INTRASEAM - INTegRAting SEx in sustainable ocean mAnagement and observing systems for biodiversity conservation of the Mediterranean Sea

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Ocean managers are actively working to manage human uses and set effective conservation actions to protect the environment. Climate-smart solutions for reversing biodiversity loss rely on knowledge of how marine organisms, populations, and communities respond to climate change. A fundamental, but often overlooked biological characteristic of organisms is sex. Sex-specific responses to climate change have been documented for marine organisms across a broad range of ecosystems and taxa. However, any effort to protect species and habitats can fail if we do not consider sex-specific effects of our actions on male, female, and hermaphrodite organisms. Recognizing and addressing these issues is crucial for ensuring long-term ocean health and supporting ecosystem service provisioning.

With INTRASEAM, I propose a novel approach to sustainable ocean management by integrating knowledge of sex-specific biological processes and adapting management strategies to climate-induced changes affecting them. I will combine sex-specific policy analysis, habitat and niche modeling, marine spatial prioritization, and sex-specific cumulative effects assessment to elaborate a portfolio of management measures for sex-sensitive sustainable ocean management. This novel sex-specific approach to conservation problems will produce an innovative understanding of the effectiveness of conservation actions on population and ecosystem dynamics to boost ecosystem service provision. It will also advance climate-smart solutions for adaptation and mitigation in biodiversity conservation by integrating sex as an Essential Ocean Variable in global ocean observing systems.

INTRASEAM will co-produce useful and usable sex-specific knowledge with managers and experts to innovative ocean observing systems and ocean management to achieve sustainability, addressing cultural bias that hamper the application of sex analysis in management practice.

The innovative approach of INTRASEAM will be tested in the Northern Mediterranean Sea, and specifically to the Italian Maritime Spatial Planning initiatives. The transferability and impact of INTRASEAM will be granted by nesting the engagement, capacity building and educational activities, and the interoperable data service in the Italian National Biodiversity Gateway.