

Actions for Marine Protected Areas

AMAre

Interreg MED

Coordinator: CoNISMa

Minutes of the 3rd General Assembly

10-11th December 2018

Hosting Institution: CoNISMa

Marevivo, Lungotevere Arnaldo da Brescia Scalo de Pinedo, 00196 Roma RM

During this third General Assembly, field activities, monitoring protocols and achieved results regarding the Testing period (WP4) were discussed and shared among the AMAre partners. How to use this information for the development of tools for concrete applications of Maritime Spatial Planning within the AMAre MPAs was the focus of most of the discussions, besides consider valuable strategies for implementing the institution of networks of MPAs. An update of the recent initiatives in which AMAre has been included was also presented and the idea to participate to the 3rd InterregMed call with “AMAre2” project was advanced, with great approval from all of the GA participants.

The first day was fully dedicated to the discussion on the sampling activities, sharing of data and results regarding the last field activities. In detail, the following topics have been covered:

- Conisma: A general overview

The Lead Partner gave an overview regarding the achievements and the future developments of AMAre, considering the currently achieved objectives and the weakness as well.

Monitoring activities to test the reserve effect of Torre Guaceto and Porto Cesareo on subtidal benthic assemblages and on *Posidonia oceanica* have been presented, also including data regarding a long-term assessment of *P. oceanica* meadows integrity within the first MPA. The inconsistency of monitoring and management plans among the AMAre MPAs has also been widely discussed, basing on the information provided, up to now, by the managers. The purpose would be to improve the accuracy and the amount of the supplied data as a further step, and to draw up a scientific paper which highlight the huge heterogeneity among the management plans which regulate each MPA, which compromises the establishment of coordinated and integrated actions at Mediterranean level to achieve the yearned conservation outcomes. The necessity to implement a common monitoring protocol, in the framework of the Marine Strategy Framework Directive and based on an ecosystem-based management approach, including long-term series of data, was approved by all the partners as a further focus of the project. Trying to involve stakeholders such as NGOs and or environmental agencies, by using and implementing alternative and innovative communication tools, could be the right approach to overcome the current limits to the lack of consistent long-term monitoring data-sets.

- Ismar-CNR:

Presented the ongoing updates of the developed geospatial tools (the Geodatabases and the Spatial Geoportal) and the future uses of currently collected data. The discussion also concerned the implementation of the AMAre Geoportal Manual and the following future advancements:

- 1- promotion of the Geoportal as a tool for supporting researches and MPA managers
- 2- improvement of the Geoportal for the use by different stakeholders
- 3- increase of the MPAs uploaded on the Geoportal

An illustration of the Spatial GeoPortal structure and functioning was also provided.

- Torre Guaceto: Proposed application of the ISEA conceptual models within AMAre

The ISEA conceptual models has been presented for some examples of AMAre MPAs, describing the highest pressures and the related determinants within each area, their ecological effects and identifying key targets (KT) for conservation actions as the last step of the ISEA scheme.

Within this context, solid monitoring plans (sampling protocols and timelines) deserve lot of attention and are crucial in the management framework. Monitoring plan should be designed considering the available economic and human resources and should guarantee that each activity carried out within the MPA has acceptable environmental impact on the KT, while meeting stakeholders needs and other priorities. Monitoring plans should also include indicators to follow-up KT, pressures and determinant changes which may contextually cover biophysical, socio-economic and governance issues to assure an effective management of the MPA.

- Hellenic Centre for Marine Research (HCMR): Report on monitoring activities

The main topic covered was that of the cumulative impacts on *Posidonia oceanica* and the supplied Ecosystem Services.

The management plan of the National Marine Park of Alonissos Northern Sporades was discussed (NMPANS), after a brief description of the background of this MPA and the current management plan. The lack of support from many local stakeholders, especially fishermen, has been presented as the biggest problem in the MPA that needs to be solved as a top priority, trying to cooperate with those involved with the fisheries.

The impact of each activity carried out in the area has been scored. Ports, fishing ports, small scale fishing, tourism, coastal urbanization and anchoring have been presented as the main pressures acting on *Posidonia oceanica* meadows, on the base of field surveys at different scales (1kmx1km, 500mx500m, 200mx200m).

Alongside, an evaluation of the Ecosystem Services supplied by *Posidonia oceanica* and coralligenous assemblages has been provided for the NMPAS, by applying the economic value estimates for: carbon sequestration, food resources (fish) and recreational and aesthetic, according to the Millennium Ecosystem Assessment classification (2003). Further surveys in Alonnisos, Athens and across Malta are planned. Moreover, HOBO temperature data loggers have been deployed within the Greek MPA.

- Ifremer: Marine litter monitoring in MPAs

The French Research Institute for the exploitation of the sea presented a simple mapping/management tools for marine litter (ML) and a model-fluxes of the plastics onto the Corsica coastline (Lamma/ CMCC/ IFREMER).

Videos and photos have been collected through a camera installed on a wave glider, providing adequate long-term information for debris monitoring from 0 to 4.5m. Furthermore, ML transport models have been developed for the North Tyrrhenian Sea, by covering debris sources and hot spots identification, distribution, transport, concentrations; transport patterns of riverine and harbour litter and tracking sources of litter in the area of Bonifacio have been described.

Monitoring data regarding the effect of marine debris on benthic populations have been presented, also supplying a template to estimate the entanglement of invertebrates.

- CSIC-Balearic Islands MPA: Report on monitoring activities

Results from monitorings carried out at the Reserva Marina dels Freus d'Eivissa i Formentera during September 2018 have been shown.

Sampling activities regarding subtidal benthic assemblage coverage and *P. oceanica* shoot density and morphometric information were conducted by underwater visual census through the transect (25x1m) and the quadrat (40x40cm) methods. As a result, shoot density was very high within each level of protection with significantly slightly higher values within the no-take zones.

The same sampling method was applied to describe the presence of invasive species, flowering events along transects and bleaching or mass mortality events of calcareous organisms. Mortality or bleaching events were recorded for the following species: *Cladocora caespitosa*, *Balanophyllia europaea*, *Ircinia fasciculata*, *Spondylus gaeredopus*, *Arca noae* and the 100% of the recorded *Pinna nobilis*.

- Porto Cesareo MPA: Report on monitoring activities

After a brief description of the MPA main features, monitoring activities covering AMAre, the Marine Strategy and the MPA-ADAPT frameworks have been summarized. Sampling activities have been carried out on coralligenous formations between 30 and 40 m depth by 200 m length transects using the ROV (25 km² total coverage), to estimate the effects of fishery and other activities along a gradient of human uses, information coming from the S.A.M.P.E.I. project outcomes. Marine litter surveys have been carried out and the MPA-ADAPT LEK questionnaires regarding the artisanal fishery within the Porto Cesareo MPA have been distributed to the involved stakeholders. The idea regarding the employment of underwater photogrammetry techniques to acquire 3D data on the habitat structure was also presented and HOBO logger installation for long-term temperature records is in plan.

- CMCC: Update from oceanography

The AMAre Web Map Service (WMS) regarding oceanographic data and maps was implemented and a number of new layers have been uploaded to the AMAre GIS.

Oceanographic database includes a wide set of physical descriptors obtained through satellite data or generated models (e.g. Chlorophyll, SST, SSS, SSC, Transparency) and was presented for the 5 AMAre MPAs. The workflow and the process have been briefly described during the meeting.

- University of Pisa-CoNISMa: Update from early warning indicators of regime shifts in MPA monitoring.

Models regarding the probability of collapse of *Cystoseira* spp. macroalgae and *Posidonia oceanica*, with the experimentally determined threshold, have been shown, providing guidelines and best practices for monitoring the risk of collapse of benthic ecosystems within the MPAs.

Acquisition of biological (e.g. % cover of *Cystoseira* spp.), anthropogenic and environmental data and localized perturbation experiments are in progress, aiming to assess spatial early warning signals and the status of specific marine ecosystems.

One of the main issues is represented by data collection and data sharing.

- University of Malta: Biological monitoring update, conflict and impact analysis

Field surveys on *Cystoseira* spp. coverage have been carried out in Malta and Gozo by *in situ* visual census with replicated 20x20cm quadrats, aiming to describe the effect of multiple human activities and impact (e.g. desalination plants, sewage outfalls, coastal urbanisation) on its distribution.

A cumulative-impact assessment was also performed on *P. oceanica* and maërl beds by conflict and cumulative impact analyses. Footprint maps were built for a list of activities, including: aquaculture, fishing and recreational vessel activity, commercial passenger vessels, bunkering and SCUBA diving. These footprint maps were correlated to available ecological component datasets, generating an impact-risk level for *P. oceanica* and maërl beds and user-user conflict maps by a cumulative conflict index which estimates the number and the intensity of each anthropogenic activity with a spatial resolution of 1x1 km². Field activities related to other projects on similar topics were also presented (Interreg Italia-Malta *Harmony*).

Moreover, information regarding: human impacts, oceanographic data, time-series data on nutrients, mercury and contaminants along the water column, in the sediment and in *P. oceanica*, were added to the AMAre Geoportal. It was of great interest the presentation from Brian James Christie, stressing the role of AMAre in the management of Natura 2000 site in Malta.

- Politecnico di Milano-CoNISMa: The inventory of current human activities and pressures in the MPAs.

According to the Regional Tourism Agency, Apulia is the most touristic region of Italy (hosting more than 20% of the total Italian tourism). A list of direct and not direct threats for Torre Guaceto and Porto Cesareo MPAs was compiled by the Politecnico di Milano, by using data from the AMAre webGis and other online sources. Moreover, maps and models describing the pressure distribution related to the increase of human frequentation in the

main MPA's Municipalities (Nardò, Brindisi, Porto Cesareo e Carovigno) were presented. Tourism flux trends and seasonality, solid waste production, recreational boating, wastewater, runoff quantification, pesticide contamination and precipitation rate were considered as the major pressures.

During the second day, the focus of most of the discussions was how to use the results currently gained from the project for the implementation of tools for concrete applications of Maritime Spatial Planning, besides consider valuable strategies for the implementation of networks of AMAre MPAs.

Other discussed issues regarded the activities and advancements achieved by the horizontal project PANACeA and the planification of further events. Furthermore, the idea to participate to the 3rd interregMed call with a new project deserved a lot of attention and discussions. All the partners agreed with the purpose to transfer the AMAre outcomes to other Mediterranean contexts. From an operational point of view, ideas and proposals concerned innovative monitoring approaches, toward original schemes and tools. As an example: the use of underwater or aerial drones to detect the impact signs on the environment, paired to field survey, image analyses and citizen sciences (to monitor anchoring or beaching of litter, ghost fishing); to create a common space where all the other InterregMed projects may upload their own tools or achievements, aiming to a "cross-fertilisation" among projects. Other ideas concerned the project structure, such as: the inclusion of Natura 2000 sites beside MPAs, to increase the partnership by involving other Mediterranean MPAs, especially from IPA countries, to address the climate change theme as an additional topic of the project.

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Scope of the SC:

Planning the next activities and Sharing thoughts

The SC was very short since most of the morning was dedicated to common discussions about results and further interactions. All partners agreed that valuable progresses were done in terms of data collection and assessment of human impacts. However, there was also a general acknowledgement that MPAs partners (e.g. Balears) should be more present. As in previous meetings, it was largely commented the need of a more intense participation from their side, stressing the importance of the inputs from MPAs managers. Results from AMAre can support future EU initiatives and strategies on marine management, including extra-MPAs areas but there are key topics (e.g. monitoring, management) that cannot be covered without the presence of MPA managers. The GA concluded with the idea of having a skype for completing the GA for planning next steps.