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Integrating functional and trophic approaches for a better management of exploited ecosystems in the Celtic Sea.

The state of marine ecosystems is more often reduced to the assessment of exploited stocks than to the state of the ecosystem as a whole. Few studies integrate both functional and trophic approaches. In the context of ecosystem approach to fisheries, this PhD proposal seeks addressing this gap for a better representation of Celtic Sea communities, an ecoregion under a strong fishing pressure. This work will provide a more integrated vision of complex ecosystem and communities' responses to exploitation through the studies of three main and complementary axes: i) the spatio-temporal modeling of diversity patterns and its structuring factors (fishing effort, depth, sediments types, ….), ii) the structure and stability of the trophic network, iii) the vulnerability of benthic biodiversity to trawling effort. Developing these research themes will allow answering several issues on the sustainability of marine resources while preserving the functional potential and the resilience of marine ecosystems. This PhD project responds to the strong request of France, but of Europe as well, for an ecosystemic approach of fisheries including explicitly biodiversity components.