L'Animation Scientifique

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> JEUDI 05 MAI 2022, 13h45 \ 14h30

Spatial closure or effort reduction as a tool for managing mixed fisheries in the Gulf of Lion, Western Mediterranean Sea

In the Mediterranean Sea over 80% of the total assessed stocks are over exploited with levels around 2-3 times that of FMSY, including 97% of demersal stocks. This has led, in the western basin, to the first multi-annual West-Med Management Plan initiated in 2020. Its primary objectives are to reduce fishing effort to reach FMSY for all demersal species by 2025 and reduce juvenile catch of European hake, whose stock is considered collapsed. Early efforts have so far shown to benefit species, such as red mullet, with several seasonal spatial closures proposed to speed up recovery effects, particularly for hake juvenile and spawner concentrations. However, under current model assumptions, hake recovery by 2025 is not possible. To test and prioritise alternative management measures, we use an ISIS-Fish model parameterized for the mixed fisheries of the Gulf of Lion, which was initially co-constructed with fishery stakeholders' inputs and focuses on the hake population. We assess the consequences of effort reduction and spatial management on fleet multi-specific outcomes and hake recovery, while further disseminating the effects of their implementation on catch weight, the catch-at-age, and potential for individual fleet segments while accounting for fishing effort reallocation. Our results show that intense effort reduction can yield greater catch weights after only one year of implementation. Increases in population biomass under these intense all-at-once effort reductions measures also led to gains 25 to 50 times greater than gradually applied effort reduction measures, and 50 to 100 times greater than spatial closure measures alone. Through combining spatial closures and effort reduction measures, explicit age class response patterns, which varied by population zone, for both biomass and catchweight were also realised. Accounting for three sources of uncertainty: rate of dispersion, recruitment levels, and initial abundance, 18 alternative hypotheses per scenario were simulated with scenarios ranked against each other. While no change in scenario biomass ranking was present from these analyses, catchweight and revenues were slightly affected by the chosen hypothesis. Greater variances were also seen with spatial closure scenarios, for which the model uncertainty was also the greatest. Our study reiterates the need for clearer management objectives when applying age specific measures and demonstrates how combined management tools can be used to achieve different outcomes.

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Séminaire accessible sur ZOOM :
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Jeudi 19 mai 2022 à 13h45 : Esméralda Longépée et Claire Golléty (UMR ESPACEDEV / CUFR de Mayotte)
"Local Ecological Knowledge on Mangroves in Mayotte Island (Indian Ocean) and Influencing Factors"