ENI CBCMED
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REGIONE AUTÒNOMA DE SARDIGNA
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MED4EBM Mediterranean Forum for Applied Ecosystem-Based Management

الجمعية الملكية لحماية البيئة البحرية
The Royal Marine Conservation Society
JREDS

سلطة منطقة العقبة الاقتصادية الخاصة
AQABA SPECIAL ECONOMIC ZONE AUTHORITY

UNDP

إدارة مصائد الاسماك بنهج النظام البيئي في العقبة، الأردن: من الرصد بمشاركة مجتمع الصيادين إلى استراتيجيات الإدارة التنفيذية

Fisheries Ecosystem Based Management in Aqaba, Jordan: From Community Engaged Monitoring to Management Strategies

National Workshop ورشة عمل وطنية

Monday, May 23rd 2022 **الإثنين، 23 أيار 2022**

Aqaba, Jordan **العقبة، الأردن**

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Background

Aqaba Marine Reserve (AMR) has been officially registered as a National Protected Area in December 2020. It followed the steps of Aqaba Marine Park, which was established in 1997, and occupied the same area. AMR Management vision is to develop the reserve as a model of effective planning and management that ensures its unique ecological values and associated socioeconomic benefits are used sustainably for the present and future generations through active stakeholders' stewardship. This automatically calls for effective monitoring to provide the necessary knowledge on the system and effective concerned communities involvement. It is mandatory for ASEZA to monitor and report on the environmental resources. Several regular monitoring programs exist all stem from legal obligations either of ASEZA in its mandate for sustainable management or responsible enterprises through their Environmental Impact Assessment Environmental Management Programs. A wealth of information on the coastal ecology of Aqaba is available through these monitoring activities, which needs to continue growing and get better organised and public engaging through direct participation and effective dissemination of information. UNDP Jordan Country Office has recently signed an agreement with ASEZA for supporting AMR's management and operations supported by a grant from the EU. The main goal of the agreement is to realise AMR management objectives for the years 2022-2025.

The Mediterranean Forum for Applied Ecosystem-Based Management (MED4EBM) is a partnership project coordinated by UNDP Jordan Country Office and funded by ENI CBC MED Program 2014-2020, under the Thematic Objective B.4 (Environmental Protection, Climate Change Adaptation and Mitigation), particularly Thematic Priority B.4.4 (Incorporate the Ecosystem-Based Management Approach to ICZM in Local Development Planning). The Project endeavours to introduce an innovative computerised tool that simplifies handling the complex and inter-crossing ICZM issues, following an indicator-based, and participatory approach. Successful implementation of this approach will lead to developing a highly informative Decision Support System (EB-ICZM-DSS) and an effective EB-ICZM Implementation Protocol (EB-ICZM-IP). The Project helps wide-spreading EBM in the Mediterranean and other coastal and marine ecosystems adhering to the UN Environment Regional Seas Program. Enhancing capacities of various stakeholders and institutional actors involved in the management of coastal and marine areas is a Project's top priority.

Workshop Objective

The workshop objective was to discuss fisheries management practices in Aqaba, Jordan based on eight years of fishing monitoring results 2014-2021. The workshop marks the first intervention of the fishermen community in Aqaba to effectively engage in a management participatory approach for protecting the fish stocks and developing sustainable fishing strategies. This is a common objective between Aqaba Marine Reserve Management and the MED4EBM Project. The workshop is thus a first episode in a chain of discussions with the concerned communities targeting better protected coastal and marine ecosystem and improved sustainable returns of the ecosystem services.

Proceedings

The workshop joined about 30 participants representing different stakeholders, mainly civil society organizations concerned with occupational and amateur/sport fishing, and competent governmental authorities. A detailed list of participants is given in Annex I. Detailed Agenda is outlined in Annex II. The workshop was conducted over one day Monday, June 23rd 2022, and proceeded as follows.

Welcome & Opening Address

ASEZA Environment and Tourism Commissioner Dr. Nidal al Majali apologised for not being to inaugurate the workshop for a pressing urgent commitment. Open addresses have been given by Mr. Mohammad Tawaha Acting Executive Director at JREDS – National MED4EBM Project Manager and Dr. Mohammad Badran MED4EBM Project Coordinator, who has also facilitated the Workshop as the Project's EBM Expert. The open remarks welcomed the participants, emphasizing the central role of the concerned communities in the success of AMR management to achieve its target objectives. Sustainable fisheries management is a major concern in Jordan due to the limited resources and the importance of fishing as a livelihood and a cultural heritage in Aqaba. Knowledge based management through the AMR Initiative and MED4EBM Project provide a real hope that sustainable and rewarding returns from fishing could be achieved.

Mediterranean Forum for Applied Ecosystem-Based Management (MED4EBM)

Moving directly after the opening to the first session in the workshop, Dr. Badran facilitated a presentation on the MED4EBM Project. The presenter started by encouraging the participants to interact in the discussion, highlighting the importance of the present event as one of the MED4EBM activities. The Project endeavors to introduce an effective management tool that can be used by all actors concerned with the coastal and marine resources in Aqaba. The Project has activities in four marine and coastal regions with some common challenges in management despite the different natural settings. While three out of the four regions are estuaries on the Mediterranean Sea witnessing river – sea interaction and encompassing wetlands, the fourth region is in Aqaba on the Red Sea, where no regular rivers exist and even rainfall is very low resulting in almost no seasonal rivers in the area. While the three regions on the Mediterranean enjoy typical sandy beach Mediterranean habitats the fourth region in Aqaba is mainly rocky and enjoys flourishing highly diverse coral reef habitats.

MED4EBM Project is mainly about data gathering, information management, training and capacity building. Specialized training concerning the computerized management tool is designed by the Projects Technical Team and conducted through stakeholders' participatory workshops. The other type of training and capacity building, which is more general and may cover any issue in the coastal and marine resources management is identified through stakeholder's consultation. The present workshop is real life example of the Project's information management and delivering specialised training to fishermen, who are a key stakeholder involved in the integrated coastal zone management with high interconnection with AMR management.

Community Engagement in Ecosystem Based ICZM in Aqaba, Jordan

After a short coffee break, Mr. Tawaha facilitated a session on engagement of the civil society organizations in the integrated coastal zone management on the Jordanian sector of the Gulf of Aqaba. The facilitator shared real life examples of the fishermen community participation in monitoring of the coastal environment, and on surveillance activities the fishermen community practice in collaboration with the competent authorities. The fisheries management data gathering program, which provided data for discussion in the present workshop was triggered by the fishermen community in 2014. JREDS, which is also a civil society organization made ever possible effort to maintain the program running over the past 8 years.

Discussions during the session highlighted the importance of civil society organizations in coastal zone management in general and the organizations concerned with fisheries in particular. Collaboration between these organizations to deliver integrated services to their members took a good share of the discussion. This has triggered discussions on the members' satisfaction and collaboration with their organizations. Noting that fisheries monitoring has so far been practiced on occupational fishing only, there was active discussion on how civil society organizations concerned with amateur/sport fishing could get involved in establishing monitoring of this type of fishing.

Citizen Science Principles in Monitoring Fisheries for Ecosystem Based Management

The third session in the workshop was facilitated Dr. Badran and focussed on community engagement in environmental and socioeconomic monitoring. The session illustrated that data collection for ecosystem based management is highly divers and may come from highly diverse sources, contrary to the misconception that data can only be generated by scientists and can only be found at research facilities. The facilitator indicated that effective environmental and socioeconomic monitoring is a process that consists of three stages: identification of a problem or a potential problem; finding an information based solution including data management; and applying the solution to solve a problem or prevent a problem to happen. Citizen Science Principles are quite suitable and can be effectively used in fisheries monitoring. This is mainly because of the cumulative knowledge that fishermen community have from real life practice.

Citizen science; also known as community science, crowd science, crowd-sourced science, civic science, or volunteer monitoring (https://en.wikipedia.org/wiki/Citizen_science) is scientific

research conducted, in whole or in part by nonprofessional amateur scientists. It leads to advancements in scientific research by improving the scientific community's capacity and increasing the public's understanding of science. Monitoring results could be achieved by getting information from published sources, entities that own the data and information, interviewing relevant persons, preparing questionnaires targeting different stakeholders, and by doing actual field measurements. Collecting the information must be for a valid reason and the needed information must be identified during planning. Safety of the people involved in the monitoring and integrity of the ecosystem monitored are fundamental. Information management is a crucial step as unorganized information will be difficult to retrieve and can be of very little use if any. The widespread of databases and cloud data and information storage have made this easy. The session also discussed the mechanism of decision making. Regular monitoring and review of the monitoring process and accountability of the persons responsible for monitoring and applying the solutions derived from monitoring results are instrumental in effective citizen science. Like other types of monitoring this monitoring must conform to the prevailing culture, norms, laws and regulations from the planning to decisions taking and implementation.

Quality Control/Quality Assurance of Data Collection and Storage; Data Collection and Data Management Enhancement

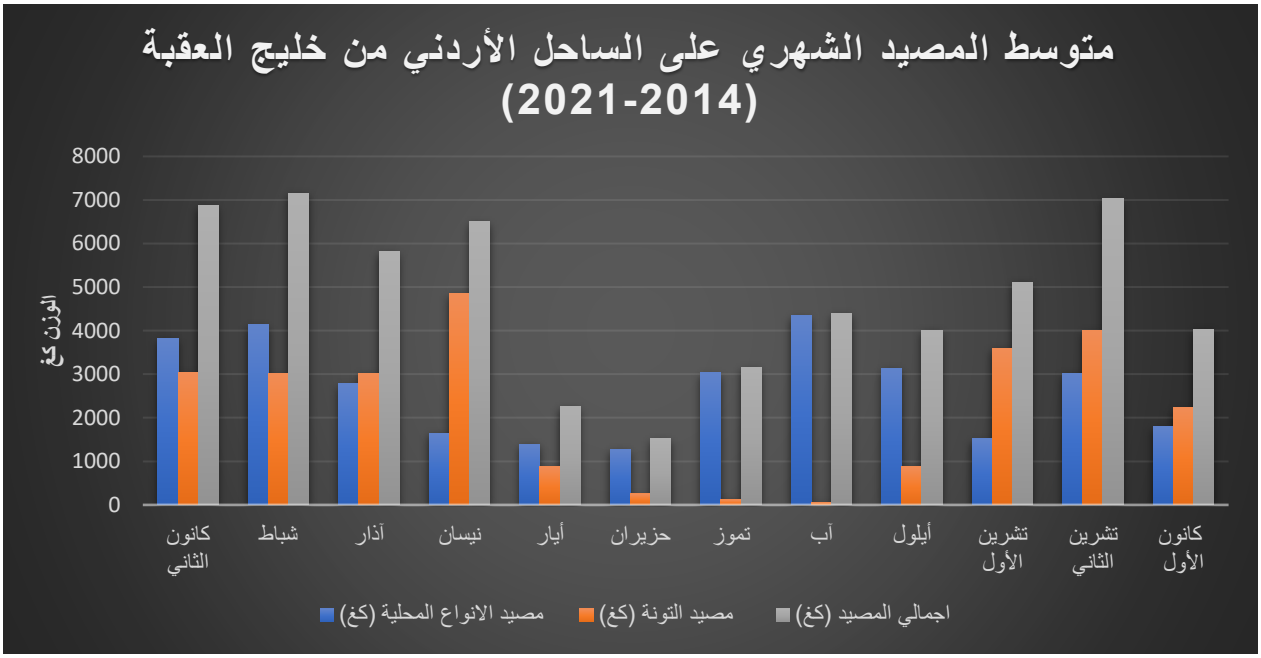
The fourth session of the workshop was on data quality control, quality assurance. Discussions of this session were facilitated by a representative of the data collection team, Mr. Omer Kabariti; Data Management Team, Mr. Zakaria Mashaqbeh and EBM Expert Dr. Badran. Mr. Kabariti provided a description of the data collection process indicating that the data collection team coordinates with the Royal Marine Force Officer in duty and visits the fishing landing site every working day. The on duty data collection specialist interviews the fishermen per individual boat and records the data every boat provides on the landing weight, species, number of fishermen on the boat, the fishing gear used, and the sites visited. This was verified by the participating fishermen, who confirmed that the meet the data collection team regularly and provide them with the required data. Notable here is that no data collection takes place over the weekends and official holidays.

Mr. Mashaqbeh described the process of data handling indicating that all fisheries data are stored in a special database at JREDS Office in Aqaba. In order for the data to be used in the MED4EBM Project Decision Support Software EB ICZM DSS, it needs some adjustment through a SQL server. Currently only landing data have been processed. Fishing effort data will be processed shortly. Mr. Mashaqbeh opened the EB ICZM DSS and demonstrated the System Diagram and some of the data types already stored in the SQL database component of the software.

Discussion was facilitated with the participants reminding them that this is not the first time they get to know the EB ICZM DSS, as some of them have participated in the early workshops that took place in 2021 for setting up the system and identifying relevant data. Some participants requested to have access to the data, which is perfectly fine and helps in capacity building of the

civil society organizations concerned with fisheries. Continued collaboration in data sharing is imperative for effective fisheries information based management.

Session 5 of the workshop involved presentation and analysis of limited fisheries monitoring results focusing on the total catch and total catch of tuna as a migratory fish as summarised in the Figure below. May and June appeared to have the lowest average total catch but still had some tuna landings. Landings of the local fish were the highest in August, when tuna landings were negligible. Highest landings total landings including tuna were recorded during the months November – April, with a relative drop in December.



Fishermen participating in the workshop found these findings interesting. They however indicated that May and June may witness lower landing wight but not necessarily lower landing values. Catch in Aqaba has some kind of a regular seasonality and the season in May and June is mainly for sardines which are small fish leading to low landing weights but with considerable significance to fishermen. The discussion concluded that this is only a limited analysis of the monitoring findings and a thorough and detailed analysis is needed. It has been agreed that the discussion would continue, and more data analysis sessions will be conducted.

Conclusions and Recommendations

Although session six of the workshop was devoted for conclusions and recommendations, several conclusions and recommendations have been made during discussion in the previous sessions. Some recommendations were related directly and only to fisheries monitoring and data collection and management, while other important recommendations have also been made on issues related to the

fishing itself and fisheries management. The bullets below summarise the main conclusions and recommendations made in the workshop.

- Participating stakeholders found the workshop an interesting opportunity to learn about fisheries management and understand landings patterns in terms of quantities and species landed. A strong recommendation was made that fisheries monitoring results would be shared and regularly visited for analysis to improve understanding of the fishing yields and their socioeconomic relevance.

- The workshop enhanced interaction between the scientific community and the fishermen. Participating scientists represented by Dean of the Faculty of Basic and Marine Sciences at the University of Jordan, indicated that they do have fisheries monitoring results that they would like to share with and continue participating in JREDS' running fisheries monitoring initiative

- It was noticed that fisheries monitoring data do have some gaps that sometimes extended for several months. This is mainly due discontinued financial resources. It has been recommended that fisheries monitoring would become a part of the National Monitoring Program supported by ASEZA. Other gaps in the data are short term and result from unavailability of the monitoring team during the weekends and official holidays. This needs to be handled by improving the monitoring management

- Fishing in Aqaba has feature patterns during the year. However, year to year changes do accrue and can be noticed by the practicing fishermen. Year 2022 for example is witnessing high spring productivity. This is reflected in higher turbidity in the water column, higher macro algae abundance extending until late May and higher abundance of Sardines in May

- Surplus fish landings during some seasons result in low market value. This calls for urgent intervention to provide cooling facilities and facilitate marketing landed fish outside Aqaba, which requires cooled shipping vehicles and smooth customs procedures. There was a good hope that this issue would be resolved after building the fishing marina and the landed fish market, but this still this hasn't been granted. Speaking of the marina, participating fishermen noted that with its present design it poses potential risks on the environment and on boats safety

- The issue of fishing practices and banning the use of submersible fishing nets has been raised. This is an ongoing discussion with ASEZA. Thirty five fishermen have submersible fishing nets that cost them about 70,000 JD. These have been banned and the concerned fishermen were promised to be compensated. But this hasn't been realised yet. An affective management solution is needed

- An issue of the need for practicing hobby/sport fishing from shoreline has been raised. These are common fishing practices in the world and needed in Aqaba. There is a need for an effective management solution.

- Seeing the maps that could be generated using the EB-ICZM-DSS provided by the MED4EBM Project and other GIS tools, participants in the workshop recommended establishing detailed maps from fisheries management purposes, which may clearly show the allowed sites for bate collection and allowed fishing areas indicating the fishing method allowed at every area

- Essential improvements needed on the fisheries monitoring include: widening the scope of monitoring to include the hoppy/sport fishing, regularity in the monitoring team visits to the landing site, collaboration with the Royal Maritime Force officers in duty for better records of fishing efforts, particularly information on the fishing boats fishermen onboard

Annex I. Workshop List of Participants

Name	Organisation
Hanan Kafaween	The Royal Marine Sports Federation Rjmsf
Mohammad Al Tawaha	JREDS
Dr. Khaldoun Al Momani	Aqaba Governerate
Saleh Moghrabi	Thagher Al Urdon Association
Ali Al Asiale	Eco Sport Fishing Association
Naser Madi	Eco Sport Fishing Association
Omar Al Kabariti	JREDS
Bader Yassin	Thagher Al Urdon Association
Ghazi Alaa Al Deen	Thagher Al Urdon Association
Sa'eed Bdair	Thagher Al Urdon Association
Eng. Mohammad Ibrahim	Thagher Al Urdon Association
Dr. Maroof Khalaf	University of Jordan - Aqaba Branch
Mohammad Khamees	Fisherman
Ahmad Ashur	JREDS
Dr. Mohammad Badran	UNDP
Ahmad Shehab	JREDS
Belal Al Khudari	Fisherman
Yana Hamtini	UNDP
Ahmad Alalywat	Jordan Maritime Commission (JMC)
Murad Frehat	Jordan Maritime Commission (JMC)
Sadeq Al Jarrah	Public Security Directorate
Shehadeh Al Natsheh	Member of Fishing Association
Khalid Al Najadat	JREDS
Ayman Noaimat	NAVY
Mahmoud Ayyad	Thagher Al Urdon Association
Eng. Mohammad Al Marafi	Thagher Al Urdon Association
Waed Al Ajarmeh	JREDS
Dr. Mohammad Al Zubdeh	Univesity Of Jordan- Aqba Branch
Zakaria Al Mashaqbeh	JREDS

Annex II. Workshop Agenda

المسؤولية	Activity	الوقت
الوصول والتسجيل		
محمد الطواها/ ق أ المدير التنفيذي للجمعية الملكية لحماية البيئة البحرية الدكتور محمد بدران/ منسق مشروع MED4EBM – UNDP عطوفة الدكتور نضال المجالي/ مفوض السياحة والبيئة – سلطة منطقة العقبة الخاصة	الترحيب والافتتاح	09:30 – 10:00
محمد بدران منسق المشروع وخبير الإدارة بنهج النظام البيئي	منتدى متوسطي للإدارة التنفيذية القائمة على النظام البيئي (MED4EBM)	10:00 – 10:30
استراحة قهوة		
محمد الطواها القائم باعمال المدير التنفيذي JREDS	المشاركة المجتمعية في الإدارة المتكاملة للمنطقة الساحلية القائمة على النظام الإيكولوجي في العقبة ، الأردن	11:00 – 11:30
محمد بدران منسق المشروع وخبير الإدارة بنهج النظام البيئي	مبادئ علم المواطن في الرصد القائم على نهج النظام البيئي	11:30 – 12:00
محمد بدران، زكريا المشاقبة، عمر الكباريتي منسق المشروع، أخصائي إدارة البيانات، أخصائي جمع البيانات	جمع البيانات وضبط / ضمان الجودة وفجوات البيانات تعزيز عملية جمع البيانات	12:00 – 12:30
محمد بدران منسق المشروع وخبير الإدارة بنهج النظام البيئي	عرض تحليلي للنتائج	12:30 – 13:00
صلاة الظهر		
مناقشة جماعية	الاستنتاجات والتوصيات والختام	13:30 – 14:00
دعوة لتناول طعام الغداء		

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Time	Activity	Responsibility
09:00 – 09:30	Arrival and Registration	
09:30 – 10:00	Welcome & Opening Address	JREDS, UNDP, ASEZA
10:00 – 10:30	Mediterranean Forum for Applied Ecosystem-Based Management (MED4EBM)	M. Badran Project Coordinator and EBM Expert
10:30 – 11:00	Coffee Break	
11:00 – 11:30	Community Engagement in Ecosystem Based Integrated Coastal Zone Management in Aqaba, Jordan	M. Tawaha JREDS Acting Executive Director
11:30 – 12:00	Citizen Science Principles in Monitoring for Ecosystem Based Management	M. Badran Project Coordinator, EBM Expert
12:00 – 12:30	Data Collection, Quality Control/Quality Assurance and Data Gaps/Data Collection Enhancement	M. Badran + Z. Mashaqbeh + O. Kabariti
12:30 – 13:00	Results Presentation and Analysis	M. Badran Project Coordinator, EBM Expert
13:00 – 13:30	Thohr Prayer	
13:30 – 14:00	Conclusions, Recommendations and Closing	Group Discussion
14:00 – 15:00	Invitation for Lunch	

Annex III. Workshop Photos and Media Visibility

Photos:

Media Visibility

Platform	Link
Facebook	https://www.facebook.com/theJREDS/photos/pcb.10160571286534614/10160571285989614/
Facebook	https://www.facebook.com/med4ebm.eu/photos/pcb.538232514692174/538232358025523/
Facebook	https://www.facebook.com/305211889613/posts/pfbid075VAZPGuRjugHSMYtWFLoat488C2jkjEd6EK9G9v4nHrvaaDb4hWCN3p7Np2QTrwl/?sfnsn=mo
Facebook	https://www.facebook.com/305211889613/posts/pfbid02WKgfFLDcZPi2412HfTENXoKFT1kmvm7Mt2FDx83ETuy767vjDFqGkiWFSgsaanZVl/?sfnsn=mo
Facebook	https://www.facebook.com/305211889613/posts/pfbid031TvqUncR6cRsQkrGGQhxKHWoYcmkPgciVVLJtv7JD15XdL9FE7KGjpDUz5Ejnw5Xl/?sfnsn=mo
Instragram	https://www.instagram.com/p/CdveicVMd3J/?utm_source=ig_web_copy_link
Instragram	https://www.instagram.com/p/Cd78Jbgq4pg/?utm_source=ig_web_copy_link
Instragram	https://www.instagram.com/p/CeNydBwuooY/?utm_source=ig_web_copy_link
Instragram	https://www.instagram.com/p/CdbJkC2L3De/?utm_source=ig_web_copy_link