



## ***Innovation: deployment of an artificial reef made from empty shells in Cherbourg Harbour***

**Cherbourg, 8<sup>th</sup> April 2015 - An artificial reef system designed and made within the European project RECIF, was immersed in Cherbourg Great Harbour on April 8<sup>th</sup>.**

The main challenge of the European RECIF project is to develop suitable materials and to understand the role of artificial reefs in biodiversity improvement and development in the Channel ecosystem.

These objectives will be achieved through comprehensive environmental investigations on the colonization process of artificial reefs deployed in the Cherbourg Great Harbour.

The experimental artificial reef is composed of 12 modules grouped in 3 clusters to create a triangle structure. Each module is 3m long, 2m wide and 1.35m high (8,1m<sup>3</sup> each module - 32,4m<sup>3</sup> by cluster - 97,2m<sup>3</sup> in total).

After deployment, the RECIF project will enter an experimental and investigation phase, over a 5 years. Results, observations and conclusions of this multidisciplinary approach will be shared with all stakeholders interested in the effect of artificial reefs of the maritime structures and especially with PNA (Ports of Normandy Authority).

### **RECIF European project**

The RECIF project aims at improving the ecosystem of the Channel area and better management of our marine resources. To address these major economic and environmental issues, this project has several objectives: enhancing the use of marine resources and reusing by-products (empty shells), developing innovative building materials for artificial reefs and deploying artificial reefs to improve the biodiversity and productivity of the marine ecosystem in the Channel.

The RECIF project was selected under the European Cross-border Cooperation Program INTERREG IVA France (Channel) / England, co-funded by the European Union (ERDF) and the Basse-Normandie Region. The €2.7 million project led by ESITC Caen, brings together eight French and British partners ends this year but a follow on study is planned

### **The partners**

#### **ESITC Caen**

ESITC Caen is a influential engineering school specializing in construction and pioneer in sustainable building. ESITC Caen aims to develop skills, provides knowledge and triggers eco-friendly behavior. This specificity is related to the presence in the school of a Research laboratory whose work focuses on materials and eco-friendly building materials, taking into account their environmental impact and their technical performances: Materials and Eco-construction: development of eco-materials from co-products such as vegetable fibers (flax), marine-products (shellfish) or demolition aggregates. Environmental Geotechnics: treatment and recovery of soils and sediments for the field of construction. [www.esitc-caen.fr](http://www.esitc-caen.fr)

#### **EMCC**

French market leader in maritime and river works.

The company EMCC is a branch of the VINCI Construction France group and is specialized in maritime and river works. The country's main dredging company, EMCC is a market leader in the fields of maritime civil works and port developments, underwater civil works, repairs or construction of engineering works in rivers as well as the installation of ducts or outlet



streams. With a wide experience and stock of equipment which is considered as the largest in France, EMCC is not only a valuable partner for maintenance works on waterways and ports across the country, but also for the construction, creation or deepening of ports on an international level. With its integrated design and methods office, the company is able to propose clients environmentally friendly design construction projects. The company has an annual turnover is 81 million euros and 330 employees. <http://www.entreprise-emcc.fr>

#### **University of Exeter**

Exeter University combines world class research with excellent student satisfaction at its campuses in Exeter and Cornwall. It is a member of the Russell Group which represents 24 leading UK universities committed to maintaining the very best research, an outstanding teaching and learning experience and unrivalled links with business and the public sector. Formed in 1955, the university has 18,000 students from 130 different countries. Its success is built on a strong partnership with its students and a clear focus on high performance. Exeter was voted the Sunday Times University of the Year 2012/13. It is ranked amongst the UK's top 10 universities in the Higher Education league tables produced by the Times, the Guardian and the Sunday Times. It is also ranked amongst the world's top 200 universities in the QS and Times Higher Education rankings. <http://www.exeter.ac.uk>

#### **The National History museum / Dinard's marine station**

At the crossroads of Earth, Life and Human sciences, the museum has been dedicated to studying biodiversity and geodiversity on a daily basis for over 350 years. As a research centre, the Museum bases its work on field and laboratory studies, a multi-disciplinary approach as well as its exceptional collections – amongst the three largest in the world – and its renowned expertise. The museum's educational work as well as its vocation to share the knowledge it has gained through its various galleries, zoological parks and botanical gardens, has become an important channel for sharing information and making the public more aware of the need to protect our planet. The Institution brings together almost 1,900 people including 500 researchers, trains around 350 students every year and houses 68 million specimens in its storage areas and galleries. Over 2 million people visit the 12 sites around France each year. [www.mnhn.fr](http://www.mnhn.fr)

#### **Plymouth Marine Laboratory (PML)**

PML is an independent, impartial provider of scientific research and contract services for the marine environment, with a focus on understanding how marine ecosystems function and reducing uncertainty about the complex processes and structures that sustain life in the seas and their role in the Earth system. As a truly multidisciplinary marine research centers, PML delivers highly innovative research and solutions for national and international marine and coastal programs. The research at PML is timely and highly relevant to UK and international societal needs and its research, development and training programs have a mission to contribute to issues concerned with understanding global change and the health and sustainability of marine ecosystems. [www.pml.ac.uk](http://www.pml.ac.uk)

#### **Ocean and Earth Science, University of Southampton**

The University of Southampton has a well established reputation for its outstanding research and degree courses in Ocean and Earth Science. Our students are based at the prestigious National Oceanography Centre Southampton (NOCS). NOCS is the integrated collaboration between the Southampton-based part of the Natural Environment Research Council's National Oceanography Centre, and the University of Southampton's Ocean and Earth Science. The Centre hosts one of the world's largest groups of scientists and engineers devoted to research, teaching and technology development in ocean and Earth science. The Centre is comprehensively equipped with modern instrumentation and laboratory facilities and is also the operational base for the UK's fleet of deep sea research vessels. <http://www.southampton.ac.uk/oes/index.page>

#### **University of Caen Basse-Normandie**

Three research units (RU) of UniCaen are involved in the RECIF project. The CNRS INEE - FRE3484 BioMEA RU "Biology of marine molluscs and associated ecosystems", the CNRS M2C (UMR 6143) RU "Continental and coastal morphodynamics" and the LUSAC EA 4253 RU "Applied sciences laboratory of Caen Basse-Normandie university in Cherbourg". The RECIF project involves the FEME team (Functioning of operated marine ecosystems) of the BioMEA RU. This team, specialized in the coastal ecosystems functioning, works mainly on 3 items: i: primary producers, ii: trophic interactions, iii: anthropic pressure effect. The M2C RU is interested in the ocean/continent interface from the watershed dynamics to the adjacent coastal zones evolution. One of the issues is to isolate the impact due to natural factors from the anthropic ones and the consequences on the coastal and continental environments based on integrated multidisciplinary approach associating mechanic-geosciences and geo-eco-microbiology and the experimental and modeling *in situ* approaches. LUSAC brings together complementary competences in the scientific fields of thermal and fluids mechanics, of materials for energy and electronics, and of thermal energetic systems and electrical energetic systems based on alternative energy sources (marine renewable energy, fuel cells, electrical energy storage, etc...). BioMEA and M2C are members of the CREC (Research center



on coastal environment – Luc-sur-Mer marine station - University of Caen) which structures and means for the sea will be mobilized for the RECIF project. <http://www.unicaen.fr>

#### **TPC**

TPC is a subsidiary company of VINCI Construction France. It's specialized in civil engineering, maritime and port work, building, earthwork, demolition and asbestos, pipes and utilities and quarries. Located in Tourlaville, Lower Normandy, the company brings support to its customers from design to maintenance, through installation, financing and implementation. It regularly carries out precast structures of wide floating size, but not exclusively, within maritime and port projects (reefs, Jarlan Caisson, ...etc). The TPC company is certified for its quality management system (ISO 90001 – 2008), its security management system (ILO – OSH 2001), work under ionizing radiation (E certification of CEFRI), for asbestos removal (ASCERT certificate). Operating throughout the western part of France, TPC claims 130 employees and a yearly 20 million euro turnover. <http://www.entreprise-tpc.fr>

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