



MANTIS: Marine protected Areas Network Towards Sustainable fisheries in the Central Mediterranean

MINOUW : Minimizing unwanted discards in European fisheries

Strait of Sicily stakeholders meeting report

**CNR, Mazara del Vallo, Sicily
26 october 2018**

Results sharing meetings



G. Prato, T. Russo, S. Vitale, F. Fiorentino



MEETING OBJECTIVES

On the 26th of October a meeting to share and discuss with stakeholders the results of both the Mantis and Minouw project was held in Mazara del Vallo, Sicily. Twenty stakeholders were welcomed to the meeting, including representatives of regional institutions and control bodies, national fisheries associations, local producers organizations and local fishermen cooperatives, local and national research centres.

The objectives of the meeting were to:

- Share and discuss the fisheries management scenarios simulated within the Mantis project for the Strait of Sicily
- Share and discuss the results of the Minouw project on the tested solutions to increase gear selectivity and reduce discards at sea.

The meeting lasted 3h following the agenda below:



Mantis – Minouw Meeting

Istituto per le Risorse Biologiche e le Biotecnologie Marine (IRBIM)
Consiglio Nazionale delle Ricerche (CNR)

Mazara del Vallo (TP)

26 ottobre 2018

Agenda

- **10:00** *Gioacchino Bono* CNR-IRBIM di Mazara del Vallo: Welcome
- **10:10** *Fabio Fiorentino* CNR- IRBIM e *Giulia Prato* WWF-Italia: Presentation Mantis e Minouw projects and meeting objectives ed obiettivi del meeting
- **10:30** *Tommaso Russo* Conisma- Uniroma2: Mantis project results on fisheries management scenarios in the Strait of Sicily
- **11:00** *Sergio Vitale* CNR-IRBIM: Minouw project results for discard mitigation of trawling in the Strait of Sicily
- **11:30** Coffe Break
- **12:00** Discussion with stakeholders
- **13:00** *Fabio Fiorentino* CNR-IRBIM: Conclusions



After the participants welcome and acknowledgement from the CNR Director Gioacchino Bono, project coordinator Fabio Fiorentino recalled the correlated objectives of the 2 projects: protecting fish stocks by closing fisheries in areas of high juveniles concentrations (Mantis) and by increasing gears selectivity to reduce juveniles' bycatch (Minouw) . Fiorentino recalled the importance of having an open discussion with stakeholders, whose feedback has been key in the identification of the best management scenarios in the Mantis project, as well as in the development of technical solutions for gear selectivity in the Minow project.

OVERVIEW OF MINOUW RESULTS ON TECHNICAL SOLUTIONS. Giulia Prato

Giulia Prato, WWF, provided an overview of the Minouw project results, presenting the main technical solutions identified for improving trawl nets selectivity: led lights in Tuscany trawlers (the video was showed), T90 panel in Catalanian trawlers and grids in Sicilian trawlers. An overview of the project website was also provided to show where information on technical solutions of interest can be collected. The presentation highlighted the need for fishers to urgently adopt such technical solutions, in order to be able to comply with the Landing Obligation for demersal species entering into force on the 1st January 2019. With this regard, the recent Medac advice was recalled, which asked for management plans where technical measures to improve selectivity are included as condition-sine-qua-non for obtaining de minimis exemptions .

OVERVIEW OF MANTIS RESULTS ON MANAGEMENT SCENARIOS. Tommaso Russo

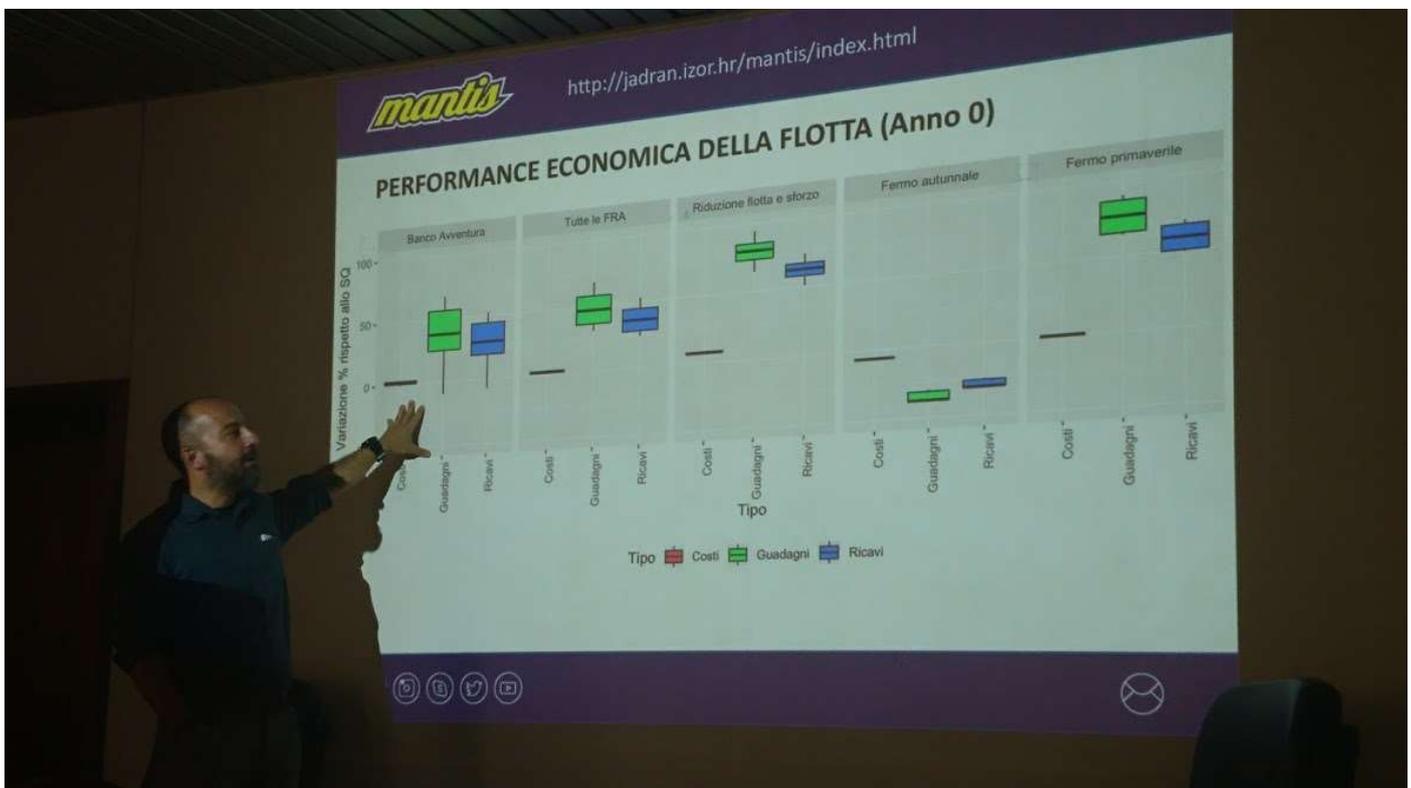
Tommaso Russo presented the production maps of the 4 target species (hake, red mullet, deep water rose shrimp and red shrimp) in the Strait of Sicily, compiled through the integration of scientific data and fishers knowledge collected during the project introductory meetings. Discussion:

- Domenico Asaro, local fisher: **requests a more detailed geographical map to verify the accuracy of the presented data**, particularly concerning the red shrimp autumn fishing area located 60mile north Lybia, which does not appear to be a fishing area for the Sicilian trawlers. He also expresses disagreement with the presented levels of production, with the example of 3000 kg/30 m boat, being not realistic to his knowledge
- T.Russo: shows the maps presenting the overlap among the age-cohorts distribution of catches for each species and the existing Fisheries Restricted Areas.
- Giampaolo Buonfiglio: expresses surprise for the absence of juveniles in the southernmost FRA
- F.Fiorentino: clarifies that the FRA was established for hake which was demonstrated to be there according to surveys conducted until 2003. The area was not monitored since then, hence data used for the current maps only includes 2012-2016 surveys.
- G.Buonfiglio: **Suggests that the areas showing high productions for both adults and juveniles should be considered as important areas where selective grids identified with the Minouw project should be used.**
- Germana Garofalo: specifies that the apparent overlap between adults and juveniles' high concentration areas is mostly due to the low resolution of the map. Higher resolution maps with bathymetry would be needed to show the absence of overlap.
- D.Asaro: stresses that fishers don't target juveniles, but only adults that inhabit 700-1000 m depths . Fishers don't target 300-500m grounds knowing they are inhabited by juveniles
- F.Fiorentino: recalls that some fisheries (such as Sciacca) are forced to fish juvenile fish, not having vessels of enough size and power to target deeper and further grounds such as the Mazara vessels.



T. Russo presents the tested management scenarios:

- status quo
- 1. 1 year closures of all protected areas of the SoS
- 2. 1 year closure of the SoS FRAs
- 3. 8% fleet reduction and 5% effort reduction (according to the Sos management plan)
- 4. 1 year closure of the whole Adventure Bank (scenario decided upon the feedback of fishers in Porto Palo)
- 5. Autumn ban (sept-oct) + after-ban regulation of effort (3 fishing days per week during 2 months) (suggested by Porto Palo fishers)
- 6. Winter ban (feb-march) + after-ban regulation of effort (3 fishing days per week during 2 months) (suggested by Porto Palo fishers)



Effects on effort dislocation

- **Scenario 4 - Adventure bank closure:** Fishing effort increases in farther areas close to North Africa and along the borders of the closed area
- **Scenario 3 - Capacity and effort reduction :** Fishers' highlight the need to consider tunisian vessels, 300 boats operating offshore. The fleet is expanding ,the area must be closed for everyone and research institutions must collaborate to monitor them. T.Russo states that the observation is relevant, but there is no available data about Tunisian fishing effort, since they don't have VMS or AIS. Suggests that data could be collected by the Mazara fishers ,while the data-collection will improve (mentions pilot studies testing VMS on Tunisian vessels)

Effects on economic performance:



- **Scenario 4 - Adventures bank closure:** no effect on costs, improvement on incomes and revenues
- **Scenario 3 - Capacity and effort reduction:** no effect on costs, even higher improvement on incomes and revenues (due to reduced completion among boats)
- **Scenario 2 - All FRAs closures and Scenario 6- winter ban:** no effect on costs ,improvement of incomes and revenues
- **Scenario 5 - Autumn ban:** no effect on costs ,reduction of income and revenues

Effects on Spawning Stock Biomass

- **Deep-water rose shrimp:** equilibrium is reached in all scenarios after an initial decline in the resource. The autumn ban scenario performs better in terms of stock recovery – after a strong reduction, the stock doubles its size in 6 years.
- **Hake:** only the Adventure bank closure scenario has an effect, very positive. The closed Bank acts as a lung for the stock. This scenario has the most positive effect
- **Red mullet:** Best scenarios are Adventures bank closure and autumn ban. The closure of all FRAs has no effect.
- **Red shrimp:** Large positive effect from the autumn ban. Adventure banks closure has no effect

Table 1. Synthesis of scenarios effects

Effect on economic performance	Adventure Bank	FRAs	All protected areas	Capacity and Effort reduction	Autumn ban	Winter ban
Costs	Grey	Grey	Grey	Grey	Grey	Grey
incomes	Green	Green	Green	Green	Red	Green
revenues	Green	Green	Green	Green	Red	Green
Effect on Spawning Stock Biomass	Adventure Bank	FRAs	All protected areas	Capacity and Effort	Autumn ban	Winter ban
Deep-water rose shrimp	Green	Green	Green	Green	Green	Green
Hake	Green	Grey	Grey	Grey	Grey	Grey
Red mullet	Green	Grey	Grey	Grey	Green	Grey
Red shrimp	Grey	Grey	Grey	Grey	Green	Grey

Discussion:

- T.Russo: To have a real effect on species biological cycles, large areas must be closed, however this might negatively affect other species since the fleet is forced to insist in other areas. **The Adventure bank closure is the most promising scenario in terms of improved production, improved size of the catches and hence improved revenues on the market. If no spatial measures are considered, the most promising scenario is the Autumn ban, followed by a regulation of effort.**
- F.Fiorentino, G. Buonfiglio: economic performances are only referred to the first year after the application of the measure. The reduction in revenues foreseen (e.g. following the winter ban) will be balanced by the rapid increase in production of the stock. **Longer term predictions are needed also for the economic performance of the fleet, and the Tunisian fleet activity must also be included.**

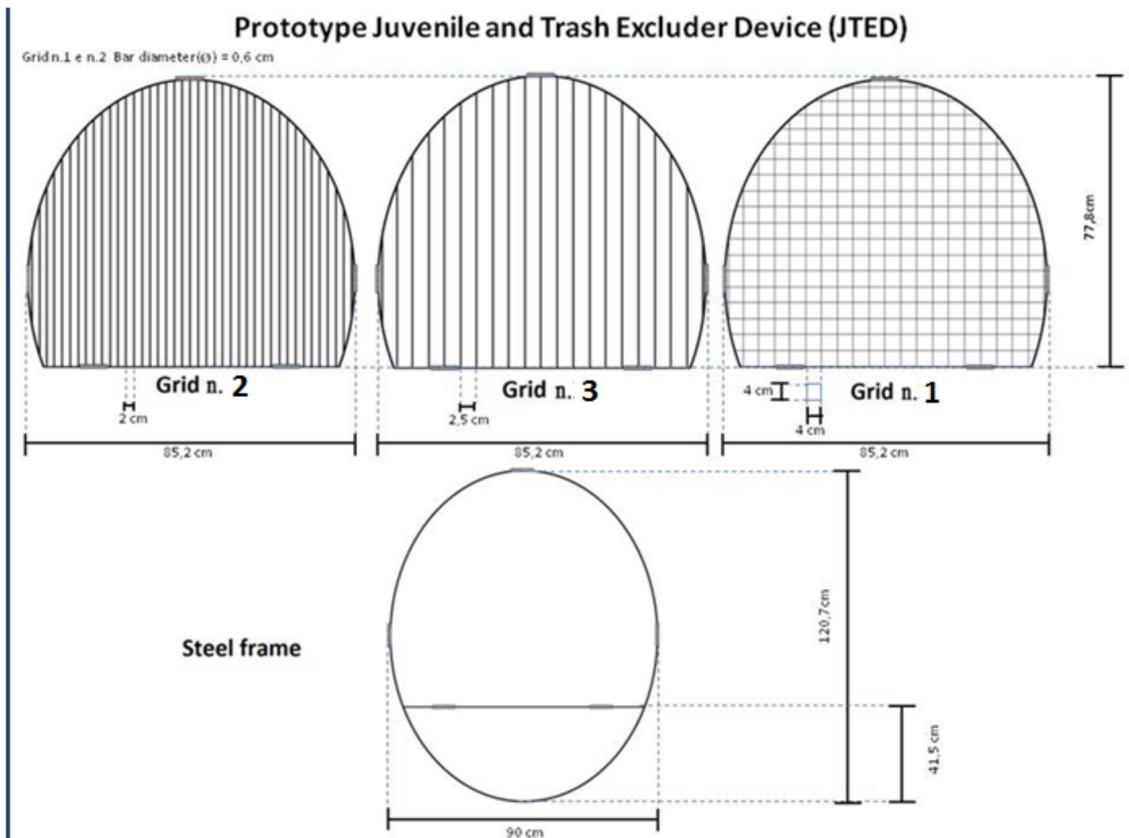


- T.Russo: It is possible to estimate the Tunisian activity, also for the vessels not having vms or ais. Official fleet register data are needed, plus the knowledge of the Mazara fishers on the tunisians' activity. A discussion needs to follow on whether the closure simulations should be tested for both Italian and Tunisian fleets or accounting for a Tunisian non-compliance.

DETAILED RESULTS OF GRID TESTS – MINOUW. Sergio Vitale



After reminding project objectives and working packages, Sergio Vitale focused on the results of the tests performed to improve bottom trawl selectivity and reduce juvenile discards through the application of Juveniles Trash Excluder Device (JTED). Target species of the fishing activity are the Deep Water Rose Shrimps (DPS), while the by-catch species are mostly European hake (HKE) and horse mackerel. An interchangeable system was projected to adapt, on a fixed frame, three grids with different selectivity (Grid 1, Steel & Net, mesh size 40 mm square; Grid 2, Steel, space among the bars 2 cm; Grid 3, Steel, space among the bars 2.5 cm). The sampling design consisted in repeated hauls (with grid and without grid) using a local commercial fishing vessel. Forty-eight trawl hauls were carried out on 7 days over the same geographical coordinates during November 2015. In September 2017 a new survey was conducted with the same vessel for a total of further 42 hauls.



Square mesh grid (Grid 1) was the most efficient in reducing shrimp and hake juveniles.

New tests will be performed during the commercial fishing activity, in order to simultaneously test the grid effect with paired trawls, one equipped with a grid, one without, as control.

The main problem identified was the occlusion of grids with macro-zoobenthos, when fishing trawler targeting fish on rocky-habitats. The potential solution will be to adopt a double net (as already used in the commercial activity) – with a vertical-bars grid (2 cm) installed on the upper net, and a lower net with larger mesh size which will allow the exit of macro-zoobenthos.

Discussion:

- F. Fiorentino: suggests that, based upon the Mantis results, area closures alone are not sufficient to allow stock recovery, but must be integrated with additional measures, one of which could be the identification of buffer areas around the nurseries, where fishing is allowed only to trawls equipped with selectivity grids.
- Buonfiglio: demands whether any effect was seen on the commercial target.
- S.Vitale: with grid 1 (built with a net of 40-mm square mesh) there is an overall loss of –60% and –44% DPS and HKE juveniles, respectively. A good efficiency in reduction of undersized specimens using grid 2 (DPS – 59%; HKE –34%,) and grid 3 (DPS –73%; HKE –38%). However, the latter showed quite a high loss of the marketable DPS fraction (–36%). These % were calculated on 1 hour experimental haul, hence it is paramount to perform the test during the real fishing activity.

Net efficiency depends on the haul duration and the time of the day: very high differences are seen between day and night hauls. At night grids are more efficient for DPS (from -45% during the day to -73% at night than



the control) while for HKE its appear more efficient during the day (from – 50% during the day to -5% during the night than the control), since, during the night, juvenile hake swim towards the surface.

- Buonfiglio: **suggests to use grids to reduce juveniles at night, and to compensate the loss in the commercial fraction by using the lights as in the Tuscany Minouw site example. Lights in fact allow to increase the commercial fraction of the catch.**
- T. Russo: suggests it would be useful to evaluate the economic efficiency of the grids, considering the gain in time due to reduced processing and better prices on the market for higher quality catches.
- Alfonso milano: stresses that consumers nowadays prefer large shrimps to be consumed raw. For this reason Esselunga buys deep water rose shrimp at 15 eur/kg. It would be interesting to think an integration of the grid system with a set of overlaid folds that automatically select the sizes of the catch, avoiding the manual processing. EMFF funds could be used to develop this kind of solution.
- S. Vitale reminds that such a solution would have a mechanical impact on the catch due to the passage of the animal through different levels. Fiorentino suggests that more modern boats are needed, built with the objective of valuing better the catch directly onboard.
- S. Vitale: suggests to couple the use of grid to closures of nursery grounds, where only boats equipped with grids are allowed to fish, and to provide a sustainability certification to such boats as an incentive to adopt grids. Consumers are increasingly aware of environmental issues also related to fishing, as demonstrated by a study performed for Auchan, where consumers were available to spend up to 14% more for a certified product.
- Buonfiglio: asks if grids have been tested only with a rigid structure. Vitale explains the structure is rigid but the 3 types of grids are easily inter-changeable. Interesting would be to test steel grids which could be rolled up. A similar example exists in Norway, where on 35 m boats the crew is made of only 2 people, everything being authomatised.
- Buonfiglio: asks if the cost and operational complexity for gear modifications to apply grids has been evaluated.
- S.Vitale: **applying grids to nets is very easy. One grid has an average cost of 600-700 euros. It is likely that the cost would be lower for a bigger purchase from the sector. Grid installation is straightforward, as testified by boat captains and warehouseman.** The cone of the current grid prototype could also be substituted with a net working as a launching platform. The only problem related to grids is the risk of rocks being stuck in the grid when fishing for fish on rocky substrates (not shrimp). However this should be solved by using a double net – with lower net having very large mesh size. Rocks would roll into the lower net and would be released through the mesh or a pannel. This solution is already used in commercial nets for the same reason.
- Buonfiglio: states that the loss in 7% of the target catches would surely slow fishers to accept grids. It would be necessary to impose grids as only condition to fish in certain areas.
- Fiorentino: **agrees that grids use should be imposed in the management plans in particular for fishing in juveniles concentration areas.**
- Buonfiglio: **suggests to close GFCM FRAs in the Strait of Sicily with an additional surrounding buffer zone with limited access to boats equipped with grids.**
- T. Russo: stresses that fishers must see the advantage in such measure, otherwise they would never implement them (and controls are lacking)



- A.Milano: suggests **that the advantage for fishers adopting grids would be the facilitated access to EMFF measures**. E.g for measure 1.42 for fish products transformation onboard, only vessels adopting selective gear are eligible

CONCLUSIONS

MANTIS: The Adventure bank closure is the most promising scenario in terms of improved production, improved size of the catches and hence improved revenues on the market. If no spatial measures are considered, the most promising scenario is the Autumn ban (sept-oct) followed by an after-ban regulation of effort (3 fishing days per week during 2 months, as suggested by Porto Palo fishers)

Additional tests needed: Longer term predictions for the economic performance of the fleet are needed and the Tunisian fleet activity must also be included. Tunisian activity might be quantified coupling official fleet register data with the the knowledge of the Mazara fishers.

MINOUW: Square mesh grid (Grid 1) is the most efficient in reducing catch of undersized shrimp and hake. Grids could be used to reduce juvenile catches at night, while adopting lights (see Tuscany site example) to compensate loss in the commercial fraction. One grid has an average cost of 600-700 euros. It is likely that the cost would be lower for a bigger purchase from the sector. Grid installation is straightforward, as testified by boat captains and warehouseman. Grids use should be imposed in the management plans in particular for fishing in areas of juveniles concentration. Eg. GFCM FRAs in the Strait of Sicily could be prohibited to fishing, while adding a surrounding buffer zone with access allowed only for vessels equipped with grids.

Fishers adopting grids would have facilitated access to EMFF funds, in particular measure 1.42

Additional tests needed:

- grid effect with paired trawls, (one equipped with a grid, one without, as control) during the commercial fishing activity, in order to evaluate real % of target catch retention.
- Net modification to use grids on rocky substrates, with a double net (doppio sacco - as already used in the commercial activity) – with a vertical-bars grid (2 cm) installed on the upper net, and a lower net with larger mesh size which will allow the exit of macro-zoobenthos and rocks





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Mazara del Vallo
26 ottobre 2018

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