



Co-Operation for Restoring
Cockle Shellfisheries
and its Ecosystem Services
in the Atlantic Area (AA)

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Contratulations,
Simão Correia!

Welcome to COCKLES!

I would like to welcome you on board of COCKLES. This exciting project is expected to address several challenges related to the role that this emblematic species plays in the coastal areas of Europe and very especially in the Atlantic Area. The project embraces multiple disciplines and gathers the capacities of an outstanding consortium to better understand the current situation and the future trends around the biology, ecology, economy and social implications of cockles' populations.

It is expected to provide knowledge-based solutions to recover this resource, increase the understanding of the ecosystem services it provides and boost coastal economies of the Atlantic Area.

Through this newsletter we expect to deliver, periodically, synthetic information about the project goals and achievements.

In the name of the whole project team, I wish you a pleasant reading,

Rosa Fernández, CETMAR
COCKLES project coordinator

COCKLES everywhere

COCKLES dissemination strategy aims to promote an open dialogue among all stakeholders: scientists, managers, politicians, fishermen, NGO's and others involved in the use of cockles and to sensitize all, in coastal communities and beyond, about the diversity and value of the ecosystem services cockles provide. COCKLES newsletters will spread our project main achievements and outputs, including regular information about the partners' field and laboratory activities, publications and communications. Newsletters will also serve to announce COCKLES' future activities, in particular those organised for and with stakeholders such as workshops on specific topics.

COCKLES in a cockleshell

Programme

Interreg Atlantic Area

Execution Dates

2017.10.01 – 2020.09.30

Project Coordinator

Rosa Fernández, Spain

Proponent Institution

Centro Tecnológico del Mar,
Fundación CETMAR · ES

Countries

ES, PT, FR, IE, UK

Funding Entity

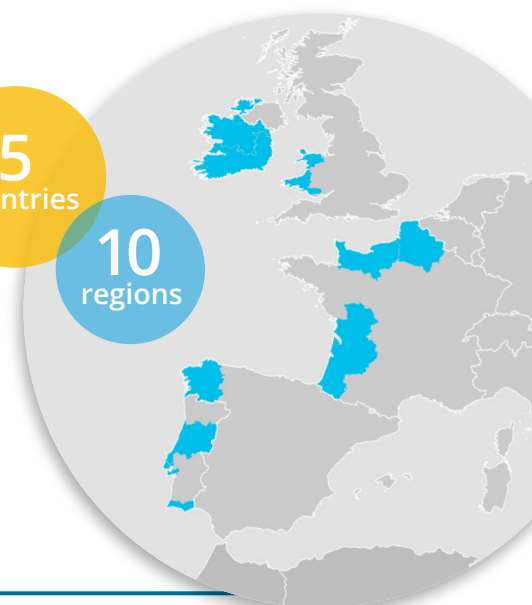
European Union

Total Funding

3,613,017.54 €

5
countries

10
regions



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Biodiversity,
Natural and
Cultural Assets

COCKLE's Meetings



Kick-off meeting in Aveiro | 25-26 October 2017

1st Steering Committee Vigo, Spain • 10-11 April 2018

The first COCKLES Steering Committee took place in Vigo, Spain from the 10th to the 11th April, 2018. Twenty two partners attended to review progress and activities in the project and to discuss on future actions requiring stakeholders' involvement. Achievements of all COCKLES work packages since the launch of the project in October 2017 and the work planned for the next six months were presented by the partners. In addition to that, two monographic sessions were held. The first one to discuss on activities requiring the engagement and exchange with local stakeholders. The second one was a participatory workshop focused on the approach proposed to assess the cultural ecosystem services provided by cockles. Next assembly meeting has been scheduled in Cork, Ireland, from the 16th to the 18th of October 2018. Together with the assembly meeting an Atlantic Area Workshop will also be organised, targeted to COCKLES' stakeholders and focusing on preliminary progress around cockles populations status and major threats.



Steering Committee Meeting Vigo | April 2018

How do cockles benefit society?*

NERC-CEH · UK | 21 May 2018

Ecosystem services is a term used to describe the many different benefits that humans get from the natural environment and from healthy biological systems. They are grouped into four broad categories (Fig 1): (1) **supporting services**, such as providing habitat for other animals, water filtering, bioturbation and supporting food chains; (2) **provisioning**, such as the production of food and shells; (3) **regulating**, such as removing nutrients from the sea, and the control of climate and disease; and (4) **cultural**, such as spiritual and recreational benefits. Thinking about nature in this way can help us understand the wider benefits we get from cockles, which are much more than just the cockle meat. Understanding these wider benefits is useful to decision-makers and will help us manage cockle stocks responsibly and sustainably into the future.

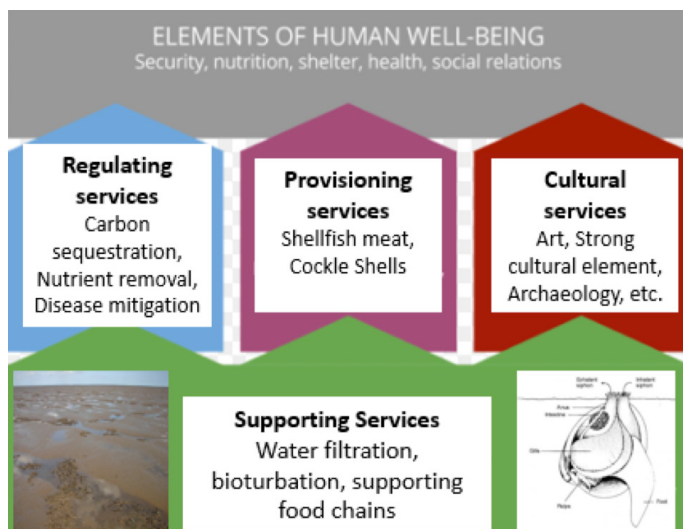


Fig 1. Diagram showing the four broad categories of Ecosystem Services with some specific examples for cockles

COCKLES project aims to quantify the contribution of cockles at important sites in Portugal, Spain, France, Ireland, and Wales. The work focuses on three aspects:

A) Cockles act as an 'engineer species'. They disturb (bioturbate) large areas of intertidal sandy sediment, which alters the amount and movement of nutrients and microscopic plants and algae that live at the sediment-water interface (SWI) and which form a vital foundation for coastal food webs. Much of this work is being carried out in northern France using laboratory and field experiments with cockles to measure their effects and influence on the environment. A first set of experiments will accurately measure the rates at which cockles bioturbate the sediment column and their subsequent impact on: (1) nutrient fluxes across the SWI and (2) the spatial distribution and production of benthic microalgae. The influence of different factors such as temperature, cockle size, density and disease will also be investigated.

B) COCKLES project aims to quantify the more direct benefits of cockles. For this, detailed information from all countries on the amount and value of the meat taken from cockles and the by-products that come from their empty shells will be collected. The project will work on regulating services, to see how much carbon is taken from the environment and stored by cockles and how much nutrients they remove from the water column. This work links up all the countries involved in this project, and works closely with other Work Packages to gain the maximum benefits of the research and to share information. Project partners are using standard methods and adopting a common approach to presenting and summarising their findings.

C) An exciting challenge is to investigate the cultural services that people gain from cockles in each of the partner countries. Using a common framework, all the partners can contribute examples of the cultural aspects associated with cockles that occur in their countries. This does not just assess monetary values; there is a strong emphasis on non-monetary value which can be a powerful force to motivate people. A social approach is needed for this work, involving interviews and questionnaires with local people to draw out the stories of those with an interest in cockles. Some of the cultural ecosystem services we are studying include reference to cockles in archaeology and history, recreation through cockle harvesting, the place of cockles in gastronomy and seafood festivals, the use of cockles in art and for ornaments and jewellery, the role of cockles in defining seascapes and coastal communities, and in instilling a sense of place or identity within individuals and communities (Fig 2).



Fig 2. Sculpture representing traditional sweets *Ovos Moles* from Aveiro, Portugal, which are often in the shape of a cockle

In the final phase of the work, these findings will be pulled together, in collaboration with industry, researchers and other interested people to create a decision tool for managers. This will allow them to understand the ecosystem services provided by cockles at their particular site and, in combination with outputs from the other Work Packages, will result in improved management of cockle fisheries and better response to climate change and other threats to the cockle stocks.



Picking cockles at Galicia, Spain

Field work in Galicia have started to look for molecular markers of marteiliosis resistance*

CIMA-XUGA · ES | 2 May 2018

Marteiliosis is causing cockle mass mortalities in Galicia since 2012; looking for ways to overcome this disease is one of the objectives of COCKLES. On 16th April, CIMA has started field work in Galicia corresponding to work packages 5 and 7, with the help of the Fishers Association of Noia (*Confraría de Pescadores S. Bartolomé de Noia*). Cockles (market size, ≥ 25 mm in length) were taken from Noia, a cockle highly productive area in *Ría de*

Muros where no marteiliosis outbreak has been detected. Around 50 cockles were processed to analyse immune parameters, starting the monthly sampling in the shellfish beds of *Noia*, for two years, to characterise the immune system of this species. Furthermore, 2200 cockles were marked and distributed in boxes with sea-bottom sediment, each covered with a mesh to minimise predation. Three devices, each holding 6 boxes with cockles, were submersed on the shellfish bed of *Lombos do Ulla*, located in the inner side of *Ría de Arousa*, where marteiliosis recurrently outbreaks each summer/autumn. The dynamics of the next expected outbreak will be monitored by sampling monthly the trans-

planted cockle batch; some cockles have just been collected, before the expected outbreak (non-infected cockles), and new samples will be taken during the outbreak (cockles with diverse infection intensity) and after the outbreak (surviving cockles). Cockles in the samples will be processed to identify molecular markers of marteiliosis resistance by studying protein contents and gene expression. Molecular markers for assisting future selective breeding to produce resistant or highly tolerant cockles, will open a promising pathway for the recovery of the production in affected areas. Cooperation of the Fishers Association of Cambados will be crucial to assess the effectivity of the new strategies.

*The information reported refers to WP5 and WP7

There is life inside each cockle*

UBX · FR | 2 May 2018

One objective of COCKLES project is to provide an exhaustive list of cockle symbionts *sensu lato* (i.e. including parasites and commensals) in different sites of the Atlantic Area, assessing which one could provoke diseases for cockles. Selected sites are Formosa and Aveiro for Portugal, Noia and Arousa for Spain, Arcachon and Baie de Somme for France, Burry Inlet and the Dee for United Kingdom and Dundalk for Ireland. A guideline book will be proposed to stakeholders and professionals to help them to sustain the resource. The expertise of different laboratories of

the five involved countries and concerning different types of symbionts (bacteria, worms, protists) has been solicited. Large scale sampling already started in 7 of the different sites, plus one site out of the AA (Texel, the Netherlands), and first analyses were performed. The very preliminary results already highlighted 1) that cockles are associated with a very diverse symbiont fauna; 2) that symbiont species associated to cockles appear specific to each site, although few species are more opportunistic and found in different sites. At completion, the partners of the project will attempt to evaluate the eventual pathogenicity of each of these symbionts for cockle populations and consequently

will be able to provide guidelines concerning potential transfer of cockles at different scales (for example, within each site vs. among sites).



Xavier de Montaudouin

*The information reported refers to WP5



Simão Correia (BSP Spring Meeting 2018)



Contratulations Simão Correia!

Universidade de Aveiro · PT | 4 May 2018

Simão Correia (Portugal) won the *Best Poster Award* at the British Society for Parasitology (BSP) Spring Meeting, that took place from 8 to 11 April 2018, in Aberystwyth, Wales.

The title of the winning poster presented during the meeting is "Patterns of trematode parasites communities in *Cerastoderma edule* cockles from Portugal aquatic systems." Congratulations!

To View/download the poster, click on the image

COCKLES Stakeholders Meeting
Cork, Ireland | 16 October 2018

FULL PARTNERS



ASSOCIATED PARTNERS

