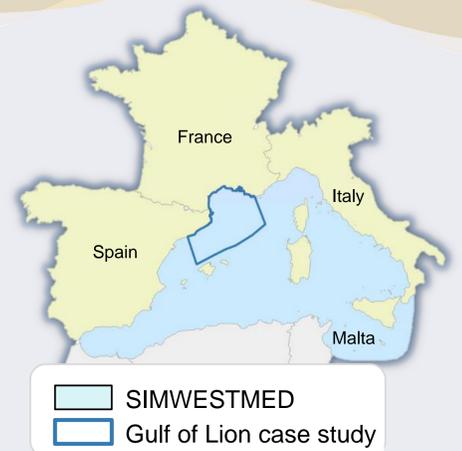


Cetaceans and seabirds: Exposure risk to anthropogenic pressures in the Western Mediterranean

The SIMWESTMED case study "Gulf of Lion" aims to demonstrate the cross-border cooperation between Spain and France in technical analysis to support implementation of maritime spatial planning (MSP). This case study draws perspectives on the evaluation of offshore anthropogenic pressures and their effects on cetaceans and seabirds.

These species are common in this area, have a high mobility and face multiple cross-border anthropogenic pressures. Furthermore, they are on the top of the marine food chain and are therefore good indicators of the global state of ecosystem.

Spanish-French collaboration was established to select, standardize and share relevant datasets (activities, pressures, ecologic components) between the two countries and to carry out first cumulative effect assessment attempts.



Gulf of Lion case study area

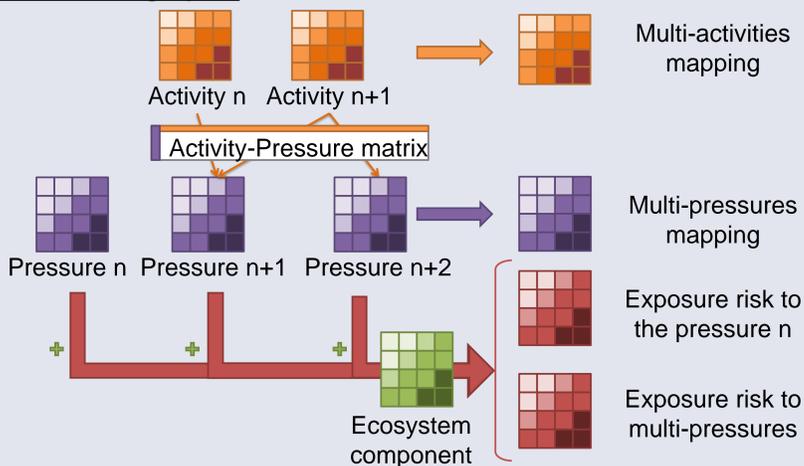
Dataset

Category	Type	Data source*	
Activity	Navigation	CEDEX	CEREMA
	Fishing	IEO	DPMA
Pressure	Noise	CEDEX	SHOM
	Marine litter	-	Pelagis observatory
Ecological component	Cetaceans and Seabirds	-	Pelagis observatory

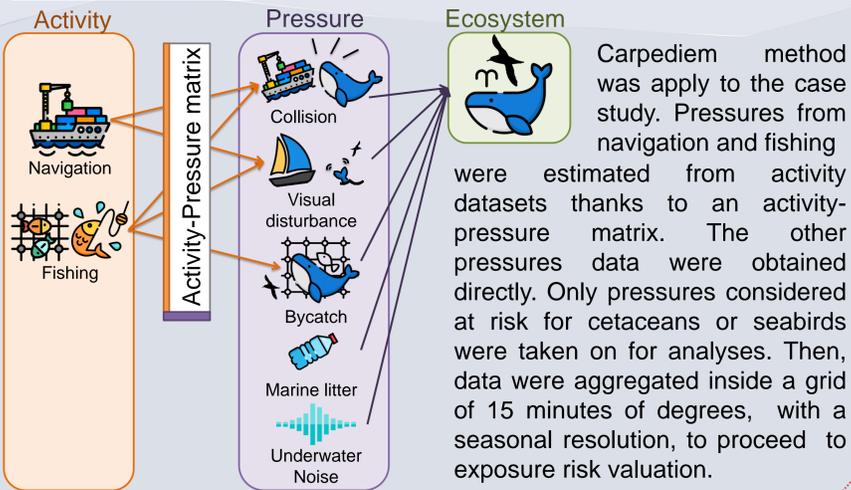
* CEDEX: Centro de Estudio y Experimentación de Obras Públicas (Spain), CEREMA: Centre d'études et d'expertise sur les risques (France), DPMA: Direction des pêches maritime et de l'aquaculture (France), IEO: Instituto Español de Oceanografía (Spain), SHOM: Service Hydrographique et Océanographique de la Marine (France)

CARPEDIEM methodology

Theoretical graphic

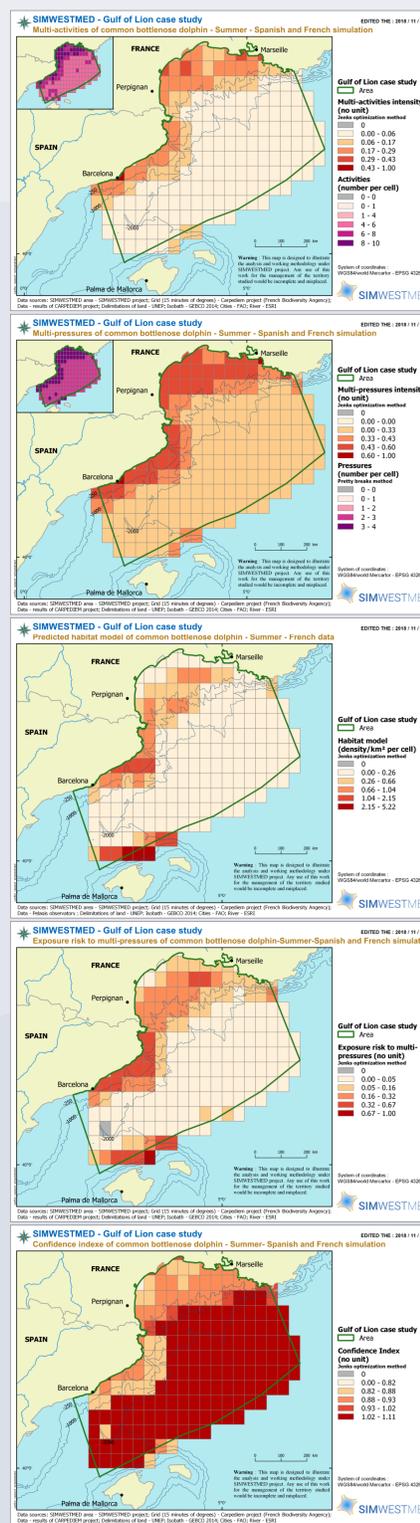


Method application



Results

Implementation example on the Common bottlenose dolphin



Multi-activities intensity

In this analysis, the considered activities are fishing (effort underestimated due to lack of data) and navigation.

The cumulative activities intensity is concentrated on the continental shelf.

Multi-presures intensity

Pressures took into account where selected with regards to their effect on the bottlenose dolphin, thanks to expert judgment. Considered pressures are continuous underwater noise, bycatch, collision and visual disturbance.

All these pressures occur on the continental shelf and extend up to the bank except for bycatch which mainly occurs along the coast. The cumulative pressures intensity is high and concentrated on the continental shelf.

Species Habitat model

This species is more frequently observed along the coast on the continental shelf, with a slightly higher abundance along the Spanish coasts and on the northern part of Balearic islands.

Data are from an unique aerial survey campaign in 2012, the assessment has to be interpreted with caution.

Exposure risk to multi-presures

The exposure risk to multi-presures is higher along the coast, with peaks on the Spanish coast and north of the Balearic islands.

These both peaks of exposure risk have two different explanations. The Balearic islands peak is explained by a high abundance of dolphins despite a low multi-presures intensity. The other peak is explained by a high multi-presures intensity and a moderate abundance of dolphins.

Confidence index

The confidence index concerns the exposure risk to multi-presures and is overall high on the whole area (minimum of 80 percent).

The lower index on the coast is explained by the confidence index of the input data : the majority of the input data is concentrated on the coast and has a lower index than the input data on the bank.

This first test in the Gulf of Lion allowed to initiate a cross-border collaboration and data sharing between France and Spain. It has taken a step forward in the assessment of anthropogenic pressures occurring in the pelagic domain, very poorly addressed until now.

However, it has also pointed out the well known issue of data availability and compatibility across border. There is still need for large scale comprehensive datasets encompassing the whole range of maritime uses and related pressures. Moreover, these analysis still need to be improved and validated to be effectively taken into account in cross-border MSP. Confidence in species distribution datasets need to be improved and knowledge on pressure effect on each species need to progress.

By delivering synthetic and understandable visual results (maps) this kind of approach is undeniably a progress to better inform MSP processes.