

COCKLES

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

Restoring cockle beds and a Galician case study

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FINAL VIRTUAL CONFERENCE

March 2021

Episodic mass mortalities

Shellfish beds have been suffering from episodic mass mortalities leading to decline or collapse of natural stocks.



Photograph by Iñaki Abella, Faro de Vigo

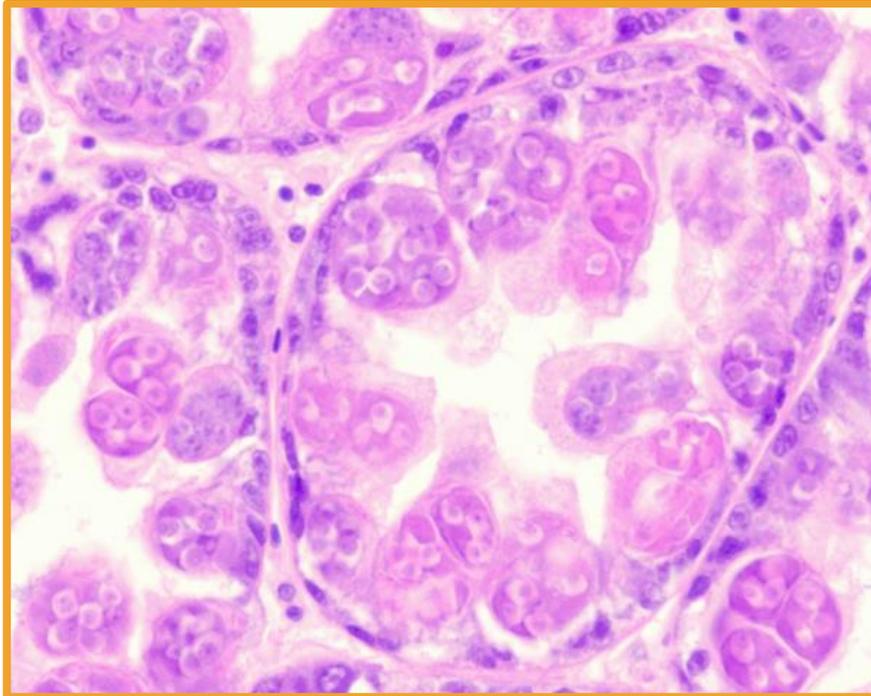
Causes:

- Storms/heavy rain/stressing environmental conditions
- Wrong management/overfishing
- Habitat degradation/pollution
- Invasive species
- Emerging diseases

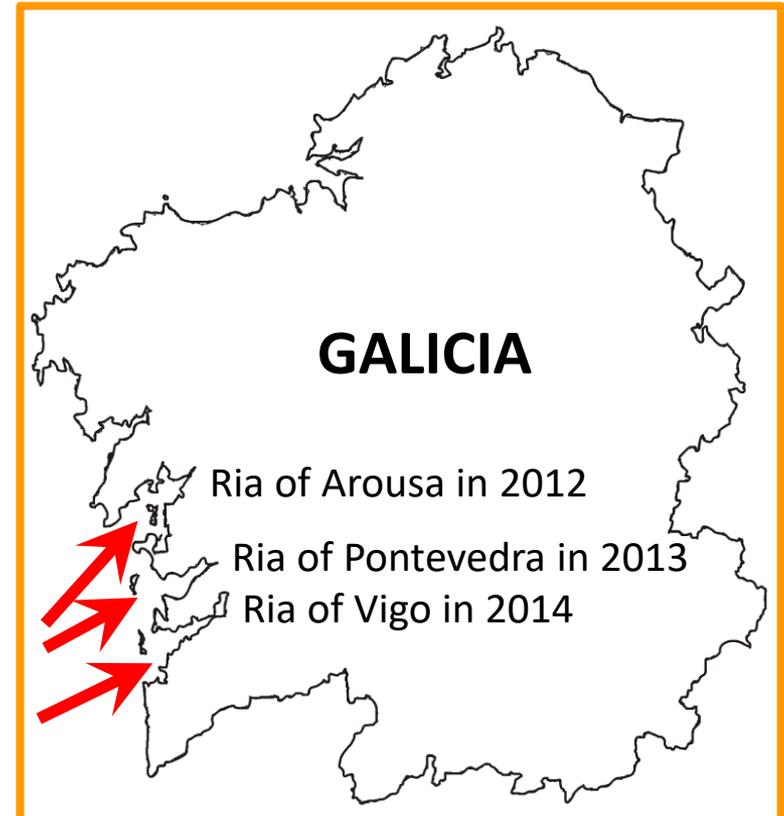
Objective: Designing procedures to restore exhausted cockle beds

Episodic mass mortalities

Marteiliosis is the major threat for cockle production in Galicia because of the huge mortality it causes since 2012.



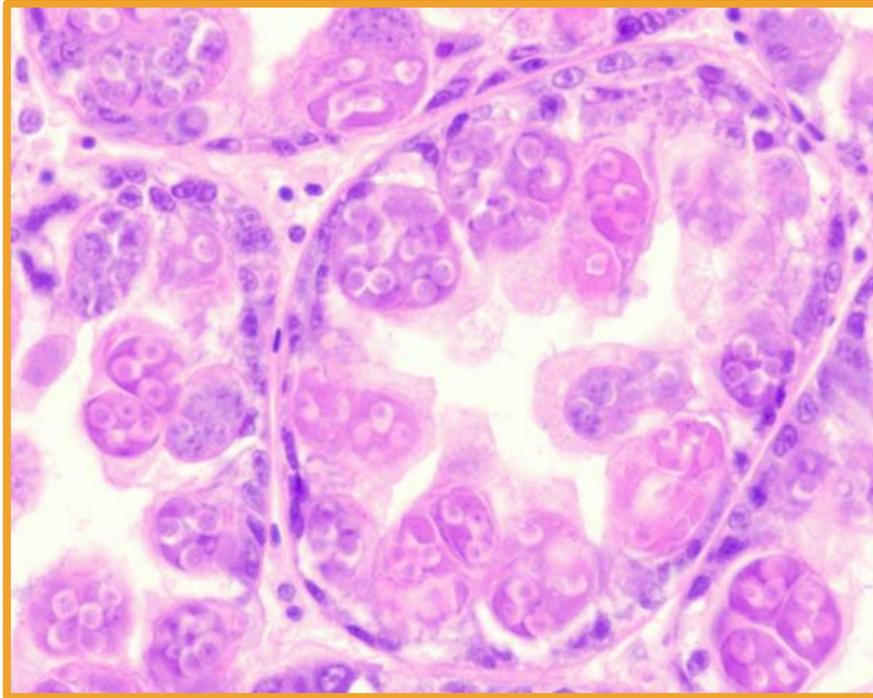
Marteilia cochillia



Objective: Designing procedures to restore exhausted cockle beds

Episodic mass mortalities

Marteiliosis is the major threat for cockle production in Galicia because of the huge mortality it causes since 2012.



Marteilia cochillia

Eradication is almost impossible

Restoring beds where the parasite occurs would require cockles resistant to marteiliosis

This case may serve as a reference to face any other serious pathogen.

Objective: Designing procedures to restore exhausted cockle beds

Guidelines to restore exhausted cockle beds

The final report with guidelines to restore exhausted cockle beds integrates the achievements on:

- Culture procedures
- Selective breeding programme for resistance to marteiliosis

A white rectangular box with a thin orange border containing project details. At the top center are the logos for Interreg Atlantic Area and the European Union. Below are three rows of information: Acronym: COCKLES, Title: Co-Operation for Restoring Cockle Shellfisheries and its Ecosystem Services in the Atlantic Area, and Contract: EAPA_458/2016. At the bottom, it lists Deliverable 7.5: Guidelines to restore exhausted cockle beds, dated March 2021.

The logo for Interreg Atlantic Area, featuring the text "Interreg Atlantic Area" in blue, with "European Regional Development Fund" in smaller text below. To the right is the European Union flag, with "EUROPEAN UNION" written below it.

Acronym: COCKLES

Title: Co-Operation for Restoring Cockle Shellfisheries and its Ecosystem Services in the Atlantic Area

Contract: EAPA_458/2016

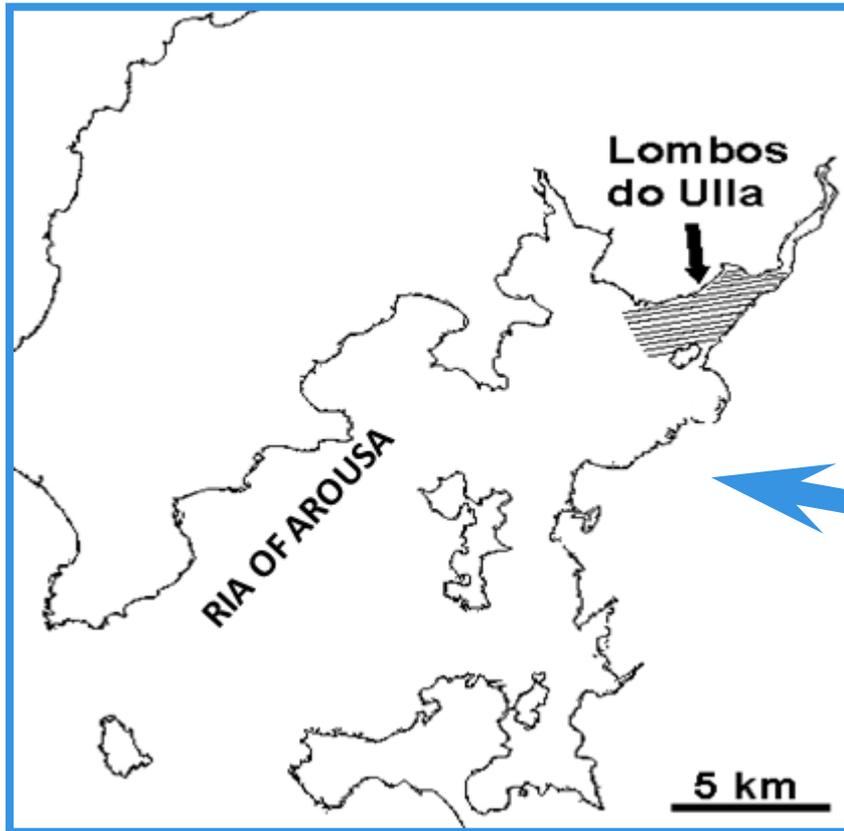
Deliverable 7.5

Guidelines to restore exhausted cockle beds

March 2021

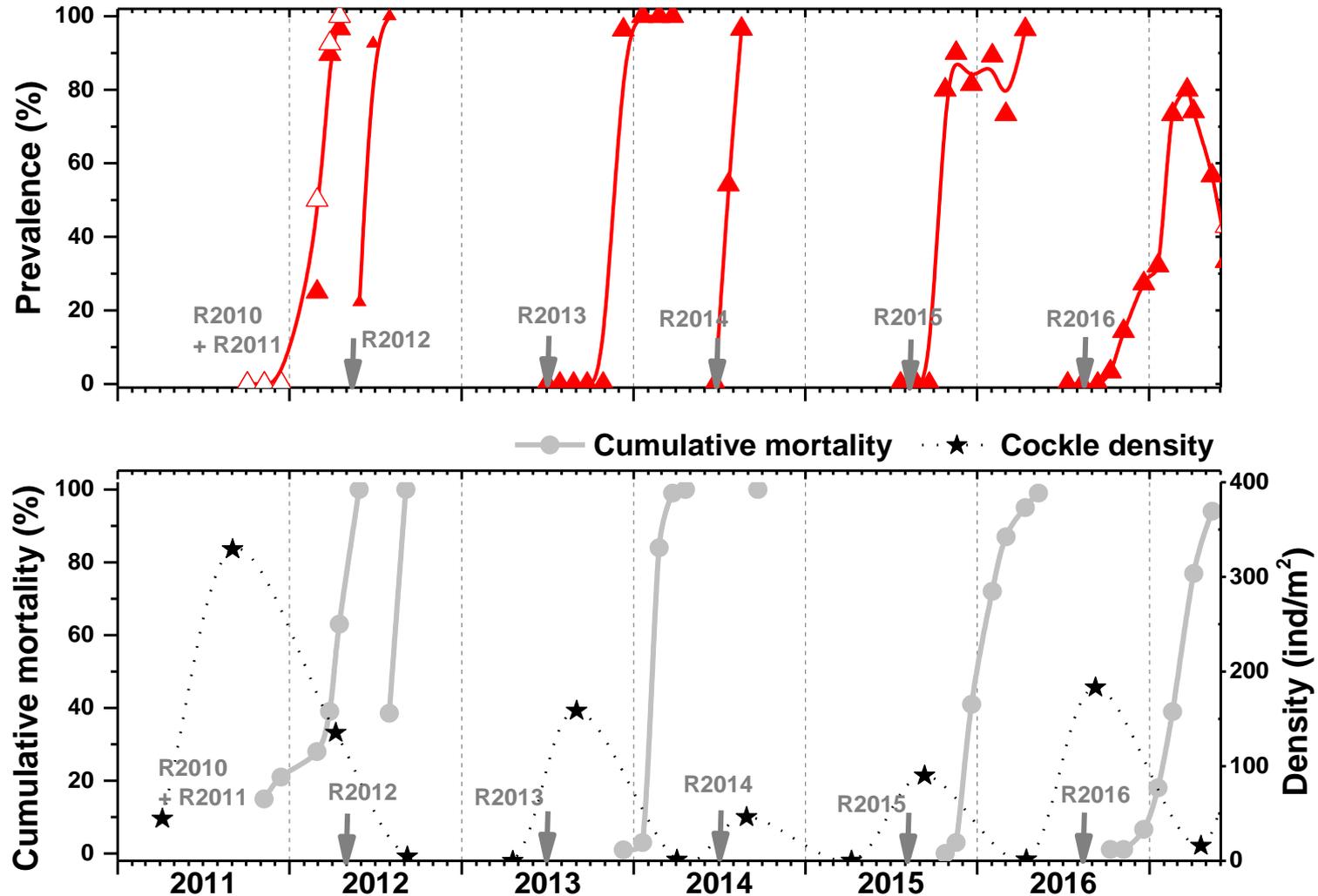
A Galician case study

Temporal pattern of marteiliosis dynamics before COCKLES (2012-2016)



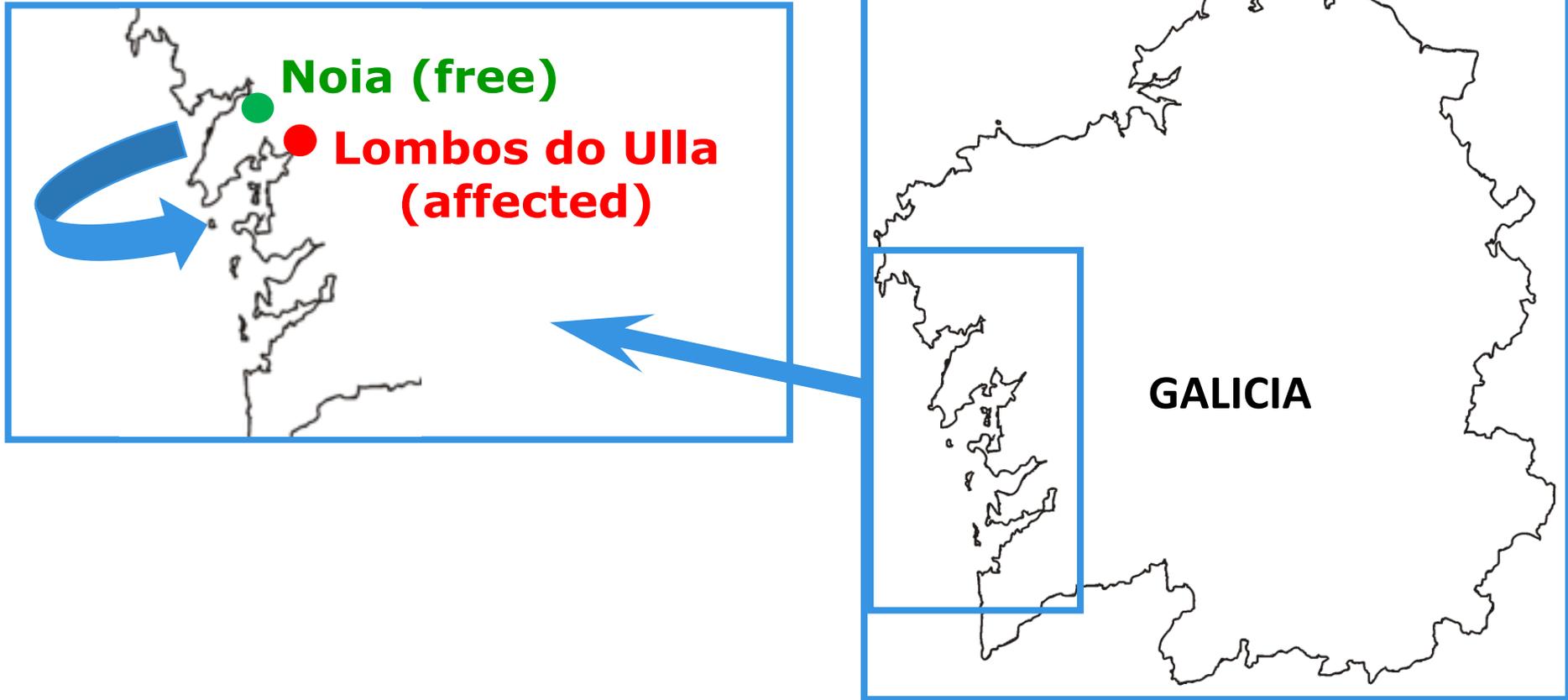
A Galician case study

Temporal pattern of marteiliosis dynamics before COCKLES (2012-2016)



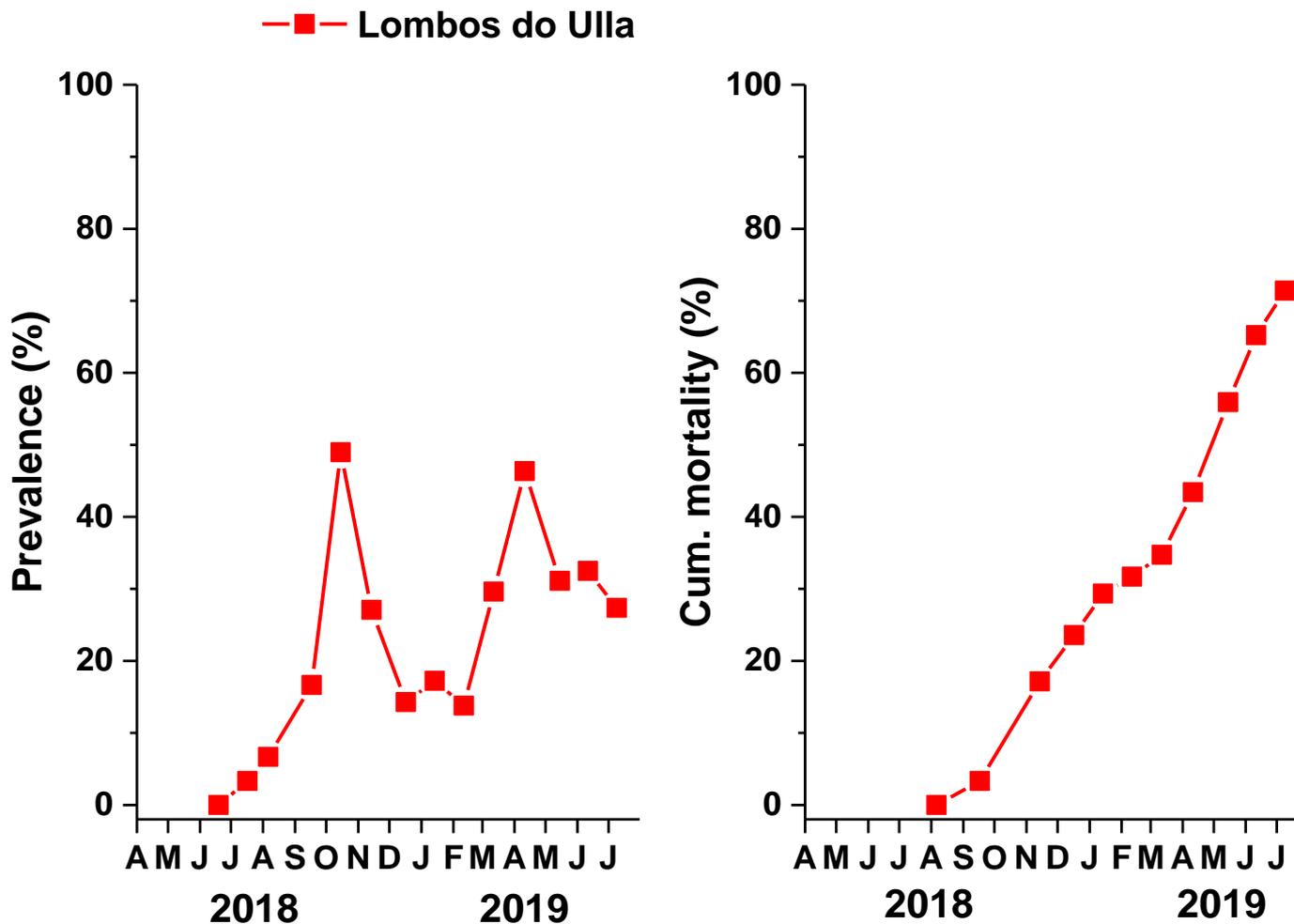
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Cockles collected from a naïve bed (Noia) were transplanted into the bed of Lombos do Ulla in the spring of 2018.



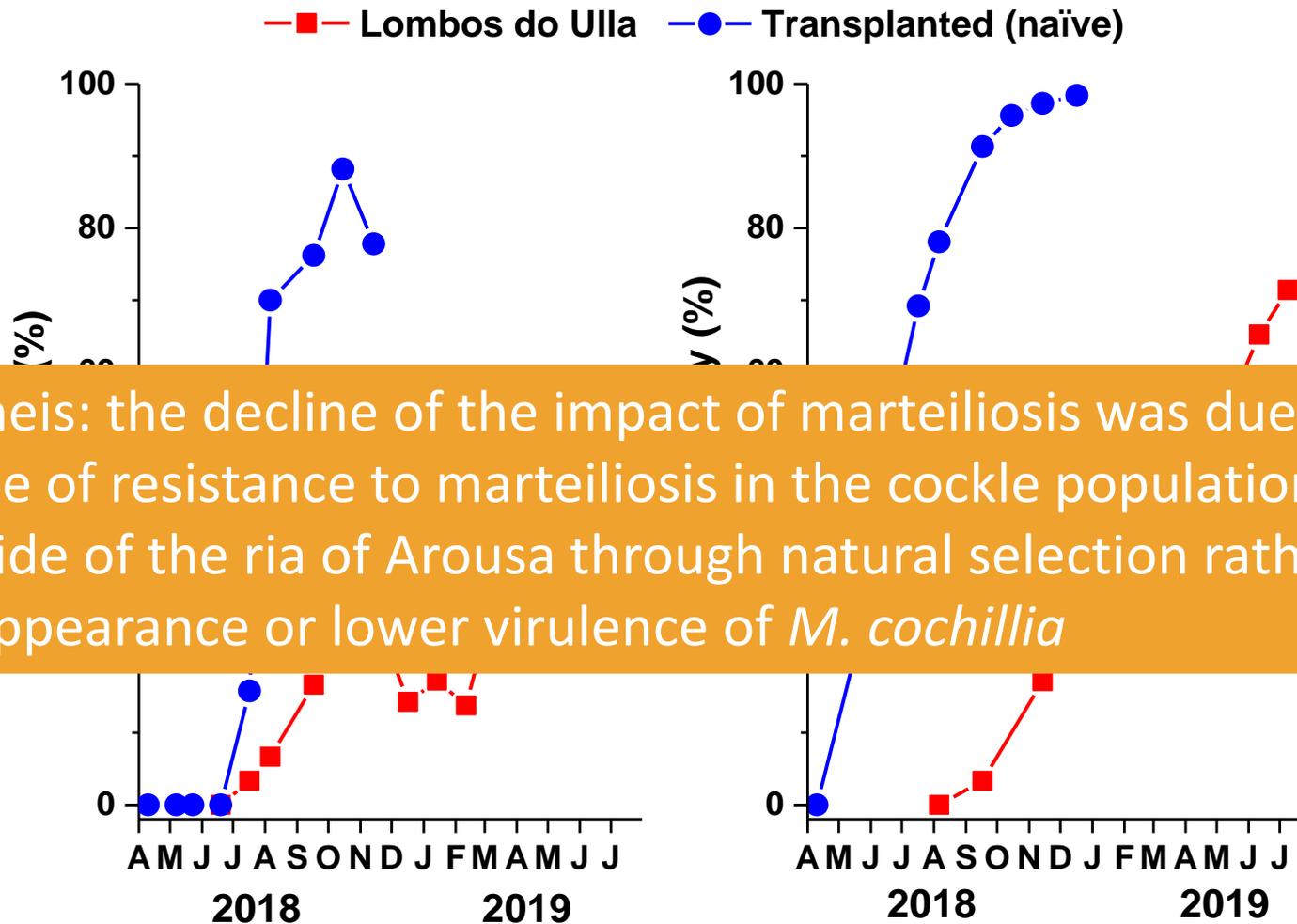
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Temporal pattern of marsteilosis dynamics during COCKLES (2018-2019)



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Temporal pattern of marteiliosis dynamics during COCKLES (2018-2019)



Hypothesis: the decline of the impact of marteiliosis was due to an increase of resistance to marteiliosis in the cockle population of the inner side of the ria of Arousa through natural selection rather than to disappearance or lower virulence of *M. cochillia*

A Galician case study

La Voz de Galicia

BARBANZA

O berberecho regresa en abundancia ás lonxas de Cabo de Cruz e Rianxo

As capturas están nos mesmos niveis que antes da aparición do parásito



L MARTELO

Exciting news, July 2019

La Voz de Galicia

AROUSA

El camino de vuelta del berberecho

No hay ninguna certeza sobre cuáles pueden ser las razones que lo expliquen, pero lo cierto es que el bivalvo ha vuelto a la ría; la lonja de Carril es testigo de su regreso



MONICA TRAGO

- To assay every stage in a process of cockle bed restoration in marteiliosis affected areas.
- To involve two shell-fisher associations in this process of capitalising the new available knowledge.
- To test the hypothesis of increased resistance to marteiliosis of the cockle population of the inner side of the ria of Arousa through natural selection.
- To validate the candidate molecular markers of resistance to marteiliosis identified in this project.



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BROODSTOCK SELECTION

Collection of cockles to be used as broodstock from two locations

- Long-term exposed bed (stock with some hypothetical resistance)
- Naïve area (fully susceptible stock)

HATCHERY

Production of seed cohorts from each broodstock batch

OUTDOOR PRE-GROWING

Pre-growing of two seed batches, one deriving from the hypothetically resistant stock and another one from the susceptible stock

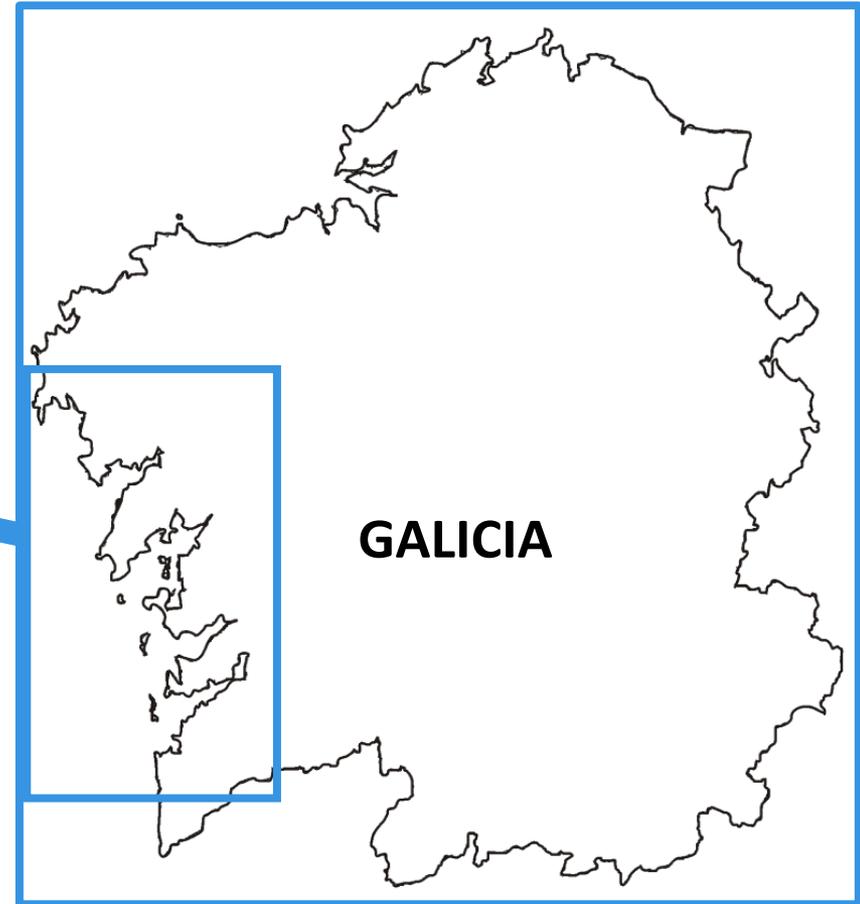
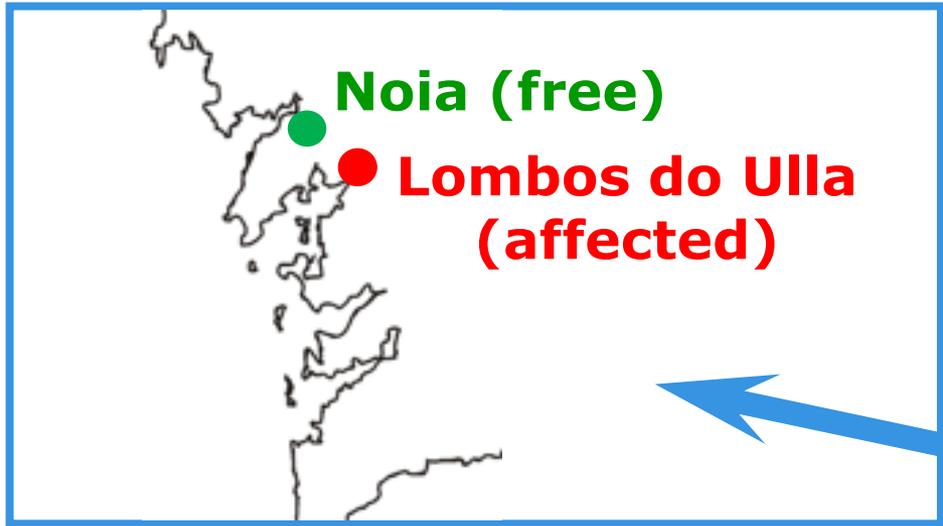
DEPLOYMENT IN THE BEDS AND MONITORING

Deployment of cockles from each stock in two shellfish beds affected by marteiliosis and monitoring of marteiliosis dynamics and survival

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BROODSTOCK SELECTION

May 2020



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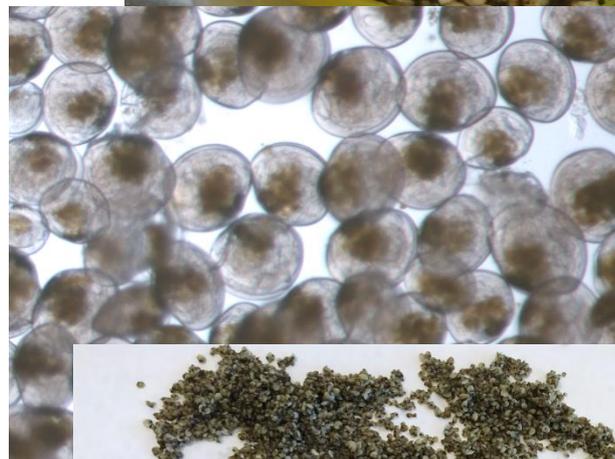
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Universidade de Vigo

HATCHERY

May 2020



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OUTDOOR PRE-GROWING

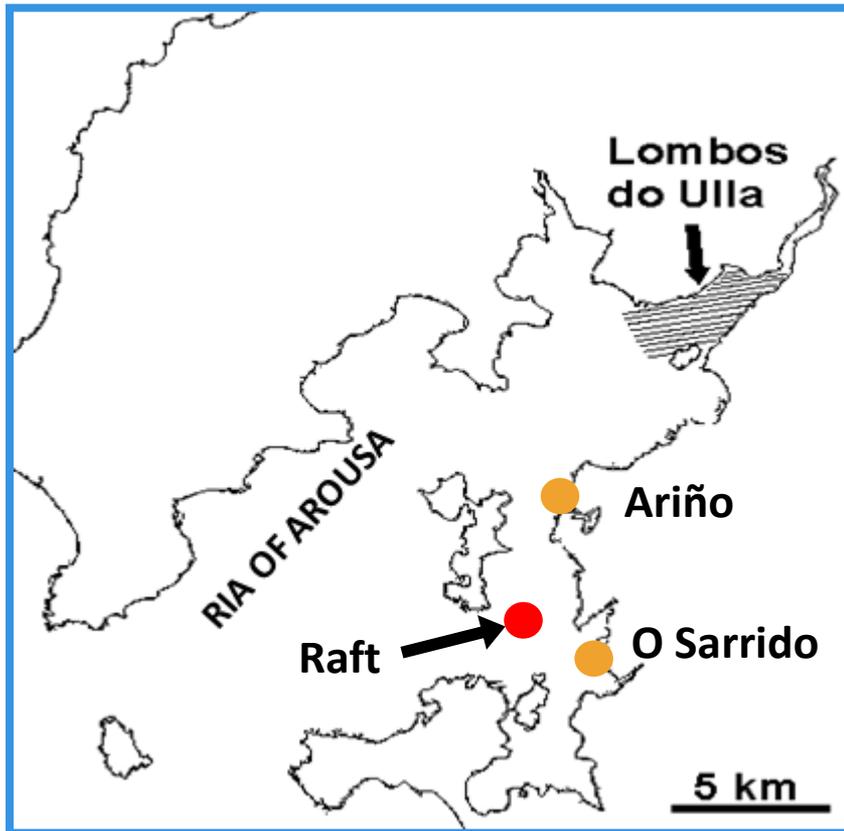
COFRADÍA DE PESCADORES
"SAN ANTONIO"
CAMPADOMUS



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DEPLOYMENT IN THE BEDS AND MONITORING

18th-19th November 2020



COFRADÍA DE PESCADORES DE
CAMBADOS

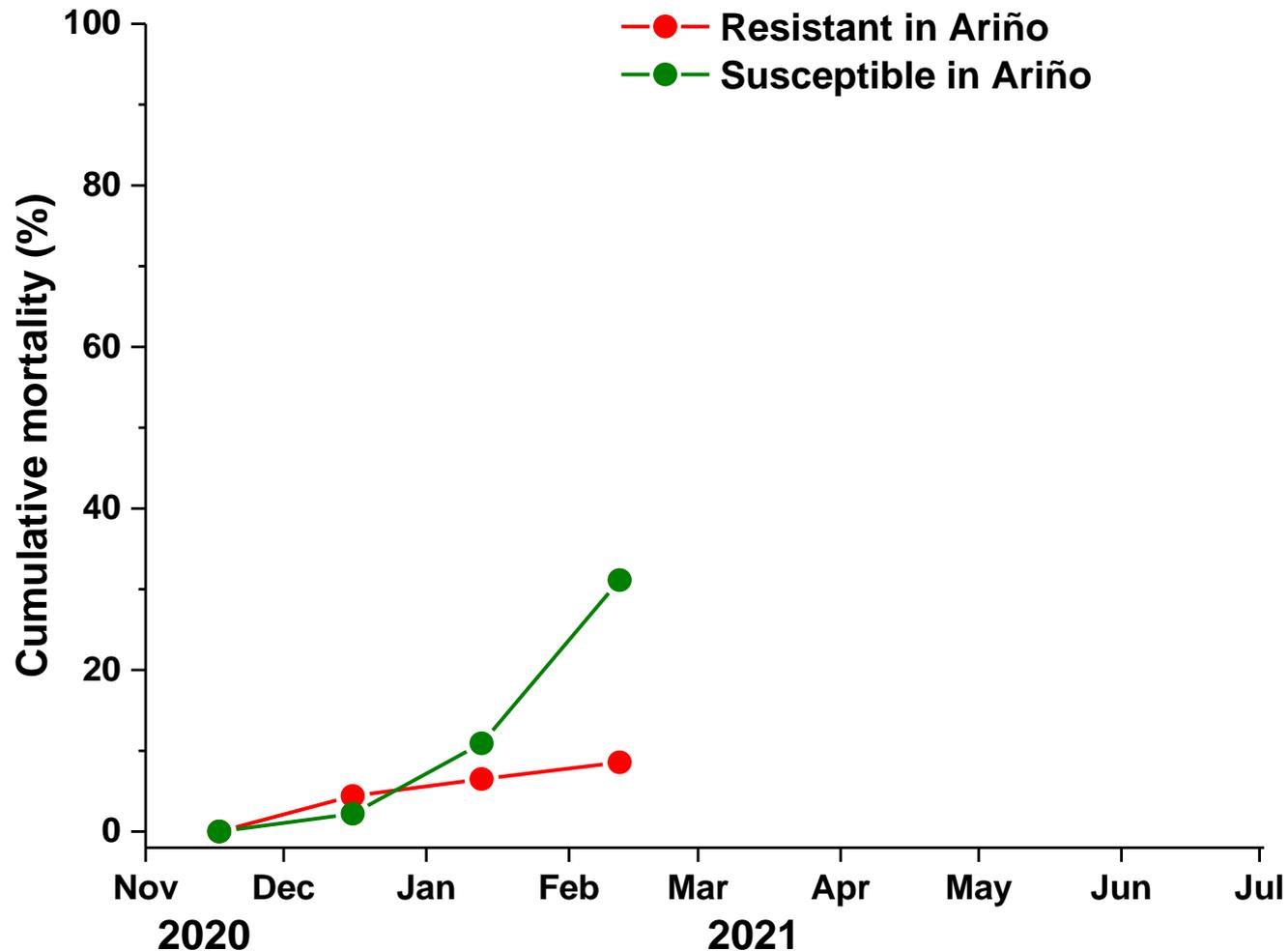
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DEPLOYMENT IN THE BEDS AND MONITORING



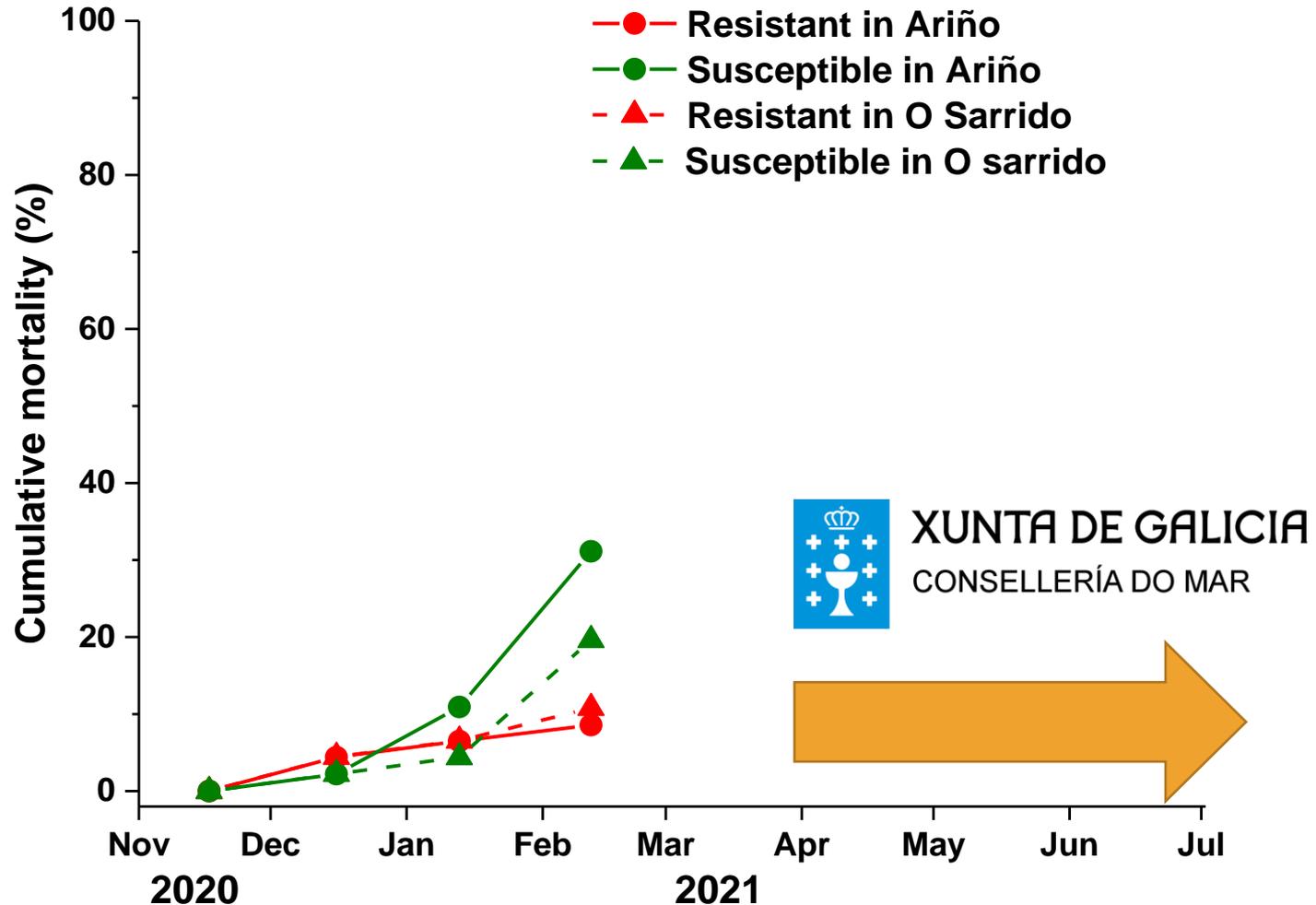
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DEPLOYMENT IN THE BEDS AND MONITORING



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DEPLOYMENT IN THE BEDS AND MONITORING



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Thank you!

