The use of a fixed-point underwater camera, to promote stakeholder engagement as a method to increase marine citizenship and effective marine management practices at a local level

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Introduction:

- Long-term monitoring of marine biodiversity is crucial as it will inform how effective marine management policies and practices are such as MPA functioning [1].
- Monitoring and collecting data over extended periods of time is important to recognise change in ecosystems [2][3]. Using underwater camera (UWC) systems is a commonly used cost-effective technique due to recent technological advances [3].
- Employing citizens to help monitor the environment is an important tool to conduct scientific research while increasing the awareness [4].

The value of the fixed underwater camera (UWC) of Gibraltar as a marine monitoring tool is being assessed.

Methods:

- Observation UWC for six weeks, with ten minute recordings (random) in the morning, midday and evening.
- Identification of species from the recordings.
- The public was asked for contribution and engagement, by sending in photos of the marine life in Gibraltar.

Results:

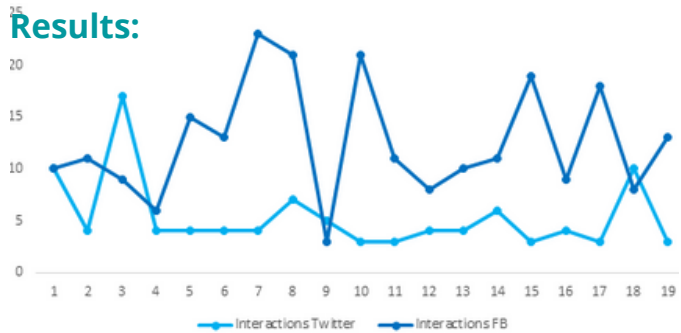

Figure 1: *Evolution of the number of interactions on each of the 19 posts, on Twitter (light blue) and on Facebook (dark blue)*

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Findings:

15493 individuals
32 marine species
3 spp. listed as vulnerable (IUCN red list)

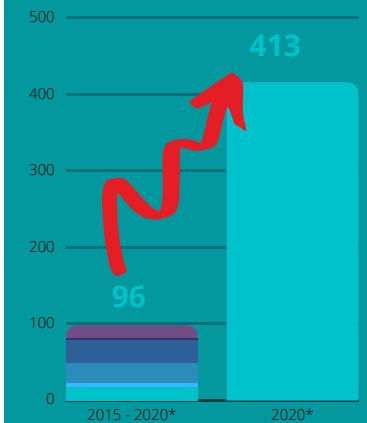

Figure 2: *The number of photos send every year to the monitoring email address before and after May 22 2020 (start date public engagement for projectSEACOMM)*

Use of social media and stakeholder engagement has led to an increase in marine citizenship

#projectSEACOMM*

*Stakeholder Engagement, Assessing COnservation via Marine Management

Discussion:

Limitations of an UWC [3]:

1. The technology
2. Device effects
3. Visibility
4. Human dependent
5. Deficiencies
6. Misidentification

Conclusion:

- A shift in the chosen social media platforms is seen throughout the six weeks.
- Parallel to this, more interaction took place on Facebook compared to Twitter.
- How well marine monitoring is thriving, depends on the amount of data collection and monitoring programmes in place. With a results of decreasing costs. Limitations needs to be acknowledge and adjustments need to be made.

Citizen science increases awareness and has a favourable influence on the attitude towards the marine environment and marine life.

Figure 3: *Photos taken from the Underwater Camera in Gibraltar, A the Striped red mullet (Mullus surmuletus) and B a Peacock wrasse (Symphodus tinca)*

References:

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