

Shelving the coast

Sandown bay, Isle of Wight , Bouldner Isle of Wight, Boscombe Beach Bournemouth

Eccleston George and Arc Consulting

BIG Challenge 2015 submission category: Most innovative

Project overview

Shelving the Coast is both an artful solution to the threat of coastal squeeze, and a way to create intertidal habitats on existing and future sea defences.

From an original idea by Ian Boyd of Arc Consulting, artist Nigel George has developed a series of interactive sculptures he calls 'Vertipools'.

The idea works on the principle that a new vertical intertidal zone might make it be possible for a rockpool environment and its dwellers to migrate with sea-level rise and continue to thrive in a high-rise format.

The Vertipool sculptures work by both holding seawater between tides and providing textured surfaces for colonization - effectively becoming artificial rockpools.

Shelving the Coast now has installations at three locations in the south of England and is the subject of ongoing research with PhD Alice Hall and Dr



Photo: Engaging primary children with the making process

Roger Herbert at the Dept. of Life and Environmental Sciences, Bournemouth University.

What were the biodiversity conditions on site, prior to the enhancement?

No rockpool habitat featured in any of the three installation sites, each a vertical coastal defence structure. Some algal colonization but little or no mollusc, fish or crustacean activity.

In each case the biological conditions were poor with little diversity and low habitat complexity and niche availability.

Were there any specific conditions that led to you carrying out this work?

The work was first prompted by work done on the Island's Climate Adaptation Strategy and refined through our frustrations over the paucity of design detail and sophistication for biodiversity (and public engagement) in the built environment.

Shelving the Coast is a cross-discipline collaboration. Ian Boyd, Ecologist & Nigel George, Artist, became neighbours when Ian moved his business next door to Nigel's studio.

What were the biodiversity measures taken?

These questions are currently being answered with PhD research work by Bournemouth Uni:

- How important is structure's substrate?
- How are mobile fauna utilising the inshore structures?
- Is there a relationship between structural complexity and biodiversity?
- Do structures act as stepping stones for dispersing native and non-native species?
- Can ecological enhancement improve biodiversity within the intertidal zone?

The results show clearly that inshore fauna preferentially select Vertipools and differentiate between them in their usage.

The project has already been repeated in 3 different locations and in each case has been shaped to the particulars of site, aspect, biotype and local conservation targets showing that Shelving the Coast is replicable.

Its innovation is in its almost limitless retrofit capabilities and in its immediate results – delivering increases in biodiversity within weeks and then sustaining and extending those gains.



Photo: A Vertipool in the studio prior to installation

Shelving the Coast is being developed through the collaboration of policy makers, academics, engineers, ecologists and, uniquely, artists.

Planning and installation is approved by local authority coastal management teams, linked to local BAP and NERC s41 targets and designed and monitored with the direct involvement of University tutors and researchers.

At each stage the collaboration of artist, ecologist and engineer delivers design refinement and innovation in moulding and in fixing.

The installation at Bouldnor worked with the EA and EU CCATCH programme (Coastal Communities Adapting to Change) to involve schools in creating new Vertipools and interpreting the story of sealevel rise and its threats to coastal biodiversity.

Public interface with Shelving the Coast is an essential element; Vertipools contribute to green tourism in resort locations, citizen science and wildlife encounter.

This is another innovation–biodiverse engineering that can add value to its location through the visitor economy. The latest Vertipool innovation is in the use of recycled tyres.

How would you best describe the project?

An enhancement.

Further information

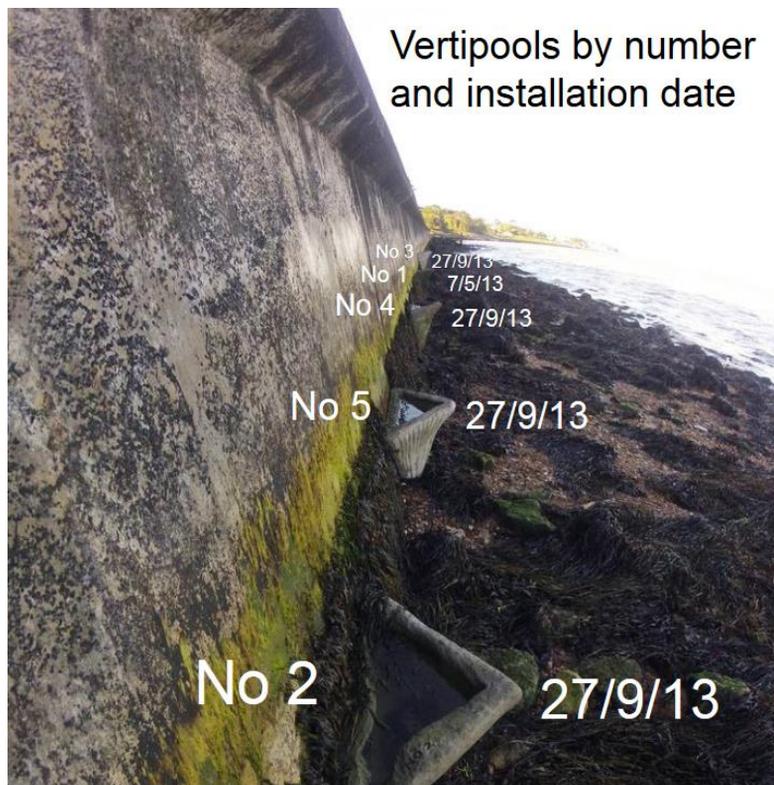
Installation techniques for the 29 retro fitted Vertipools that are currently out in the public realm spread over three locations varied from on site to the other.

Each site threw up different challenges relating to the secure fixing of the Vertipools.

At Bouldnor where the pools are fixed to a concrete sea a threaded bar was used as a fixing pin. The pins were inserted into predrilled holes in the seawall and resin was used to hold them in place.

At Boscombe specially designed steel straps were used to fix the pools onto concrete groyne structures.

In Sandown Bay recycled tyres were used to create the pools and fixed them with bolts and brackets onto wooden groynes. All the Vertipools are being monitored by Bournemouth University.



Vertipools by number and installation date

Photo: Vertipools by number and date

Speaking about Shelving The Coast researcher at Bournemouth University Dr Roger Herbert said: “We’ve seen habitat degradation and biodiversity loss along our coastline as a result of pollution, overfishing and our steady reclamation of the seabed through coastal engineering works and port developments.

Climate change and sea level rise presents new challenges for the protection of inshore marine life.

These new features will help us to understand more clearly what aspects are attractive to marine organisms.

We can then introduce sensitive engineering design within new marine developments to mitigate for potential biodiversity loss.

Not only will these features allow creatures to colonise them, but they’ll also allow members of the public to observe and explore their colonisation”.

What was your personal motivation for carrying out the enhancement?

Cross discipline projects are fantastic to work on. Coming up with novel solutions to real world problems using imagination and creativity is never a dull thing!

One huge driver for this project was the challenge of engaging with the general public through the process of design and installation, which happened through a variety of engagement projects.



Photo: Vertipool