

MareFrame



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Simulating the effect of alternative management solutions in the mixed fisheries of the Strait of Sicily using the Atlantis end-to-end ecosystem model

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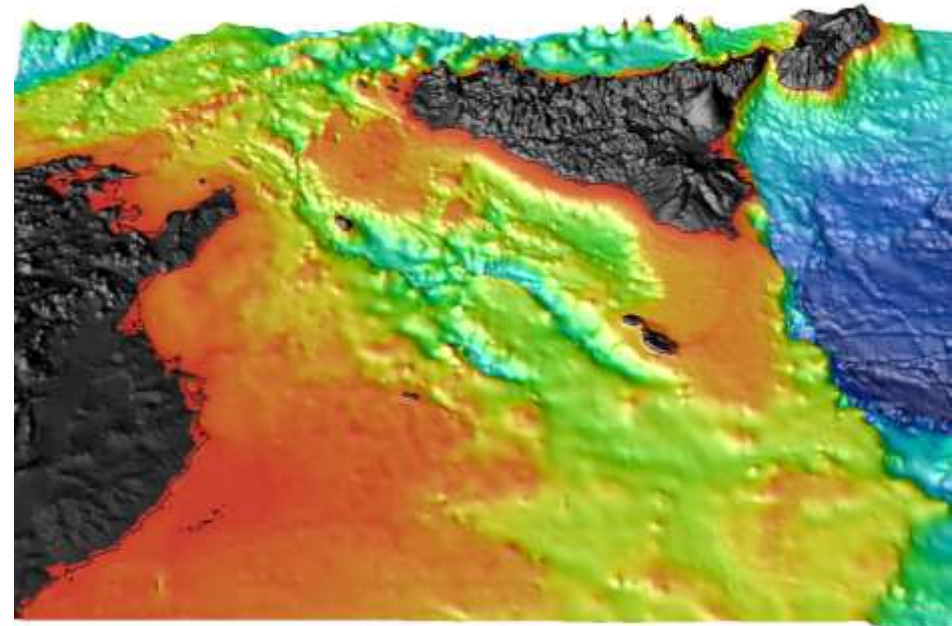
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The Strait of Sicily

- **Complex ecosystem**
- **Multi fisheries**
- **Generally overexploited**



Colloca talk on CS



Main objective: explore strategies to achieve sustainability of SoS trawling fisheries



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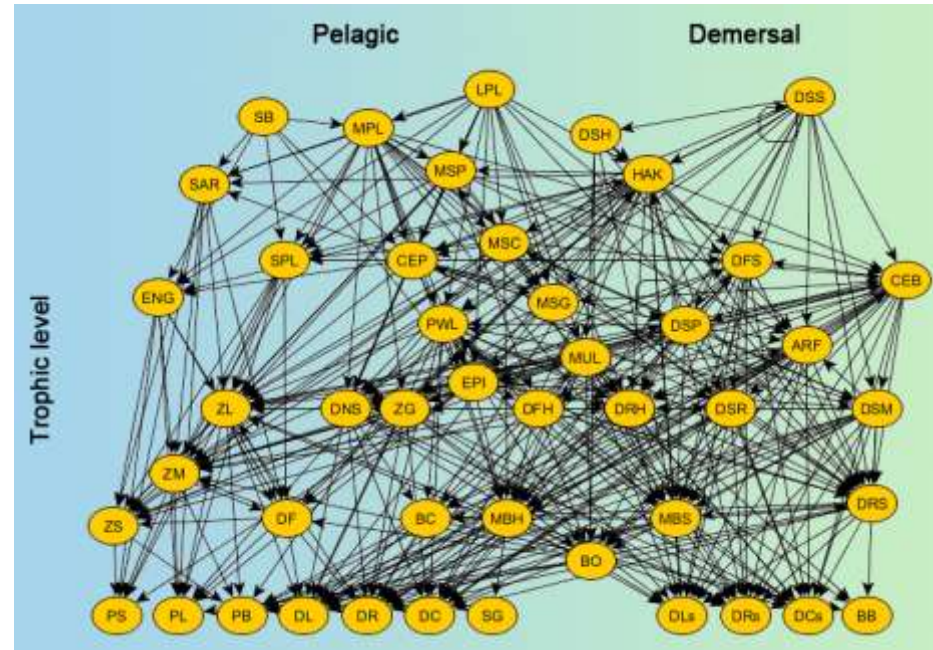


Model I - ATLANTIS

37 box based on biophysical characteristics

454 spp. → 58 FG

- 26 vertebrate groups
- 6 target species
 - Anchovy
 - Sardine
 - Hake
 - Red mullet
 - Common pandora
 - Deep water rose shrimp
 - Red prawn



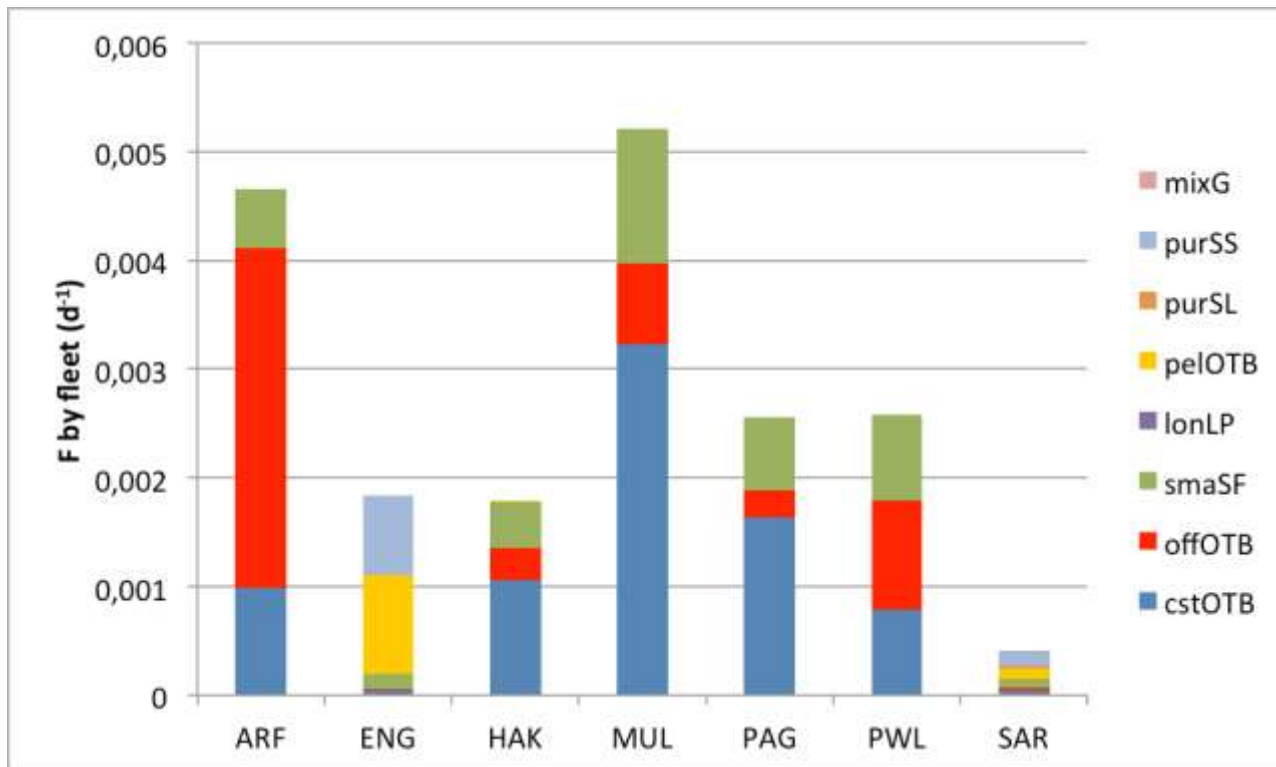
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Fisheries

- coastal bottom trawl
- offshore bottom trawl
- small scale fishery (fixed gears)
- longlines large pelagics
- pelagic trawl
- purse seine large pelagics (tuna)
- purse seine small pelagics (sardine + anchovy)
- mixed gears

- cstOTB OTB-24
- offOTB OTB-40
- smaSF
- lonLP
- pelOTB
- purSL
- purSS
- mixG





New knowledge

- Systematic gathering of information available on the SoS ecosystem

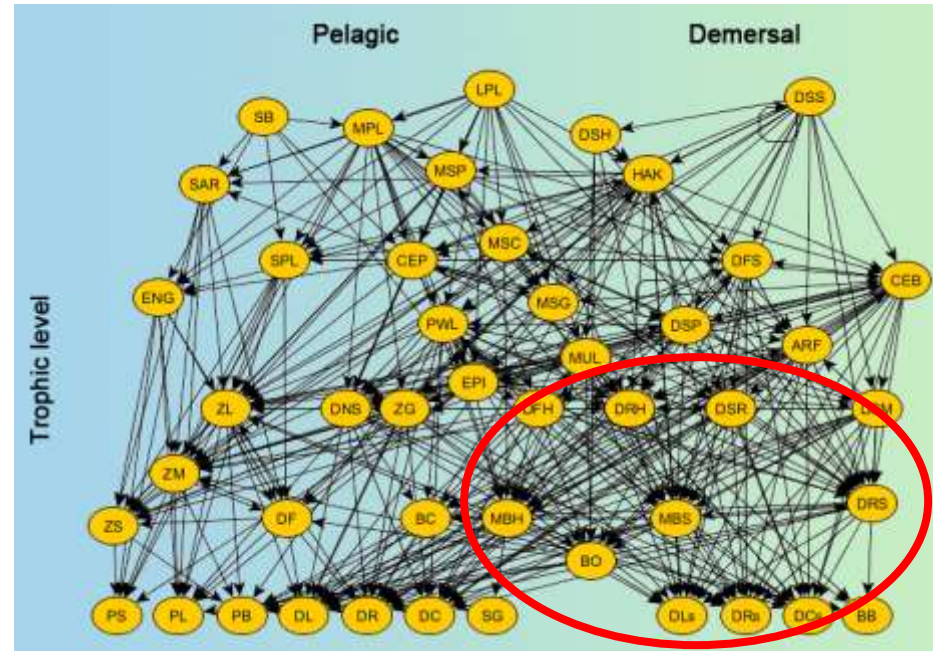
Di Lorenzo M., Sinerchia M., Colloca F. Hydrobiologia 2017.

- Improved representation of trophic interactions

From a FishBased diet matrix to stomach content data

- Spatial distribution of benthic invertebrates biomass

- Division of some FG to shelf and slope



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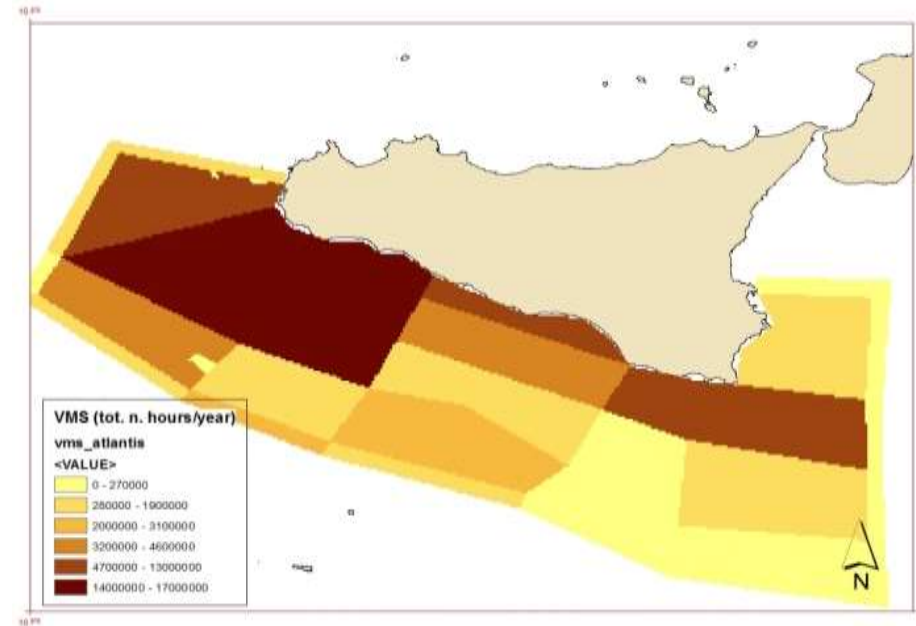
- Improved representation of trophic interactions

From a FishBased diet matrix to stomach content data

- Spatial distribution of benthic invertebrates biomass

- Division of some FG to shelf and slope

- Use of VMS data



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Methods

Selected management plan scenarios

BAU

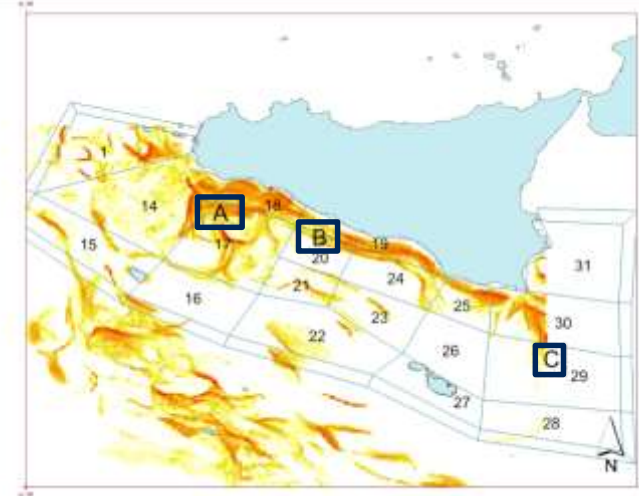
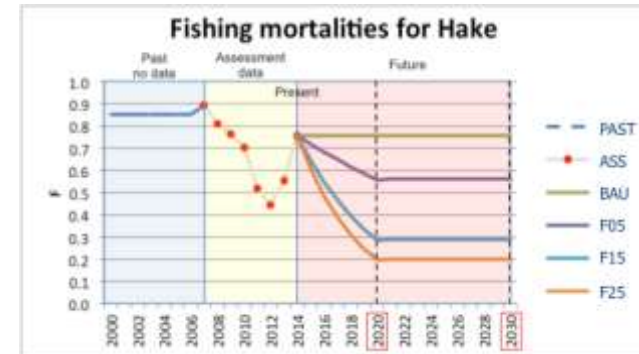
Effort reduction

- $F \rightarrow F_{MSY}$ by 2020 for DPS (low reduction) 5%
- intermediate 15%
- $F \rightarrow F_{MSY}$ by 2020 for HKE (high reduction) 25%

Fisheries restricted areas (3 areas)

Improved gear selectivity

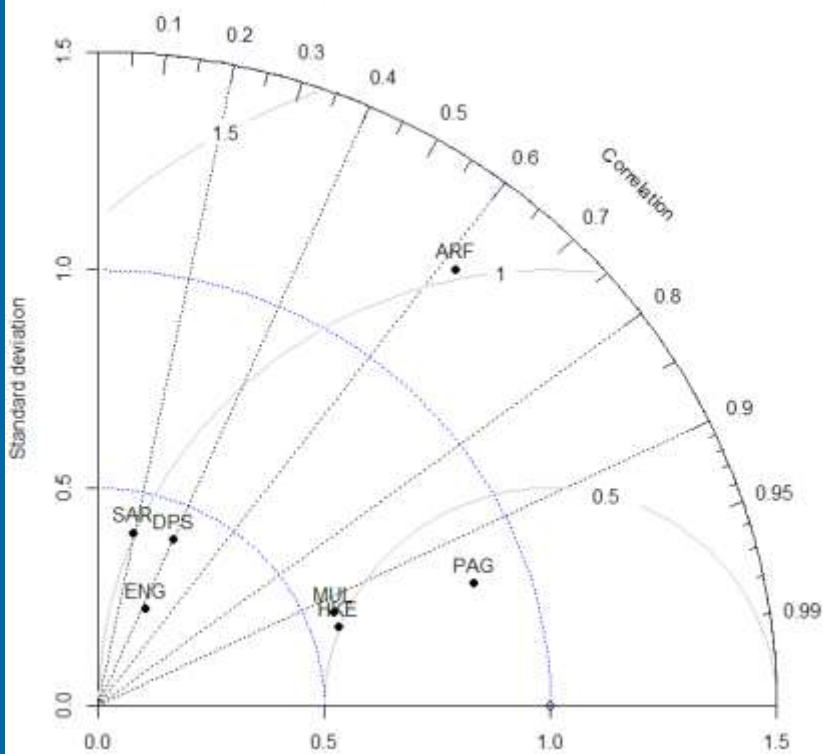
Application of social economics evaluation of management scenarios



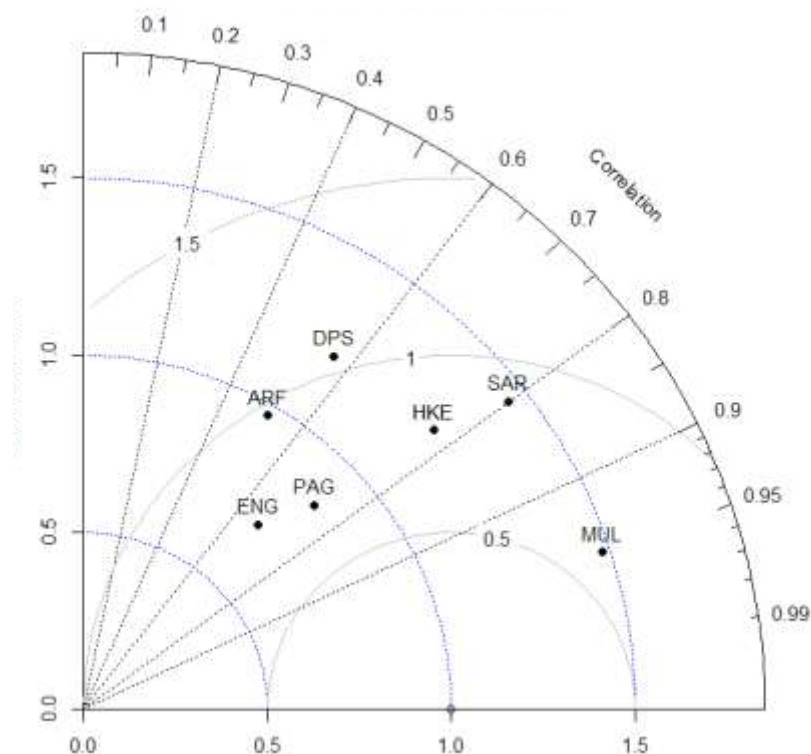


Results – Target species

Biomass

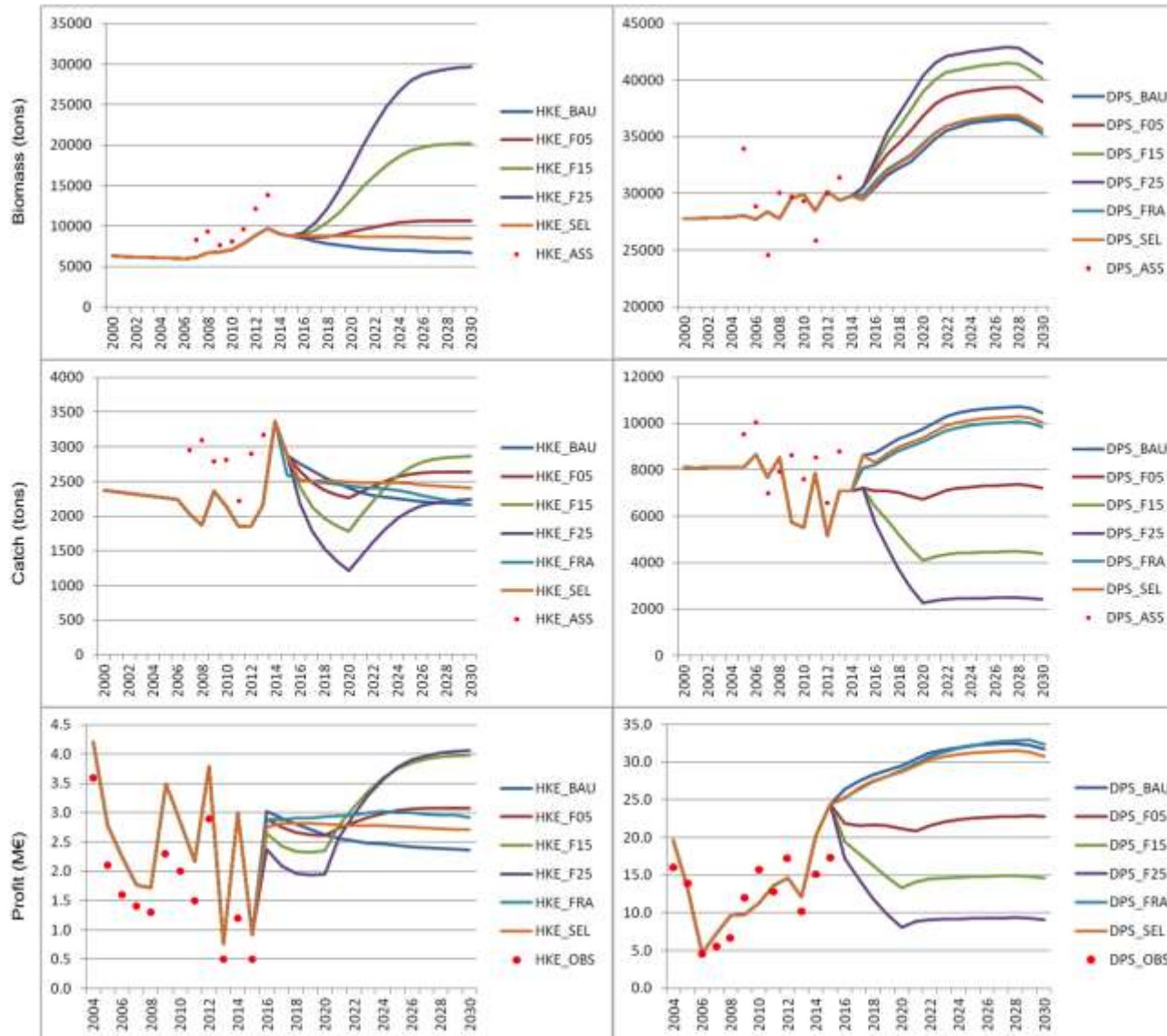


Catch





Results



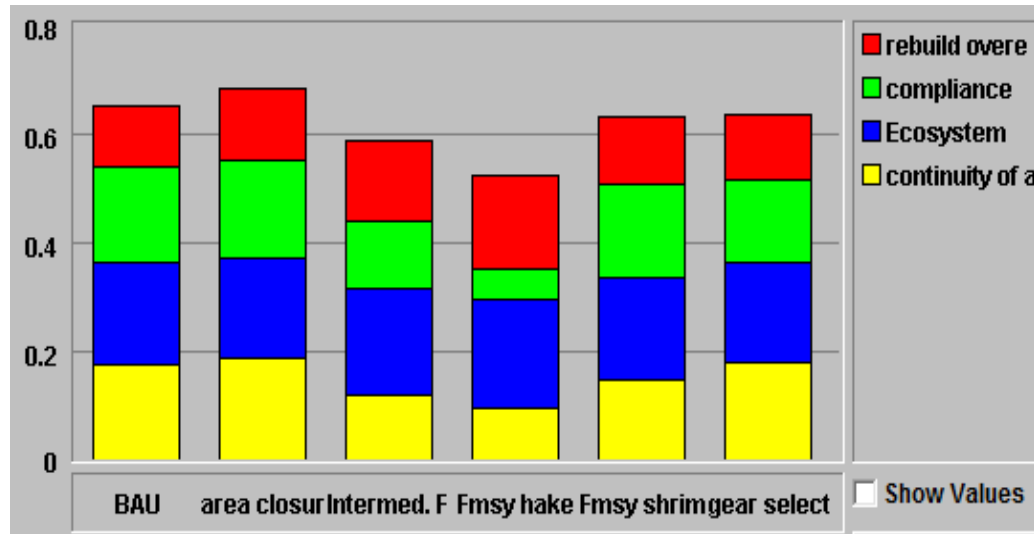
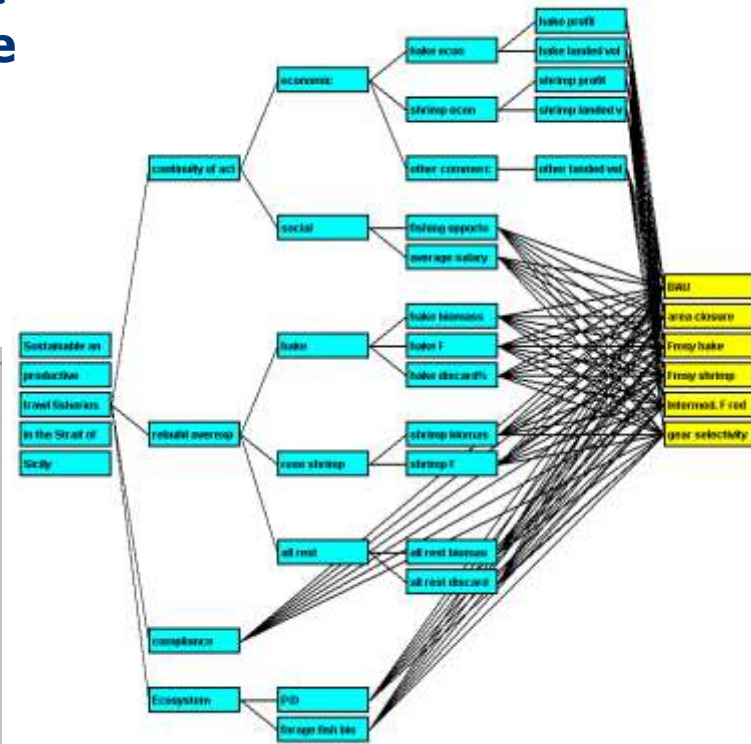
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Tools

Decision support disentangles the multiple EAFM goals of the mixed shrimp and hake fishery in the Strait of Sicily.

M. Rahikainen, M. Sinerchia, M., Colloca F.



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