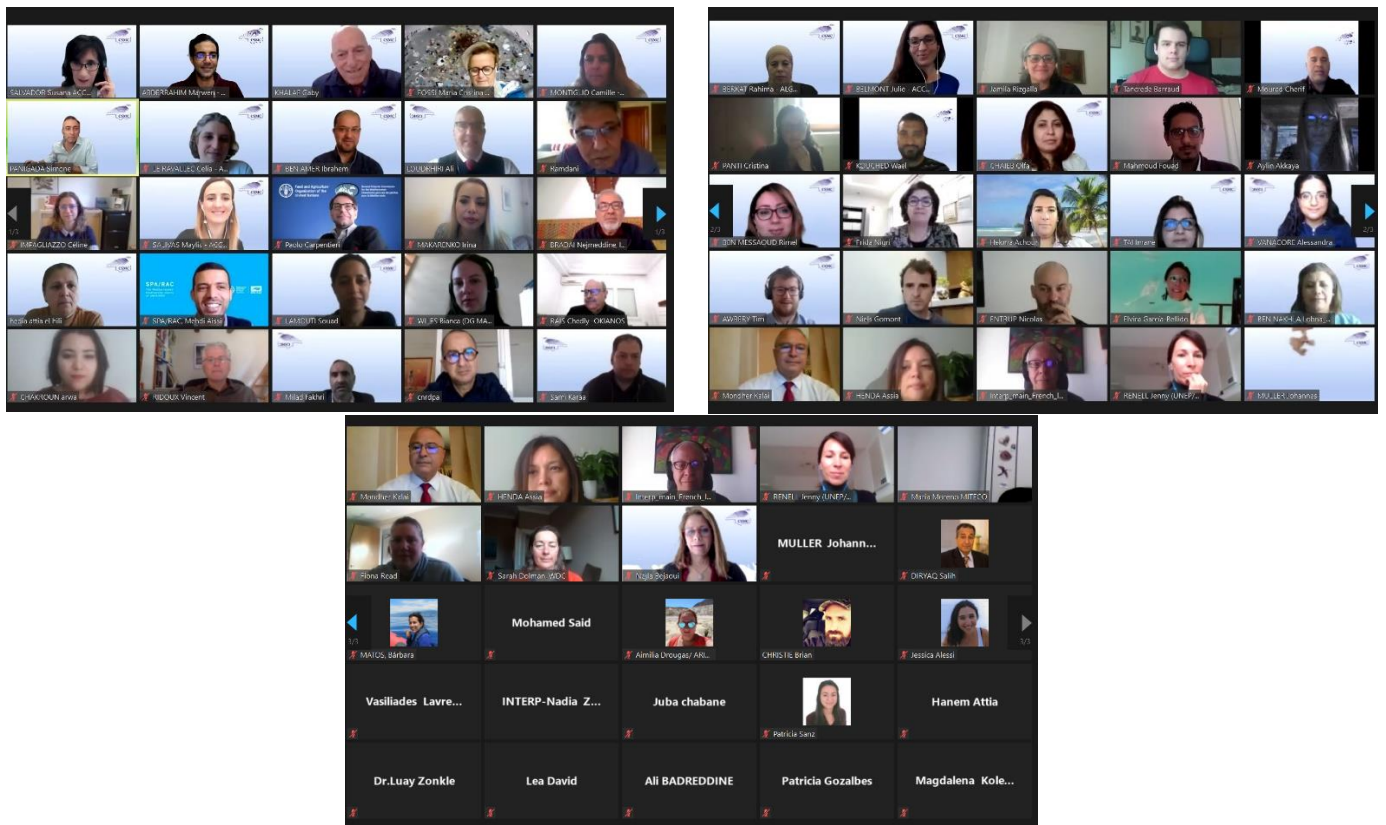


FIFTH CONFERENCE ON CETACEAN CONSERVATION IN SOUTH MEDITERRANEAN COUNTRIES REPORT

Online, April 13-15, 2021

Host Country: Lebanon



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Fifth Conference on Cetacean Conservation in South Mediterranean Countries Report

INTRODUCTION

The 5th Conference on the Conservation of Cetaceans in the South Mediterranean Countries (CSMC5), hosted by the National Centre for Marine Sciences of Lebanon (CNRS-L), was held online from 13 to 15 April 2021. This Conference was organized by the ACCOBAMS Secretariat, in collaboration with the Specially Protected Areas Regional Activity Centre (UNEP/MAP-SPA/RAC) and was financially supported by the Principality of Monaco.

More than seventy participants (experts, researchers, doctoral students and undergraduate students) from the ACCOBAMS region as well as several international organizations such as the General Fisheries Commission for the Mediterranean (GFCM), the Commission for the Protection of the Black Sea (BSC) and the European Commission's Directorate General for Maritime Affairs and Fisheries (DG MARE), took part in the Conference.

OBJECTIVE OF THE CONFERENCE

The objective of this CSMC5 was to take in consideration the state of knowledge available on cetaceans in the southern Mediterranean, to identify potential gaps and to encourage the development of dialog actions to promote the implementation of the ACCOBAMS Recommendations.

During these two and a half days, five scientific sessions were organised on the following topics:

- The interactions between cetaceans and human activities – fisheries and bycatch, underwater noise, whale watching;
- Cetaceans' strandings
- Monitoring cetaceans' populations
- Areas of importance for cetaceans

These sessions provided an opportunity to exchange experience and information and to consider the best approaches and actions for better knowledge on cetaceans' populations in the southern Mediterranean region.

A training workshop was devoted to the use of the NETCCOBAMS digital platform for cetaceans conservation.

CONFERENCE PROCEEDING AND WORK PRESENTATIONS

OPENNING SESSION

Accueil des participants et introduction du Président de la Conférence

Gaby KHALAF, Conference Chair

He expressed his gratitude to Mr. Khalil ATTIA Director of the Specially Protected Areas Regional Activity Centre (SP/RAC); to Abdellah SROUR, Executive Secretary of the General Fisheries Commission for the Mediterranean (GFCM); to Ms. Susana SALVADOR, Executive Secretary of ACCOBAMS; to the staff of the secretariat; the Lebanese National Council for Scientific Research (CNRS) and its General Secretary and to all who participated in the preparation of the conference. Mr. KHALAF has also expressed his regret at not seeing the conference take place face-to-face given the global health situation and all the problems facing Lebanon, such as the explosion at the port, oil pollution. and currency devaluation etc. He further added that despite everything, he hopes that research projects can continue and that the fight for the protection of cetaceans continues.

Susana SALVADOR, ACCOBAMS Executive Secretary

The Secretary affirmed that the gathering of all the participants suggests fruitful results of the conference in particular the recommendations resulted from it. She hoped that the conference would be prolific, enriching, motivating and will add to the collective work benefiting the preservation of cetaceans in the Mediterranean.

She mentioned the logistic points of the conference concerning translation and then called out the conference rules and the agenda.

Khalil ATTIA, Director of the Specially Protected Areas Regional Activity Centre (SPA/RAC)

Mr. Attia expressed his gratitude to the President of the Conference, the Executive Secretary of the General Fisheries Commission for the Mediterranean as well as the Executive Secretary of ACCOBAMS. He affirmed that despite the global situation, the 5th conference was organized thanks to the technological means of communication in order to share the latest data and information on cetaceans in the Mediterranean. In addition, he thanked ACCOBAMS and Lebanon for the invitation and representing SPA/RAC.

He recalled that ACCOBAMS and SPA/RAC have been collaborating for years to maintain favorable conservation status of cetaceans in accordance with the recommendations of the Barcelona Convention.

Ample efforts have been invested in assisting Mediterranean countries in building their capacities in terms of surveys monitoring of cetaceans, the establishment of action plans for the conservation of cetaceans, the development of national research networks for cetaceans and to identify critical habitats and existing threats in their respective countries.

In addition, the Director also recalled the joint effort to organize and implement the ACCOBAMS Survey Initiative (ASI) since 2018. This effort has resulted to a robust capacity building program at the national and regional levels based on harmonized survey methods. This made it possible to develop a cetacean monitoring program with all countries of the Mediterranean.

The collaboration aims to strengthen the fight against human pressures on cetaceans, to set up a protection plan that will be updated and reviewed during the meetings scheduled for May 2021. This update will help the development of the regional conservation plan based on updated knowledge.

Iryna MAKARENKO, Pollution Monitoring and Assessment Officer, Secretariat of the Commission on the Protection of the Black Sea Against Pollution

Ms. Makarenko began by expressing her thanks, then explained the work done in the Black Sea on the aspects of pollution, marine traffic, fishing etc. She recalled the collaboration between the Commission for the Protection of the Black Sea against Pollution and ACCOBAMS and the will to maintain it in the future.

Ms. Makarenko also recalled the joint actions and initiatives made with the help of the present partners. She praised the level of cooperation and again emphasized the need and well to continue the collaboration for the sustainability of data on cetaceans' stranding, bycatch and others.

Ms. Makarenko finally praised the work of ACCOBAMS in supporting the scientific collaboration in the region especially in the Russian waters of the Black Sea.

Paolo CARPENTIERI, Executive Secretary of the General Fisheries Commission for the Mediterranean

He apologized on behalf of Mr. Abdellah SROUR who could not attend the event and he thanked the ACCOBAMS for the invitation for the conference. He confirmed their will to continue to enhance the collaboration between the two organizations.

Céline IMPAGLIAZZO, ACCOBAMS National Focal Point for Monaco

Ms. Impagliazzo affirmed that the Conference is an opportunity to create new synergies and to strengthening the existing ones. She added that the conservation of marine biodiversity is a national priority to Monaco, and that the principality is working to strengthen these initiatives at the international level as well.

Milad FAKHRI, National Focal Point of ACCOBAMS in Libanon

Overview on the National Centre for Marine Sciences' recent activities for cetaceans' conservation in Lebanon (conference host country)

Milad FAHKRI

The National Centre for Marine Sciences – CNRSL (NCSM) continues since its designation as ACCOBAMS national focal point in 2005 to invest efforts for the conservation of cetaceans in the Lebanese water. In the last 3 years, several activities were performed in the context of implementing the national action plan for the conservation of cetaceans in Lebanon. In summer 2019, the team of the NCSM participated in the ACCOBAMS Initiative Survey (ASI) with an observation campaign covering the territorial water, promising results were obtained. The Centre participated in the organization of 2 events related to ACCOBAMS activities in Lebanon: ACCOBAMS Training Course on Photo-ID and Databases for Experts in 2018 and ASI/EcAp regional workshop on Estimating Marine Mammals Abundance in June 2019. The NCSM is still working on creating a stranding network and in the last 3 years four cases were reported, documented and autopsied; among them one rarely observed species in the Lebanese water "*Stenella coeruleoalba*" and one rare visitor in the Mediterranean Sea "*Orcinus orca*". A special campaign was conducted in February 2020 to survey the presence of a live Orca in Beirut coastal water, and several shots were taken that helped in its identification in cooperation with "Orca Guardians" in Iceland. Additional work is to be done in the near future where a campaign is scheduled to study the impact of Beirut blast on the abundance and distribution of cetaceans in the affected marine area.

SESSION 1 : MONITORING OF CETACEAN POPULATIONS

Session Chair: Abdelali LOUDRHIRI (Morocco)

Introductory conference:

ACCOBAMS Survey Initiative, reinforcement and sustainability of monitoring efforts

Julie BELMONT (ACCOBAMS)

The ACCOBAMS work is based on different initiatives. Reducing threats to cetaceans by improving knowledge through strengthening the knowledge on populations abundance, the estimate of populations trends to evaluate conservation efforts over time. Moreover, there is a strong investment in capacity-building on monitoring methods, data collection, data analysis. Many efforts have been done to harmonize monitoring approaches at the regional level. In addition of the several collaborations and synergies created with relevant organizations & environmental monitoring policies (IMAP, MFSD) to reinforce and synchronize efforts.

Information on ASI Results Special Issue - Nejla BEJAOU (INAT, Tunisia)

The ACCOBAMS Initiative Survey ASI is an unprecedented database on abundance and distribution of Cetaceans, marine megafauna and marine litter in the Mediterranean and Black Seas.

La région tunisienne, un point chaud de mégafaune marine en Méditerranée

Mehdi DEKHIL, co-auteurs : Ines ABDELJAOUED TEJ, Nejla BEJAOU, Vincent RIDOUX, Auriane VIRGILI

The census of marine mammals as well as other elements of the marine megafauna throughout the Mediterranean basin and in particular in the Tunisian region has the general objective of identifying the habitats associated with the highest densities or the greatest diversity with a view to modelling these areas of ecological interest in all the waters of this vast region. Concretely, the aim is to describe the distribution of the species observed, characterise their preferred habitats and estimate their relative densities, while comparing the Tunisian region with the entire Mediterranean basin. Five biological models have been studied: the bottlenose dolphin *Tursiops truncatus*, the small dolphins, which include the striped *Stenella coeruleoalba* and the common *Delphinus delphis* dolphins, the yellow-legged gull *Larus michahellis*, the *Scopoli* shearwater *Calonectris diomedea* and the shelled turtles, mainly the loggerhead turtle *Caretta caretta*. The aerial component of the ACCOBAMS Survey Initiative (ASI) project, at the origin of the data used here, covered almost the entire Mediterranean basin in the summer 2018. Dolphins were sampled using a linear transect protocol, while birds and turtles were sampled using a strip transect protocol. Some species appeared at higher density in the Tunisian region than in the whole basin, such as bottlenose dolphins (0.09 vs. 0.04 ind.km⁻²), shearwaters (0.31 vs. 0.08 ind.km⁻²) and turtles (0.38 vs. 0.17 ind.km⁻²). On the other hand, other species are less dense in the Tunisian zone such as small dolphins (0.14 vs 0.34 ind.km⁻²), or appear at equivalent densities such as gulls (0.11 vs 0.14 ind.km⁻²). These regional differences are in line with the preferential habitats of the species considered and must be taken into account in marine biodiversity conservation policies.

Assessing knowledge on cetaceans inshore and offshore Algeria

Souad LAMOUTI

Several works contributed to improve the knowledge about cetaceans of the Algerian part of the Mediterranean, thanks to stranding monitoring, necropsies, surveys and threats identification. This work presents a compilation of available data and its objective is to assess the achievements and the gaps in order to prioritize actions to be taken to better know these species, conserve and protect them.

Estimation des biais associés à l'évaluation de l'abondance de la mégafaune marine au cours de la campagne d'observation ASI

Mehdi DEKHIL, co-auteurs : Ines ABDELJAOUED TEJ, Nejla BEJAOUI, Vincent RIDOUX, Auriane VIRGILI

Estimating the abundance of the main species of marine megafauna present in the Mediterranean basin requires an analysis of the biases associated with these estimates. Within this framework, three hypotheses have been tested: 1) the degradation of sea-state or observation conditions should lead to a reduction in the detection distance; 2) large groups should be detectable at greater distances; 3) glare should lead to a reduction in the detection of groups. Four biological models were used: small dolphins, which include the striped *Stenella coeruleoalba* and common dolphins *Delphinus delphis*, the yellow-legged gull *Larus michahellis*, the Scopoli shearwater *Calonectris diomedea*, and shelled turtles, mainly the loggerhead turtle *Caretta caretta*. The aerial component of the ACCOBAMS Survey Initiative (ASI) project, at the origin of the data used here, covered almost the entire Mediterranean basin in the summer of 2018. Dolphins were sampled using a line transect protocol, while birds and turtles were sampled using a strip transect protocol. It has been shown that the group size of small dolphins has an effect on the effective strip width (ESW), which increases from 196 m for groups of 1-3 individuals to 264 m for groups greater than 30 individuals; in cascade, the abundance estimate is overestimated by about 10% at the basin scale. On the other hand, no effect of sea state or subjective observation conditions on ESW has been demonstrated. In addition, glare leads to an underestimation of about 40% of turtles on the dazzled side of the aircraft, resulting in a 14% underestimation of the density across the whole basin. For dolphins and birds, the effect of glare could not be disentangled from the heterogeneity of detection and group size.

Les présentations ont été suivies de 2 posters :

Poster : Suivi de *Tursiops truncatus* autour d'une ferme aquacole à l'Est de la Tunisie (Teboulba)

Wael KOUCHED

Les fermes aquacoles sont connues par la création de nouveaux habitats à travers le supplément de nutriments. Cet enrichissement trophique favorise le regroupement d'un peuplement halieutique divers sous les cages ce qui attire à son tour la mégafaune y compris les delphinidés. Jusqu'à présent, la plupart des travaux scientifiques se sont concentrés sur la façon dont les dauphins interagissent avec les cages ; il y a un manque d'informations sur la façon dont l'aquaculture influence la distribution des dauphins. Ce travail est dédié au suivi de la distribution, démographie et éthologie de la population de *Tursiops* autour d'une ferme aquacole à l'Est de la Tunisie (Teboulba).

L'effort de prospection, a commencé Février 2020, est de l'ordre de 105h où les dauphins y étaient présents seulement durant 07h. Au total, 118 observations ont été effectuées. Un degré élevé de variation temporaire de la présence de *Tursiops* est noté. L'occurrence de *Tursiops* est plus élevée lors de la saison printanière et hivernale. Les observations n'étaient pas homogènes dans toute la zone d'étude : il existe des cages plus fréquentées que d'autres.

La taille du groupe observée est liée à la saison, la présence d'immatures et à l'activité autour de la cage ($p > 0.05$). Les groupes comptent généralement de 1 à 5 individus répartis en petites unités caractéristique des populations du Grands dauphins côtiers. La photo-identification suggère qu'un petit nombre de *Tursiops* habite la ferme aquacole sujette de ce suivi. Sur 11 individus, identifiés sur la base de 1081 photos, seuls 09 étaient hautement marqués.

L'alimentation est l'activité la plus dominante (63% du bilan comportemental) suivie par la socialisation et le déplacement représentent respectivement 17% et 19% du budget comportemental des dauphins. Les associations de dauphins pendant l'alimentation peuvent être divisées en trois catégories : les connaissances, les affiliés et les associés d'alimentation.

Poster: Estimating abundance and residency of a *Tursiops truncatus* (sub)population along the south-western coast of Sicily

Alessandra VANACORE

The bottlenose dolphin (*T. truncatus*, Montagu 1821) is a species highly protected by European and Italian laws, under the Habitat Directive. Despite this, in the waters off the Agrigento province (northern border of the Strait of Sicily) the species had never been monitored before 2016. In the summer seasons between 2016 and 2019, 112 daily surveys were conducted, covering 6487.5 Km and sighting 93 pods of bottlenose dolphins, with an encounter rate of 83,04%. During each encounter with dolphins, photo-identification technique was applied, allowing for the creation of a photo-ID catalogue. On average 86% of sighted dolphins were identified, the catalogue resulted of 76 identified specimens, among which 24 reproductive females. Photo-identification data were used to analyse the residency of dolphins and to estimate population abundance. Monthly occurrence rate (MOR) shows that in the area 11% of the animals are resident, 29% are frequent and 60% are sporadic. Average yearly occurrence rate (YOR) is 0.54 (sd 0.27) greatly higher than in the neighbouring area. The (sub)population was estimated to comprise 77 (SD 6.63) dolphins, with a mortality rate of 0.09 (CI 0.000-0.195). Density was estimated with the Kernel non-parametric method. The population appears to be distributed in the whole study area, with a density hotspot located at 4.5 NM from the coast, at a depth between 40 and 50 m. This (sub)population appears to be part of a larger population, as testified by both MOR and YOR. Understanding the home range of the whole population is of primary importance to implement the correct conservation measures, as protecting only a small community could prove to be not as affective.

A well-connected network for cetacean monitoring in south Mediterranean countries following the EcAp/IMAP principles

Medhi AISSI

In 2008, with the ultimate objective of achieving Good Environmental Status (GES) in the Mediterranean Sea and coast, the Contracting Parties to the Barcelona Convention adopted the Ecosystem Approach (EcAp) Roadmap to be implemented. This was followed by the adoption of 11 Ecological Objectives associated by Operational objectives, GES definitions and Common Indicators.

A major EcAp Roadmap achievement milestone has been the adoption in 2016 of the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and related Assessment Criteria (IMAP). The IMAP sets out all the required elements that are necessary for the establishment of a primary, region-wide Integrated Monitoring and Assessment Programme on a set of agreed indicators among them marine mammals.

Within this vision, the Specially Protected Areas Regional Activity Centre (SPA/RAC) is assisting the southern Mediterranean countries to implement a regular and long-term monitoring programme on the agreed set of indicators on biodiversity in and surrounding Marine Protected Areas (MPAs). Marine mammals are included in three indicators (distribution, abundance and demography).

During the first phase of the IMAP implementation (2016-2019), countries updated their national monitoring programmes and selected the key species and areas to be monitored (one MPA and one high pressure area from human activity). Monitoring protocols to be used were harmonised and standardized. In addition, serial of training events was organised to reinforce national human capacities and exchange best practices.

During the second phase of IMAP implementation (2020-2023) SPA/RAC looks to assist southern Mediterranean countries in the implementation of the on-ground field monitoring activities through a dedicate EU funded projects (IMAP-MPA and EcAp-MEDIII projects). These projects will result to the delivery of a quality-assured data on the status of key habitats and endangered species including marine mammals. Monitoring and assessment of marine mammal abundance, distribution and demography at national and sub-regional scale will be used to improve knowledge on the Mediterranean marine environment through the development of the regional assessment of the Mediterranean in 2023 (2023 Mediterranean Quality Status Report).

Collaboration tripartite (Liban, Tunisie et France) pour une amélioration du suivi des cétacés en Méditerranée

Gaby KHALAF

Un projet financé par le CNRS-L (Conseil National de Recherche Scientifique Libanais) et l'AUF (Agence universitaire de la francophonie) a impliqué le Centre National des Sciences Marines (CNSM/CNRS-L) au Liban, l'Observatoire Pelagis (La Rochelle Université) en France et l'Institut National Agronomique de Tunisie (INAT/Université de Carthage) en Tunisie. Les objectifs du projet sont le renforcement de la collaboration scientifique en matière de cétologie et de suivi des cétacés en Méditerranée, la consolidation du réseau francophone des spécialistes en cétacés via des actions de transfert de compétences et de connaissances et les recherches conjointes entre les trois partenaires scientifiques. La préparation de ce projet se faisait en parallèle à celui de l'ACCOBAMS Survey Initiative (ASI) qui vise à améliorer la compréhension de l'état de conservation des cétacés au niveau macro régional en mer Méditerranée et mer Noire. ACCOBAMS a soutenu la participation de nos chercheurs aux formations indispensables pour l'ASI et plus généralement l'amélioration des méthodes de suivi des cétacés, notamment concernant i) la collecte et la validation des données de distribution et d'abondance des cétacés, ii) l'utilisation des logiciels spécifiques Sammoa et Logger et, iii) la photo-identification. Pour mener ce projet des missions réciproques des experts de ces trois pays ont été réalisées. En Tunisie, les travaux ont porté sur les interactions entre les populations de cétacés et les activités de pêche et d'aquaculture, l'atténuation des interactions entre les dauphins et la pêche aux petits pélagiques à Kélibia, et la consolidation des pratiques de gestion des échouages de Cétacés. Au Liban, les activités du projet ont traité du renforcement de capacités sur les pêche-dauphins par la visite des principaux ports et une formation à l'analyse des contenus stomacaux de dauphins. Les présentations ont été suivies par 2 posters.

Poster: National implementation for Integrated Monitoring and Assessment Programme on Marine Mammals (Opportunity & Challenges)

Mohamed ABDELWARITH

The Contracting Parties to the Barcelona Convention committed to apply the ecosystem approach with the common vision to have a healthy Mediterranean with marine and coastal ecosystems that are productive and biologically diverse contributing to sustainable development for the benefit of present and future generations and adopted in 2008 a roadmap for its implementation. In 2012 and 2013, 11 Ecological Objectives along with Good Environmental Status definition, indicators and targets were adopted by the Contracting Parties to achieve the GES of the Mediterranean Sea. The 19th Meeting of Contracting Parties in Feb. 2016 agreed on the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP).

During Oct. 2017, a national workshop has been organized by SPA/RAC and EEAA to discuss and validate the national monitoring programme on biodiversity along the Mediterranean Egyptian coastline. During this workshop, stakeholders, national institutions, universities, research centres, MPA managers and NGOs were invited to select the potential monitoring sites and the key habitats and species to be monitored including marine mammals and its habitats protection.

This program is considered ready to work; however, there are an institutional and financial challenges facing this work. In the proposed poster, the monitoring programme will be presented and the opportunities it includes, as well as indicating the challenges it faces and presenting the available requirements.

Poster: Trends in cetacean research in the Eastern North Atlantic

Bárbara CARTAGENA DA SILVA MATOS

Cetaceans are considered ecosystem engineers and useful bioindicators of the health of marine environments. The Eastern North Atlantic is an area of great oceanographic complexity, that favours ecosystem richness and, consequently, cetacean occurrence. Although this occurrence has led to relevant scientific research on this taxon, information on composition of this research remains unassessed.

We aim to quantify the evolution of research on cetaceans, highlighting the main focuses and trends in the Eastern North Atlantic.

This study considers 380 peer-reviewed publications between 1900-2018. For each paper, we collected publication year, research topics and regions, and species studied. We assessed differences among regions with distinct cultural and socio-economic landscapes, and between coastal and oceanic habitats. To evaluate the growth of scientific production, we fitted a General Additive Model to the time series of paper numbers. Although research in this region has been growing, the results show relatively little research output in Northern African and coastal regions within the study area. Moreover, except for four studies done in high seas, research was restricted to a few miles around the coast of main islands, leaving offshore regions less well surveyed. There was less research on genetics, acoustics, and behaviour. Most papers focused on the Azores and Canary Islands, and mostly involved bottlenose and common dolphins, and sperm whales. Species considered Endangered or Near Threatened are objects of only 10% of the studies.

We suggest a greater research focus on beaked whales in Macaronesia, as well as collaborative efforts between research teams in the region, by sharing data sets, and aiming to produce long-term research. Moreover, a Delphi method approach, based on rounds of questionnaires answered by experts, could be attempted to identify priority research for cetaceans in these areas.

This work is currently in press in Mammal Review.

Link of posters <https://accobams.org/csmc5-posters-area/>

SESSION 2 : AREAS OF IMPORTANCE FOR CETACEANS

Session Chair: Mahmoud FOUAD (Egypt)

**Introductory conference / Rapporteur: Léa DAVID (éco-Océan Institut) & Maïlis SALIVAS (ACCOBAMS)
introductory conference:**

Toward the identification of important cetacean's areas at a regional scale - Léa DAVID (éco-Océan Institut) & Maïlis SALIVAS (ACCOBAMS)

ACCOBAMS Parties Commitments regarding Habitats protection has implemented a detailed Conservation Plan to achieve and maintain a favorable conservation status for cetaceans. This commitment combines total protection of threatened species with stronger habitat protection. They adopt a Cetacean Critical Habitats CCH process to enhance the conservation approach to find solutions for conciliating human activities and cetacean conservation. This approach allowed to identify new CCH and enhance synergy with Important Marine Mammal Areas IMMAs.

IMMA : Système d'alerte précoce pour la conservation du Grand dauphin *Tursiops truncatus* de la région Nord-Est de la Tunisie

Rimel BENMESSAOUD

Bien que les campagnes de prospection des cétacés en Tunisie soient disparates et ponctuelles mais elles ont toutes soulevé la concentration des observations de *Tursiops truncatus* dans la région Nord-Est de la Tunisie. Cette région occupe une position stratégique au sein du canal Siculo-tunisien où certains facteurs sont réunis (forte biomasse de proies potentielles et facilité d'accès aux engins de pêche) favorisant ainsi la survie de *Tursiops*. En effet, des études datant de 2009 ont montré que des groupes résidents de cette espèce y sont observés au fil des années et y apprennent à vivre en groupes, à se socialiser, à s'agréger pour se reproduire et se nourrir. Il s'agit d'un préférendum pour cette espèce.

Ces études ont permis à ce domaine maritime d'être retenu, en 2017, comme Aires d'Intérêts pour les Mammifères Marins (IMMA) répondant aux critères standards (A, B et C). Bien que les IMMA ne soient pas un modèle pour les aires marines protégées, elles sont utiles pour fournir une base pour la planification spatiale marine spécialisée pouvant ensuite conduire à une zone protégée. Cependant, les informations provenant des IMMA doivent refléter les conditions actuelles. Il s'avère judicieux de mettre en œuvre un programme de surveillance de l'IMMA avec des indicateurs relatifs à la population et la zone étudiées. Il s'agit d'un système d'alerte précoce, où la consolidation d'informations aussi actuelles que possible, se révélera utile pour le suivi de l'évolution de l'espèce et de l'état de la zone d'étude et pour le renforcement

de la coopération régionale en vue de la conservation de *Tursiops* et d'autres biodiversité marine. Ces IMMA pourront ainsi être qualifiées de Zones clés pour la biodiversité (KBA).

Mots clés : *Tursiops truncatus*, IMMA, conservation, Nord-Est de la Tunisie.

SESSION 3 : INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: WHALE WATCHING AND NOISE

Session Chair: Ibrahem BEN AMER (Libya)

Introductory conference / Rapporteurs: Lobna BEN NAKHLA (SPA/RAC) & Maïlis SALIVAS (ACCOBAMS)

Introductory conference:

Progress for a better prevention and mitigation of underwater noise impacts on cetaceans and for a sustainable implementation of whale-watching activities - Lobna BEN NAKHLA (SPA/RAC) & Maïlis SALIVAS (ACCOBAMS)

If well managed and within a suitable management framework, it could be a valuable educational tool, create direct and indirect economic benefits for many communities and can promote research on cetaceans and their conservation. Nevertheless, it could also have negative impacts such as changes in cetaceans swimming behavior, fast changes in direction, decrease in population size and movements of cetaceans away from the area targeted for tourism. For this reason, ACCOBAMS launched The "High Quality Whale Watching" certificate to encourage the implementation of good practices and sustainable know-how by whale watching operators involved in quality and ecological responsibility initiatives. A Whale Watching Working Group was set up to assess such a commercial activity. Furthermore, there are several international legal frameworks dealing with marine mammal conservation and/or noise mitigation.

Whale watching et pécaturisme au Maroc, enjeux et contraintes

Abdelali LOUDRHIRI

Cet article traitera des essais engagés par le Maroc en vue d'implémenter le projet du whale watching et du pécaturisme au nord du pays.

Il vise à tracer le chemin parcouru par ce projet ainsi que les contraintes qui entravent son développement et sa mise en œuvre.

Les obstacles administratifs ainsi que le volet réglementaire constituent un défi pour la commission chargée de ce dossier qui devrait trouver des solutions adéquates afin de mettre ce projet sur les rails.

Au terme de cet article, des pistes d'amélioration et des recommandations seront émises dans un but de booster le lancement de ce projet au nord du Maroc qui bénéficie de grandes opportunités favorables à la réussite dudit projet.

Investigating the impact of anthropogenic activities on cetaceans within the Eastern Mediterranean Sea of Turkey

Aylin AKKAYA

A deficiency of baseline knowledge can be a major hurdle to implement effective mitigation and conservation measures. This is particularly true when there are unregulated and uncontrolled anthropogenic activities taking place, as without baseline data, the dimension of these impacts cannot be deduced. The current study implemented dedicated land and boat surveys in the Gulf of Antalya between 2015 and 2017 and conducted ongoing seasonal boat surveys between Marmaris and Antalya since 2018. AIS data was obtained for the same period to assess the levels of marine traffic. Cetaceans were detected on 260 occasions, with the most sightings belonging to bottlenose dolphins, common dolphins, striped dolphins followed by sperm whales and beaked whales. Delphinids were distributed in the coastal and pelagic waters with year-round presence. Sperm whale distribution were concentrated around the 1000m contour in Finike Trough and beaked whales were dominantly recorded in the Gulf of Antalya, showing a preference to warmer months. The identified

critical habitats considerably overlap with marine traffic and were prone to loud and impulsive noises from seismic operations to sonars. This study is the first multi-annual seasonal research effort in the Eastern Mediterranean Sea and has revealed previously unknown critical habitats of cetaceans that needs urgent mitigation and conservation strategies to minimize the negative population trend.

Cetacean sightings in the Mediterranean off the territorial waters of Moroccan Atlantic coast during oil exploration aboard the drilling vessel: Biodiversity and Sperm whale behaviour

Mohammed RAMDANI

A total of ~280 hours (from sunrise to sunset) of marine mammal visual effort was carried out during the survey. Visual monitoring began before the source arrays were deployed (from 15th March to 5th April 2018). Sighting conditions for marine mammals were generally good throughout the survey, with favorable sea state. There were 14 visual sightings of marine mammals during the survey period. In addition, there were 4 incidentals sightings during the survey by the crew of the chase vessels (3 sightings for *Delphinus delphis* species). Sperm whale *Physeter macrocephalus Linnaeus* (1758) with 3 sightings and 2 individuals; Bottlenose dolphin (*Tursiops truncatus*) with 6 sightings and 12 individuals, Common dolphin (*Delphinus delphis*) with 5 sightings and 16 individuals; Striped dolphin *Stenella coeruleoalba* (Meyen, 1833) with 8 individuals and 2 sightings.

The marine surrounding region of Rabat – Casablanca is a heavily fished inshore area where the occurrence of the marine wildlife is moderately represented. This area shelters an important marine animal-life, however, the species of marine mammals and sea turtles are not very common. Three species of cetacean are rarely observed in the studied area.

Prise en compte de la problématique du bruit sous-marin en Algérie

Souad LAMOUTI

A l'instar de tous les pays, l'Algérie est appelée à développer différents projets à grande importance économique comme la réalisation de prospections sismiques, forages, constructions de ports. Ces activités génèrent des bruits impulsifs pouvant avoir un impact négatif sur les cétacés. La participation d'algériens à différentes missions et ateliers de formations organisés par le secrétariat de l'ACCOBAMS ayant pour objectif la collecte de données sur le bruit pour l'atténuation de ces impacts s'intègre dans la volonté nationale et régionale d'assurer un développement durable de ces activités tout en évitant ou du moins limitant l'impact sur les espèces vulnérables.

Poster: Progressing prevention, mitigation and reduction of anthropogenic noise

Nicolas ENTRUP & Johannes MÜLLER

Anthropogenic underwater noise can inflict irreversible damage to marine mammals, leading to temporary or permanent hearing loss, masking, habitat displacement and in some cases even death, with similar negative impacts for fish and invertebrates. Océan noise sources generated by human activities can be divided into two main categories: ambient, continuous noise and intense, impulsive noise (Hildebrand, 2005; Simmonds et al., 2014). For the purpose of this poster, we have decided to place our focus on shipping (continuous noise) and seismic surveys (impulsive noise). This is owed primarily due to the consideration that both of these have direct and indirect implications for the climate. Maritime transport is responsible for approximately 2,9% of global greenhouse gas (GHG) emissions and seismic surveys employing airguns are predominantly undertaken to explore new hydrocarbon resources for its exploitation by the fossil fuel energy sector. Therefore, we explore whether conservation measures that reduce noise emissions for such activities also have a positive impact on reducing GHG emissions.

If properly implemented and rigorously applied the measures adopted by MEAs provide a sound basis for the protection of cetaceans. Efforts to prevent, mitigate and ultimately reduce anthropogenic underwater noise can only progress if existing measures are put into effect, including the following:

Shipping:

- Implement speed reductions in sensitive areas
- Set up and implement speed reduction trials throughout the Mediterranean.

Seismic surveys:

- Conduct stringent and transparent environmental impact assessments
- Impose a ban on the exploration of new hydrocarbon activities.
- Implement and apply the CMS and ACCOBAMS Guidelines.

SESSION 4 : CETACEAN STRANDINGS**Session Chair: Rahima BERKAT (Algeria)****Introductory conference / Rapporteur: Sandro MAZZARIOL (Italy) & Chedly RAIS (ACCOBAMS)**

Opening by the Session Chair

Introductory conference:**Best practices in monitoring and management of cetacean stranding - Sandro MAZZARIOL (Italy)**

For the best practice on post-mortem investigation and tissue sampling, we need tool for building a functional stranding network depending on resources, skills and expertise, to practice post-mortem investigation vs Necropsy, to emphasize no short-cuts but guidance, to focus on forensic medicine, to engage veterinarian vs biologists, to enhance cooperation with all Institutions, and prioritize capacity building and remote assistance.

Échouage des cétacés le long de la côte Algérienne. Cas du grand dauphin *Tursiops truncatus**Henda ASSIA*

La place des Cétacés au sein de l'écosystème pélagique demeure mal connue, notamment au niveau du bassin Algérien. Ceci est lié au déficit d'investigations sur cette fraction biologique, notamment à la difficulté d'évaluer et de quantifier les échouages. C'est dans ce contexte qu'il nous est apparu opportun de privilégier l'acquisition de données à travers la mise en place d'un réseau de surveillance des échouages sur des sites disséminés le long de la côte Algérienne. Ceci a conduit à un recensement de 292 spécimens de Cétacés qui se sont échoués entre Février 2003 et Juillet 2015. Nous nous sommes intéressés particulièrement dans le contexte de cette étude à l'échouage du *Tursiops truncatus*.

Cetacean in Libyan waters: recorded via a citizen science project and mining social media platforms

Cetacean in Libyan waters: recorded via a citizen science project and mining social media platforms*Jamila RIZGALLA*

Occurrence and geographical distribution of stranded cetaceans along the Libyan coastline was assessed via a citizen scientist project launched 21 December 2020, entitled "did you see a cetacean", and through mining social media networks (Facebook, Twitter and YouTube). The retrospective observational data set, comprised a total of 63 images and 5 movies of cetaceans posted from 14 coastal cities and localities spanning between 2009 and 2020. Documented cetacean stranding (live and dead) and citing included *Balaenopteridae* (n=6); *Delphinidae* (n=25); and *Physeteridae* (n=1). The probable cause for the mortality in some cases included traumatic injuries, emaciation, drowning and intentional killing, in one case using a firearm. Whale meat consumption was documented. Live beached cetaceans often endure stressful and aggressive responses from people, including; trapping, touching, holding (with submerged head and blowhole), closing the blowhole by people sitting on larger individuals, and using them as jumping and riding platforms. The present report draws attention towards the importance of the Gulf of Sidra as a possible nursery, and feeding ground for *Balaenoptera acutorostrata*. Attention is drawn to the general lack of awareness, urgently calling for a nationwide awareness campaign targeting schools and fisheries to stress the importance of cetaceans and the role of each individual in their protection. Furthermore, cetacean protection programs require both governmental and nongovernmental institutions. And while citizen science/ social media comes with its pitfalls,

it can be used for cetacean monitoring programs, offering a cost-effective resource, and can be employed in recording stranding events, and as primary response to strandings and should not be overlooked, especially in a country with an extended mostly remote coastline, political instability and lack of funding for scientific research.

→ The presentations were followed by posters

Poster : Première signalisation d'un échouage d'une orque pygmée (*Feresa attenuata*) en Tunisie

Hédia ATTIA EL HILI

Le 03 octobre 2020, une orque pygmée (*Feresa attenuata*) a échoué pour la première fois en Tunisie sur la plage de la région "Kalaat El Andalous" située sur la côte nord-est du pays. Ce mammifère marin appartenant à l'ordre des cétacés et à la famille des Delphinidés est aussi appelé orque naine et il est l'unique membre de genre *Feresa*. Il est présent dans tous les océans du globe sauf dans les régions polaires ainsi qu'en Méditerranée. Cette espèce compte parmi les delphinidés les plus rarement observés.

Sa taille analogue à celle de nombreux dauphins et l'absence de rostre, fait qu'il peut être confondu avec un pseudorque (*Pseudorca crassidens*), ou un dauphin d'Électre (*Peponocephala electra*). Parmi ses caractéristiques morphologiques, la couleur foncée de son manteau et la présence de taches blanches autour de la bouche et sur l'abdomen.

Sa signalisation a été effectuée par la garde marine nationale de la région, D'après les commémoratifs, l'animal a été observé la veille à l'état vivant sur la côte présentant un fil d'hameçon sortant de la cavité buccale et accompagné de son congénère. Son examen a montré qu'il s'agit d'une femelle non altérée présentant surtout des signes d'interaction avec les engins de pêche et également d'ingestion d'une assez importante quantité de plastique.

Poster: A rare stranding event of the short beaked common dolphin (*Delphinus delphis*) in the eastern Tunisian coastline

Oifa CHAIEB

On March 3rd, 2021 a short beaked common dolphin was found stranded on Hammamet beach (Central-eastern Tunisia). This is a rare stranding event as since 1971, this case represents the third stranding individual ever reported on Tunisian coastline. Post mortem examination of the freshly dead female common dolphin was conducted to know the presumable cause of death. The pregnant female was bearing a female foetus with fully formed organs. Detailed biometric data are described for both individuals. The objective is to improve the knowledge about this poorly studied species in this area of the Central-eastern Mediterranean.

Poster: First Record of a Shark Predation Case on Bottlenose Dolphin (*Tursiops truncatus*) in the South Mediterranean Region

Salih DIRYAQ

Interaction between delphinoid species and sharks has been documented in several parts of the world including Australia, USA, The Bahamas, The Caribbean and South Africa. This interaction was observed in relation to several small cetaceans' species including the Indo-Pacific bottlenose dolphin (*Tursiops aduncus*) and the common bottlenose dolphin (*Tursiops truncatus*). These attacks are mostly caused by large shark species such as the Great White Shark (*Carcharodon carcharias*). In the Mediterranean, very little records of such event have been documented (e.g. in Lampedusa, Italy). Here, we report a case of shark predation on a bottlenose dolphin (*Tursiops truncatus*) in the Gulf of Sirte (31° 16' 27"N, 16° 01' 48"E). The carcass of the adult female dolphin (total length 270cm) was found on the remote beach of Khamseen (west of Sirte city) with several shark bites. These distinctive marks varied in size and depth and were in different parts of the body, several of them were in the dorsal area between the blowhole and the dorsal fin while others were in the abdomen area from the pectoral fins to the anus and genitalia. Although it wasn't clear if the bites

occurred when the dolphin was alive or post-mortem, this record will add to the general knowledge regarding the interaction between these species in the Mediterranean and shed the light again on the Gulf of Sirte as an area of significance to small delphinids and elasmobranchs.

Poster: First records of Cuvier's beaked whale (*Ziphius cavirostris*, G. Cuvier 1823) strandings along the Tunisian coast

Sami KARAA

Abstract the Cuvier's beaked whale (*Ziphius cavirostris*) is the only member of the Ziphiidae family with a regular occurrence in the Mediterranean Sea. Much of the knowledge of this species in the Mediterranean has come from stranding data. This note reports the first records of strandings of Cuvier's beaked whales along the Tunisian coast. The two strandings described are two specimens: the first was 530 cm long and beached at El Hicha (Gulf of Gabès, south Tunisia) on March 5th, 2019; the second was 630 cm long and it was reported in Ras Angla (Bizerte, north Tunisia) on June 6th, 2019. Since this species faces multiple threats in the Mediterranean basin, this contribution is intended to extend previous knowledge of this species in the region.

Keywords: Cuvier's beaked whale, First record, Distribution, Mediterranean Sea, Tunisia

Poster: Stomach content analysis of stranded cetaceans along the Lebanese coast

Céline MAHFOUZ

For the first time along the Lebanese coast, stomach contents of stranded cetaceans will be investigated. Overall, 5 stomachs of cetaceans (3 *Tursiops truncatus*, 1 *Delphinus delphis* and 1 *Orcinus orca*) stranded between 2015 and 2020 will be examined. Contents will be sorted (otoliths, fish vertebrae, whole or partly digested prey items, cephalopod beaks, etc.), counted, measured, and identified to the lowest taxonomic level. The stomach content analysis is a traditional method for dietary study. It has its strength and weakness and gives different aspects of the dietary information, timeframe perspective and prey detail.

In general, stranding of cetaceans along the Lebanese coast is scarce. Activities for observation and conservation of cetaceans are being regularly conducted in Lebanon. However, the results obtained from the stomach content analysis will give preliminary insights into the feeding strategy and the predator-prey relationships of cetaceans frequenting the Lebanese waters, in addition to their responses to fishery interactions.

Poster: Data on four delphinidae species stranding in the Gulf of Hammamet (Central-eastern Mediterranean): recent findings (2019-2021)

Olfa CHAIEB

In the frame of the National Stranding Network, nine stranded dolphins, belonging to four species, were recorded in the Central-eastern Mediterranean region (Gulf of Hammamet) from February 2019 to March 2021. Six specimens of *Tursiops truncatus*, the main stranded species (66,6%) were recorded and only one specimen of the following species were detected: *Delphinus delphis*, *Stenella coeruleolba* and *Grampus griseus*. The latter three species were rarely observed stranding in the area; each species was recorded only one time since the National Stranding Network was launched. Measurements were taken and post mortem examination was conducted in some cases to know the presumable cause of death. Tissue samples, as well as digestive tracts, were collected for further analyses and for storage in the tissue bank at the Institut National des Sciences et Technologies de la Mer (INSTM).

Poster : Nouvelle espèce échouée sur le littoral algérien : Baleine à bosse " *Megaptera novaeangliae*"

Yahia BOUSLAH

Ce présent travail fournit des informations sur l'échouage pour la première fois d'une baleine à bosse (*Megaptera novaeangliae*) sur le littoral algérien, cet échouage est considéré comme « rare » dans ce domaine.

Le 31 Octobre 2012, une baleine à bosse, mesuré 9,30 m de long, a été retrouvée morte sur la côte algérienne (Ain Temouchent), l'animal a été disséqué. Il était un jeune mâle. L'épaisseur du lard était de 8 cm, la baleine avait été en bonne santé avec un bon état nutritionnel (épaisseur de lard normale). Examen externe du corps n'a révélé aucune fracture. Par conséquent, la présente étude constitue le premier enregistrement confirmé d'échouage de cette espèce sur la côte d'Algérie. Cependant, les concentrations des éléments traces (zinc (Zn), le plomb (Pb), le cadmium (Cd) Nickel (Ni), le chrome (Cr), le manganèse (Mn)) ont été mesurées dans le lard et le muscle de ce Cétacé. Les concentrations des éléments traces dans les tissus de cette espèce étaient généralement inférieures à ceux rapportés dans les tissus d'autres mammifères marins dans différentes zones. La cause de mortalité de cette juvénile baleine n'a pas été déterminée.

Mots clés: Cétacés, Échouage, *Megaptera novaeangliae*, éléments Traces, littoral algérien.

Le Réseau National des Echouages en Tunisie : historique et perspectives

Hédia ATTIA EL HILI

En Tunisie, le Réseau National des Echouages (RNE) des cétacés et des tortues marines a été mis en place depuis 2004 à l'Institut National des Sciences et Technologies de la Mer (INSTM). Sur le plan organisationnel et fonctionnel, il était très simple et facile à gérer puisqu'il a été piloté et coordonné par un seul organisme. La collecte des données à travers un questionnaire et un protocole d'échantillonnage préétablis a permis de constituer une base de données très riche. Trois cellules de veille (nord, centre et sud) assurent la surveillance. Les résultats ont permis d'élaborer des rapports et des publications scientifiques et aussi d'alimenter la base de données MEDACES. Par ailleurs, l'INSTM a bénéficié d'un projet financé par ACCOBAMS (2014-2015) qui lui a permis de renforcer le RNE.

Le réseau a fonctionné d'une manière satisfaisante jusqu'à l'année 2016. En 2017, malgré la signature d'une convention entre l'INSTM et le Centre National de Veille Zoosanitaire (CNVZ) en vue de renforcer la surveillance sur les côtes, le nombre des échouages non signalés aux membres du réseau a continué à augmenter. En effet de nombreuses signalisations d'événements d'échouages sur les réseaux sociaux sont fournies par des citoyens et des ONG. Cette science citoyenne est à priori intéressante et mériterait d'être encouragée puisqu'elle permet d'avoir des données fraîches et bien illustrées sur les échouages. Toutefois, certains de ces organismes ainsi que d'autres étatiques interviennent sur les lieux et transportent avec eux les cadavres entravant ainsi le travail de l'équipe RNE. Devant cette situation, l'équipe RNE s'est trouvée dans l'obligation de revoir l'organisation du réseau pour assurer sa durabilité, sa représentativité et sa crédibilité tout en veillant à encourager la science citoyenne. Dans ce contexte, une réflexion a été proposée mais non encore validée par le comité de suivi du RNE.

Review and Compilation of Cetaceans' Stranding Records along the Libyan Coastline

Ibrahim BEN AMER

Stranding is defined as the arrival of a marine mammal to shore alive or dead due to natural or human causes. Stranded specimens provides valuable data that is difficult to obtain or extract from live animals. In addition to indices on presence, abundance, behavior and habitat, biological data such as age, sex, diet, pathology, genetics and physiology are examples of data that can be extracted from strandings. In the southern Mediterranean coast, systematic monitoring of cetaceans stranding is scarce and Libya with its approximately 1900km coastline is no exception. In this paper, we present the results of a 3+ years study in which a group of researchers representing NGOs, Universities and governmental bodies collaborated to develop potential mechanism of monitoring strandings in Libya. Through their effort, they have compiled, evaluated, and verified the available stranding records collected from the field or from other sources such as social media.

This effort resulted in a 68 stranding records of 11 cetacean species. Most of these records are of small odontocetes such as bottlenose (*T. truncatus*) and common dolphins (*D. delphis*). There are also some records of "rare" species in the Mediterranean such as false killer whale (*P. crassidens*), minke whale (*B. acutorostrata*), and humpback whale (*M. novaeangliae*). Temporal distribution of the data indicates that there were more "reported" events during winters. This is driven by the 9 easily-noted fin whale stranding events that usually happened in winters. Spatial distribution shows a number of areas which are considered a "hot spots" for stranding such as the Gulf of Sirte and the Gulf of Bombah. This study also highlights the essential need of establishing a stranding network in the country and the need for training national experts to deal with stranding events including rescue measures for live animals, conduct necessary necropsies to collect samples and host the data in a national database.

Échouages de cétacés sur les côtes marocaines entre 2015 et 2020

Imane TAI

Le suivi des échouages des cétacés le long des côtes marocaines fait partie des activités de l'Institut National de Recherche Halieutique (INRH). C'est une activité structurée en un Réseau de Suivi des Echouages (RSE), composé d'équipes de scientifiques de l'INRH qui interviennent en étroite collaboration avec les représentants des autorités publiques, des forces de l'ordre et les associations locales dont les activités sont dédiées au suivi de l'environnement marin et ce à chaque fois que l'information leur est transmise. En 2015 une impulsion a été donnée pour une meilleure structuration des interventions sur les espèces échouées. Le présent travail décrit les échouages de cétacés signalés entre 2015 et 2020 le long des côtes marocaines. 715 individus appartenant à 20 espèces de cétacés ont été trouvés échoués au cours de cette période. La diversité spécifique a varié entre 12 et 18 espèces par an. Le nombre des cétacés échoués a évolué autour d'une moyenne annuelle de 119 individus par an. Les dauphins bleus et blancs, les dauphins communs, les grands dauphins, les petits rorquals, les rorquals communs, les globicéphales noirs, les marsouins communs et les ziphius étaient les plus fréquemment observés dans les échouages. Environ 30 % des cas échoués pouvaient être associés à une action humaine directe, soit que les animaux étaient retrouvés piégés dans des engins de pêche ou qu'ils avaient des nageoires sectionnées ou qu'ils présentaient d'autres blessures caractéristiques d'interaction avec la pêche. Pour la majorité des cas, il était difficile de se prononcer sur la cause de leur mort. Soit que les carcasses étaient en état avancé de décomposition ou qu'elles ne présentaient pas de signes particuliers.

→ The presentations were followed by posters

Poster : Statut des cétacés en Tunisie à travers l'analyse de la base de données du Réseau National d'Echouages (RNE) de 2010 à 2021

Sami KARAA

Nous analysons dans ce travail les données d'échouages des cétacés de la base de données du réseau national d'échouages des tortues marines et des cétacés, hébergée à l'Institut National des Sciences et Technologies de la Mer (INSTM). Cette analyse mettra en évidence les espèces échouées, leur importance selon les régions, les saisons, les données biologiques et les éventuelles causes de mortalité.

Poster: Using MEDACES to conserve cetaceans through stranding data

Patricia SANZ

MEDACES, the Mediterranean Database of Cetacean Strandings, was created under the Barcelona Convention, then extended to the entire ACCOBAMS area with the aim of coordinating national efforts to compile and share data on stranded cetaceans. To date, MEDACES contains 15598 stranding records on 22 cetacean species from 29 countries; 12275 and 870 come from the northern and southern Mediterranean, respectively, and 2453 from the Black Sea. Here we show the potential of MEDACES as a tool to investigate trends in the occurrence and distribution of cetaceans, a timely goal in the context of global change. We emphasize the role of southern Mediterranean countries (SMC) to develop this task. The biogeographical

viewpoint, it is interesting to note the increasing trend of records of minke whale (*Balaenoptera acutorostrata*) in the Mediterranean; the total number in MEDACES is 62, the oldest being in 1975 from Tunisia. It is unclear why records are recently more frequent, but most of them come from northern Mediterranean countries and data from SMC are decisive to complete the picture. Another peculiar species is the rough-toothed dolphin (*Steno bredanensis*). MEDACES contains 8 records since 1997, all from Israel, and 9 scattered records in Sicily and Strait of Gibraltar in 2002-2004. Stranding patterns of this species obviously deserve a closer look in other countries. The conservation viewpoint, MEDACES can be used to monitor historical trends in two endangered species in the Mediterranean: the common bottlenose dolphin (*Tursiops truncatus*) and the long-beaked common dolphin (*Delphinus delphis*). The database contains data from 1971 to 2019, with 2047 records of *T. truncatus* (317 from SMC), and 1130 records of *D. delphis* (122 from SMC). The role of SMC in this project would help to achieve the purposes of this database: to get a global view of the information and trends of Mediterranean cetacean species and to apply efficient management strategies in the ACCOBAMS Area.

Poster: Mapping the Stranding Whales in Turkish Marine Waters

Cemal TURAN

Whales' distribution in the Mediterranean is mostly known through stranding records. In the present study, the stranding records of whales in Turkish Marine waters were mapped to elucidate the number of whale species stranding and see the general pattern of distribution of whale's stranding in Turkish marine waters that might help to generate mitigation measures for their conservation. The primary data consisted of occurrence points of whale species in Turkish marine waters were obtained from the published literatures, grey literatures, and personal communications. Geographic coordinates represent the location of stranding points of whales across the Turkish Marine Waters. Google Earth was applied to gather coordinates of the records if there were only localities. QGIS was used to check the accuracy of all occurrence records prior to use. The stranding records of 6 whale species (the fin whale *Balaenoptera physalus*, the True's beaked whale *Mesoplodon mirus*, Cuvier's beaked whale *Ziphius cavirostris*, sperm whale *Physeter macrocephalus*, the strap-toothed whale *Mesoplodon layardii*, false killer whale *Pseudorca crassidens*) were varied and mainly located on the Mediterranean and Aegean coasts of Turkey

TRAINING WORKSHOP ON THE USE OF NETCCOBAMS DIGITAL PLATFORM FOR CETACEAN CONSERVATION

SESSION 5 : INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: FISHERIES AND BYCATCH

Session Chair : Nejla BEJAOU (INAT, Tunisie)

Introductory Conference / Rapporteur : Souad LAMOUTI (CNRDPA, Algérie) & Celia LE RAVALLEC (ACCOBAMS)

Opening by the Session Chair | Introductory conference:

Activities and progress in assessing and mitigating interactions with fisheries

Souad LAMOUTI (CNRDPA, Algeria) & Celia LE RAVALLEC (ACCOBAMS)

Incidental catch of vulnerable species in the Mediterranean: an overview of the "MedBycatch project" and of the results from "SoMFi 2020"

Paolo CARPENTIERI

In the framework of the MAVA project "Understanding Mediterranean multi-taxa 'bycatch' of vulnerable species and testing mitigation – a collaborative approach", to support Mediterranean countries (i.e. Morocco, Tunisia and Turkey) and in collaboration with several partners organizations (ACCOBAMS, BirdLife, GFCM,

IUCN-Med, MEDASSET, RAC/SPA), have been developed the following publication: “Monitoring the incidental catch of vulnerable species in the Mediterranean and Black Sea fisheries: methodology for data collection“. The main aim was to support regional monitoring programmes and provide a framework for the development and implementation of an efficient, standardized data collection and monitoring system for all vulnerable species encountered in the Mediterranean and the Black Sea, namely elasmobranchs, marine mammals, seabirds, sea turtles and macrobenthic invertebrates. This methodology ensures minimum common standards for the collection of data on these species and allows for replicability and comparisons among fisheries across the region, thus offering a harmonized basis of knowledge, information and evidence for decision-making.

The new report on the State of Mediterranean and Black Sea Fisheries (SoMFi 2020), published biennially by the GFCM, presents also a compilation and a review of available information on the incidental catch of vulnerable species in different fisheries, collected from 2000 through the present, from different sources. It is worth noting that the geographical and historical coverage of the data analysed is very variable, and that only studies reporting individual values of vulnerable species were considered. Therefore, the data presented could underestimate the real picture and the actual frequency of vulnerable species incidental catch in the GFCM area.

Assessing the overlap of fishing and bottlenose dolphins in an understudied region of the Mediterranean

Tim AWBERY

Bottlenose dolphins are often found in the coastal waters of Mediterranean countries which are also exploited by both artisanal and commercial fishing operations. This can lead to an overlap between the distribution of dolphins and fishing vessels, yet thus far no study in Montenegro has investigated the extent of this interaction. Land surveys were conducted from six-different predetermined stations (each selected to maximise coverage of Montenegrin coastal waters). A theodolite was used to record the track lines of bottlenose dolphins, artisanal boats and commercial fishing vessels. 546 surveys were undertaken between September 2016 and March 2021 with a total of 1643 hours of observation. The survey area was gridded and the distance of the track lines of vessels was summed for each grid cell and then weighted for the time spent observing that cell. The data was split into absent, low, medium and high categories. A density raster was created for dolphin observations from which areas with greater than mean density were delineated as core areas. Artisanal and commercial fishing vessels were the nearest vessels to dolphins 25.6% and 15.8% of the time respectively. Unsurprisingly, artisanal fishing boats were generally distributed near the shore, remaining in close proximity to the nearest ports. Commercial fishing vessels were found further from the coast and spanned a much wider range of cells. Five dolphin core areas were delineated and these overlapped with medium/high areas of fishing activity in four locations for artisanal boats and in Bar and Utejha for commercial vessels. Whilst range from shore and difficult to access areas act as a limitation for theodolite use, they enable users to accurately plot the position of dolphins and their overlap with marine vessels. Mitigation to minimise the impact of fishery practices should be introduced in the delineated areas and further study is necessary to understand the magnitude of the short and long-term impacts.

Changement dans le volume et la composition des captures des sardiniers attribuable à la déprédation par *Tursiops truncatus* au Nord-Est de la Tunisie (Kélibia)

Rimel BENMESSAOUD

Nombreuses études scientifiques indiquent de plus en plus que les populations côtières de *Tursiops truncatus* utilisent les filets de pêche comme source d'alimentation facilement accessible tout en amortissant l'état et la rentabilité des engins de pêche.

Notre étude s'intéresse à l'évaluation de l'impact de la déprédation des grands dauphins sur les filets de pêche ciblant les petits pélagiques et ce en analysant le volume et la composition des captures de 620 opérations de pêche de Juillet 2020 à Mars 2021.

Tursiops truncatus ont été principalement observés chassant à la fois des bancs et des proies solitaires autour des sennes tout en utilisant des stratégies d'alimentation soit individuelles ou coopératives. *Tursiops* ont

attaqué, en moyenne, 24.78% des filets et endommagé 7% des prises. Cependant, les filets sujettes de déprédation étaient caractérisés par des prises par unité d'effort et une composition respectivement plus élevées et plus diversifiée que celles des filets non attaqués.

Nos résultats suggèrent (i) que les grands dauphins sont attirés par les fortes densités de poissons, (ii) qu'ils adaptent leur régime alimentaire à la nature des proies, différentes des proies préférentielles, présentes autour de la zone d'exploitation/sennes et (iii) que la déprédation, même si dans la majorité des cas affecte la recette des pêcheurs, peut-être aussi considérée comme une source additionnelle de captures à haute valeur commerciale.

→ The presentations were followed by posters

Poster : Etude préliminaire sur l'étendue des captures accidentelles et les événements de déprédation entre les cétacés et les activités de pêche en Algérie

Mohamed El Amine OUHADJA

Ce travail constitue le premier pas vers une meilleure compréhension de l'interaction entre les espèces marines menacées et les activités de pêche. L'objectif principal consiste à identifier les interactions qui existent entre la pêche et les espèces marines menacées et de déterminer les paramètres pouvant influencer la prédation dans les filets des pêcheurs. La zone d'étude est appelée El Marsa située à l'Est de la baie d'Alger. Les informations sont collectées sur terrain à la base des questionnaires d'enquêtes.

Le Grand dauphin *Tursiops truncatus* (MONTAGU,1821) appelé dans cette région « Marsouin » est l'espèce la plus responsable des attaques. La fréquence moyenne des interactions est estimée à 11.38%, le filet maillant et le trémail ont la même probabilité d'être attaqués.

Le phénomène étudié est présent durant toute l'année avec une intensité bien marquée en période printanière et les attaques des dauphins semblent être dépendantes de la dimension de la maille et de la profondeur à laquelle la pêche est exercée. Il paraît que les mailles étirées inférieures à 40mm ne subissent aucune attaque par les mammifères marins.

La fréquence moyenne des sorties de pêche attaquées lors de l'utilisation des filets à maille supérieure à 80mm est de l'ordre de 26.62%, tandis que les dimensions inférieures à 80mm ne dépassent pas les 7.68%. Les opérations de pêche réalisées dans des zones qui correspondent à des profondeurs supérieures à 100m ont une fréquence fortement prononcée (52.68%).

Poster : Expérimentation de deux types de répulsifs acoustiques pour atténuer la déprédation au niveau des sennes au Nord-Est de la Tunisie

Arwa CHAKROUN

Les interférences entre les pêcheries et *Tursiops truncatus* sont reportées dans toutes les régions méditerranéennes y compris en Tunisie. Au Nord-Est de la Tunisie, ce phénomène peut causer des pertes collatérales aussi bien pour les pêcheurs à la senne que pour les delphinidés.

Notre étude s'intéresse à l'utilisation de deux types de répulsifs acoustiques : Dolphin Deterrent Devices (DDD) et Dolphin interactive Device (DiD), qui n'est que la version interactive du modèle DDD, afin de limiter le phénomène de déprédation entre les grands dauphins et les sennes.

L'expérimentation a eu lieu durant la période allant de Novembre 2020 à Mars 2021. Pour cette action, nous avons utilisé 10 répulsifs acoustiques (5 DDD/ 5 DiD) répartis sur 10 sardiniers. La méthodologie suivie lors de cette étude nous a permis de quantifier la fréquence de déprédation, la typologie des perforations et les coûts de ramassage associés ainsi que l'efficacité technique de ces répulsifs.

L'effet négatif des interférences se matérialise sous forme d'attaques des delphinidés sur le banc de poissons encerclés par la senne ou lors du boursage de cette dernière. Ceci se traduit par l'endommagement des filets de pêche et la réduction des captures. Les opérations de pêche réalisées sans utilisation répulsifs, ont connu une moyenne de déprédation de l'ordre de 38% alors que les bateaux équipés de répulsifs ont enregistré une moyenne de déprédation égale à 08.54% (Fréq. déprédation DDD= 14% ; Freq. déprédation DiD=1%). Ces deux répulsifs font preuve d'une efficacité technique supérieure à 82%.

Cette étude doit être entretenue à long-terme afin de mieux évaluer l'efficacité technique des répulsifs et inclure le suivi du volume et composition de la capture.

Poster : Utilisation du système Licado pour la prévention de la déprédation des Grands Dauphins sur les sennes au Nord-Est de la Tunisie (Kélibia)

Mourad CHERIF

La déprédation de la pêche par les delphinidés est une préoccupation économique mondiale. Nombreuses études sur l'atténuation de la déprédation des dauphins dans les pêcheries en Méditerranée se sont concentrées sur les dispositifs de dissuasion acoustique appelés "pingers" comme moyen de réduire ce type d'interaction. Certains pingers ont donné des résultats positifs avec une réduction de la fréquence d'interaction et des dommages et une augmentation du rendement au niveau des engins de pêche.

A cet effet, un système acoustique ergonomique, appelé Licado, a été testé de Novembre 2020 à Mars 2021 auprès de deux embarcations ciblant les petits pélagiques. Il s'agit d'un répulsif acoustique directif avec une nouvelle fonction de déclenchement interactif. Nous avons combiné des questionnaires et des expériences participatives pour évaluer la prévalence des événements de déprédation, le volume et la composition de la capture des embarcations échantillonnées.

Les répulsifs testés ont montré une efficacité technique notable où la fréquence de déprédation et les coûts associés ont chuté significativement accompagnés par une élévation nette du volume de capture à comparer avec ceux des embarcations dépourvues de Licado.

Cependant, l'expérimentation devra être poursuivie afin de préciser la période d'accoutumance.

Poster : Interaction grand dauphin-senneurs/ expérimentation de la senne renforcée

Mohammed MALOULI IDRISSE

Depuis 2017, l'INRH effectue un suivi régulier du phénomène d'interaction entre le grand dauphin et la pêche à la senne en Méditerranée marocaine, par le biais d'enquêtes et d'embarquements à bord de senneurs opérant à partir des ports d'Al Hoceima et de M'diq. Ce suivi permet d'évaluer le taux d'attaque mensuel et de suivre son évolution au cours des saisons et des années.

Entre 2017 et 2020, le taux d'attaque moyen a varié entre 13% en janvier 2018 et 88% en avril 2018. Alors que le taux d'attaque annuel moyen était respectivement de 38%, 45%, 33%, et 36% pour les années 2017, 2018, 2019 et 2020. Le taux d'attaque mensuel ne présente pas de corrélation significative avec le nombre moyen de senneurs actifs dans la région. En effet, plusieurs autres facteurs peuvent interagir et influencer le taux d'attaque, tels que la zone de pêche, la disponibilité de la ressource, la composition spécifique des captures, les caractéristiques des senneurs, etc.

Afin de remédier à cette situation, l'INRH a expérimenté un nouveau prototype de senne plus résistante. La performance de cette senne renforcée a été évaluée selon deux critères : l'efficacité de pêche et la résistance aux attaques du grand dauphin (par le nombre moyen de déchirures par marée et leur taille). Ces deux paramètres sont calculés pour la senne renforcée, et sont comparés avec les données collectées pour les senneurs opérant avec des sennes ordinaires au cours de la même période.

La capture moyenne par marée de la senne renforcée pour l'ensemble de la Méditerranée marocaine, était presque 2 fois plus importante que la capture de la senne ordinaire. Avec des différences significatives entre les différents ports.

Concernant la résistance aux attaques du grand dauphin, la senne renforcée a subi en moyenne moins de déchirures (11 déchirures par marée), comparée à la senne ordinaire (38 déchirures par marée). Par ailleurs, le coût de réparation par marée pour la senne renforcée est plus de 4 fois moins élevé que celui de la senne ordinaire.

Les déchirures observées sur la senne renforcée étaient de plus petites tailles (90% des déchirures observées d'une taille comprise entre 0 et 60 cm) que celles observées sur la senne ordinaire (97% des déchirures observées d'une taille comprise entre 0 et 100 cm).

Les résultats de l'expérimentation de la senne renforcée testée à bord de senneurs opérant à partir des ports d'Al Hoceima et de M'diq de juillet 2018 à décembre 2020 indiquent que la senne renforcée présente une meilleure efficacité de pêche, une meilleure résistance aux attaques par le grand dauphin et un coût de réparation moins élevé que la senne ordinaire.

En plus de l'expérimentation de la senne renforcée, l'INRH a initié un projet de recherche visant la compréhension et l'analyse du comportement du grand dauphin en Méditerranée marocaine, avec l'appui de l'ACCOBAMS, dont l'activité phare est la photo identification. Ce projet s'effectue entre 2020 et 2022.

SIDE EVENT SUR LE PROJET PLASTICBUSTER MPA

It was presented by Maria Cristina FOSSI (Italie)

How to detect the impact of Marine Litter in the Pelagos Sanctuary: the Plastic Busters MPAs approach

FOSSI Maria Cristina, co-authors : Cristina Panti, Matteo Baini, Silvia Casini, Matteo Galli, Ilaria Caliani, Dario Giani, University of Siena, Italy, Massimiliano Rosso, Paola Tepsich, CIMA, Italy, Teresa Romeo, Gianfranco Scotti, ISPRA, Italy, Francesca Giannini, PNAT, Italy, Francois Galgani, IFREMER, France, Sebastian Leccia, OEC, France

Plastic Busters MPAs is a 4-year-long Interreg Med-project aiming to contribute to maintaining biodiversity and preserving natural ecosystems in pelagic and coastal Mediterranean marine protected areas (MPAs), by defining and implementing a harmonized approach against marine litter. The project entails actions that address the whole management cycle of marine litter, from monitoring and assessment to prevention and mitigation, as well as actions to strengthen networking between and among pelagic and coastal MPAs.

The overarching aim of this presentation is to describe the Plastic Busters MPAs harmonized monitoring approach to detect the impact of marine litter (particularly microplastics) on Mediterranean ecosystems and marine biodiversity, including endangered species (cetaceans, sea turtles and birds) inhabiting pelagic and coastal MPAs focusing on the largest SPAMI of the Mediterranean Sea. The implementation of the monitoring strategy and the preliminary results obtained from the monitoring carried out in the SPAMI Pelagos Sanctuary and in the included MPAs (the Tuscan Archipelago National Park - PNAT) will be presented. In spring-summer 2019, 34 researchers of 8 European institutions, monitored more than 2230 nautical miles, collecting 140 samples of superficial microplastics in the study areas and carrying out 280 monitoring of surface macrolitter simultaneously monitoring biota. During these campaigns, in order to assess the ecotoxicological impact on biodiversity, cetacean species skin biopsies, neustonic invertebrates, lantern fish, mussels and several edible fish species were collected. The entire sampling design was guided by the development of a marine litter distribution model in order to identify the possible marine litter hot spot areas and of the potential impact on biota. Furthermore, seasonal monitoring of the marine litter was regularly carried out on the beaches of the Pelagos Sanctuary and the PNAT in order to identify the 10 ML Top Items and the related sources and then guide the specific mitigation actions.

ANNOUNCEMENT OF THE THREE BEST POSTERS SUBMITTED BY THE STUDENTS

Thanks to the financial support of the Principality of Monaco, a competition was organised to elect the best informative posters presented by doctoral or postgraduate students.

Thus, Isabelle ROSABRUNETTO, Director General of the Department of External Relations and Cooperation, awarded Mr Wael KOUCHED, post-doctoral student at the National Institute of Marine Sciences and Technologies in Tunisia (INAT), the first prize for his poster entitled: "Monitoring of *Tursiops truncatus* around an aquaculture farm in eastern Tunisia". Mr. Kouched will thus be invited to Monaco on the occasion of the celebration of the 25th anniversary of ACCOBAMS and to the 14th Meeting of the Scientific Committee of ACCOBAMS, scheduled in November 2021.

The 2nd and 3rd prizes were awarded to Ms. Arwa CHAKROUN and Ms. Patricia SANZ for their posters titled: "Experimentation of two types of acoustic repellents to mitigate depredation on seines in North-East Tunisia" and "Using MEDACES to conserve cetaceans through stranding data" respectively.

CONCLUSION AND RECOMMANDATIONS

MONITORING OF CETACEAN POPULATIONS:

- Encourage the continuation of large-scale surveys (such as ASI) through the development and implementation of the ACCOBAMS Long Term Monitoring Programme, in synergy with other relevant projects/programmes (ex. EcAp MEDIII/IMAP, MSFD).
- Continue and develop local and seasonal monitoring projects on regular yearly basis, based on standardized protocols.
- Identify possible biases and take them into consideration as appropriate, when elaborating abundance estimates based on ASI results.
- Seek and promote exchange and data sharing between photo-identification databases.
- Facilitate and support contributions to peer-reviewed publications by researchers from the South Mediterranean countries. In this regard, the ASI special issue that will be developed for publication in "Frontiers in Marine Sciences" represents a unique opportunity. All scientists from the ACCOBAMS Area, with particular focus from the Southern countries, are invited to submit articles to the Topic Editors.
- Encourage and seek through dedicated projects, collaboration, transfer of expertise and exchanges of experts between universities/research centres across the Mediterranean Basin.
- Share lessons learnt, data and results from Regional monitoring efforts (*i.e.* ASI Project) with UNEP-MAP/SPA-RAC in the context of the IMAP implementation and the preparation of the Med QSR 2023.
- Strengthen national coordination to create networks of experts in charge of the implementation of the thematic IMAP and data processing and analysis, in particular to deliver relevant IMAP assessment reports.

AREAS OF IMPORTANCE FOR CETACEANS

- Request Parties to support the implementation of scientific studies based on standard protocols to provide robust results on cetacean knowledge at national and regional levels.
- Request scientists to identify important areas for cetaceans, based on IMMA criteria, in order to prepare the next review of IMMAs.
- Request the Secretariat to develop, with the support of the Scientific Committee, decision support tools and to propose practical trainings on the identification and implementation of management and mitigation measures for new identified CCH, in particular the creation of MPAs or identification of OECM (Other Effective Area-based Conservation Measures).
- Develop collaboration and exchange with other bodies concerned with MPAs (EU for Natura 2000, Barcelona Convention, IMO for PSSAs, etc.).
- Consider the data from and results of relevant projects and initiatives (Bycatch project, MEDACES, etc.) in the identification and management of Areas of Importance for Cetaceans.

INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: WHALE WATCHING

- Encourage countries wishing to develop sustainable WW activities, to contact the ACCOBAMS Secretariat and other countries that have already implemented these activities (for example with the "High Quality Whale watching" certificate), to get information on socio-economic studies that would have been done previously.

- Request the ACCOBAMS Secretariat and SPA/RAC to support the countries wishing to implement such activities by (1) assisting them to apply for external funding (e. g European Commission), and (2) associating other regional organizations such as the GFCM, that are in charge of professional fishing issues.
- Support Countries and adapt the identification criteria for the WW to local conditions for a more specific control of this activity depending on the country context.
- Investigate to what extent the WW and the "High Quality Whale Watching" certificate could contribute to the collection of data useful for science.

INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: NOISE

- Put into effect and enforce existing mitigation measures in order to reinforce efforts to prevent and mitigate impacts of anthropogenic underwater noise. If properly implemented and rigorously applied the measures adopted by MEAs (Multilateral Environment Agreement) provide a sound basis for the protection of cetaceans.
- Request the ACCOBAMS Secretariat to disseminate the ACCOBAMS Guidelines of Resolution 7.13 and the relevant CMS Guidelines to all the ACCOBAMS Parties, stressing underwater noise issue, as well as ACCOBAMS Resolution 7.12 on collisions to encourage the speed reduction in some specific areas.
- Request the ACCOBAMS Secretariat and SPA/RAC to further communicate on the projects dealing with the noise issue and in which they are involved and continue involving national authorities in all capacity building activities.

CETACEAN STRANDINGS

- Strengthen cooperation between veterinarians and biologists, including universities, research centres, veterinary institutions, and International Organizations.
- Raise public awareness so that reporting of stranding and voluntary field interventions are carried out under the best possible conditions.
- Encourage appropriate use of citizen science to support monitoring networks of cetacean stranding.
- Further promote harmonization of stranding protocols (Data/sample collection and analysis, etc.) in order to facilitate data exchange and complementarity.
- Implement relevant Capacity building tools such as practical trainings and remote assistance.
- Further develop national monitoring networks for cetacean stranding and/or improve their structures and functioning procedures (enhance internal communication, extend their geographical coverage, update national databases, further involve NGOs, etc.).
- Further encouragement to researchers to report strandings to MEDACES.

INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: FISHERIES AND BYCATCH

- Consider cetaceans distribution/abundance and fisheries areas and characteristics (e.g. effort, gear, period, etc.) at the same time in studies related to the assessment of interactions (or the assessment of the risk of interactions) between cetaceans and fisheries.
- Include activities aimed at raising awareness of the fishing sector to the conservation of the marine environment, cetaceans and their habitats in studies on interactions with fisheries and implement these activities in collaboration with fishers.
- Encourage further studies to understand the interactions between cetaceans and fisheries and to identify potential mitigation measures.

Regarding incidental catch

- Monitoring programmes on the incidental catch of vulnerable species are essential and represent a fundamental step towards developing and implementing appropriate conservation and management measures for the protection of vulnerable species (i.e. marine mammals, sea turtles, seabirds, sharks and rays and VMEs) and the concomitant sustainability of the fisheries sector
 - ⇒ Expand incidental catch surveys, based on standardized monitoring practices and protocols such as the GFCM methodology for data collection of incidental catch of vulnerable species^[1], to compare fisheries, areas, as well as test potential methods and eventual mitigation tools that could reduce bycatch while maintaining catches of the targeted species

Regarding depredation

- Develop studies on the diet of the bottlenose dolphin (*Tursiops truncatus*) in the different areas of the Mediterranean, for example when possible, by studying the stomach contents of stranded individuals, in order to complete the knowledge on the diet of this species and better understand its feeding habits.
- Develop studies to establish the link between by-catch/depredation and the reduction in prey availability due to increased fishing effort or reduced resources (including through the development of trophic network modelling).
- Assess the long-term economic sustainability of small pelagic fisheries, taking into consideration stock reduction due to overfishing and competition for the resource between their natural predators and humans.
- Pursue studies on acoustic devices (pingers) to assess their efficiency over the long-term taking into consideration that pingers are to be carefully considered as they represent an additional source of noise in the marine environment, with risks for the dolphins of physical injuries and of habitat exclusion.
- Continue the studies to assess the efficiency of the strengthened net tested in Mediterranean Moroccan purse seine fishery, which, up to date, demonstrate positive results with an increased resistance of the net.
- Conduct further studies on the feasibility of developing alarm systems that would inform fishers of the presence of dolphins and avoid interaction situations and depredation.

^[1] FAO. 2019. *Monitoring the incidental catch of vulnerable species in Mediterranean and Black Sea fisheries: Methodology for data collection*. FAO Fisheries and Aquaculture Technical Paper No. 640. Rome, FAO.

IMPACT OF MARINE LITTER ON CETACEANS

- Encourage scientists to engage in the monitoring of the impact of macro and micro plastics on cetacean, including through marine litter ingestion in stranded specimens, given the importance of the marine litter issue and its impacts on the marine life in general and on cetaceans in particular. Trainings on the subject should be promoted by the Secretariat of ACCOBAMS in collaboration with other relevant organizations.

CLOSING OF THE CONFERENCE

Mouïñ HAMZÉ, Secrétaire Général du Conseil National pour la Recherche Scientifique au Liban

Il a affirmé que pendant les 3 jours de débats et discussions sur notre la mer Méditerranée se sont terminé avec 38 recommandations. Ainsi, les efforts de l'ACCOBAMS et de tous les autres organismes ont fini par faire leurs preuves au cours de ces 2 dernières décennies, ce qui a permis la contribution à la conservation de la biodiversité marine. En dépit de la conjoncture mondiale, les efforts ont continué.

Il a affirmé en outre, que le CNRS est très attaché à la recherche malgré tout et que le milieu marin libanais est soumis à un stress anthropique dû aux activités humaines, à la surpopulation et au versement des déchets. Cette situation ne s'est pas améliorée avec l'explosion du port en été 2020, la pollution par les hydrocarbures en plus de la crise sanitaire. Tout cela ne vous a pas découragé pour continuer les efforts de conservation.

Le Secrétaire Général a adressé ses remerciements.

M. Gabi Khalaf a remercié à son tour le Secrétaire Général

ANNEX

ANNEX 1 –PARTICIPANT LIST

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ANNEX 2 - AGENDA

Tuesday 13 th April 2021	
MORNING	
9:00 - 10:00 ¹	OPENING SESSION
9:00	<i>Gaby KHALAF</i> , Conference Chair
9:10	<i>Susana SALVADOR</i> , ACCOBAMS Executive Secretary
9:15	<i>Khalil ATTIA</i> , Director of the Specially Protected Areas Regional Activity Centre
9:25	<i>Iryna MAKARENKO</i> , Pollution Monitoring and Assessment Officer, Secretariat of the Commission on the Protection of the Black Sea Against Pollution
9:35	<i>Abdellah SROUR</i> , Executive Secretary of the General Fisheries Commission for the Mediterranean
9:45	<i>Céline IMPAGLIAZZO</i> , ACCOBAMS National Focal Point for Monaco
9:50	<i>Milad FAKHRI</i> , ACCOBAMS National Focal Point for Lebanon Overview on the National Centre for Marine Sciences' recent activities for cetaceans' conservation in Lebanon (conference host country)
10:00 - 12:30	SESSION 1: MONITORING OF CETACEAN POPULATIONS Session Chair: <i>Abdelali LOUDRHIRI (Morocco)</i> Introductory conference / Rapporteur: <i>Simone PANIGADA (Tethys Research Institute) & Julie BELMONT (ACCOBAMS)</i>
10:00	Opening by the Session Chair
10:05	Introductory conference: ACCOBAMS Survey Initiative, reinforcement and sustainability of monitoring efforts <i>Julie BELMONT (ACCOBAMS)</i> Information on ASI Results Special Issue <i>Nejla BEJAOUI (INAT, Tunisia)</i>
10:15	La région tunisienne, un point chaud de mégafaune marine en Méditerranée <i>Mehdi DEKHIL (Tunisia)</i>
10:25	Assessing knowledge on cetaceans inshore and offshore Algeria <i>Souad LAMOUDI (CNRDPA, Algeria)</i>
10:35	Estimation des biais associés à l'évaluation de l'abondance de la mégafaune marine au cours de la campagne d'observation ASI <i>Mehdi DEKHIL (Tunisia)</i>
10:45	Poster : Suivi de <i>Tursiops truncatus</i> autour d'une ferme aquacole à l'Est de la Tunisie (Teboulba) <i>Wael KOUCHEDE (INSTM, Tunisia)</i>
10:50	Poster: Estimating abundance and residency of a <i>Tursiops truncatus</i> (sub)population along the south-western coast of Sicily <i>Alessandra VANACORE (Italy)</i>
10:55 - 11:20	Discussion
<i>Break</i>	
11:30	A well-connected network for cetacean monitoring in south Mediterranean countries following the EcAp/IMAP principles <i>Mehdi AISSI (SPA/RAC, Tunisia)</i>
11:40	Collaboration tripartite (Liban, Tunisie et France) pour une amélioration du suivi des cétacés en Méditerranée <i>Gaby KHALAF (CNRS, Lebanon)</i>
11:50	Poster: National implementation for Integrated Monitoring and Assessment Programme on Marine Mammals (Opportunity & Challenges) <i>Mohamed ABDELWARITH (Egypt)</i>
11:55	Poster: Trends in cetacean research in the Eastern North Atlantic <i>Bárbara CARTAGENA DA SILVA MATOS (Portugal)</i>

¹ The displayed schedules are in CET format

12:00 - 12:30	Discussion and Session 1 Conclusions by the Session Chair and the Rapporteur
AFTERNOON	
13:30 - 14:20	SESSION 2: AREAS OF IMPORTANCE FOR CETACEANS Session Chair: <i>Mahmoud FOUAD (Egypt)</i> Introductory conference / Rapporteur: <i>Léa DAVID (écoOcéan Institut) & Majlis SALIVAS (ACCOBAMS)</i>
13:30	Opening by the Session Chair
13:35	Introductory conference: Toward the identification of important cetacean's areas at a regional scale <i>Léa DAVID (écoOcéan Institut) & Majlis SALIVAS (ACCOBAMS)</i>
13:45	Poster : IMMA : Système d'alerte précoce pour la conservation du Grand dauphin <i>Tursiops truncatus</i> de la région Nord-Est de la Tunisie <i>Rimel BENMESSAOUD (INAT, Tunisia)</i>
13:55 - 14:20	Discussion and Session 2 Conclusions by the Session Chair and the Rapporteur
14:20 - 16:00	SESSION 3: INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: WHALE WATCHING AND NOISE Session Chair: <i>Ibrahim BEN AMER (Libya)</i> Introductory conference / Rapporteurs: <i>Lobna BEN NAKHLA (SPA/RAC) & Majlis SALIVAS (ACCOBAMS)</i>
14:20	Opening by the Session Chair
14:25	Introductory conference: Progress for a better prevention and mitigation of underwater noise impacts on cetaceans and for a sustainable implementation of whale-watching activities <i>Lobna BEN NAKHLA (SPA/RAC) & Majlis SALIVAS (ACCOBAMS)</i>
14:35	Whale watching et pécaturisme au Maroc, enjeux et contraintes <i>Abdelali LOUDRHIRI (Morocco)</i>
14:45	Investigating the impact of anthropogenic activities on cetaceans within the Eastern Mediterranean Sea of Turkey <i>Aylin AKKAYA (DMAD, Turkey)</i>
<i>Break</i>	
15:05	Cetacean sightings in the Mediterranean off the territorial waters of Moroccan Atlantic coast during oil exploration aboard the drilling vessel: Biodiversity and Sperm whale behaviour <i>Mohammed RAMDANI (Morocco)</i>
15:15	Prise en compte de la problématique du bruit sous-marin en Algérie <i>Souad LAMOUTI (CNRDPA, Algeria)</i>
15:25	Poster: Progressing prevention, mitigation and reduction of anthropogenic noise <i>Nicolas ENTRUP & Johannes MÜLLER (OceanCare, Switzerland)</i>
15:30 - 16:00	Discussion and Session 3 Conclusions by the Session Chair and the Rapporteur

Wednesday 14 th April 2021	
MORNING	
9:00 - 12:00	SESSION 4: CETACEAN STRANDINGS Session Chair: <i>Rahima BERKAT (Algeria)</i> Introductory conference / Rapporteur: <i>Sandro MAZZARIOL (Italy) & Chedly RAIS (ACCOBAMS)</i>
9:00	Opening by the Session Chair
9:05	Introductory conference: Best practices in monitoring and management of cetacean stranding - <i>Sandro MAZZARIOL (Italy)</i>
9:15	On the occurrence of bottlenose dolphin, <i>Tursiops truncatus</i> (cetacea: delphinidae) from the Syrian coast (eastern Mediterranean Sea): historical data and recent records <i>Malek ALI (Syria)</i>
9:25	Échouage des cétacés le long de la côte Algérienne. Cas du grand dauphin <i>Tursiops truncatus</i> <i>Henda ASSIA (Tunisia)</i>
9:35	Cetacean in Libyan waters: recorded via a citizen science project and mining social media platforms <i>Jamila RIZGALLA (Libya)</i>
9:45	Poster: Première signalisation d'un échouage d'une orque pygmée (<i>Feresa attenuata</i>) en Tunisie <i>Hédia ATTIA EL HILI (Tunisia)</i>
9:55	Poster : Nouvelle espèce échouée sur le littoral algérien : Baleine à bosse " <i>Megaptera novaeangliae</i> " <i>Yahia BOUSLAH (Algeria)</i>
10:00	Poster: A rare stranding event of the short beaked common dolphin (<i>Delphinus delphis</i>) in the eastern Tunisian coastline <i>Olfa CHAIEB (INSTM, Tunisia)</i>
10:05	Poster: First Record of a Shark Predation Case on Bottlenose Dolphin (<i>Tursiops truncates</i>) in the South Mediterranean Region <i>Salih DIRYAQ (Libya)</i>
10:10	Poster: First records of Cuvier's beaked whale (<i>Ziphius cavirostris</i> , G. Cuvier 1823) strandings along the Tunisian coast <i>Sami KARAA (INSTM, Tunisia)</i>
10:15	Poster: Stomach content analysis of stranded cetaceans along the Lebanese coast <i>Céline MAHFOUZ (CNRS, Lebanon)</i>
10:20	Poster: Data on four delphinidae species stranding in the Gulf of Hammamet (Central-eastern Mediterranean): recent findings (2019-2021) <i>Olfa CHAIEB (INSTM, Tunisia)</i>
<i>Break</i>	
10:40	Le Réseau National des Echouages en Tunisie : historique et perspectives <i>Hédia ATTIA EL HILI (Tunisia)</i>
10:50	Review and Compilation of Cetaceans' Stranding Records along the Libyan Coastline <i>Ibrahem BEN AMER (Libya)</i>
11:00	Échouages de cétacés sur les côtes marocaines entre 2015 et 2020 <i>Imane TAI (Morocco)</i>
11:10	Poster : Statut des cétacés en Tunisie à travers l'analyse de la base de données du Réseau National d'Echouages (RNE) de 2010 à 2021 <i>Sami KARAA (INSTM, Tunisia)</i>
11:15	Poster: Using MEDACES to conserve cetaceans through stranding data <i>Patricia SANZ (Spain)</i>
11:20	Poster: Mapping the Stranding Whales in Turkish Marine Waters <i>Cemal TURAN (Turkey)</i>
11:25 - 12:00	Discussion and Session 4 Conclusions by the Session Chair and the Rapporteur
<i>Break</i>	
13:00 - 16:00	Training workshop on the use of Netccobams Digital Platform for cetacean conservation

Thursday 15 th April 2021	
MORNING	
9:00 - 10:30	SESSION 5: INTERACTIONS BETWEEN CETACEANS AND HUMAN ACTIVITIES: FISHERIES AND BYCATCH Session Chair: <i>Nejla BEJAOUÏ (INAT, Tunisia)</i> Introductory conference / Rapporteur: <i>Souad LAMOÛTI (CNRDPA, Algeria) & Celia LE RAVALLEC (ACCOBAMS)</i>
9:00	Opening by the Session Chair
9:05	Introductory conference: Activities and progress in assessing and mitigating interactions with fisheries <i>Souad LAMOÛTI (CNRDPA, Algeria) & Celia LE RAVALLEC (ACCOBAMS)</i>
9:15	Incidental catch of vulnerable species in the Mediterranean: an overview of the “MedBycatch project” and of the results from “SoMFi 2020” <i>Paolo CARPENTIERI (GFCM, Italy)</i>
9:25	Assessing the overlap of fishing and bottlenose dolphins in an understudied region of the Mediterranean <i>Tim AWBERY (DMAD, Turkey)</i>
9:35	Changement dans le volume et la composition des captures des sardiniers attribuable à la déprédation par <i>Tursiops truncatus</i> au Nord-Est de la Tunisie (Kélibia) <i>Rimel BENMESSAOUD (INAT, Tunisia)</i>
9:45	Poster : Etude préliminaire sur l'étendue des captures accidentelles et les événements de déprédation entre les cétacés et les activités de pêche en Algérie <i>Mohamed El Amine BOUHADJA (CNRDPA, Algeria)</i>
9:50	Poster : Expérimentation de deux types de répulsifs acoustiques pour atténuer la déprédation au niveau des sennes au Nord-Est de la Tunisie <i>Arwa CHAKROUN (INSTM, Tunisia)</i>
9:55	Poster : Utilisation du système Licado pour la prévention de la déprédation des Grands Dauphins sur les sennes au Nord-Est de la Tunisie (Kélibia) <i>Mourad CHERIF (INSTM, Tunisia)</i>
10:00	Poster : Interactions entre grands dauphins et senneurs en Méditerranée marocaine et expérimentation avec la senne renforcée <i>Mohammed MALOULI IDRISSE (INRH, Morocco)</i>
10:05 - 10:30	Discussion and Session 5 Conclusions by the Session Chair and the Rapporteur
10:30 - 11:00	Side Event on the PlasticBuster MPA project by <i>Maria Cristina FOSSI (Italy)</i>
<i>Pause</i>	
11:20 - 11:30	Announcement of the three best posters submitted by the students <i>Isabelle ROSABRUNETTO</i> , General Director of the Department of Foreign Affairs and Cooperation of the Principality of Monaco
11:30 - 12:30	Conclusions and Recommendations of the Conference
12:30 - 13:00	Closing of the Conference <i>Mouïñ HAMZÉ, Secretary General of the Lebanese National Council for Scientific Research</i>