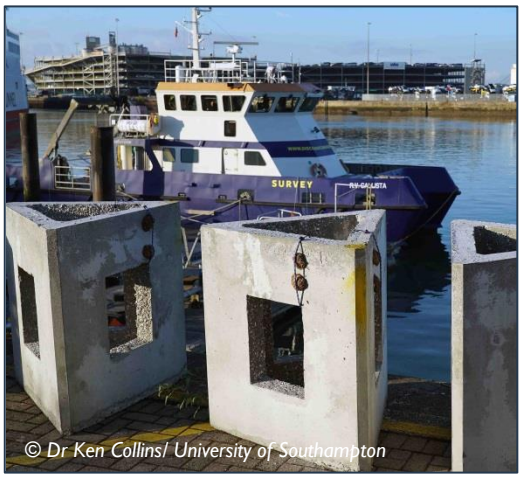
On 2nd September, the shipping vessel *Wilcat* was loaded with the oyster prism reefs and joined by National Oceanography Centre's research vessel *Callista*. Fortunately, the perfect weather allowed for the straightforward and careful deployment of all reef units just off the coast of Calshot village.

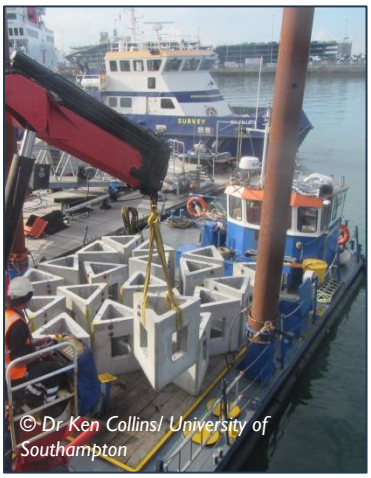
On the morning of deployment, four live mature native oysters were stuck to each of the oyster prisms to kick-start the settlement of oysters in the future. This is because not only will these adults provide a supply of larvae, they will also give off chemical signals to guide oyster larvae in the water to a suitable habitat. However, we have some months yet before we might see natural oyster settlement on the Marineff oyster prisms as oysters do not spawn until late spring.

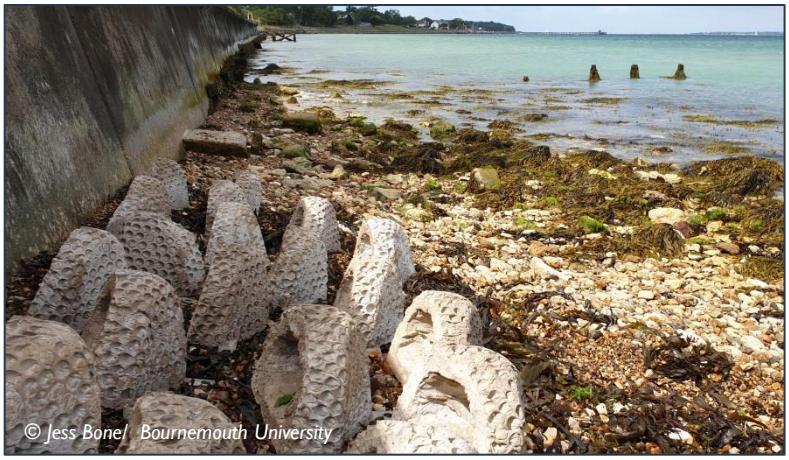
It is anticipated that the shape and design of the oyster prisms will also encourage other species to move in, such as crabs and fish. Side scan sonar and camera surveys conducted by project partner University of Southampton will reveal their secrets over the course of the project.

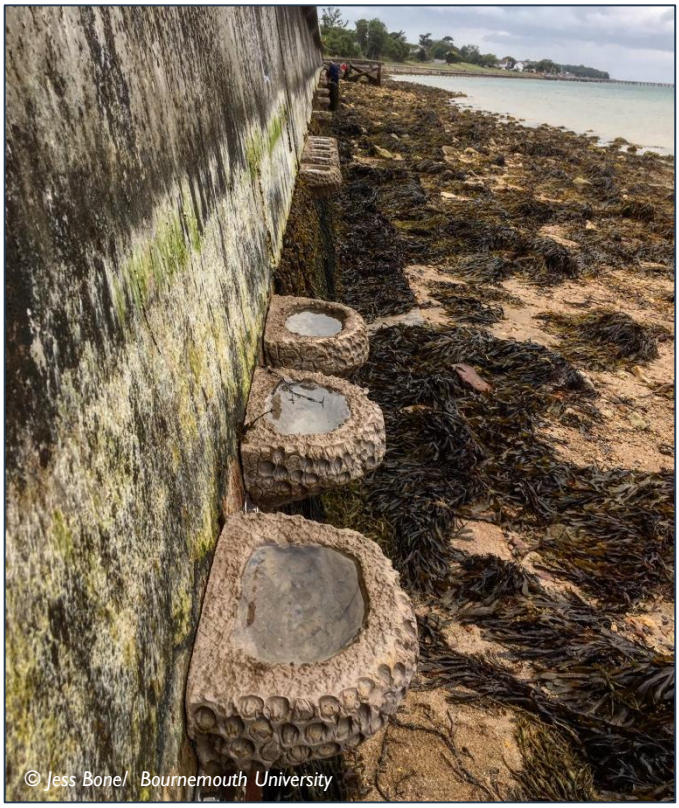
Top row: live adult oysters are stuck to the oyster prisms. Middle row: oyster prisms are loaded onto Wilcat vessel. Bottom left: oyster prisms are lowered into position at the deployment site. Bottom right: A visiting mullet (Chelon sp.) at the newly submerged oyster prisms. © Dr Ken Collins/ University of Southampton.











Top left: artificial rockpools await installation near Yarmouth, Isle of Wight. Top right: the artificial rockpool fixings. Bottom left: the near complete installation near Yarmouth, Isle of Wight. Bottom right: Artecology drill the bottom holes for the rockpool fixing. © Jess Bone/ Bournemouth University & Nigel George/ Artecology

Artificial rockpools find homes on concrete sea walls in Dorset and Isle of Wight, UK...

Project partner Bournemouth University have successfully installed 90 artificial rockpools across two sites; near Yarmouth, Isle of Wight and Poole Harbour, Dorset in the UK. Forty-five rockpools were installed over three days in late June and 45 over two days in Poole Harbour in mid July. Holes were drilled into the concrete sea wall to secure threaded bars with cementitious mortar before the rockpool brackets were fitted over the bars and secured with Nyloc nuts.

At the time of writing, a further 48 rockpools are scheduled to be installed over autumn; 24 in Ouistreham Harbour, France, and 24 in Hamble Harbour, UK. As opposed to the current rockpools installed in horizontal rows, these rockpools will be arranged vertically in columns of three to see how tidal height affects their colonisation and success.


© Jess Bone/ Bournemouth University


© Jess Bone/ Bournemouth University

... and marine life swiftly moves in.

Since installation, the team at Bournemouth University surveyed the rockpools after the first month to see if any marine life had made the rockpools their home. At the Isle of Wight site, small numbers of prawns (*Palaemon elegans*) and a common blenny fish (*Lipophrys pholis)* were found in the rockpools. In the Poole Harbour rockpools, seaweed growth was rapid and extensive, covering the rockpools in as little as six weeks. As many as 10 species were found in and on the rockpools, including crabs (*Carcinus maenas*), prawns, sea snails, and shore springtails (*Anurida maritime*).

We look forward to sharing our findings with the rockpools over the next few years.

Top left: Artecology tighten bolts at the Poole Harbour site. Top right: a rockpool awaiting the bottom bolt and nut, Poole Harbour. Middle left: a small sea snail inside a rockpool, Poole Harbour. Middle right: Edible periwinkles (Littorina littorea) use the pockets moulded onto the rockpool exterior. Bottom left: extensive Ulva sp. growth on the rockpools just six weeks after installation, Poole Harbour. Bottom right: a common blenny fish in a rockpool, Isle of Wight. © Jess Bone/ Bournemouth University.


© Jess Bone/ Bournemouth University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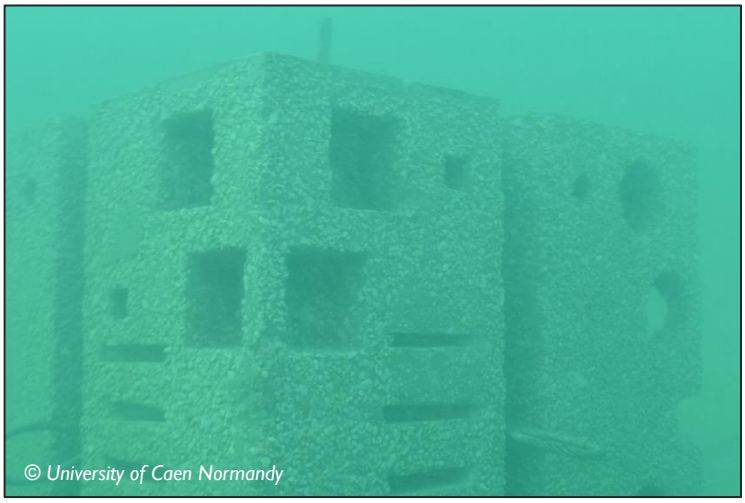
Immersing subtidal breakwater modules in Cherbourg Harbour

All 36 breakwater modules have now completed manufacture by project partner TPC. Immersion started at the Cherbourg Harbour site, France, on 21st September and continued throughout the week. On 21st a press conference was held to celebrate the first two breakwater modules being immersed near existing artificial reefs from the RECIF project, with the remaining modules awaiting better tides and visibility. The *Adèle* was chartered to allow journalists to enjoy the occasion.

Top: the completed breakwater modules up close, showing their rough external texture. Second from top: the breakwater modules in the port, awaiting loading onto the barge. Second from bottom: the barge and crane preparing to lower the breakwater modules into Cherbourg harbour. Bottom: The barge crew attach a breakwater module to the crane.
© P. Beuf/ ESITC Caen



As with the oyster prisms, a crane was used to hoist the breakwater modules into the water from a barge with care taken to ensure they were placed securely in the correct location. Divers were used to verify the breakwater modules had been lowered into the correct position.

At the time of writing, the remaining 12 breakwater modules are soon due to be immersed in Bernières-sur-mer. Project partner University of Caen Normandy will be monitoring the colonisation of the breakwater modules for the next two years. We look forward to sharing more of their dive photos with you!

Top: the breakwater modules are lifted from the barge. Second from top: the breakwater modules break the surface for the first time. Second from bottom: Second from bottom: A first glimpse of the breakwater modules underwater. Bottom: A velvet swimming crab (Necora puber) inspects the new habitat. © P. Beuf/ ESITC Caen and University of Caen Normandy.

Three custom formworks to one boat mooring module

At the time of writing, manufacture of the boat mooring modules was nearing completion. The largest of the Marineff eco-engineering designs, these boat moorings are destined for three popular diving locations off the coast of northern France. They are made in three sections; the base with a dense concrete to ensure the unit is sufficiently heavy for securely anchoring dive vessels; the middle and top, made with concrete containing seashells to increase the receptivity of the concrete to marine life. Immersion is due to take place this autumn by project partner Muséum National d'Histoire Naturelle.

Top left: the top section formworks are pumped with concrete. Bottom left: the set top section is lifted from the formworks. Top right: concrete left to set in the middle section formworks. Middle left and right: the completed middle and top. Bottom right: the completed heavy bottom section of the boat mooring module. © ESITC Caen.

Bournemouth University: in focus




Bournemouth University have a strong history with eco-engineering projects, having worked closely with Marineff subcontractor Artecology in the past and advising coastal consultancy work. Based in the Department of Life and Environmental Sciences, the small Marineff team is made up of senior academics, a post-doctoral researcher and a research assistant/ PhD researcher. Bournemouth University is responsible for all 114 artificial rockpools spread over 3 UK sites for the project duration, including their maintenance and monitoring. They will be surveyed quarterly for the first year and biannually for the second, assessing key parameters that will determine their success at boosting biodiversity. The team's research interests include:

- The optimal number of rockpools to maximise biodiversity
- How the rockpools might increase biodiversity on coastal structures
- How the rockpools might affect microclimate on coastal structures.

The team is also responsible for coordinating the production of training videos, the organisation of online and in-person Marineff events such as workshops, and the creation and publication of the dedicated Marineff newsletter.

Clockwise from top left: Principal investigator Dr Roger Herbert, co-investigator Professor Rick Stafford, ,research assistant & PhD researcher Jess Bone, and post-doctoral researcher Dr Alice Hall.
© Bournemouth University.

Marineff Project: Eco-engineering on the Channel coast

Join us for an online event this December

The Marineff project will be running a free live webinar next month, hosted by CIRIA. As we are still unable to host in-person workshops at this time, we hope this will provide a great opportunity for you to hear the latest updates and ask questions. The webinar will aim to:

- illustrate Marineff's cutting-edge research and development in coastal eco-engineering, including intertidal and subtidal habitats
- share current project progress and lessons learned
- welcome interest and collaboration with like-minded stakeholders and engage with new audiences

DATE: Wednesday 2nd December at 13:00-14:15
Register online here!