



**GENERAL FISHERIES COMMISSION
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COMMISSION GÉNÉRALE DES PÊCHES
POUR LA MÉDITERRANÉE**



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**Proposal for a regional management plan for red coral
(Excerpt from document GFCM:SAC16/2014/inf.16: Report of the Workshop on the
Regional Management Plan on Red Coral in the Mediterranean,
Brussels, Belgium, 21–22 January 2013)**

1. BACKGROUND AND SCOPE OF THIS PROPOSAL

1. Following the request of its member countries, the GFCM has organized several technical meetings (in 1988, 2010 and 2011) to analyze the situation of the red coral population in the Mediterranean and to promote a consensus on management measures to be applied in order to avoid overexploitation in the GFCM area. In 2011, the Secretariat was mandated to produce a regional management plan for red coral (RMP-RC) by 2012. A first draft management plan was prepared by a team of the University of Cagliari (Dr Cau and his collaborators) under the supervision of the GFCM Secretariat. It was presented to the Subcommittee on Marine Environment and Ecosystems (SCMEE) (Italy, February 2013) who welcomed the proposal and it received then the approval of SAC (Italy, April 2013). At its thirty-seventh session (Croatia, May 2013), the Commission advised to review in the details some operational aspects of this draft plan and to assess its feasibility in all the areas of the Mediterranean, so that it could be fine-tuned and used as a basis for a more formal document to be possibly adopted at the next session of the Commission. On the occasion of the Workshop on the Regional Management Plan on Red Coral in the Mediterranean (Belgium, January 2014), this document was further discussed and examined.

2. This draft regional management plan has been conceived as a **precautionary, provisional and adaptive plan**. It is precautionary in the sense that it has been designed as a means to maintain the *status quo* of the resource in the absence of data to perform a formal assessment of the stocks at a regional scale. However, a lack of data does not imply that stocks are unmanageable: a precautionary approach has been used within the framework of adaptive management. The plan is also provisional and adaptive because it can be modified according to new information available to the SAC and it is flexible enough to accommodate existing management measures already in place in different countries, provided that these are stricter.

3. Geographically, the scope of this management plan encompasses the whole Mediterranean basin. Countries that currently develop harvesting activities for red coral should define stock units and limits. The occurrence of red coral is reported along all Mediterranean coasts. In Albania, Algeria, Malta, Monaco and Montenegro, harvesting red coral is prohibited while Croatia, France, Greece, Italy, Morocco, Spain and Tunisia exploit red coral under different national regulation frameworks. For Cyprus, Egypt, Lebanon, Libya, Slovenia, Syria, and Turkey, harvesting has never been reported to the GFCM.

2. OBJECTIVES

4. Following the *Guidelines on a general management framework and presentation of scientific information for multiannual management plans for sustainable fisheries in the GFCM area*¹, the RMP-RC is aimed at counteracting overfishing (reported to occur in many areas, especially for shallow populations) and at preventing it in areas where the resource is not fully exploited, while ensuring long-term yields.

5. The overall objective of the plan is to maintain stock size at levels that can produce the optimum sustainable yield while minimizing the risk of collapsing stocks due to unsustainable fishing.

Operational objectives:

6. As proposed in the draft RMP-RC, the provisional operational objectives (Oob) that are based on the existing binding recommendations of the GFCM (Rec. GFCM/35/2011/2 and Rec. GFCM/35/2012/1) are the following:

- **RMP-RC Oob1:** To control that the legal size limit for harvesting red coral colonies is enforced at the GFCM level;
- **RMP-RC Oob2:** To maintain the same catch level as that of the three previous years in order to keep the fishery working while waiting for a consistent assessment of red coral populations based on sound scientific information.

3. INDICATORS, REFERENCE POINTS AND DECISION RULES

7. In order to measure management performance in the achievement of objectives, an indicator as well as its corresponding reference points (RP) have been defined for each Oob.

8. Each RP has three associated values:

- **Target reference point (TRP)**, corresponding to a situation considered as desirable and to be achieved on average;
- **Limit reference point (LRP)**, indicating a situation that is undesirable and to be avoided at all costs;
- **Threshold or Precautionary reference point (PRP)**, i.e. a threshold from which initial actions can be taken to reduce the risk of breaking the limit.

9. Specific actions to be taken in order to keep RPs to sustainable levels or to drive them back to the target, will be decided by each country.

10. In line with point 9 of the GFCM Guidelines on management plans, targets, thresholds and limit reference points should be defined along with a range of potential management actions based on available scientific and socioeconomic data on the resource. However, considering the peculiarity of the red coral resource and the structural lack of reliable and up-to-date data on actual yields and populations status in many areas of the distribution range, it is worth pointing out that the reference points that are frequently used in fisheries management (as advised at points 11–13 of the GFCM Guidelines) can hardly be applied to red coral at present. The proposed reference points reflect the paucity of information and should be regarded as provisional ones. A revision could be made on the basis of SAC advice and GFCM discussions.

11. Each Oob is associated to a decision rule. The decision rule serves to trigger a management action. The action to be taken will depend on the position of the indicator that is relevant to the reference point. The current RMP-RC leaves the selection of those actions up to the countries and

¹ These guidelines are referred to as Resolution OTH-GFCM/36/2012/1 in the Compendium of GFCM decisions.

advises to use measures that are rated as efficient and take into account the socioeconomic impacts of the proposed measures.

Operational objective 1: To control that the legal size limit for harvesting red coral colonies is enforced at the GFCM level

12. The indicator for this objective is the mean size (basal diameter) of landings. In the original proposal, the value of the **target** reference point for **RMP-RC Oob1** had been defined on the basis of the current size limit set by GFCM Recommendations which foresee a 10 percent allowance in live weight for undersized colonies. The **limit** reference point for **RMP-RC Oob1** had been defined as double of the TRP, which means that 20 percent of live weight of undersized coral colonies in landings is considered as the limit situation to be avoided at all costs. A **threshold** at 15 percent had been established as an early warning, indicating that the values are approaching of the limit and that actions should be triggered in order to reduce the risk of breaking the limit reference point (LRP).

Table 1: Decision control rules and actions for Oob1 of the regional management plan for red coral

Decision control rules	Actions to be triggered
Percentage of undersized colonies = 0%	<ul style="list-style-type: none"> ▪ No action
0% < Percentage of undersized colonies ≤ 10%	<ul style="list-style-type: none"> ▪ Recommend stricter control
10% < Percentage of undersized colonies ≤ 15%	<ul style="list-style-type: none"> ▪ Recommend stricter control ▪ Survey to evaluate the actual size structure
Percentage of undersized colonies > 15%	<ul style="list-style-type: none"> ▪ Recommend stricter control ▪ Survey to evaluate the actual size structure ▪ Control harvesting ▪ Evaluate the possibility of close the fishing

13. The revision carried out during the workshop of Brussels in January 2014 has led to a proposal to reduce the values of the three reference points. Consensus has been reached to modify the values of the target reference point to a 0 percent allowance in weight of colonies under 7 mm basal diameter; the precautionary (or threshold) level has been set at 10 percent and the limit to 15 percent. No action is needed between 0 and 10 percent, but once this value is reached the actions suggested in the proposal should be triggered.

14. The workshop has agreed that according to the decision rules as established in Table 1, actions should be triggered when the value of the indicator overpasses the target reference point, and that besides those, in cases where the limit (15 percent) is overpassed, additional actions to control harvesting would be suggested before resorting to the extreme of considering the closure of the fishery.

15. The timeframe and geographical scale of the actions to be taken when the threshold or the limit RPs are overpassed will be decided by the Members provided that in the annual dataset to be transmitted to the GFCM, the country's total landings comply with the 2012 Recommendation (minimum legal size 7 mm with 10 percent tolerance based on total annual weight). Nevertheless, since stocks distribution is patchy and very local, countries should ensure that this average size will be also respected on a daily (or weekly) basis for all fishing grounds through the establishment of systematic (daily or weekly) control of catches at ports.

Operational objective 2: To keep red coral harvesting at sustainable levels

16. The indicator for this objective is the value of total catches (landings) in the GFCM area and it is more consistent with the GFCM Guidelines on multiannual management plans. In the original proposal, the target reference point for RMP-RC Oob2 was the average yield of the three previous

years, and precautionary and limit reference points were established at an increase of 10 percent and 20 percent in total landings. The target had been established assuming that average catches for the three previous years (as reported to the FAO global capture database) were at a sustainable level, but the workshop pointed out the need to base Operational objective 2 on formal stock assessments (e.g. maximum sustainable yield models, etc.) under the supervision of SAC rather than on FAO data due to a recognized lack of accuracy of these data. Moreover, it was noted during the workshop that many fisheries were data poor and not ready for such an analysis. In this regard, participants highlighted the urgency to collect catch data, transmit them to the GFCM Secretariat and start some exercise of stock assessment within the SAC framework. The importance of fisheries independent data coming from scientific surveys that are less affected by a subjective selectivity of fishers towards large colonies was stressed.

17. It was therefore decided to postpone the implementation of Oob2. The proposed framework for an adaptive revision over a three-year period has been seen as feasible and convenient in order to collect the necessary data and implement, in the future, a more detailed and efficient management system relying on Oob2 as well. Notwithstanding, it was also recommended that countries adopt it gradually to the shortest delay if scientific data at the national level would allow doing so.

18. Nevertheless, some diverging views among participants led to ask SAC to provide advice on considering the alternative option of only adopting Operational objective 2 (based on quotas) in cases where Oob1 has proven to be ineffective in maintaining catches within the legal size.

4. FISHERIES MANAGEMENT MEASURES

19. According to the recommendations in force, the following technical management measures are currently applied in the whole region (Table 2).

Table 2: Technical measures already in force in existing GFCM recommendations

Management tools	Current measures at the regional level
Depth restrictions	Prohibition to collect coral at depths shallower than 50 m
Gear restriction	The only permitted gear is manual hammer by scuba diving
Minimum landing size	7 mm basal diameter \pm 10%

20. The workshop also discussed other potential measures proposed in the draft RMP-RC so that participants could assess them in terms of effectiveness and feasibility. A ranking was established as presented in Table 3.

Table 3: Ranking of potential technical measures to be adopted by countries to limit effort and catches

Management tools	At the regional level	Rank effectiveness	Rank feasibility	Comments
Limits to fishing capacity	Licensing systems	High	High	
Limits to catches	Individual annual quotas	High	High	Based on scientific data
	Individual daily quota	High	High	Might force divers to do more trips per year, but allows efficient inspections
Spatial restrictions	License restricted to certain areas	High	High	
	Establish <i>refugia</i> , or permanently closed zones	High	High	Deep populations found in virgin status should be kept as <i>refugia</i> and specific MPAs to protect red coral could be established
Temporal restrictions	Seasonal harvest restriction	High	High	Facilitates control of effort
	Rotation periods in different banks	Medium	Medium	Recovery rates of red coral are low – coral needs 25 to 30 years to reach the minimum legal size – and geographical variation is not well known.

5. FISHERIES MONITORING, CONTROL AND SURVEILLANCE (MCS)

21. To ensure compliance with the measures to be adopted in the management plan, concerned Members are responsible for implementing the adopted management measures in their jurisdictional waters.

22. Control and surveillance should be provided by the national authorities. The list of MCS measures discussed during the workshop and assessed in terms of effectiveness and feasibility is presented in Table 4.

Table 4: Ranking of potential MCS measures to be adopted by the countries

Potential MCS measures	Proposals by national representatives	Rank effectiveness	Rank feasibility	Purpose
Logbook	Logbook (all)	High	High	To register the catches and related data by dive on a daily basis
Designation of ports	Designation of ports (all)	High	High	Provide the designated ports with the necessary facilities and personnel
Observers on board	Scientific observers on board (Italy)	High	Low	To control size, transshipment and sales prior to landing
Patrolling unit		High	Medium	To control depth, licenses, gear, size
	Advance warning (France)	High	High	A phone call to the port when the vessel is approaching
Certification of logbook at landing sites		High	High	Logbook must be certified at landing to verify it contents with the actual landed catches
	Tracking device on board (EU)	High	Medium	To control that harvest takes place only at appropriate sites
	Use of videos of authorized underwater devices (France)	Medium	Low	Inspection of videos and images taken to better locate the colonies and to assess the effects of fishing
Traceability mechanisms	Sales note with details of the seller, the buyer and a code for each lot sold	Medium	Medium	To control the origin of corals, and address poaching. Certified coral from legal fisheries might have added value.

6. SCIENTIFIC MONITORING

23. The Scientific Advisory Committee (SAC) of the GFCM should be responsible for advice on status of stocks and economic indicators of the fishery.

24. An adequate annual scientific monitoring of this fishery at the national level should be ensured so that SAC is in a position to provide scientific advice. To this end, an ad hoc entry tool in Excel format has been created to facilitate the transmission of data collected on an annual basis. The contents of this file were also discussed during the workshop and a refined version was produced and is available at this address:

<https://gfcmsitestorage.blob.core.windows.net/contents/ReportingTools/GFCM-RedCoral-DataReportingSystem.zip>

25. As stipulated in Recommendation GFCM36/2012/1, Members should compile data collection forms provided by the Secretariat and return the filled-in forms by **31 January** of each year, starting with the 2013 harvesting season. For 2014, given that the deadline was very close to the workshop, an

extension of one month (28 February 2014) was unofficially agreed to submit this data to the GFCM Secretariat.

7. IMPLEMENTATION AND ENFORCEMENT MECHANISMS

26. The draft RMP-RC indicates that Members should take measures to ensure that the provisions of the RMP-RC are covered under their national legislation. The implementation and rule enforcement mechanisms of the RMP-RC should be defined through legislation and regulations at the national level, taking into account the specificities of the national legal frameworks as well as economic, social, and cultural aspects. The workshop participants agreed with indications provided by the draft plan.

8. RESEARCH PRIORITIES

27. The workshop acknowledged that the research needs specified during the previous GFCM workshops on red coral (held in Alghero and Ajaccio in 2010 and 2011) still applied and should be pursued. It was pointed out that the scientific studies foreseen could not be carried out due to limited funding. The main research topics are:

Demography

- Population density
- Colony growth rate assessment
- Population size structure
- Population reproductive structure and larval output
- Recruitment and mortality assessment (including infection by boring sponges)

Stock assessment

Methodologies for slow-growing species and data-poor fisheries

Surveys at sea:

Large and small-scale bathymetric surveys and mapping of Mediterranean red coral populations through standardized methodologies

Population genetics

- Extending the study to all the geographical areas where red coral is present (including eastern and southern Mediterranean coasts)
- Developing new effective markers for DNA microsatellite analysis of different populations
- Genetic variability and connectivity assessment

Stock recovery and restoration

Development of restoration techniques

Development of alternative deep harvesting

Evaluation of the effects of remote operating vehicles (ROV) and submersibles used for harvesting not only on red coral populations but also on the ecosystem.

9. REVIEW OF THE MANAGEMENT PLAN

28. According to the GFCM Guidelines on management plans, the contents of the management plan should be periodically reviewed in order to accommodate changes in the fisheries system. This review should be carried out by the SAC as follows:

- Status of stocks assessed yearly, on the basis of mandatory submission by countries of fishery data to the SAC
- Status of the fishery (e.g. economic indicators)

- Reference points should be proposed by SAC once indicators are available
- Once reference points are established, SAC should propose a review period for them

29. According to these indications, SAC should provide **possibly each year** – or at a longer time scale depending on the surveyed stocks and the availability of data – advice on the status of exploited stocks and on the pressure exerted by fishing activities. It should also monitor the achievement of the RMP-RC objectives in order to propose, if necessary, adjustments or revisions (point 15 of the GFCM Guidelines). The RMP-RC review should take place **over 3 years**, or at shorter intervals if new data and/or urgent matters require a more timely intervention.

30. Furthermore, on the basis of SAC advice, should the GFCM find out that some relevant indicators are no longer appropriate to achieve the objective(s) of the RMP-RC, the reference levels should be revised in line with point 17 of the GFCM Guidelines.

31. Should SAC advice indicate that specific RMP-RC targets are not being met, GFCM should decide to revise management measures in order to ensure a sustainable exploitation of the resource (point 18). This review should be based on all information gathered in the annual reports prepared by Members and on the compilation of all available data on red coral from different sources (official data entry forms, scientific community, society, industry, fishers, etc.).

32. Upon receipt of this information – which should include management technical measures as adopted at the national level – the GFCM Secretariat will take action and inform the SAC so the questions raised in the working agenda of competent subcommittees and working groups could be timely addressed. The final decision whether to accept modifications to the reference points relies upon the Commission (based on SAC advice).

33. The workshop participants agreed with the indications provided by the draft plan.

34. Furthermore, the workshop also recommended convening, after the end of 2015, a scientific workshop to evaluate the feasibility, risks, as well as potential procedures and management of deep populations ROV harvesting. This workshop would be held once the SAC has reviewed the necessary scientific data on deep populations.

10. COMPLIANCE WITH THE PLAN

35. Management actions, modifications to the plan and compliance with it should be reported to the GFCM within the national report submitted yearly to the GFCM. The Compliance Committee of the GFCM should review these reports and take necessary actions.