

# CAFC S.p.A. PP2 presentation Final meeting

AdSWiM | CAFC S.p.a |

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*BIORES S.r.l.*

*Dott. Claudio Franci*

2nd partners, GA and SC Meeting | 14th December 2021

# THE ACTIVITY OF CAFC SPA FOR AdSWiM Project

**WP4 Activity 4.2** Innovative Analytical Methods/Devices (IAMD) Nutrients and trace element

**WP5 Activity 5.2** WWT process innovation and test of the optimized AdSWiM solutions

**WP5 Activity 5.3** joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

## WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

12/2019-11/2021

### Concerning WP activity 5.2 and 5.3....

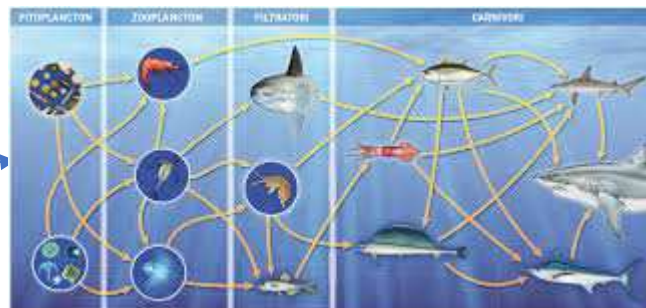
- CAFC worked with University of Udine and University of Split and shared information about Italian DPs and Italian legislation;
- CAFC gave data of Lignano and San Giorgio DPs to Marche Polytechnic University for:
  - An assessment of Phosphorus' recovery in the two DPs;
  - An assessment of diffuse pollution from spillways during stormwater event.
- CAFC carried out a test to assess a technology, the Reefball, that could be used in the future as a device for submerged discharged pipeline.

# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

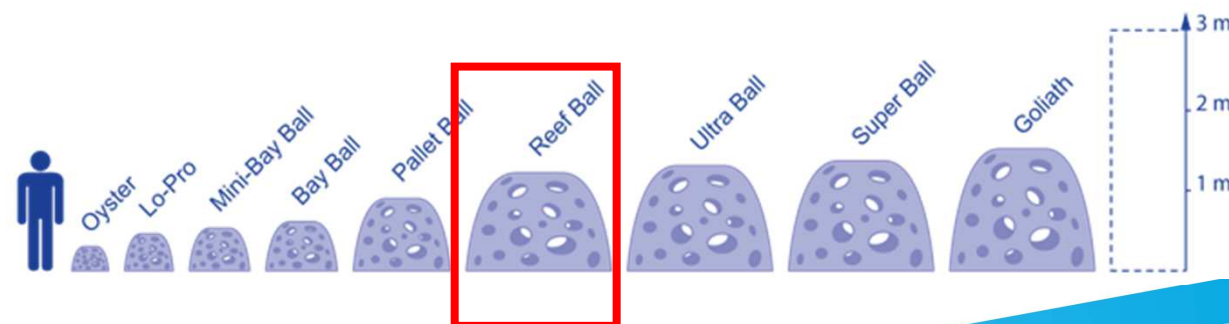
12/2019-06/2021



FAD: Fish Aggregating Devices



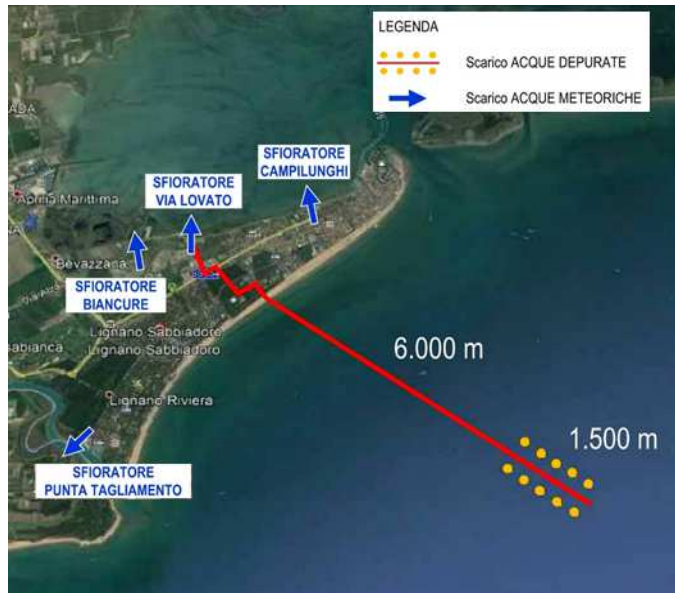
**Aim:** investigating if the reefball could be a device for the regeneration of the trophic chain



**Cement sea-friendly devices !!!!!**

# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

12/2019-06/2021



## Lignano WWTP's

- 86.400 A.E., activated sludge treatment and disinfection process;
- It treats waste water from Lignano municipality;
- Discharge pipe features::
  - L= 9,9 km (out of the sea 2.215 km, inside the sea 7,5 km, 1,5 km with diffusers);
  - Material: glass fiber DN 750 mm;
  - N° of diffusers:175;
  - Diffusers depth : 15 m;
  - Flow rate= 16.000 m<sup>3</sup>/d;
  - Discharge limits: Tab. 1, 2 e 3 D.Lgs.152/2006 Annex 5 (271/90 Directive).

## Nubers of the project....

- Number of reef balls: 20;
- Distance between each reef ball: 3 m;
- Distance between reef ball and discharge pipe: 10 m;
- Position of the reef balls: along the last 40 meters of the discharge pipe.

# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

12/2019-9/2021

DONE

Design of the reefball placement in the submerged pipeline of Lignano's DP

DONE

Authorization process for laying Fish Aggregating Devices (FAD) in the sea

DONE

Organization of the yard for FAD

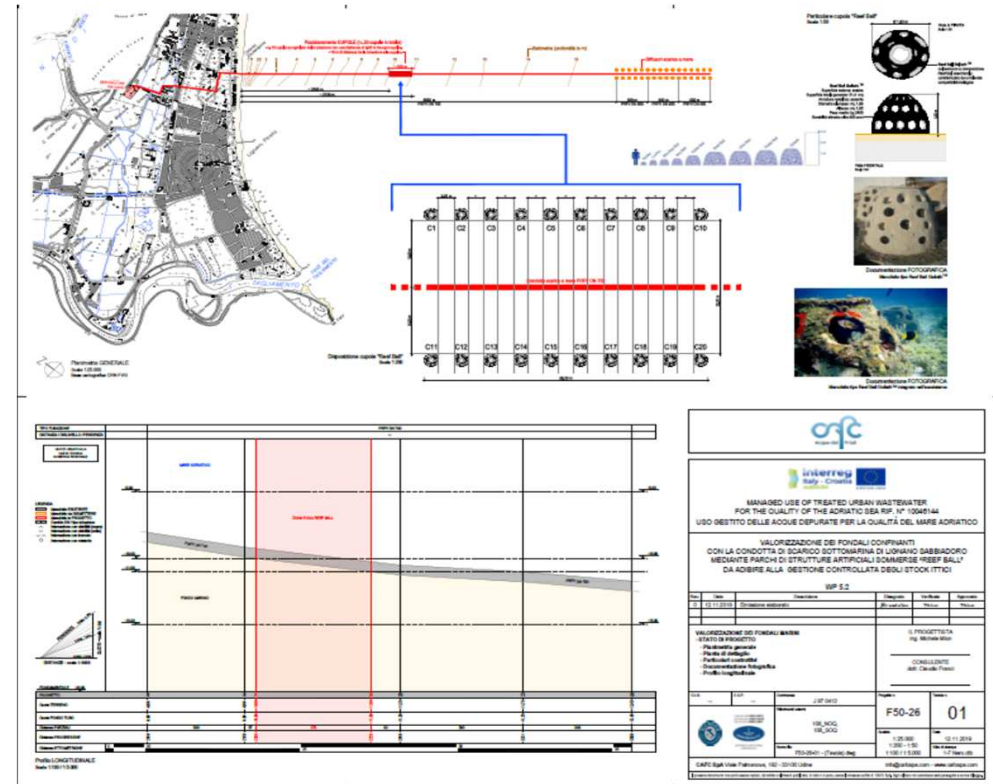
DONE

Laying FAD in the sea

DONE

Biological monitoring of FAD colonization (with undersea inspections)

**12/2019-05/2020**



# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

12/2019-03/2021



**CITTÀ DI LIGNANO SABBIAADORO**

PROVINCIA DI UDINE

Viale Europa, 26 – 33054 Lignano Sabbiadoro (UD) – codice fiscale 83000710307

Ns rif. prot. n. 5932 del 20.02.2020  
Pratica n. CDvc/16/2020

PEC

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Al Ministero delle Infrastrutture e dei Trasporti  
Provveditorato Interregionale alle Opere Pubbliche-  
Ufficio tecnico amministrativo e opere marittime per il FVG  
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Al Ministero per i Beni e le Attività Culturali  
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All'Agenzia delle Dogane e Monopoli  
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Oggetto: Installazione di manufatti cementizi detti "REEF BALL" sui fondali adiacenti la condotta di scarico sottomarina di Lignano Sabbiadoro.  
Notifica esito del procedimento amministrativo.

Con la presente si comunica che è stata rilasciata la Determinazione conclusiva della conferenza dei servizi inerente l'oggetto, che si trasmette in allegato.

## Activity

## Done

Authorization process for Reef Ball placement



Companies selection's for Reef ball construction and positioning

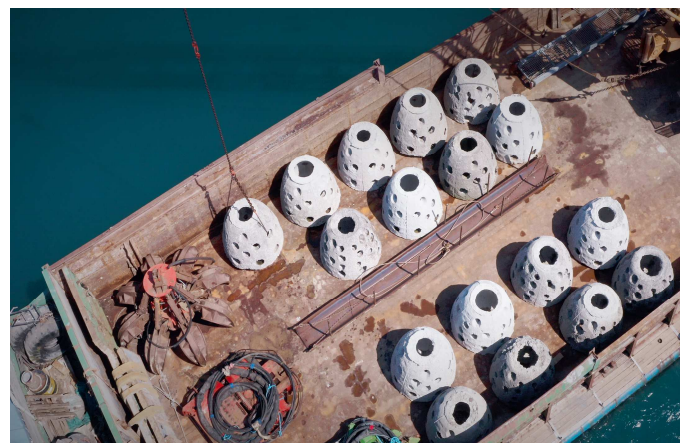
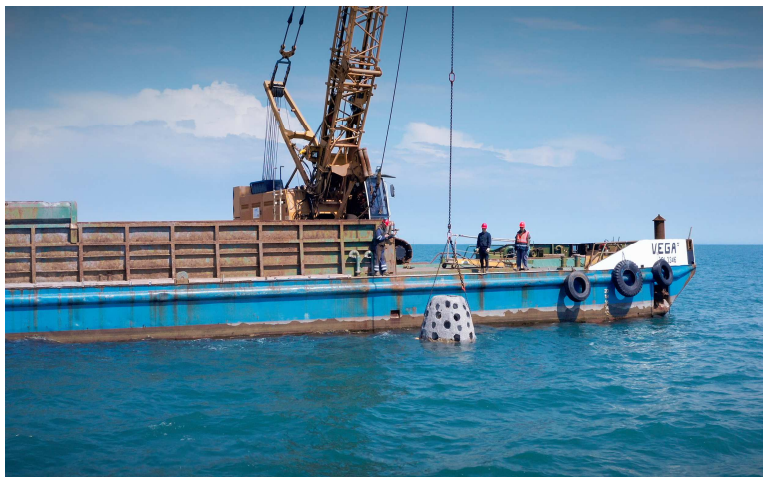


Organization for filming and photing during the reef ball positioning event



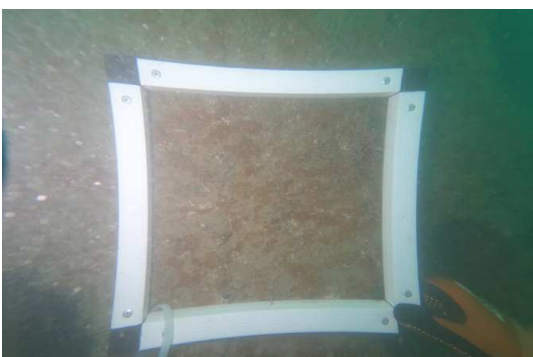
# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

10/2020-04/2021



# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

08-09/2021



Fish species found	Number	Dimensions
Dicentrarchus labrax	1	50 cm
Sciaena umbra	3	20 – 30 cm
Conger conger	1	1 m
Diplodus anularis	1	10 cm
Diplodus vulgaris	3	15 cm
Gobius niger	13	10 cm
Parablennius rouxi	9	8 cm
Other marine species found		
Maya verrucosa		
Murex spp		
Cratena peregrina		
Schizobrachiella spp		
Eudendrium spp		



# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

10-11/2021

## CONCLUSIONS

- REEFBALLs could be a development site for the starting of the trophic chain because in the proximity of the discharge pipeline there is a conducive environment.
- REEFBALLs could be a device for trapping and recovering nutrients that are present in the discharged stream of a DP. Concerning this point and one of the goal of Activity 5.2 of ADSWIM project: «evaluation of sludge variation due to the interventions at water line of DP» CAFC investigated on it answering to this question: *“If the concentration of a nutrient was broken down directly in the sea with the Reefball, what could be the effects on the quality of the sludge?”* P was selected as nutrient and the assessment was carried out on Lignano’s and San Giorgio’s DP.
  - It reveals that in both WWTPs, the sludge doesn’t change its features and it could be used in agriculture also if there is no phosphorus removal on-site;
  - It highlighted that the WWT is cheaper (due to saving of chemicals for reducing P in the stream).

# WP Activity 5.3 joint and shared cross-borders strategies of WWTP plant management and legislative action proposal

## 2022 ???

### FUTURE CHALLENGES

- Is there a lack of nutrients (Phosphorus?), (Nitrogen?) in the Adriatic Sea;
- Are the limits for DPs that discharge their wastewater in the Adriatic Sea in harmony with its site-specificity?

The answer to these questions could open new scenarios...

- The discharge of a WWTP is not a source of pollution but it could be a source of supply for sea-life;
- Reefballs could be used as regenerative devices for sea-life for catching nutrients from the DP's discharges.


# *Thank you for your attention!*

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