

Protecting Blue Horizons

The natural scientist

One possible scenario: Along the western coasts of an island in a temperate sea, a species rich ecosystem needs urgent protection. As a result, also the octopus population, a commercially important species for the local fishers can recover. Overfishing, particularly from destructive bottom trawling, pollution and invasive species, strain the ecosystems. In order to protect fish and octopus nursery areas and allow the juvenile individuals to grow, a Marine Protected Area (MPA) is being planned.

NB Another scenario can be chosen for all to fit your context better, applicable to all. See fictional map or use a map of a coastal area close by to help visualise the conflict areas between different interests.

MPAs are geographically distinct zones which aim at safeguarding the biodiversity through habitat protection, maintaining marine ecosystem healthy or restore them to a healthy state for the supply of ecosystem products and services. They are fundamental because they help to release the pressure on the habitats, on the species, and on entire ecosystems. Indeed, many human activities and all the phenomena linked to the climate change put a huge pressure on marine ecosystems.

Imagine being a natural scientist living and working in this Western Sicilian coastal region. You study this particular marine ecosystem to understand its structure, the dynamics and thus, the relationships between species and their habitat. Indeed, you should be consulted for the planning and managing of the MPA.

You are the lead scientist for the monitoring program of the MPA. You will monitor e.g. species diversity, the size composition of species, the habitat richness inside and outside of the MPA. Based on that you provide **indicators** which show the health state of the marine ecosystem. If the indicators reveal after some time that the ecosystem inside the MPA is recovering, for example having more big adults of different species in reproductive sizes, then you expect export of specimen outside the MPA. Among the indicators you use is a high biomass of fish species **bigger than the minimum reproductive size**. You get this information from www.fishbase.org (for all fish species, or easier from the FishBase Guide app, Google Play Store) and www.sealifebase.org (for other marine organisms).



An MPA works when species **populations** are healthy, when there is a **large variety of species** in different size groups which provide resilience. A functioning Marine Protected Area allows the ecosystem to flourish. Fish and the octopus can reproduce and grow. An MPA well managed in the long term will provide artisanal fishers around its boundaries a stable source of income.

You will show what are the **limits to the stress an ecosystem can sustain** and explain that beyond those limits, goods, services and activities will no longer be provided by the sea. You can show the different scenarios and outcomes with different levels of protection. Protecting the spawning area is the critical objective! Any disruptive activity in that critical area should be forced to take (and pay for) heavy precautionary measures to minimize its impact. That may reduce the profitability of such activity. You will explain that by protecting the spawning and nursery area, more resources will become available after a while for artisanal and industrial fishing, not to mention other economic benefits e.g. from potential or actual tourism and leisure.

Make sure you use language that non-scientists will be able to understand.