

WP1 – Activity 1.2

DELIVERABLE 1.2.1

Local Round Tables report

| | | |
|--|---|--|
| Work Package | WP1: Joint development of the transnational strategy for the monitoring sentinel species | |
| Activity | Activity 1.2: Creation of the coordination model and monitoring protocols in the EUSAIR Region | |
| Name of deliverable | 1.2.1. Local Round Tables report | |
| Version | Date | 17 March 2025 |
| Report description | The report contains the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels in 7 different countries of EUSAIR region: Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, Greece | |
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ACRONYMS

ACCOBAMS: Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area

APPA: Provincial Environmental Agencies

ARCHELON: The Sea Turtles Protection Society of Greece

ARPA: Regional Environmental Protection Agencies

ARPAT: Regional Agency for Environmental Protection of Tuscany

ASL: Local Health Authority

ATRA: Herpetological Association in Bosnia and Herzegovin

AUTH: School of Veterinary Medicine of Aristotle University of Thessaloniki

BDS: Banca Dati Spiaggiamenti

BIO.LOG: Society for Biological Research and Protection of Nature

CERT: Cetacean Strandings Emergency Response Team

CIBRA: Interdisciplinary Center for Bioacoustics and Environmental Research

CETEOR: Centre for economic, technological and environmental development

CoNISMa: National Inter-University Consortium for Marine Sciences

C.Re.D.iMa.: Centro di Referenza Nazionale per le Indagini Diagnostiche sui Mammiferi marini spiaggiati

C.Re.Ta.M: National Reference Centre for the Welfare, monitoring, and Diagnosis of Sea Turtle Diseases

CRTM: Centro Veterinario per le Tartarughe Marine

CZIP: Center for Protection and Research of birds of Montenegro

Department BCA: Department of Comparative Biomedicine and Nutrition (University of Padova)

ECSOs: Environmental Civil Society Organizations

FBiH: Federation of Bosnia and Herzegovina



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FLT Network: Fixed Line Transect Mediterranean monitoring

HAS: Herpetofauna Albanian Society

HEIS: Hydro-Engineering Institute of Sarajevo

IMMAs: Important Marine Mammal Areas

INCA: Institute for Nature Conservation in Albania

ISPRA: Italian Institute for Environmental Protection and Research

ISUV: Food Safety and Veterinary Institute

IZS: Experimental Zooprophyllactic Institute

IZSPB: Experimental Zooprophyllactic Institute of Apulia and Basilicata

NETCET: Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic

NGOs: International non-governmental organization

MAP: Mediterranean Action Plan

MCP: Marine and Coastal Protected Area

MEDASSET: Mediterranean Association to Save the Sea Turtles

MedCEM: Mediterranean Center for Environmental Monitoring

MDR: Montenegro Dolphin Research

MoTE: Ministry of Tourism and Environment

MP: Management Plan

MPAs: Marine Protected Areas?

MSFD: Marine Strategy Framework Directive

NAPA: National Agency of Protected Areas

NEA: National Environmental Agency

N.E.C.C.A.: Natural Environment & Climate Change Agency

NEUM: Municipality of Neum



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NGOs: Non-Governmental Organisation

PPNEA: Protection and Preservation of Natural Environment in Albania

QNOD: Inter-institutional Maritime Operational Centre

RAC: Regional Activity Centre

RAPA: Regional Agency of Protected Areas

REIC: Regional Education and Information Centre for Sustainable Development in South-East Europe

SEEP: Social Education and Environment Protection

SME: Small and medium size enterprises

SNPA: National System for Environmental Protection

SPA: Specially Protected Areas

SVOM: Coastal Sea Protection Service

UAMD: Aleksander Moisiu University, Durrës

UAV: Unmanned Aerial Vehicle

UME: Unusual mortality events

UNEP: United Nations Environment Programme

UNDP: United Nations Development Programme

VEFUNIZG: Faculty of Veterinary Medicine, University of Zagreb

ZRSVN: Institute of the Republic of Slovenia for Nature Conservation

WP1: Work Package 1

WWF: World Wide Fund for Nature



1. INTRODUCTION

Marine sentinel species, such as cetaceans, sea turtles, and monk seals, are crucial indicators of the health of marine ecosystems. Monitoring their populations provides essential insights into biodiversity conservation, habitat integrity, and the impact of human activities.

This report examines the monitoring systems for these species in seven countries (Italy, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Albania, and Greece) focusing on stranding events, free-ranging animal observation, and sea turtle nesting. Annex 1 includes all the single Round Table reports organized by 7 partners (LP/PP1 – CoNISMa, PP3 – VEFUNIZG, PP4 – UAMD, PP6 – MORIGENOS, PP7 – MDR, PP9 – Archipelagos, PP10 – NEUM) within SAMESEA project. The aim of the Round Tables was to identify current legislative frameworks, practices, approaches, highlighting strengths, gaps, opportunities, and recommendations for enhanced conservation efforts through improved collaboration, standardized methodologies, and data-sharing mechanisms with a wide range of stakeholders.

The degree of monitoring and conservation varies significantly among these countries. Some have well-established national networks and legal frameworks, while others rely on ad-hoc initiatives driven by academic institutions and NGOs. Addressing these discrepancies is essential for ensuring transnational coherence in marine conservation efforts.



2. STRANDING MONITORING

Italy

Italy has a well-structured national stranding network for marine mammals involving multiple institutions able to respond locally and perform necropsy and post-mortem investigations following standardized protocols provided by ACCOBAMS (Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area). Data collection started at volunteer-basis in 1986 and a systematic monitoring recognized at national level was established in 2015. The intervention flow includes an emergency free hotline, regional response teams, and 2 public national databases, one for stranding reports and one for post-mortem analysis outputs. The results of this monitoring are shared with the Italian Government to determine mortality causes, including anthropogenic impacts, and informs conservation strategies.

For sea turtles, a regional and national coordination exists following standardized protocols and the same free emergency number for reporting. Regional databases are not public and no national database is available.

Slovenia

Slovenia has a functional stranding network (albeit not legally defined) for marine mammals and sea turtles with data collection started in 2002. Morigenos, an NGO, plays a central role in recording and responding to strandings. The official process involves public reporting to a free emergency number, a range of institutions helping out with the initial response to reports, carcass transportation performed by the national sanitation service, and necropsy carried out by the National Veterinary Institute. Necropsies are performed on all marine mammal carcasses, and they follow



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ACCOBAMS protocols. However, necropsies are typically not carried out on sea turtles (largely due to the advanced decomposition state of the carcasses). A centralized database exists for marine mammal strandings, but not for sea turtle strandings. Data collection on the instances of stranding and during marine mammal necropsies is carried out by Morigenos, while data collection on sea turtles is not systematic and well established. No national database is available.

Croatia

Data collection about cetacean strandings started as part of an academic research in 1990 at the Faculty of Veterinary Medicine, University of Zagreb (VEFUNIZG). Today, Croatia has an established stranding network for marine animals coordinated through a national protocol which has been established in 2011. Reports are processed through an emergency free number or an online form, coordinated by the Croatian Ministry of Environmental Protection and Green Transition, and the VEFUNIZG handles necropsies following standardized protocols (ACCOBAMS).

For sea turtles, a national coordination exists following the same national standardized protocol and the free emergency number for reporting. The Croatian Veterinary Institute in Zagreb handles necropsies of sea turtles. National database is not public.

Bosnia and Herzegovina

There is no formal national stranding network for any sentinel species. Monitoring efforts are sporadic, and data collection is limited highlighting a lack of systematic monitoring. Research efforts have primarily focused on other marine species such as elasmobranchs.



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Montenegro

Montenegro lacks a formal national stranding network or standardized protocol, with unclear contact points for reporting. Stranding cases are informally reported by local communities, fishers, divers, mussel farmers, and NGOs, mainly through Facebook. The Institute of Marine Biology serves as the main contact, while Morsko Dobro handles cases within MPAs, but neither follows a defined procedure or the procedure is unknown to the public. No necropsies are conducted for dolphins or seals due to a lack of resources, making the causes of strandings largely unknown, though necropsies are performed on sea turtles. Carcass removal is also a challenge. A sea turtle rehabilitation and release facility exists in Kotor, but there is no trained veterinarian for sentinel species in Montenegro.

Albania

Albania lacks a formal stranding monitoring network. Data collection is fragmented across NGOs, universities, and protected area agencies. The Regional Agency of Protected Areas (RAPA) Vlora acts as a focal point, and a sea turtle center is under development. There is no unified national database, and most strandings are reported informally through interpersonal networks.

Greece

Greece has a formal stranding network for marine mammals and sea turtles. The Veterinary Faculty of Thessaloniki and ARCHELON, along with multiple research institutes and NGOs, handle response efforts at regional level. Reports are processed through an emergency free number. A new joint ministerial decree (2023) aims to constitute the legal framework for the creation of a new Agency for stranding



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management and standardized intervention protocols for marine mammals as well as for sea turtles and marine wildlife in general.

3. MONITORING OF FREE-RANGING ANIMALS

Italy

Aerial and vessel-based surveys are adopted at regional and national levels with the coordination of ISPRA by SPNA. According to standardized protocols by ACCOBAMS, distance sampling techniques, photo-identification and environmental DNA (eDNA) monitoring are the methods employed for population dynamic studies. A national database managed by ISPRA ensures data accessibility and consistency, but is not available for public consultation, resulting in monitoring reports that take place every 6 years for the Habitats Directive (92/43/EEC) and the Marine Strategy Framework Directive (2008/56/EC). However, there is an objective difficulty in comparing data since the detection platforms, periods, and study areas are not homogeneous.

Slovenia

Morigenos is the primary organization conducting dedicated marine mammal monitoring, both vessel-based and land-based and records sea turtle sightings during its surveys. Morigenos' monitoring is year-round and started in 2002. The only regular cetacean species in Slovenia is the common bottlenose dolphin (*Tursiops truncatus*), with around 150 animals using regularly the area. Species present occasionally are the common dolphin (*Delphinus delphis*), the striped dolphin (*Stenella coeruleoalba*), and the fin whale (*Balaenoptera physalus*). Since 2002, there is no record of presence of monk seals (*Monachus monachus*). According to standardized protocols by



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ACCOBAMS, distance sampling techniques, photo-identification and eDNA are among the methods employed by Morigenos for population dynamics studies. Citizen science initiatives contribute data, but monitoring remains limited by funding constraints. Morigenos collects a wide range of data including GPS, photo-ID, behavioral, acoustic, and drone data.

Croatia

Croatia lacks a national monitoring network but has strong regional initiatives. Regional NGOs and public institutions conduct population dynamic studies according to ACCOBAMS and national protocols. No national database is available for consultation.

Bosnia and Herzegovina

No official monitoring program exists. Some reports of dolphins and monk seals have been recorded, but systematic data collection is absent.

Montenegro

Montenegro lacks a national monitoring program or standardized sighting protocol. Baseline information on sightings are primarily collected by NGOs such as MDR, MedCEM, and CZIP, following ACCOBAMS protocols. Sightings are typically reported through NGOs, social media—mainly Facebook—and authorities like the Institute of Marine Biology of Kotor. A dedicated but non-national monk seal sighting network is coordinated by MedCEM and CZIP, with support from the Monk Seal Alliance, though its database remains closed to the public for species protection. The government is considering integrating sentinel species monitoring into MPAs, but no open-source



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national database is available. Local stakeholders have shown strong interest in joining a potential sighting network.

Albania

Albania does not have a coordinated monitoring program. NGOs and public institutions conduct ad hoc research at regional level following MPA protocols, but efforts are limited to specific projects. Funding limit continuous monitoring. No national database is available for public consultancy.

Greece

Despite the lack of a centralized national network, Greece has several research institutes and NGOs engaged in monitoring following ACCOBAMS protocols. No national database is available for public consultancy.

4. SEA TURTLE NEST MONITORING

Italy

Italy has an active nesting monitoring program coordinated by ISPRA, particularly for *Caretta caretta*. Reporting is equal to the one for strandings. SNPA establishes a protocol characterized by beach monitoring of targeted suitable or historical nesting sites. Fat bikes or UAV are also used to cover larger monitoring areas. Regional agencies and NGOs oversee nest identification, protection, and hatchling success studies. National protocols are designed by ISPRA but no national database is available for public consultancy.



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Slovenia

Slovenia has no sea turtle nesting monitoring program due to the lack of nesting activities and suitable nesting sites.

Croatia

Croatia has no sea turtle nesting monitoring program due to the lack of nesting activities and suitable nesting sites.

Bosnia and Herzegovina

Bosnia and Herzegovina have no sea turtle nesting monitoring program due to the lack of nesting activities and suitable nesting sites.

Montenegro

Montenegro recorded a single nesting event in 2024. The country is generally not within the primary nesting zone but his discovery highlights the need for increased monitoring efforts.

Albania

Albania has no formal nest monitoring system. The nesting activity of *C. caretta* has been collected since 2002 by the HAS. Some reports suggest occasional nesting along the southern coast, but data collection remains inconsistent. There is not a national database where data is stored and shared. The information flow is still very limited. The data is usually stored by individual experts or NGOs involved in the specific project, and part of it is published through papers.



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Greece

Greece has a national nesting monitoring program following national protocols and led by ARCHELON at national level and other NGOs at regional level. Reporting is equal to the one for strandings. No national database is available for public consultancy.

5. CONCLUSION

The main outputs of the round table discussion focused on the need to standardize monitoring protocols among the countries, establishing national formal networks with centralized databases which are open to the stakeholders. The majority of the countries has no open databases for public consultancy without facilitating cross-border research and conservation efforts. Many monitoring programs are NGO-led. A more consistent state-level participation is needed to ensure long-term sustainability. In the same way, many monitoring programs rely on project-based funding, leading to inconsistent data collection. Long-term funding mechanisms should be explored. Strengthening MPAs can support sentinel species monitoring for enhanced biodiversity management. The use of public awareness and training should be implemented to ensure more targeted protection of sentinel species and information of local, national, and regional activities. The use of advanced technologies (such as unmanned aerial vehicles, eDNA, remote sensing, digital reporting, etc.) can enhance species monitoring and conservation efforts.

In conclusion, the monitoring and conservation of dolphins, monk seals, and sea turtles vary widely across the EUSAIR region. While some countries have well-structured systems, other countries face significant gaps in coordination, funding, and legal frameworks. By addressing these challenges, the region can improve conservation efforts and ensure the long-term protection of marine sentinel species. Strengthening



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collaboration between governments, researchers, and civil society is essential for sustainable marine biodiversity management in the EUSAIR region.

6. RECOMMENDATIONS

The discussion during the round tables led to several recommendations, which have been consolidated and summarized into three key topics: science, management, and policy.

Science

1. Application of standardized protocols:
 - a. ACCOBAMS-LIFE DELFI protocols: stranding networks, necropsy and post-mortem investigation for health and anthropic interaction monitoring (forensic evidence-based approach);
 - b. ACCOBAMS protocol for at sea monitoring;
 - c. UNEP/MAP SPA/RAC, LIFE TURTLENEST/ISPRA for sea turtle nest and stranding monitoring;
2. Establish central database maintained by a central body;
3. Periodic capacity building and training (at individuals, organizations, institution and policy level).

Management

1. Best practice, standardized protocols and periodic training for local stakeholders, such as in fishers, tourism operators, boat tour operators, etc.



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2. Standardized digital reporting method to support stranding and nest monitoring networks and authorities for streamlined coordination and effective data sharing;
3. Empower and standardize the logistics to collect and deliver stranded animals to veterinary laboratories equipped to perform post-mortem examinations or to rehabilitation centers;
4. Stranding networks connections per species at regional level;
5. Periodic public education and awareness campaign.

Policy

1. Establishment and recognition of monitoring networks at national level involving all the relevant stakeholders;
2. Establish regular monitoring program (MPA);
3. Identify risk hotspots of particular protection/monitoring supporting targeted regulations and joint policy enforcement;
4. Enforce regional cooperation in emergency response and addressing human interaction;
5. Setting marine species conservation as one of national biodiversity conservation priority;
6. Increase national dedicated budget for the marine sentinel species monitoring;
7. Review existing monitoring and management plans (national, MPA).



ANNEX 1

LOCAL ROUND TABLES REPORTS



WP1 – Activity 1.2

**DELIVERABLE 1.2.1
Local Round Tables report**

LP1 - National Inter-University Consortium for Marine Sciences

| | |
|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

| | |
|-----------------------------|--|
| Action: | W.1 - Joint development of the transnational strategy for the monitoring sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 29/01/2025 |
| Name of the partner | LP1 - CoNISMa |
| Authorship | Cipriano Giulia, Bonelli Bianca, Pietroluongo Guido, Ricci Pasquale, Carlucci Roberto (CoNISMa). |

ROUND TABLE

| | |
|------------------------------|--|
| Date | 29/01/2025 |
| Time | 9:30 – 16:30 |
| Location | Aula Magna del Dipartimento Di Bioscienze, Biotecnologie e Ambiente. Università Degli Studi Di Bari, Campus E. Quagliariello. Via Orabona 4, 70125 Bari |
| Target groups invited | <ul style="list-style-type: none"> - National public authority - Regional public authority - Local public authority |



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| | |
|-------------------------------|---|
| | <ul style="list-style-type: none"> - Higher education and research organization - Interest groups including NGOs - SME |
| Number of participants | 44 |

INTRODUCTION

The Local Round Table event was one of the activities foreseen in the SAMESEA project in the framework of WP1.

Main objectives of this event were to promote the SAMESEA project and its goals to different target groups of stakeholders potentially interested in the project, as well as to acquire information from them about the monitoring protocols and the state of the art of knowledge about the presence and distribution of the sentinel species targeted by the project: the common bottlenose dolphin *Tursiops truncatus*, the loggerhead sea turtles *Caretta caretta* and the monk seal *Monachus monachus*.

The further goal of this event was to collect suggestions coming from the stakeholders who, in different ways, deal with these species and/or with activities that, directly or indirectly, can influence their presence, distribution as well as with institutional actors who are called to manage potential interactions and environmental emergencies that may occur (i.e., strandings). With these purposes in mind, the event was organized for a full day, subdivided into two sessions as shown by the agenda (Annex I). A morning session dedicated to interventions by different institutions that, at different geographical scales (local, regional, national), deal with monitoring and administrative aspects related to the implementation of species conservation measures. An afternoon session dedicated to a round table in which different attendants (representing different target groups) were encouraged to provide suggestions and considerations on the topic of coexistence between sentinel species and maritime activities.

The event organized by CoNISMa Local Research Unit of Bari was held in the Aula Magna of the Department of Biosciences, Biotechnology and Environment, Campus Universitario, Bari, Apulia, Italy on January 29, 2025. It saw the participation of 44 people belonging to different groups of stakeholders (Annex II).

To better understand the evidence pointed out during the Local Round event the following sections were dedicated to specific themes addressed related to the monitoring of free-ranging animals, strandings, and nesting sites of the loggerhead sea turtles.

Monitoring of free-ranging animals:

This section provides detailed information on the protocols adopted in Italy for the monitoring of sentinel species and specific case studies representing experiences that occurred in the



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EUSAIR Region to be capitalized within the SAMESEA project to overcome the difficulties previously encountered and take advantage of good practices already developed.

In Italy, the Law 132/2016 established the National System for Environmental Protection (SNPA) as the official network responsible also for monitoring free-ranging sentinel species including two target species of the SAMESEA project, *T. truncatus* and *C. caretta*. This network is a federated system including the Italian Institute for Environmental Protection and Research (ISPRA), 19 Regional Environmental Protection Agencies (ARPA), and two Provincial Environmental Agencies (APPA). This Network in November 2024 adopted shared protocols and standardized across Italian territory (including territorial waters) allowing for more effective comparisons of environmental data of different components in different investigated areas. Concerning the common bottlenose dolphin and loggerhead sea turtle, the official monitoring method of the species is the Line Transect Distance Sampling (Buckland et al., 2001) preferentially from a specific aerial platform (PARTENEVIA P68) rather than vessel ones.

Concerning the monk seal, in 2022 the regional agency ARPA Puglia in collaboration with the Italian Institute for Environmental Protection and Research (ISPRA) activated a monitoring project along Apulian coasts. The monitoring techniques applied included the use of camera traps and the collection of seawater samples from which to extract environmental DNA (eDNA). Specifically, photo traps have been set up in 5 caves distributed along the Ionian and Adriatic coasts. Although these have not captured images of the species, through the collection of environmental biological samples, the presence of the monk seal has been estimated on the Ionian side of Salento.

It is also noteworthy that at Mediterranean scale, there are different projects aimed at monitoring the sentinel species of SAMESEA project. Among these, during the event emerged the involvement of ISPRA in a LIFE Project called *Conceptu Maris "CONservation of CEtaceans and Pelagic Sea TURtles in Med: Managing Actions for their Recovery in Sustainability"* (from 2022 up to date), in International FLT Med Monitoring Network (from 2007 up to date) and the Interreg MEDSEALITTER projects (2016-2019). In detail, LIFE project *Conceptu Maris* aims to promote species monitoring techniques according to the Habitats Directive (92/43/CEE) also capitalizing experience of FLT Network and MEDSEALITTER projects. In particular, the project was formulated based on the awareness that the Mediterranean Sea is changing and that collecting data to assess the health conservation status of some species of megafauna, including the common bottlenose dolphins and loggerhead sea turtles, is urgent especially in remote offshore areas, more difficult to monitor. Specifically, these animals are exposed to multiple stressors that can lead to short and long-term changes in the species' behavior and distribution. The project implements continuous monitoring by ferries or cargo of the target species integrating visual census with eDNA techniques, stable isotope analysis, and collection of *in situ* environmental data. In this framework, the presence of the monk seal has been detected through the collection of water



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samples and eDNA analysis. To collect these data they used their protocol detailed at the following link https://www.lifeconceptu.eu/wp-content/uploads/2022/12/1_Data-Collection-Data-analysis.pdf, adopting for the collection of sightings data the Distance sampling approach. Their data, successively, are stored on the National Biodiversity Network site (<https://www.snpambiente.it/dati/biodiversita/>). Currently, this is the only national site that reports sightings data of cetaceans and sea turtles at the best of our knowledge.

At a local level, important evidence about monitoring activity of cetacean species in the Northern Ionian Sea is provided by Jonian Dolphin Conservation, an association starting in 2009 to collect data about cetacean species occurring in the Gulf of Taranto, Ionian Sea through a citizen science activity coordinated with the Department of Biosciences, Biotechnology and Environment of University of Bari. Also in this case, the approach adopted for field data collection is Distance sampling implemented using as platform a catamaran 12 m long. The experience of Jonian Dolphin Conservation has been shared also in the EUSAIR regional context, from 2020 to 2022, by the project “*BioTurS - Biodiversity and Tourism Strategy to Protect Cetaceans*”, aimed to provide the best practices for the management of ecotourism in the Adriatic Sea and resulting in the development of a Citizen Science tourism model to expand scientific knowledge on dolphin conservation and tourism management, and the creation of standardized survey techniques.

The round table event highlighted that at the different geographical scale, several research groups belonging to universities, associations, and public authorities deal with the monitoring of sentinel species applying the same protocols even if from different platforms and in different time e space frames. At the Apulia level, it emerged that despite the numerous monitoring studies and scientific information about the sentinel species target of SAMESEA project, the information available is not enough to establish Protected Areas or in some cases, bureaucratic procedures slowing the process of institution of these. For this reason, the Service of Parks and Biodiversity Protection of Apulia Region decided to establish a monitoring network that involves ISPRA, ARPA, and Universities present in regional territory. This is because the regional tools are not complete and do not allow constant updating on species of conservation interest. Consequently, the need to implement a monitoring local network was highlighted.

Strandings:

In Italy, there is an official stranding network for marine mammals, which is constituted by different bodies. Generally, the Italian Coast Guard receives the call at the toll-free emergency number 1530 and informs the regional contact person according to the type of stranding, which can be ordinary or extraordinary (Figure 1). Specifically, if the stranding is ordinary come into play the Experimental Zooprohylactic Institute (IZS) of territorial competence, Local Health Authority (ASL), and regional stranding network. If the stranding is extraordinary come into play: IZS of territorial competence, ASL, regional stranding network, and CERT (*Cetacean Strandings Emergency Response Team*) that is a research unit of the Department of



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Comparative Biomedicine and Food Science of the University of Padova that has been responsible for responding to and managing live strandings, strandings of large cetaceans (> 5 m), mass strandings, unusual mortality events (UME) and environmental disasters under the supervision of the Italian Ministry of Environment.

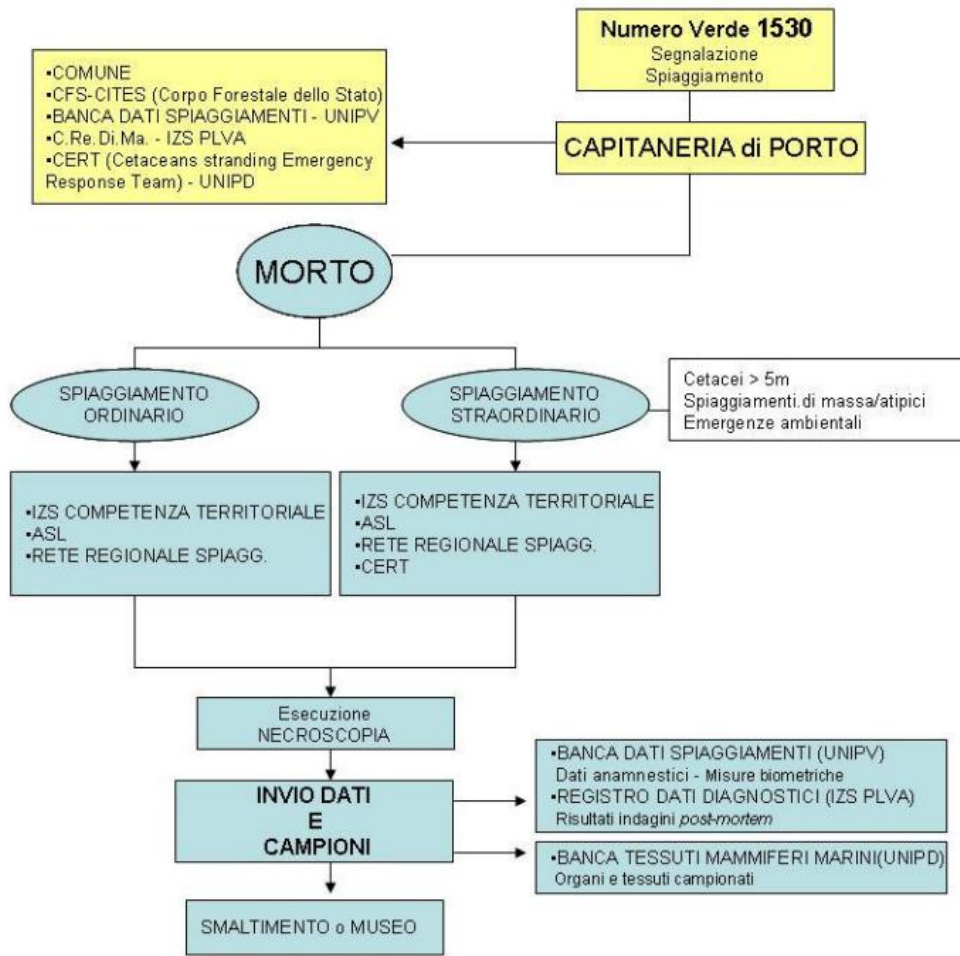


Figure 1 – Intervention flow chart to follow for dead cetacean stranding events along the Italian coasts.

Other than CERT established in 2010 to overcome the needs of an emergency response network in cases of mass strandings or large animals difficult to manage as ordinary strandings, since 2015 it was established C.Re.Di.Ma. (National Reference Center for Diagnostic Investigations in Stranded Marine Mammals) that coordinates the network of 12 IZS, 2 Universities (Padova, Siena) for the diagnostic investigations on cetacean carcasses, under the supervision of the Italian Ministry of Health. C.Re.Di.Ma manages the national stranding network, works on the standardization of intervention protocols, investigates the causes of strandings, and reports on the general causes of strandings in Italy.



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It has been established since 1986 the Banca Dati Spiaggiamenti (BDS, <http://mammiferimarini.unipv.it/>) belonging to University of Pavia, Department of Earth and Environmental Sciences; Interdisciplinary Center for Bioacoustics and Environmental Research (CIBRA); and Natural History Museum of Milan. BDS systematically collects information on marine mammal stranding in Italy under the coordination of the Ministry of Environment, the ACCOBAMS (Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area), and Pelagos Agreement.

Since 2002 the Mediterranean Marine Mammal Tissue Bank (Dep. of Comparative Biomedicine and Food Science of the University of Padova; <https://marinemammals.bca.unipd.it/>) deals with collecting, cataloguing, storing, and sending tissues free of charge, upon motivated request. It offers additional services including diagnostic pathology, necropsy, age determination, skeleton preparation, parasite identification, histochemistry and immunohistochemistry, hormone essays in blood, urine and feces, general info and specific bibliographies on marine mammals.

The establishment of different Authorities responsible for strandings over time resulted in different monitoring protocols for cetacean strandings. From 1986 to 2014 only external examinations were done, from 2015 to 2019 the protocols were standardized and from 2020 to 2023 protocols for monitoring the interaction with fishery, microplastics, and marine litter were produced. Currently, the protocol adopted at the national level is established by C.Re.Di.Ma (<https://www.izspltv.it/it/istituto/213-centri-eccellenza/centri-referenza-nazionali/428-credima.html>) and here reported: https://www.izspltv.it/components/com_publiccompetitions/includes/download.php?id=861:linee_guida_protocollo_di_intervento_sui_cetacei_morti_sul_territorio_nazionale.pdf

Considering stranding data collected along Italian coasts, from 1986 to 2023, it emerges that 2114 animals were found stranded. In the last 10 years (2014-2024), a total of 1181 cetacean carcasses were found stranded within the ADRION region, with an estimated 200 animals stranded per year (Tab 1).

Tab. 1 – Summary of cetacean stranding and cause of death from 2014 to 2024.

| Year of reference: 2014-2024 | | |
|--|-------------------------|-----|
| Number of strandings per species (2014-2024): 1181 | <i>S. coeruleoalba</i> | 525 |
| | <i>T. truncatus</i> | 484 |
| | <i>P. macrocephalus</i> | 33 |
| | <i>G. griseus</i> | 14 |
| | <i>B. physalus</i> | 15 |
| | <i>D. delphis</i> | 11 |
| | <i>G. melas</i> | 8 |
| | <i>Z. cavirostris</i> | 10 |
| | <i>K. sima</i> | 1 |
| | <i>P. crassidens</i> | 1 |
| | <i>B. acutorostrata</i> | 1 |
| | ND | 78 |



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| Main demographic characteristics (2014-2023): 1024 | Sex | | Age class | |
|---|---|-----|-----------|-----|
| | Male | 480 | Adult | 363 |
| | Female | 375 | Juvenile | 276 |
| | ND | 169 | Calf | 125 |
| | | | ND | 260 |
| Cause of death determined by necropsy (natural and anthropic) | It was possible to determine the cause of death only in the period 2015-2023: 1. Natural causes: 299; 2. Anthropogenic-related causes: 103 (fishery: 76, vessel collision: 27); 3. causes not determined: 460. | | | |
| Number of stranding hypothesized to be correlated to human interaction (fishery interaction, vessel collision, marine litter ingestion, etc.) | It was possible to determine the evidence of anthropogenic interaction only in the period 2015-2023: Fishery interaction evidence: 137 Vessel collision evidence: 18 Marine litter evidence: 29 | | | |

Overall Italian data show that, in 38 years, 32% of stranded animals interacted with human activities as the cause of death. In 90% of these cases, the interaction is related to fishing (i.e., entanglement in nets, ingestion of fishing gear, choking of the larynx). The remaining causes of death are mainly natural. The main affected species are *Tursiops truncatus* and *Stenella coeruleoalba* (Tab. 1).

At the local level, the experience of the Experimental Zooprophyllactic Institute of Apulia and Basilicata (IZSPB) shows that there are great difficulties in intervening due to the lack of funds and human resources, the non-attendance of regional reference offices, and so often come into play personal collaborations between associations involved in the protection of species and habitats (i.e., WWF).

Concerning sea turtles, ISPRA is the National Reference Institute for their strandings. Thanks to the Decree of February 2016, the Ministry of Health established the National Reference Centre for the Welfare, monitoring, and Diagnosis of Sea Turtle Diseases (C.Re.Ta.M), at the Experimental Zooprophyllactic Institute of Sicily (GU Serie Generale n.96 of 26-04-2016) concerning strandings events (<https://www.izssicilia.it/chi-siamo/centri-di-referenza-nazionale/c-re-ta-m>). Specifically, C.Re.Ta.M coordinates the network of IZS (in Sicily, Calabria, Campania, Lazio, Toscana, Abruzzo-Molise, Puglia), the University of Padova (Department BCA) and the Anton Dohrn Zoological Station, Napoli. In the context of sea turtle stranding events, ISPRA coordinates the C.Re.Ta.M. network for marine litter assessment protocol according to the Marine Strategy Framework Directive (MSFD 2008/56/CE).

At a national level, there are no databases for stranding events of sea turtles but are present only regional reports. Regarding the protocols: there is a national protocol for the marine litter (https://indicit.cefe.cnrs.fr/wp-content/uploads/2018/09/Protocole_v8.pdf) as the sea turtles



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are the sentinel species used as indicators for the achievement of Good Environmental Status of the Descriptor 10 of the Marine Strategy Framework Directive.

There are guidelines for recovery and rescue provided by ISPRA (https://www.isprambiente.gov.it/files/pubblicazioni/manuali-lineeguida/MLG_89_2013_Tartarughe.pdf). In addition, NETCET “*Network for the Conservation of Cetaceans and Sea Turtles in the Adriatic*” project (Programme 2007 - 2013 Adriatic IPA CBC) developed protocol for the post-mortem examination of sea turtles (https://www.blue-world.org/bw/wp-content/uploads/2017/05/NETCET_Standard-protocols-for-post-mortem-examination-of-sea-turtles.pdf).

At the local level, ARPA Puglia (Regional Agency for Prevention and Environmental Protection), and WWF - CRTM Molfetta coordinated with Centro Veterinario per le Tartarughe Marine of the University of Bari (Department of Veterinary Medicine) are involved in the rescue and recovery of sea turtles found along the Apulian coasts. Specifically, the CRTM of Molfetta has a close association with fishermen because of the important interaction with animals. This center is also a connection point with the institution that occupies strandings.

In conclusion, it emerged from the various speeches that, despite the significant anthropogenic impacts, strandings were much higher up to 30 years ago, but training is needed at the level of fishermen, as interactions with fishing gear remain numerous. In general, a willingness on the part of all the target groups involved to cooperate emerged.

Sea turtle nest:

The national sea turtle nest monitoring network is under the supervision of ISPRA, and each Italian Region has its network based on the occurrence of nesting. The report flow starts from the Italian Coast Guard receiving the call at the toll-free emergency number 1530 and informing the regional contact person/s. For the identification of the nesting of *C. caretta*, SNPA establishes a protocol mainly characterized by beach monitoring of sites previously and historically identified as nesting sites for the species. Currently, to monitor a larger area, fat bikes or drones could also be used (UNEP/MAP, 2017). Regarding beach monitoring frequency and period, it occurs generally during 4 months from May to August beaches, at least 3 times a week for non-mechanized beaches, and daily for beaches subject to mechanical cleaning and clearing.

At a local level, different groups and NGOs, such as WWF, are involved in monitoring activities. The WWF Oasis of Policoro is involved in sea turtle nest monitoring along the Apulian, Lucanian and Calabrian coasts, both monitoring on foot and using drones, as well as involving citizens and volunteers. WWF is involved in important dissemination activities in the area, aimed at raising awareness and engaging the local community. This monitoring has made it possible to identify and protect the main nesting areas. WWF emphasized that the involvement of the local communities is of crucial importance for the identification of the nests. In 2024, 21 nests were secured. In the last year, their effort focused only on the Ionian coast of



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Basilicata due to a lack of staff. The remaining area is predominantly monitored by volunteers, citizens, and drone operators.

The count of sea turtle nests started in 2016, so the total number of nesting events in the period between 2016 and 2024 is about 1978 (Tab. 2). There are no official national reports available, but official reports are available on a regional basis if national agencies are involved in monitoring and management (e.g. ARPAT). The main website of reference is the following: <https://tartapedia.it/>

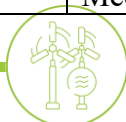
Tab.2 – Summary of nesting data between 2016-2024.

| Year of reference: 2016-2024 | |
|--|--|
| Number of sea turtle nests recorded (2016-2024) | 1978 |
| | Year Number of nests Source |
| | 2016 58 WWF |
| | 2017 46 WWF |
| | 2018 70 WWF |
| | 2019 94 TARTAPEDIA |
| | 2020 246 TARTAPEDIA |
| | 2021 256 TARTAPEDIA |
| | 2022 129 TARTAPEDIA |
| | 2023 454 TARTAPEDIA |
| 2024 625 TARTAPEDIA | |
| Number of nests per species | 1978 |
| Nesting hotspot areas | Sicilia, Calabria, Campania |

Although the counting of sea turtle nests started in 2016, to date, it is complex to find unambiguous and easily accessible information on the number of nests per region.

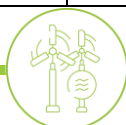
MINUTES SUMMARY PER TOPIC

| | |
|---|---|
| Monitoring of free ranging animals | In Italy, the national monitoring protocol for free-ranging animals of megafauna (cetaceans and sea turtles) adopt the Line Transect Distance Sampling approach (Buckland et al., 2001). Differences in the application of this methodology derives from the platform of observation of animals and the spatial and temporal frame of investigations. The monitoring of cetaceans and sea turtles at national scale (by ISPRA) is carried out through aerial platform. There are monitoring surveys carried out at Mediterranean scale by ferries and cargo |
|---|---|



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| | |
|-------------------------------------|---|
| | <p>platform (FLT Network) and boat-surveys carried out at local scale (sub-regional basins such as Ionian Sea). At a national level, the only one database is those of ISPRA, probably associated with data collected by LIFE project <i>Conceptu Maris</i>. There are Mediterranean databases, such as Intercet, but there is no homogeneity in the data published consisting of difficulty in comparison. In any case, most of information reported in these databases are mainly related to cetaceans than sea turtles. Regarding the monk seal, the eDNA technique appears to be the promising one. Further implementation is needed to implement the use of standardized protocols to monitor free-ranging animals and to increase the coverage of monitored areas for visual surveillance, including sightings from land and boat, possibly using drones.</p> <p>In conclusion, there is an objective difficulty in comparing data since the detection platforms, periods, and study areas are not homogeneous.</p> |
| <p>Strandings monitoring</p> | <p>On the national scale, standardized protocols for stranding monitoring and post-mortem procedures exist. For cetacean species, the Italian Stranding Network was officially established in 2015 and the protocol adopted at the national level is established by C.Re.Di.Ma.</p> <p>The National Stranding Database (BDS) has been established in 1986 by the University of Pavia, (CIBRA) and Natural History Museum of Milan. Moreover, a Mediterranean Marine Mammal Tissue Bank is established since 2002 by University of Padova.</p> <p>Since 2010, an emergency network (CERT) supervised by the Italian Ministry of Environment exists and it is responsible for managing extraordinary strandings.</p> <p>Regarding sea turtles, the monitoring and management of strandings is under the</p> |



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| | |
|--|---|
| | <p>supervision of the C.Re.Ta.M. (IZS Palermo) and ISPRA. C.Re.Ta.M. coordinates the post-mortem investigations outputs following the NetCet protocol. ISPRA is responsible for collecting data about marine litter impacts resulting from analysis of stranded animals according to MSFD protocol. No official national stranding network and database is available for sea turtles.</p> <p>Live strandings are managed by Associations, NGOs, or public bodies at the regional level within first aid or rescue centers. The centers are authorized by ISPRA and the Ministry of the Environment.</p> |
| <p>Sea turtle nest monitoring</p> | <p>In Italy, the nest monitoring is conducted at the regional level differently. Some regions have an established network, but many others keep continuing the work started on a volunteer basis. In recent years, stranding monitoring and nesting sites have been increased. ISPRA is responsible for the collection of nest monitoring data.</p> |

CONCLUSION AND RECOMMENDATIONS

The presence of a large number of people belonging to different target groups, from associations to research institutions and public bodies involved in the protection and conservation of sentinel species, as well as in the implementation of support tools for political decision-makers, highlights the importance of the topic discussed. Furthermore, a strong desire for coordination between bodies at different scales emerges, both on the topic of monitoring and on that of conservation, despite the strong awareness of the management difficulties encountered during the application processes of the procedures defined at a national or European scale. Concerning the monitoring protocols, there are no particular discrepancies in terms of applied methodologies. More than anything, the difficulty of being able to compare data collected at different spatial scales emerges due to the non-homogeneity in monitoring timing and the observation platforms adopted. Another problem is the lack of national databases that collect the information present on the Italian territory, at least as regards the monitoring of free-ranging animals, nesting sites and strandings of sea turtles. It emerged that it would be necessary to strengthen the network related to the monitoring of these species by moving from a collection of data that could lead to the publication of studies forwarded to the legislator, the parliament and finally the government to act on the specific environmental needs of each territory. The involvement of fishermen in the monitoring activities of the target species is of fundamental importance since they are the ones who intercept the animals the most and



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can provide important information. Finally, an important factor that emerged was the need to implement a local monitoring network. Although there are standardized procedures at a national level, when there is a need to explore a specific area, information is lacking. In this regard, the SAMESEA project can be a vehicle of important information for the definition of areas with different degrees of vulnerability for the coexistence of sentinel species and human activities.

From the discussion during the round table, it also emerged the need to implement technical tables between informed stakeholders about the conservation of sentinel species in the perspective of Maritime Spatial Planning, to make political choices on the issues of energy transition more aware and environmentally sustainable.

Finally, a list of synoptic recommendations is reported below.

Science Recommendations

- Implement the study of sea turtle stranding to assess health and conservation status.
- Conduct post-mortem examinations of stranded marine mammals using standardized forensic procedures, aiming to identify causes of death and contributing factors, while maintaining an evidence-based approach.
- Ensure periodic training to update the regional stranding network and post-mortem procedures.
- Use centralized databases for data exchange, enabling accessible information for management and policy-making purposes.
- Enforce the monitoring of region-specific risks to local fishing practices in influencing marine species health and distribution, such as bottlenose dolphin and setnet.
- Implementation of the use of the existing protocols, for free-ranging monitoring, to standardize data as much as possible by implementing data sharing emerged.
- Implementation of data sharing for turtle nest monitoring by creating a national network, a database where nest data can be accessible, and standardized protocols for the monitoring

Management Recommendations

- Ensure a standardized digital reporting method to support stranding and nest monitoring networks and authorities for streamlined coordination and effective data sharing.
- Empower and standardize the logistics to collect and deliver stranded animals to veterinary laboratories equipped to perform post-mortem examinations.
- Implement monitoring systems to identify and address hotspot risks or nesting areas, guided by modeling studies.
- Enforce the sea turtle stranding network connecting it to the cetacean one.

Policy Recommendations



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- Establish functional, fully funded stranding networks in every region, coordinated at the national and ACCOBAMS levels to standardize and harmonize data collection for conservation purposes.
- Implement common procedures and national protocols for handling stranded marine animals and managing nests, supported by reference laboratories with fully trained veterinarians performing necropsies.
- Enforce regional cooperation in addressing fishery interaction in the Mediterranean Sea, emphasizing the importance of rigorous monitoring and joint policy enforcement.
- Establish a technical table at a local level for stranding events where a flow chart can be defined, who is responsible, and rapid intervention methodologies. This is because the presence of stranded animals remains an important opportunity to obtain information.



WP1 – Activity 1.2

**DELIVERABLE 1.2.1
Local Round Tables report**

Partner 3 – Faculty of Veterinary Medicine, University of Zagreb

| | |
|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

| | |
|-----------------------------|---|
| Action: | W.1 - Joint development of the transnational strategy for the monitoring sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 15/01/2025 |
| Name of the partner | PP3 - Faculty of Veterinary Medicine, University of Zagreb - UNIZGVEF |
| Authorship | Martina Đuras, Tomislav Gomerčić, Andrea Gudan Kurilj, Kim Korpes, Magdalena Kolenc, Ira Topličanec, Lada Radin |

ROUND TABLE

| | |
|-------------------------------|---|
| Date | 15/01/2025 |
| Time | 9:30 – 14:00 |
| Location | Faculty of Veterinary Medicine, University of Zagreb, Heinzelova 55, Zagreb, Croatia |
| Target groups invited | Academics and researchers, National authorities, Regional authorities, National park managers, Animal rights and welfare groups and NGOs, Media |
| Number of participants | 28 |

INTRODUCTION: STATE OF THE ART

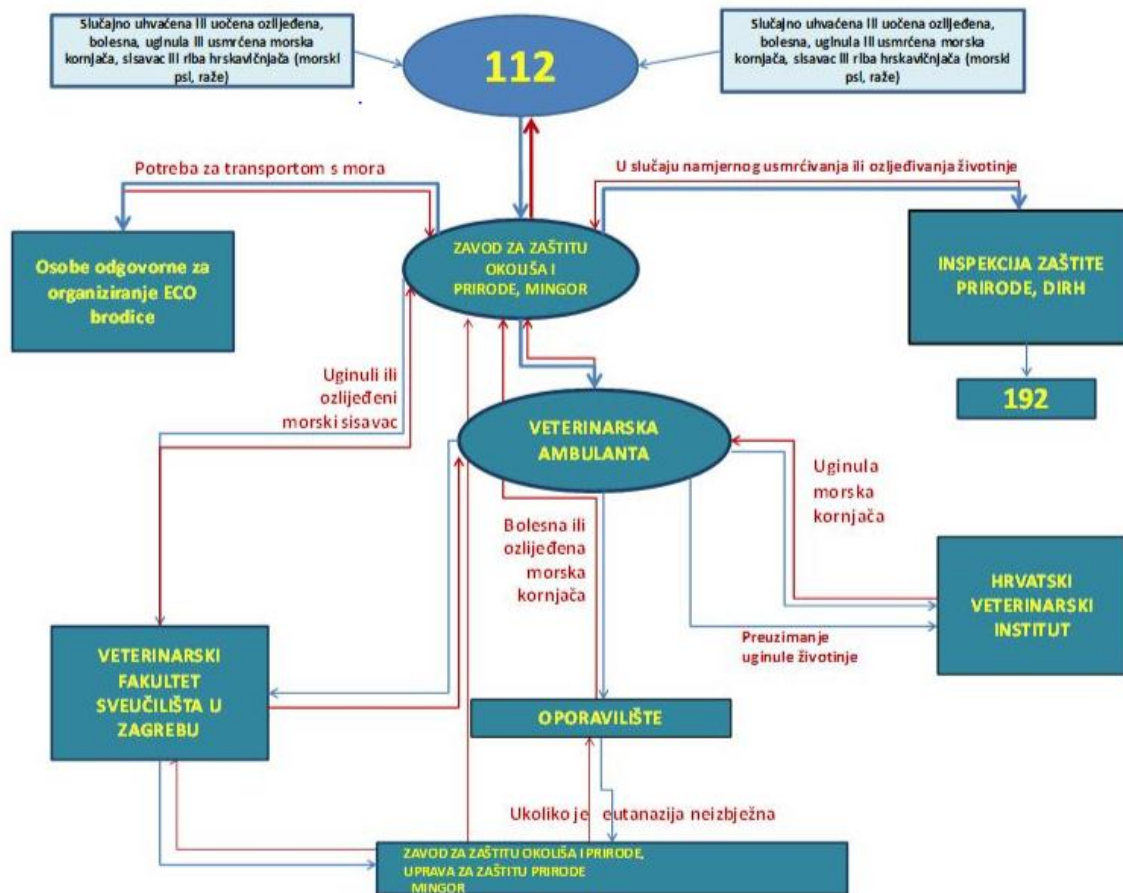
Strandings:

- Do your country have a national stranding network?



Yes

- How the stranding network is organized (please, report all the bodies that are part of the network and the flow of response)?



The Croatian national *Protocol for notification and action in case of finding dead, sick or injured strictly protected marine animals (marine mammals, sea turtles and cartilaginous fish)* (<https://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/ukljucite-se-u-zastitu/protokoli-za-0>)

In Croatia, the monitoring of stranded marine mammals and turtles is conducted at the national level via the *Protocol for notification and action in case of finding dead, sick or injured strictly protected marine animals (marine mammals, sea turtles and cartilaginous fish)* (<https://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/ukljucite-se-u-zastitu/protokoli-za-0>) (hereafter referred to as the *Protocol*). According to the reporting system, every person is required to report incidents involving accidentally captured, killed, injured, or sick marine mammals and sea turtles to the Ministry of Environmental Protection



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and Green Transition of Croatia - Institute for Environmental Protection and Nature (<https://www.haop.hr/hr/pocetna-stranica>) by calling the emergency number 112 or by filling out a web form (<https://survey123.arcgis.com/share/894e91f99c3540038be13baf979ed800>). The web form allows users to enter the following information: place, time and date of discovery, group and name of a strictly protected species or a detailed description of the species, animal tag (if any), condition of the animal, circumstances of finding, treatment of the animal, photos and information about the applicant and the finder. According to the *Protocol*, the notification of a reported case goes to the person on duty at the Institute for Environmental Protection and Nature. If a dead or injured marine mammal is reported, experts from the Faculty of Veterinary Medicine, University of Zagreb (<https://www.vef.unizg.hr/en/>) are notified. In the case of a dead sea turtle, experts from the Croatian Veterinary Institute (<http://www.veinst.hr/en/>) are notified. In the case of a dead marine mammal, it is necessary to ensure that the carcass is delivered to the Faculty of Veterinary Medicine, University of Zagreb, whereas for cases of dead sea turtles the Croatian Veterinary Institute is competent for *post mortem* examination.

- If no national network exists, do your country have someone responding to strandings? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the region of intervention.
Not applicable for Croatia.
- How many stranding were recorded in the last 10 years (2014-2024)?
In total: 267 dead cetacean and monk seal strandings: 192 *Tursiops truncatus*, 18 *Stenella coeruleoalba*, 2 *Ziphius cavirostris*, 1 *Grampus griseus*, 1 *Balaenoptera physalus*, 1 *Monachus monachus*, 51 unknown dolphin species and 1 unknown whale species.
- Is there any official report and database? If yes, please, report the links and the main results:
A national report can be obtained upon request from the Ministry of Environmental Protection and Green Transition of Croatia - Institute for Environmental Protection and Nature (<https://www.haop.hr/hr/pocetna-stranica>)

| Year of reference: 2014-2024 | |
|---|--|
| Number of strandings per species | 267 dead cetacean and monk seal strandings in total <i>Tursiops truncatus</i> : 192 <i>Stenella coeruleoalba</i> : 18 <i>Ziphius cavirostris</i> : 2 <i>Grampus griseus</i> : 1 <i>Balaenoptera physalus</i> : 1 <i>Monachus monachus</i> : 1 Unknown dolphin species: 51 |



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| | |
|--|--|
| | Unknown whale species: 1 |
| Main demographic characteristics | <p><i>Tursiops truncatus</i>: 192 strandings in total, 30 calves, 56 juveniles, 82 adults, 24 unknown age class; 47 females, 71 males, 74 of unknown sex</p> <p><i>Stenella coeruleoalba</i>: 18 strandings in total, 1 calf, 4 juveniles, 10 adults, 3 unknown age class, 7 females, 7 males, 4 of unknown sex</p> <p><i>Ziphius cavirostris</i>: 2 strandings in total, 1 adult, 1 unknown age class; 2 of unknown sex</p> <p><i>Grampus griseus</i>: 1 stranding in total, 1 adult of unknown sex</p> <p><i>Balaenoptera physalus</i>: 1 juvenile female</p> <p><i>Monachus monachus</i>: 1 adult female</p> <p>Unknown dolphin species: 51 in total</p> <p>Unknown whale species: 1</p> |
| Cause of death determined by necropsy (natural and anthropic) | <p><i>Tursiops truncatus</i>: 192 strandings in total, 76 necropsies, 13 natural causes, 35 anthropogenic causes, in 28 cases the cause was not determined</p> <p><i>Stenella coeruleoalba</i>: 18 strandings in total, 7 necropsies, 1 natural causes, 1 anthropogenic cause, in 5 cases the cause was not determined</p> <p><i>Ziphius cavirostris</i>: 2 strandings in in total, 0 necropsies</p> <p><i>Grampus griseus</i>: 1 stranding in total, 0 necropsies</p> <p><i>Balaenoptera physalus</i>: 1 stranding in total, 0 necropsies</p> <p><i>Monachus monachus</i>: 1 stranding in total, 1 necropsy, 1 natural cause</p> <p>Unknown dolphin species: 51 stranding in total, 0 necropsies</p> <p>Unknown whale species: 1 stranding in total, 0 necropsies</p> |
| Number of stranding hypothesized to be correlated to human interaction (fishery interaction, vessel collision, marine litter ingestion, etc.) | <p><i>Tursiops truncatus</i>: 2 cases</p> <p>Unknown dolphin species: 1 case</p> |

Free ranging animals:

- Does your country have a national monitoring network of sentinel species?
The monitoring of live, but sick and injured marine mammals and sea turtles is established via the *Protocol for notification and action in case of finding dead, sick or injured strictly protected marine animals (marine mammals, sea turtles and*



cartilaginous fish) (<https://www.haop.hr/hr/tematska-podrucja/prirodne-vrijednosti-stanje-i-ocuvanje/ukljucite-se-u-zastitu/protokoli-za-0>) (hereafter referred to as the *Protocol*). Free ranging animals are monitored via research projects conducted by regional authorities, national parks, NGOs and academic institutions.

- How is the network organized (please, report all the bodies that are part of the network and the flow of response)?

According to the *Protocol* reports of injured or sick animals are submitted via the emergency number 112 or web form (<https://survey123.arcgis.com/share/894e91f99c3540038be13baf979ed800>), which notifies the person on duty at the Institute for Environmental Protection and Nature (<https://www.haop.hr/hr/pocetna-stranica>). If an injured sea turtle is reported, experts at wildlife sanctuaries are notified (Blue World - Institute for Marine Research and Conservation (<https://www.blue-world.org/>), Aquarium Pula (<https://aquarium.hr/hr>), National Park Brijuni (<https://www.np-brijuni.hr/en>)). Reports on injured or sick marine mammals are directed to the Faculty of Veterinary Medicine, University of Zagreb (<https://www.vef.unizg.hr/>) and any actions concerning the animal are coordinated with the Ministry of Environmental Protection and Green Transition of Croatia - Institute for Environmental Protection and Nature (<https://www.haop.hr/hr/pocetna-stranica>). Occurrence and observations of free ranging sentinel species can be reported via different applications: <http://crodolphins.vef.hr> (provided by the Faculty of Veterinary Medicine University of Zagreb); <https://www.blue-world.org/get-involved/citizen-science/report-a-sighting> (provided by the Blue World - Institute for Marine Research and Conservation) and <https://survey123.arcgis.com/share/894e91f99c3540038be13baf979ed800> (provided by the Institute for Environmental Protection and Nature).

- If no national network exists, does your country have someone monitoring free ranging cetacean, sea turtle and monk seal? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the area of intervention.

Free ranging cetaceans have been monitored by the Blue World - Institute for Marine Research and Conservation (<https://www.blue-world.org/>), the Faculty of Veterinary Medicine University of Zagreb (<https://www.vef.unizg.hr/>), and Public Institution Nature of the Šibenik-Knin County (<https://priroda-skz.hr/en/>). These institutions have been applying photoidentification to analyse habitat range, spatiotemporal distribution, population size estimation, dolphin group characterization (including size, composition by age and sex, and behaviour), and to identify resident dolphins. The area under research has been Western Istria, Kvarnerić, Kornati, Mljet, Lastovo and Vis for the Blue World - Institute for Marine



Research and Conservation, the sea of the Šibenik-Knin County and Zadar County for the Faculty of Veterinary Medicine University of Zagreb and the sea within the Šibenik-Knin County for Public Institution Nature of the Šibenik-Knin County. There is no systematic monitoring of sea turtles, but opportunistic data, such as sighting reports, are collected through the previously mentioned apps. Tagging of rehabilitated sea turtles have been conducted by by the Blue World - Institute for Marine Research and Conservation (<https://www.blue-world.org/>). The monk seal is not permanently present species in the Adriatic Sea, however, occasional sightings have been reported.

- Is there any official report and database? If yes, please, report the links.

Reports are available upon request from the above-mentioned institutions: The Blue World - Institute for Marine Research and Conservation (<https://www.blue-world.org/>), the Faculty of Veterinary Medicine, University of Zagreb (<https://www.vef.unizg.hr/>) and Public Institution Nature of the Šibenik-Knin County (<https://priroda-skz.hr/en/>).

- Are there marine protected areas (MPAs) established to protect directly and indirectly these species? If yes, please report the ID Code and the name of the management authority body as well as the legal representative.

The bottlenose dolphin is a species for which specific Natura 2000 ecological network areas have been designated: Cres - Lošinj (HR3000161), J. Molat – Dugi – Kornat - Žirje - Zlarin – Murter - Pašman - Ugljan – Rivanj – Sestrunj – Molat (HR3000419), Lastovo and Mljet Channel (HR3000426), Vis Aquatorium (HR3000469), Kornati National Park (HR4000001), and Western Istrian Aquatorium (HR5000032). Those areas are under jurisdiction of Ministry of Environmental Protection and Green Transition of Croatia (<https://mzozt.gov.hr/>). For the loggerhead turtles there have not yet been allocated conservation areas.

- If there are MPAs dedicated to the protection of these species, is there regular monitoring of the species? Please provide details about methodologies and protocols applied during the monitoring activities.

Regular monitoring is carried out through records across the entire Croatian part of the Adriatic Sea through the *Protocol for notification and action in case of finding dead, sick or injured strictly protected marine animals (marine mammals, sea turtles and cartilaginous fish)*. In 2021, the Ministry of Economy and Sustainable Development secured European Union funding to develop monitoring programs for marine mammals and sea turtles as part of the Operational program “Competitiveness and Cohesion”. The activities were conducted by the Blue World - Institute for Marine Research and Conservation (<https://www.blue-world.org/>),



which can provide details about the methodologies and protocols applied during the project upon request.

- How widespread is the sensitivity towards issues related to the protection of sentinel species (cetaceans, sea turtles, monk seal) at the level of citizens, local and national authorities?

To our knowledge there are no recent reports/studies on these issues.

- What is the degree of sensitivity towards key marine species by economic operators (fishermen, maritime sector companies, etc.)?

A study on this issue was conducted in 2021. Here is the abstract:

Macan, I., A. Piplica, M. Đuras (2021): Procjena općeg mišljenja i informiranosti ribara u Hrvatskoj o dupinima i morskim kornjačama. (Assessment of fishermen's general opinion and knowledge about dolphins and sea turtles in Croatia). Veterinar 59: 11-20. (in Croatian)

Abstract: Whales (*Cetacea*) and sea turtles are protected species in Croatia. However, a large number of them die caught up in fishing gear. The aim of this research was to explore the fishermen's opinions and knowledge of these animals in order to determine the problems and propose possible solutions for their better conservation. The research was carried out by a questionnaire on the Google Forms platform between 1st February and 1st March 2021. The questionnaire was filled out by 39 fishermen from the following counties: Istra, Primorje-Gorski kotar, Zadar, Šibenik-Knin, Split-Dalmatia, Dubrovnik-Neretva and The City of Zagreb. The polled fishermen believe that dolphins must be protected (53.8 %), although some of them (25.6 %) think that it would be better if there were no dolphins at all in the area. With regards to sea turtles, 79.5 % of the polled fishermen consider them important and in need of protection. The polled fishermen (97.4 %) are aware that dolphins are mammals and that they use their lungs to breathe while only 64.1 % of them know that turtles are reptiles. All polled fishermen know that dolphins and sea turtles are legally protected. There is a higher incidence of fishermen encountering dolphins (on average 4.57) than sea turtles (on average 3.07). Some of the fishermen received full compensation (53.8 %) for damage on fishing nets caused by interactions with dolphins. Most of the polled fishermen know that the emergency number 112 or the veterinary services must be called upon finding an injured animal. Most polled fishermen (64.1 %) know of, but do not use "pingers" and state inefficiency and their high price as the reason and 71.8 % of them has never heard of TED devices. Most fishermen (71.8 %) would use these devices and bycatch reduction techniques if they were to receive state incentives. The general stance of the polled fishermen towards sea turtles is more positive than towards dolphins so



fishermen education could be introduced to increase knowledge about these protected species

- Are there documented cases of negative interaction (killings, capture, etc.) with human activities?

Two recent studies on this issue were published. Here are the abstracts:

Đuras M, Kolenc M, Gomerčić T, Gudan Kurilj A, Galov A, Korpes K (2024) Intentional harm in marine mammals stranded dead in the Adriatic Sea, Croatia, 1990-2023. Dis Aquat Org 160:75-93. <https://doi.org/10.3354/dao03826>

ABSTRACT: Intentional harm to marine mammals refers to deliberate human actions that cause injury, suffering, or death, and it is illegal in many countries. These actions often result from direct human attacks and are motivated by various reasons, with retaliation by fishermen being the most common. Such attacks cause severe tissue damage, frequently leading to the debilitation or death of the targeted animal. In this report, we document 13 cases of intentionally harmed marine mammals: 12 bottlenose dolphins *Tursiops truncatus* and 1 Mediterranean monk seal *Monachus monachus* found in the Croatian part of the Adriatic Sea between 1990 and 2023. Our analysis includes the life history data of the attacked specimens, post-mortem findings, and the weaponry involved. Among 311 post-mortem examinations conducted, 4.2% revealed intentional harm. Adult male bottlenose dolphins were most frequently targeted (46.2%), with a majority (53.8%) succumbing immediately due to exsanguination. Shotgun pellets, bullets, and underwater speargun spearheads were recovered from their carcasses. The attacks occurred with no discernible seasonal pattern; however, 61.5% of the cases were recorded from Istria County. Our findings underscore the inadequacy of current surveillance and enforcement in protecting marine mammals from deliberate harm. We advocate for the implementation of educational initiatives targeting relevant groups, intensive sea patrols, and routine inspection of weapons with high penalties for illegal possession and misuse, all reinforced by media campaigns to combat this malicious human behaviour.

Đuras, M. A. Galov, K. Korpes, M. Kolenc, M. Baburić, A. Gudan Kurilj, T. Gomerčić (2021): Cetacean mortality due to interactions with fisheries and marine litter ingestion in the Croatian part of the Adriatic Sea from 1990 to 2019. Veterinarski Arhiv 91, 189-206. DOI: 10.24099/vet.arhiv.1254

ABSTRACT: Different anthropogenic threats negatively influence the survival of cetaceans in all world seas. Thanks to a long-running marine mammal surveillance program, we are able to report results of a detailed analysis on the influence of cetacean-fisheries interactions and marine litter ingestion on cetacean mortality in



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the Croatian part of the Adriatic Sea during the last three decades. Total number of dead cetaceans was 459 and included 334 bottlenose dolphins (*Tursiops truncatus*), 40 striped dolphins (*Stenella coeruleoalba*), ten Risso’s dolphins (*Grampus griseus*), six Cuvier’s beaked whales (*Ziphius cavirostris*) and four fin whales (*Balaenoptera physalus*). Three hundred of them were postmortally examined. Cetacean-fisheries interactions occurred frequently in the Adriatic Sea being detected in 96 (20.9%) of the recorded cases. Bycatch was the most abundant cetacean-fisheries interaction with 66 (14.4%) cases recorded. Good nutritional condition and evidence of recent feeding were the most common findings recorded in bycatch cases, followed by persistent froth in the airways, edematous lungs, bruises and an amputated fluke or tail. Cetacean–fisheries interactions other than bycatch affected 30 animals and included larynx strangulations, long-term tail entanglement and fishing gear in the stomach. Ingestion of marine litter that was not related to fisheries was recorded in four animals. This study reveals considerable negative anthropogenic influence on cetaceans in the Adriatic Sea, especially the bottlenose dolphin that is considered the most frequent cetacean species therein and calls for an urgent development of the cetacean bycatch reduction program. Finally, it demonstrates the importance of sustaining national surveillance programs for gaining scientifically based knowledge important for cetacean protection and prospects for their long-term survival.

MINUTES SUMMARY PER TOPIC

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| <p>Strandings monitoring</p> | <p>The attendees discussed the efficiency of the <i>Protocol for reporting and action in case of finding dead, sick, or injured strictly protected marine animals</i>. The key issues highlighted include: the order of action is not always followed; individual steps are skipped leading to loss of information; carcasses are not always delivered for the <i>post mortem</i> examination due to logistical and financial problems; carcass recovery sometimes takes too long, causing them to arrive in an advanced decomposition state. All these factors contribute to the low rate of cases where the cause of death can be determined. Additionally, new legislation and changes in the organization of carcass transport in Croatia have affected the enforcement of the <i>Protocol</i>. In the past, several veterinary stations had their own carcass transport vehicles and were actively involved. However, under the new system, carcass transport has become financially unviable for veterinary stations, leading to a situation where only one company is now responsible for carcass transport across Croatia.</p> |
| <p>Monitoring of free ranging animals</p> | <p>The attendees discussed the organization of aerial and boat surveys conducted in the Croatian part of the Adriatic Sea. The aerial survey has been confirmed as the most effective method for determining population</p> |



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| | <p>size and trend, abundance, spatiotemporal distribution, group size and composition on a large scale, i.e. the whole Adriatic Sea. However, high costs limit its regular implementation. Boat surveys are considered the most effective method for monitoring home range abundance, spatiotemporal distribution, group size and composition, behavior, sentinel species – human interactions on a smaller scale, i.e. areas of the Adriatic Sea. So far, boat surveys have been conducted in Western Istria, Kvarnerić, Kornati, Mljet, Lastovo and Vis by the Blue World - Institute for Marine Research and Conservation, in the sea of the Šibenik-Knin County and Zadar County by the Faculty of Veterinary Medicine University of Zagreb and in the sea of the Šibenik-Knin County by Public Institution Nature of the Šibenik-Knin County. Regional authorities, national park managers and NGOs highlighted the lack of information on upcoming funding opportunities that could support regional monitoring of sentinel species. Ministry representatives acknowledged these concerns. The use of aerial and underwater drones for monitoring has been discussed. Representatives of different ministries presented that databases on human activities (such as maritime traffic, aquaculture, exploitation of sea resources) and prey availability (such as fish stock trends, annual catch of fish and other marine organisms) are available for the Croatian part of the Adriatic Sea and will be offered for the needs of the SAMESEA project.</p> |
| <p>Sea turtle nest monitoring</p> | <p>There is no known sea turtle nesting area in the Croatian part of the Adriatic Sea.</p> |

CONCLUSION AND RECOMMENDATIONS

1. In Croatia, there is sufficient legislation for the monitoring and conservation of sentinel species; however, it is not fully effective due to incomplete implementation. This is primarily caused by factors such as insufficient funding and a lack of professional staff.
2. Databases on human activities (e.g., maritime traffic, aquaculture, and exploitation of sea resources) and prey availability (e.g., fish stock trends and annual catches of fish and other marine organisms) are available for the Croatian part of the Adriatic Sea. These resources will be provided for the SAMESEA project through inter-ministerial cooperation established at the round table.
3. To monitor population size and trends, abundance, spatiotemporal distribution, group size, and composition on a large scale (i.e., the entire Adriatic Sea), it is essential to conduct regular aerial surveys (annually, biannually, or on a similar schedule). However, only aerial surveys covering the entire Adriatic Sea can be considered fully effective, as all sentinel species (marine mammals and turtles) are highly migratory. Given the high costs of aerial surveys, national and international funding and transnational collaboration should be considered.
4. Boat surveys are regarded as the most effective method for monitoring home range abundance, spatiotemporal distribution, group size and composition, behavior, and



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sentinel species–human interactions on a smaller scale (i.e., areas of the Adriatic Sea with cumulative human activities). To obtain reliable and comprehensive data for objective conclusions, it is necessary to increase the number of regional studies, develop standardized study protocols, and conduct thorough data analyses.

5. Post-mortem examinations should be routinely performed on every sentinel species carcass recorded in the Croatian part of the Adriatic Sea. These examinations are essential for determining diseases and causes of death in sentinel species, in addition to collecting data on mortality, age- and sex-related causes of death, and pollutant burdens. The *Protocol for reporting and action in case of finding dead, sick, or injured strictly protected marine animals* should be updated to include additional responsible entities in order to follow the One Health concept, such as the Directorate for Veterinary and Food Safety of the Ministry of Agriculture. Furthermore, the full implementation of the Protocol in the future is uncertain if funding and efforts for carcass recovery remain at current levels.
6. New technologies and methods for monitoring sentinel species and reducing bycatch should be explored, including aerial and underwater drones, while carefully considering their advantages, disadvantages, and cost-effectiveness.



WP1 – Activity 1.2

DELIVERABLE 1.2.1

Local Round Tables report

Project Partner 4 – “ALEKSANDER MOISIU” UNIVERSITY OF DURRES

| | |
|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

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| Action: | W.1 - Joint development of the transnational strategy for the monitoring sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 16/01/2025 |
| Name of the partner | PP4 – “Aleksander Moisiu” University, Durres, Albania |
| Authorship | Erjola Keci |

ROUND TABLE

| | |
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| Date | 16/01/2025 |
| Time | 9.00 – 12.00 |
| Location | “Aleksander Moisiu” University, Durres, Albania |
| Target groups invited | <ul style="list-style-type: none"> • Protected area managers and employees/Regional/National coastal park managers • Local/regional/national authorities • Port authorities • Fishermen and fishing cooperatives/Aquaculture (fish farming, mussel farming, clam farming) • Academics and researchers • Animal rights and welfare groups and NGO's |
| Number of participants | 12 |



INTRODUCTION: STATE OF THE ART

Strandings:

There is not a proper monitoring network of stranding events established in Albania despite of several projects, national and international, on sea turtles in Albania; there are a few actors that collect data on marine sentinel species and including stranded animals. Particularly in relation to strandings, there is a lack of continuous cooperation between the different actors and there is no common protocol/form or database.

The Regional Agency of Protected Areas (RAPA) in Vlora appears to be the focal point for the south of Albania; it was reported that a sea turtle center is under construction. There were sporadic cases of dead sea turtles brought to Vlora from Durres and Lezha, but there is not a continuous cooperation.

Currently, sea turtle strandings along the Albanian coast are monitored by different local institutional stakeholders and Environmental NGOs, experts, researchers, etc.

RAPA, Vlora cooperates mainly with NGOs and experts for the monitoring of the sentinel species; however, the monitoring of such species usually is carried out in the frame of different related projects. There is not a harmonized monitoring protocol and a national data base. The data usually are owned by the project beneficiary institution or experts.

There is no specific legal framework regarding stranding monitoring of marine sentinel species. The respective institutions are in place, but there is no specific legal framework that regulates the monitoring activity for the marine species.

Relevant Stakeholders involved in monitoring of strandings

¹The National Agency of Protected Areas (NAPA) with its Regional Agencies (RAPA of Vlora, Fier, Durres, Shkodra, and Lezha) have been collecting data on wildlife flora and fauna inside protected area territories for the last 5 years.

Regarding sea turtles strandings, the RAPA of Vlora with its First Aid Center in Radhima area and the RAPA of Fier in the Divjaka area, are the most active. The RAPA of Vlora and its First Aid Center use a simple form to collect data (provided by HAS) and then transfer the data to an excel database; data are integrated to their annual report to the NAPA (Ministry of Tourism and Environment). However, stranding data is not systematically collected by an organized network; strandings are reported thanks to interpersonal contacts that the RAPA of Vlora has with different actors, such as fishermen, or other independent focal points.

¹ Sacdanaku E., V. Rae, L. Boura, F. Bentivegna. 2021. Albanian National Marine Turtle Stranding Network: Synthesis, Protocol & Database Template. A report by the Mediterranean Association to Save the Sea Turtles (MEDASSET).



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PPNEA – Protection and Preservation of Natural Environment in Albania

Protection and Preservation of Natural Environment in Albania (PPNEA), established in 1991, is a non-governmental environmental organization that operates nationwide, known to be the first environmental organization in Albania. PPNEA experts have been engaged in the monk seal (*Monachus monachus*) monitoring in the frame of Eastern Adriatic Monk Seal Project.

The Herpetofauna Albanian Society (HAS) has collected data since 2002 on sea turtles in Albania (including strandings) through different projects, But the data collected are not transferred to a common database or to any public institution/ authority. Some of the data are published via scientific papers.

Social Education and Environment Protection (SEEP), an NGO based in Vlora, sometimes collects data on strandings along the coast in the Vlora Bay area.

The University of Tirana, through its experts at the Research Center of Flora and Fauna, collect data and have their own databases on stranded sea turtles along the coast via different sources (such as interpersonal contacts, fishermen, etc.).

There are some documents drafted in the frame of different related projects, mainly focused to the sea turtle, such as:

- National Action Plan for the Sea Turtle in Albania
- Marine Spatial Plan in Albania
- Report on Albanian Stranding Network
- Marine protected area Management plan

Strandings in the last 10 years

There is evidence related to strandings in Vlora area last 10 years, where 80% of stranding events belong to the loggerhead sea turtle (*Caretta caretta*), 20% to the green sea turtle (*Chelonia mydas*), while the leatherback sea turtle (*Dermochelys coriacea*) is reported mostly in the area of Durres-Velipoje

Table 1. Stranding events reported by RAPA Vlore during the round table

| Year of reference: 2014-2024 | |
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| Number of strandings per species | Approximately a total of 120 sea turtles in the south of Albania 2 cases of monk seals in Saranda 2-3 cases of dolphins in Vlora 3-4 dolphins in Durres |



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| | ² 117 stucked sea turtles to the ghost gear (2019)- Drini Bay; 102 stucked sea turtles (2022)- Drini Bay |
| Main demographic characteristics | <p>The biggest population of the sentinel species in Albania is the one of the Sea turtles.</p> <p>Monk seal population has a considerable number of individuals concentrated mainly in the area of Vlore – Sarande – Ksamil and in the Adriatic area of Montenegro and Croatia.</p> <p>The dolphin population in Albania comprises a small number of individuals</p> |
| Cause of death determined by necropsy (natural and anthropic) | <p><i>Sea Turtle:</i> 3-4 cases from marine litter ingestion 1 case from the fishing with dynamite 1 case attached by the jackal in the shore vessel collisions Abandoned, lost or discarded fishing gear (ghost gear); There are identified 7 risk areas of “ghost gear” in the Adriatic and Jonian seas in Albania, especially Karaburun.</p> <p><i>Dolphins:</i> <i>Vessel collision in Durrës</i></p> <p><i>Monk seal:</i> Attacked by humans</p> |
| Number of stranding hypothesized to be correlated to human interaction (fishery interaction, vessel collision, marine litter ingestion, etc.) | Approximately 50 cases of sea turtles within Durrës – Shengjin marine Area |

Free ranging animals

There is not a proper network established for the monitoring of sentinel species in Albania. There are national and local institutions responsible for sentinel species monitoring and conservation, which have usually similar or overlapped competences; There is a limited cooperation between the different institutions; inter-institutional mechanisms or structures to facilitate the cooperation between related authorities are very limited.

² Curri A., Kolutari J., Haxhiu I.; “Reducing the impact of ghost gear on sea turtles, in Drini Bay: Results of Life-MedTurtles project”, 4th international conference of Agricultural and Life Sciences.



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There are no harmonized monitoring protocols, except those for the species monitoring within the marine protected area, and no national database related the sentinel species monitoring. However, do exist some reports or papers related to sentinel species in Albania monitoring, even though not recent.

Limited budget allocated at national and local level has impacted the continuous periodical monitoring of sentinel species, which is carried out mainly in the frame of different projects in cooperation with local authorities, NGOs, academics. The project data usually has been included into the project deliverables.

Currently the RAPA, Vlore appears to be the most active institution related to the sentinel species monitoring, being responsible as well for the management of the marine protected areas in the south of Albania. All the monitoring data is included at the national report delivered to NAPA each year.

Main relevant stakeholders:

National and Local Institutions

Ministry of Tourism and Environment (MoTE): the main authority responsible for the protection marine biodiversity and their monitoring; MoTE through agencies is responsible for the management of protected areas, biodiversity and water monitoring, coastline management. Among the MoTE responsibilities and competences are drafting, revising and updating of the legal framework for the protection and management of wildlife fauna and biodiversity, including species action plans.

National Agency of Protected Areas (NAPA) is an integral part of the Ministry of Tourism and Environment, which was established in 2015 and has since played an important role in organizing monitoring and conservation work for the marine sentinel species in collaboration with various partners, including NGOs, research institutions, experts, etc.

NAPA manages Albania's protected areas, including national parks, nature reserves, and marine protected areas. Key Responsibilities include:

- Develops and implements management plans for protected areas.
- Promotes ecotourism and conservation initiatives within protected areas.
- Monitors biodiversity and coordinates research efforts within protected zones.

Regional Agencies of Protected Areas (RAPA) of Vlora, Fier, Durrës, Shkodra and Lezha: the RAPAs have an active role in the field for the implementation of biodiversity conservation policies and activities. They have a very important role in the monitoring and conservation of sentinel species in the coastal protected areas within their area of jurisdiction.³The Sea Turtle

³ Curri A., Kollitari J., Haxhiu I.; "Reducing the impact of ghost gear on sea turtles, in Drini Bay: Results of Life-MedTurtles project", 4th international conference of Agricultural and Life Sciences.



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Rehabilitation Center in Radhima in the southern region, opened in 2017 and is administrated by the Regional Agency of Protected Areas of Vlora.

The **National Environmental Agency (NEA)** monitors environmental standards, including water quality, biodiversity, and pollution, through periodic inspections and data collection. Furthermore:

- Collects data on water pollution and quality.
- Enforces environmental regulations regarding water resources.
- Issues permits for water use and waste discharge.
- Collects and analyses data on biodiversity and ecosystems.
- Issues permits for activities that may impact natural resources.
- Enforces national standards for pollution control and environmental protection.

Directory of Policies, Strategy and Programs for Fishery and Aquaculture in Albania:

The mission of this Directorate, under the Ministry of Agriculture and Rural Development, is to fulfill all the necessary state services related to the management of infrastructure and data on fisheries and aquaculture, as well as to guarantee the observance of legal requirements in the protection of fisheries and aquaculture in Albania. It performs the following tasks: a) manages fishing infrastructure, including ports and fishing centers; b) collects fishery data; c) ensures compliance with legal requirements in the field of fisheries protection and aquaculture through monitoring and inspection of fishing activity, which is performed by its fisheries monitoring and control sector.

Food safety and veterinary institute (ISUV): an institution under the Ministry of Agriculture and Rural Development. Its goal is to improve the health of animal population by collection, analysis, interpretation and dissemination of best possible information on animal infectious diseases prevalent in the country. This is achieved mainly through surveillance, epidemiological investigation and applied research.

Inter-institutional Maritime Operational Centre (QNOD): The decision of the Council of Ministers: Nr. 954 dated 30/09/2009 determines the “*Structure, organization and function of the Inter-institutional Maritime Operational Centre (QNOD); its interaction with state institutions; and interests in the sea*”. QNOD is an inter-institutional coordination structure that functions in accordance with the Albanian legal framework, and which assigns the primary responsibility for managing the maritime space to the Ministry of Interior and the Albanian border control, along with other ministries, which have different authority in the sea. QNOD coordinates operations, resources, manpower etc. from the various organizations and institutions involved. One of the functions of QNOD is that, in concert with the Ministry of Tourism and Environment, it can coordinate: i) control implementation of fisheries legislation; ii) operations to prevent and protect the marine environment from pollution.

Albanian Coast Guard: the maritime law enforcement force of Albania, under the authority of the Ministry of Defence. Its operational duties in peacetime are organized and commanded by the Inter-Institutional Operational Maritime Centre (QNOD). The Coast Guard has the



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responsibility for the security of Albanian territorial waters, maritime surveillance and law enforcement, as well as search and rescue. In operational combat situations in peacetime or wartime, the direction and command of the Albanian Coast Guard passes to military authorities and Albanian Naval Force.

Academia

University of Tirana, Faculty of Natural Sciences: through its Research Center of Flora and Fauna (Museum of Natural Sciences) it provides expertise related to sea turtle science and has contributed to sea turtle conservation in Albania via project implementation and through the volunteer work offered by its students as part of their undergraduate and postgraduate studies.

Agriculture University of Tirana: It provides expertise related to fisheries and fishery management, assessment of impacts to sentinel species, such as ghost gear impacts to sea turtle at Drini Bay; marine water quality monitoring.

NGOs

Protection and Preservation of Natural Environment in Albania

PPNEA is the oldest and the most active NGO in Albania with an experience of over 30 years. Its thematic working areas are conservation of keystone, threatened and rare species, conservation of high biodiversity value areas, scientific research on wildlife and habitats, education, awareness raising and advocacy on nature conservation and institutional development of ECSOs (Environmental Civil Society Organizations).

Institute for Nature Conservation in Albania (INCA) is a NGO established in 2000 and focuses mainly to professional capacity building through training and participatory approach, safeguard of environment, conservation of the natural environment treasures and rural development in the country, protection of flora and fauna, the assessment of biodiversity, the management of protected areas, river basin management, raising awareness of the public and policy and decision makers, and undertaking conservation measures when possible and appropriate to protect species and their critical habitats.

The Herpetofauna Albanian Society (HAS) has collected data since 2002 on sea turtles in Albania (including strandings) through different projects, but the data collected are not transferred to a common database or to any public institution/ authority. Some of the data are published via scientific papers.

Social Education and Environment Protection (SEEP), an NGO based in Vlora, sometimes collects data on strandings along the coast in the Vlora Bay area.

Marine Protected Areas in Albania

There are 2 marine protected areas in Albania: National Park of Karaburun – Sazan and Natural Park of Porto-Palermo, both of them are managed and administrated by the National Agency



of Protected Areas (NAPA) under Ministry of Tourism and Environment (MoTE) through the Regional Agency of Protected Areas of Vlora (RAPA, Vlora).

⁴There is a Management Plan (MP) for the marine national park of Karaburun – Sazan, currently under implementation. The plan has been drafted in 2015 and has the validity of 10 years. Management Plan for Karaburun-Sazan Marine and Coastal Protected Area (MCPA) has been developed within the framework of the United Nations Development Programme (UNDP) project “Improving Coverage and Management Effectiveness of Marine and Coastal Protected Areas”.

The MP aims to maintain and protect valuable marine species and habitats by regulating activities at the sea and improving knowledge on importance of biodiversity. The MP aimed to Preserve favourable status of endangered and protected marine species and ensure safe passage of charismatic species (marine turtles, monk seals, dolphins and whales) through corridor during the last 10 years, as well as Reduce degradation and maintain the size and status of Posidonia meadows in front of

beaches (western part); Stop degradation and maintain the status of coralligenous communities and other vulnerable marine habitats.

RAPA Vlora is responsible for the management plan implementation. RAPA representative indicated that there are also monitoring protocols related to the sentinel species within the Marine PA. A zoning system is applied within the protected area territory for the management and control of anthropogenic activities.

There is not any management document/plan for the Natural Park of Porto-Palermo.

Sensitivity towards issues related to the protection of sentinel species (cetaceans, sea turtles, monk seal) is different for different categories; national and local authorities are sufficiently aware on the sentinel species presence and importance; fishery operators as well recently are enough aware about the sentinel species.

The main issue is the sensitivity of touristic operators related to sentinel species, which is very scarce, and this has created several issues during the touristic seasons lately. There have been cases of vessel collision, disturbance of species (especially dolphins), related habitat pollution and deterioration.

Use of marine caves as touristic attraction has impacted the habitat of monk seal (e.g. last year, experts of PPNEA have collected 40 bags of beer bottles from the Haxhi Ali cave at the Karaburun Peninsula).

Sea turtle nest:

There is not a proper monitoring network for the Sea Turtle monitoring in Albania, but data on the nesting activity of *C. caretta* along the Albanian coastline have been collected since 2002

⁴ Rajkovic Z. and Kromidha G. (2014) Management Plan for National Marine Park Karaburun-Sazan. UNDP, 100 Pp. + Annexes. The Management Plan has been produced based on the Grant Agreement between UNDP Albania and WWF Mediterranean Program from 07/04/2014.



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by the Herpetofauna Albanian Society (HAS). In 2017, the first empirical evidence of nesting activity was recorded on a small beach at Kepi Rodonit (north Albania) (Sacdanaku E. et al, 2022). However, monitoring has been carried out through years from NGOs, Centre of Flora and Fauna/Faculty of Natural Sciences/Tirana University, or experts in the frame of related projects in cooperation with respective RAPA staff. There is not a national monitoring protocol for the sea turtle nest monitoring.

⁵During summers 2018 and 2019, in cooperation with the Regional Agencies for Protected Areas, has been carried out a study of the sea turtle nesting along the entire Albanian coast in the frame of the project being implemented by MEDASSET as part of a larger Mediterranean project funded by MAVA Foundation. Data were collected along transect lines (49 sites on 41 beaches in 2018, and 36 sites on 29 beaches in 2019) for elevation, compaction and anthropogenic activity up to a distance of 100m either side of the transect (Sacdanaku E. et al, 2022). Two emergences of sea turtles were documented in the northern region during the survey period: one non-nesting emergence and one nest (the first official nest in Albania). Based on previous evidence and the data collected during this survey, it indicates that the northern Adriatic region of Albania is more likely to experience sea turtle nesting activity (Sacdanaku E. et al, 2022).

⁶Sea turtles use the nearshore and offshore coastal water of Albania throughout the year; Drini Bay is an important feeding, overwintering and developmental habitat in the mediterranean. The Bay is used by adult and subadult loggerheads and occasionally by green turtles for foraging or migration. Juvenile loggerhead and possibly green turtles are using the area as developmental habitat. A 3-year survey has been conducted during 2008-2010 by MEDASET in cooperation with local fishers, and 407 individuals have been recorded (402 *Caretta caretta* and 5 *Chelonia mydas*). During the period of 2011-2018 an average of 179 individuals/year are being caught, mainly in stavnik, fishing traps and other type of fishing gears; a total of 1391 individuals of loggerhead turtles were caught in different stavnik fishing nets in the area of Drini Bay, with almost half of the records captured in Mati outlet stavnik fishing type (Pirol, 2021; Drini Bay Monitoring Technical Report, 2023).

There are some documents (Reports and Papers) related to Sea turtles protection or sea turtles monitoring (such as the Sea Turtles Action Plan, 2013; Drini Bay Monitoring Technical Report, 2023); very few papers are related to sea turtle nest monitoring. There is not any national database where all the data is stored and shared with the related stakeholder; the information flow is still very limited. The data usually is stored by individual experts or NGOs involved in the specific project and part of it is published through papers.

Table 2. Sea Turtle nest monitoring data reported during the round table

| Year of reference: 2014-2024 | |
|-------------------------------------|---|
| Number of sea turtle nests recorded | Area of Pisha-Poro-Narte and Jonian area: |

⁵ <https://medasset.org/looking-for-sea-turtles-on-albanian-beaches/>

⁶ https://issuu.com/medasset/docs/drini_bay_monitoring_technical_report_medasset_fin



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| | <p>Vjose-Vlore – 6 nests Palase – 1 nest with 75% of nesting possibility This year we have put the thermometer to 1 nest to measure the nest temperature and to define the gender. 1 non-nesting emergence and one nest (the first official nest in Albania) – Drini Bay area</p> |
| Number of nests per species | <p>No number indicated; there are unpublished data All the recorded nests of <i>Caretta caretta</i></p> |
| Nesting hotspot areas | <p>Areas of bars close to the touristic zones The camping areas (camping cars pose a risk for the turtles' nests) Vjosa River delta Narta dune</p> |

MINUTES SUMMARY PER TOPIC

| | |
|------------------------------|--|
| Strandings monitoring | <p>There is not a proper monitoring network of stranding events established in Albania. Particularly in relation to strandings, there is a lack of continuous cooperation between the different actors and there is no common protocol/form or database. The Regional Agency of Protected Areas (RAPA) in Vlora appears to be the focal point for the south of Albania; it was reported that a sea turtle centre is under construction. There were sporadic cases of dead sea turtles brought to Vlora from Durres and Lezha, but there is not a continuous cooperation. Currently, sea turtle strandings along the Albanian coast are monitored by different local institutional stakeholders and Environmental NGOs, experts, researchers, etc. RAPA, Vlore cooperates mainly with NGOs and experts for the monitoring of the sentinel species; however, the monitoring of such species usually is carried out in the frame of different related projects. There is not a harmonized monitoring protocol and a national data base. The data usually are owned by the project beneficiary institution or experts. There is no specific legal framework regarding stranding monitoring of marine sentinel species. There is evidence related to strandings in Vlora area last 10 years, where 80% of stranding events belong to the loggerhead sea turtle (<i>Caretta caretta</i>), 20% to the green sea turtle (<i>Chelonia mydas</i>), while the leatherback sea turtle (<i>Dermochelys coriacea</i>) is reported mostly in the area of Durres-Velipoje.</p> |
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| <p>Monitoring of free ranging animals</p> | <p>There is not a proper network established for the monitoring of sentinel species in Albania. There are national and local institutions responsible for sentinel species monitoring and conservation, which have usually similar or overlapped competences; There is a limited cooperation between the different institutions; inter-institutional mechanisms or structures to facilitate the cooperation between related authorities are very limited.</p> <p>There are no harmonized monitoring protocols, except those for the species monitoring within the marine protected area, and no national database related the sentinel species monitoring. However, do exist some reports or papers related to sentinel species in Albania monitoring, even though not recent.</p> <p>Limited budget allocated at national and local level has impacted the continuous periodical monitoring of sentinel species, which is carried out mainly in the frame of different projects in cooperation with local authorities, NGOs, academics. The project data usually has been included into the project deliverables.</p> <p>Currently the RAPA, Vlore appears to be the most active institution related to the sentinel species monitoring, being responsible as well for the management of the marine protected areas in the south of Albania. All the monitoring data is included at the national report delivered to NAPA each year.</p> <p>There are 2 marine protected areas in Albania: National Park of Karaburun – Sazan and Natural Park of Porto-Palermo, both of them are managed and administrated by the National Agency of Protected Areas (NAPA) under Ministry of Tourism and Environment (MoTE) through the Regional Agency of Protected Areas of Vlora (RAPA, Vlora).</p> <p>There is a Management Plan (MP) for the marine national park of Karaburun – Sazan, currently under implementation. The plan has been drafted in 2015 and has the validity of 10 years.</p> <p>The MP aims to maintain and protect valuable marine species and habitats by regulating activities at the sea and improving knowledge on importance of biodiversity.</p> <p>The MP aimed to Preserve favourable status of endangered and protected marine species and ensure safe passage of charismatic species (marine turtles, monk seals, dolphins and whales) through corridor during the last 10 years, as well as Reduce degradation and maintain the size and status of Posidonia meadows in front of beaches (western part); Stop degradation and maintain the status of coralligenous communities and other vulnerable marine habitats.</p> |
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| | <p>RAPA Vlora is responsible for the management plan implementation. RAPA representative indicated that there are also monitoring protocols related to the sentinel species within the Marine PA. A zoning system is applied within the protected area territory for the management and control of anthropogenic activities.</p> <p>There is not any management document/plan for the Natural Park of Porto-Palermo.</p> <p>Sensitivity towards issues related to the protection of sentinel species (cetaceans, sea turtles, monk seal) is different for different categories; national and local authorities are sufficiently aware on the sentinel species presence and importance; fishery operators as well recently are enough aware about the sentinel species.</p> <p>The main issue is the sensitivity of touristic operators related to sentinel species, which is very scarce, and this has created several issues during the touristic seasons lately. There have been cases of vessel collision, disturbance of species (especially dolphins), related habitat pollution and deterioration.</p> |
| <p>Sea turtle nest monitoring</p> | <p>There is not a proper monitoring network for the Sea Turtle monitoring in Albania, but data on the nesting activity of <i>C. caretta</i> along the Albanian coastline have been collected since 2002 by the Herpetofauna Albanian Society (HAS).</p> <p>However, monitoring has been carried out through years from NGOs, Centre of Flora and Fauna/Faculty of Natural Sciences/Tirana University, or experts in the frame of related projects in cooperation with respective RAPA staff. There is not a national monitoring protocol for the sea turtle nest monitoring.</p> <p>There are some documents (Reports and Papers) related to Sea turtles protection or sea turtles monitoring (such as the Sea Turtles Action Plan, 2013; Drini Bay Monitoring Technical Report, 2023); very few papers are related to sea turtle nest monitoring. There is not any national database where all the data is stored and shared with the related stakeholder; the information flow is still very limited. The data usually is stored by individual experts or NGOs involved in the specific project and part of it is published through papers.</p> |

CONCLUSION AND RECOMMENDATIONS

Taking into consideration the round table discussions related to the marine sentinel species conservation and monitoring, the following conclusions and recommendations appear to be important in Albania:



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- Establishment of a harmonized national monitoring network of stranding events or in general for the monitoring of marine sentinel species, with representatives from all the relevant stakeholders in Albania.
- Establishment of cooperation mechanisms between related national and local stakeholders.
- Design and establishment of an Information Management System related to marine sentinel species monitoring at local and national level.
- Establishment of a national monitoring protocols for the strandings monitoring, free range sentinel species monitoring and sea turtles nest monitoring.
- Clear legal framework regarding stranding monitoring of marine sentinel species.
- Clear institution competences related the sentinel species monitoring and conservation.
- Establishment of effective inter-institutional structures for the marine sentinel species conservation.
- Setting marine species conservation as one of national biodiversity conservation priority; increased national budget for the marine sentinel species monitoring.
- Provide capacity building activities to local stakeholders related to marine sentinel species monitoring.
- Revision and update of the Management Plan for the Marine National Park of Karaburun – Sazan with focus to protection of marine sentinel species.
- Drafting of the Management Plan for the Marine Natural Park of Porto-Palermo.
- Provide periodical awareness campaigns related to marine sentinel species conservation for different categories of stakeholders such as local authorities, marine water users, touristic operators, seasonal businesses, local population, etc.



WP1 – Activity 1.2

**DELIVERABLE 1.2.1
Local Round Tables report
Partner 6 - Morigenos**

| | |
|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring of sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

| | |
|-----------------------------|---|
| Action: | W.1 - Joint development of the transnational strategy for the monitoring of sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 31/01/2025 |
| Name of the partner | PP6 - Morigenos |
| Authorship | Marco Casoli, Krista Lokar, & Tilen Genov |

ROUND TABLE

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| Date | 21/01/2025 |
| Time | 10:00 – 15:00 |
| Location | Morigenos center, Piran (Slovenia) |
| Target groups invited | Local groups directly or indirectly involved in activities at sea (see the list of all invited groups at the end of this document) |
| Number of participants | 7 invited participants + 2 Morigenos staff members |

INTRODUCTION: STATE OF THE ART

Strandings: monitoring of stranding events of live and dead animals:

- Does your country have a national stranding network?
Slovenia does have an operational national stranding network, albeit it is not legally defined through any governmental decree.



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- How the stranding network is organized (please, report all the bodies that are part of the network and the flow of response)?

Formally, the 112 emergency number (Emergency Response Center) should be contacted when reporting dead or injured animals. However, due to a lack of awareness by the public, this is not often followed. Often specific institutions focusing on these species are contacted directly.

Dead cetaceans - Members of the public report to Morigenos (and sometimes to the local emergency phone number, 112). All entities operating at sea report to Morigenos. Morigenos then notifies the SVOM (the Coastal Sea Protection Service) and the national sanitation service. If the carcass is floating at sea or is on land in a remote location, Morigenos or SVOM recover the carcass. Once easily accessible on land, the carcass is then picked up by the sanitation service (the removal of a carcass must be carried out by the sanitation service, as required by law). The sanitation service also transports the carcass to the National Veterinary Institute in Ljubljana, for necropsy or incineration. Necropsies are performed on all cetacean carcasses by the National Veterinary Institute and Morigenos.

Injured turtles – The primary point of contact is the Aquarium of Piran (legally tasked to deal with cases of injured turtles). Sometimes Morigenos is notified first, thus Morigenos informs the Aquarium of the injured individual. The Aquarium (or Morigenos on its behalf) retrieves the animal. The Aquarium is in charge of animal care duties.

Dead turtles – They are typically reported to SVOM, Aquarium Piran, or Morigenos by the public. SVOM is tasked to recover dead turtles at sea. Once easily accessible on land, the sanitation service picks up the carcass and deals with transportation and incineration. No necropsy is carried out on turtles (most of them are in advanced states of decomposition).

Since the sanitation service does not take measurements when handling a carcass, data on dead turtles are not consistently collected. If desired, these data should be collected by another co-attending institution (similar to what Morigenos does in the case of dead cetaceans). Most dead turtles are fairly decomposed at the moment of the report, but when this is not the case, it would be ideal to carry out a necropsy (for instance to try to establish the cause of death).

All cases – When people report an injured or deceased animal, it is necessary to clearly explain to them that activating a response will take some time. It is also important to explain which steps will be involved in the response.



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A centralized database connecting all organizations tasked with dealing with injured or dead individuals is necessary.

All cases involving a dead individual - all cases should be reported to the Emergency Center first (phone number 112), to avoid confusion over responsibilities. The Emergency Center should then notify the Institute of the Republic of Slovenia for Nature Conservation (ZRSVN), which in turn should inform relevant stakeholders (e.g., Morigenos, Aquarium of Piran). This procedure and response flow should be formalized legally.

- If no national network exists, does your country have someone responding to strandings? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the region of intervention.

The flow of responses stated above applies to the whole Slovenian coast.

- How many stranding were recorded in the last 10 years (2014-2024)?
Cetaceans – 18 cases (17 *Tursiops truncatus*, 1 *Delphinus delphis*).
Turtles – unknown (read above about the current problems of non-systematic data collection methods for dead turtles); approximately 20 cases are reported every year.
- Is there any official report and database? If yes, please, report the links and the main results:
There is not an official database. There are unpublished reports of stranding events compiled by Morigenos and by ZRSVN.

| Year of reference: 2014-2024 | |
|--|--|
| Number of strandings per species | 18 cetacean instances – 17 <i>Tursiops truncatus</i> , 1 <i>Delphinus delphis</i> Approx. 200 turtle instances |
| Main demographic characteristics | Cetaceans: 9 calves (8 <i>T. truncatus</i> , 1 <i>D. delphis</i>) and 9 adults (<i>T. truncatus</i>) |
| Cause of death determined by necropsy (natural and anthropic) | Cetaceans: infections disease, bycatch (asphyxiation), ingestion of fishing gear (internal injury) |
| Number of stranding hypothesized to be correlated to human interaction (fishery interaction, vessel collision, marine litter ingestion, etc.) | Cetaceans: overall, 42% of deaths in <i>T. truncatus</i> are attributed to fisheries (among the documented stranding cases). |



Free ranging animals:

- Does your country have a national monitoring network of sentinel species?
Morigenos is the only national group carrying out monitoring of marine sentinel species. Morigenos carries out dedicated monitoring of marine mammals, but it also collects sightings data on sea turtles during its surveys.
The public and agencies operating at sea report sightings to Morigenos by phone or online (by compiling a form at www.morigenos.org).
- How is the network organized (please, report all the bodies that are part of the network and the flow of response)?
Morigenos carries out dedicated research on marine mammals. Other agencies operating at sea and the public report their sightings to Morigenos.
- If no national network exists, does your country have someone monitoring free ranging cetacean, sea turtle and monk seal? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the area of intervention.

Morigenos, for both cetaceans and sea turtles. Morigenos operates along the whole Slovenian coast and throughout the entire Slovenian sea territory (see <https://www.igismap.com/download-slovenia-administrative-boundary-gis-data-for-national-municipality-and-more/>; for detailed geographical info on Morigenos' study area, please refer also to the info previously provided for SAMESEA Activity 1.1).

- Is there any official report and database? If yes, please, report the links.
Scientific publications available at <https://www.morigenos.org/en/scientific-publications/>
- Are there marine protected areas (MPAs) established to protect directly and indirectly these species? If yes, please report the ID Code and the name of the management authority body as well as the legal representative.

There are several MPAs in Slovenia; four of these are relevant to cetaceans (albeit none was specifically designated for marine sentinel species): 1) Rt Madona, Piran (WDPA ID: 326112; Management authority: Ministry of Agriculture and Environment, Ljubljana, Slovenia); 2) Krajinski park Strunjan (WDPA ID: 196471; Management authority: Ministry of Agriculture and Environment, Ljubljana, Slovenia); 3) Med Strunjanom in Fieso (WDPA ID: 555579063; Management authority: European Commission); 4) Med Izolo in Strunjanom – klif (WDPA ID: 555535203; Management authority: European Commission).



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- If there are MPAs dedicated to the protection of these species, is there regular monitoring of the species? Please provide details about methodologies and protocols applied during the monitoring activities.

Regular monitoring is carried out by Morigenos in all four sites. For detailed protocols, please refer to the word file previously provided for SAMESEA Activity 1.1.

- How widespread is the sensitivity towards issues related to the protection of sentinel species (cetaceans, sea turtles, monk seal) at the level of citizens, local and national authorities?

It is relatively widespread, both among citizens and authorities.

- What is the degree of sensitivity towards key marine species by economic operators (fishermen, maritime sector companies, etc.)?

It varies across operators (from negative, to neutral, to positive).

- Are there documented cases of negative interaction (killings, capture, etc.) with human activities?

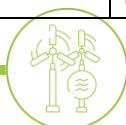
Yes (bycatch, intentional killing, and a suspected boat strike).

MINUTES SUMMARY PER TOPIC

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| <p>Strandings monitoring</p> | <p>Slovenia has an operational national stranding network. The 112 emergency number (Emergency Response Center) should be called when reporting dead or injured animals, even though in practice local institutions are often contacted first. As required by law, the national sanitation service picks up carcasses and transports them to the National Veterinary Institute in Ljubljana, for necropsy or incineration. Multiple local institutions contribute to the overall response process to strandings (see details in the dedicated sections above).</p> <p>Discussion</p> |
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| | <p>1. Communication challenges: there is need to standardize notification and response protocols to deal with dead and injured animals. There is sometimes confusion over who to contact for a report, leading to duplication of effort, especially for sea turtles. Improving communication between institutions and develop a clear guidance for the general public is key.</p> <p>2. A common database is needed bringing together information on dead and injured animals. This would allow to better keep record of the events, and to better exchange information between organizations.</p> <p>3. Post-mortems examinations are necessary to determine the cause of death of an animal, but they can be difficult to perform due to funding issues and due to unsuitable conditions of a carcass (especially in turtles). There is need to improve the coordination of necropsies and to increase the number of necropsies carried out.</p> <p>4. Support from the Ministry of the Environment, Climate and Energy, which should ensure adequate assistance in standardizing the procedures for carcass management and waste monitoring.</p> <p>5. Increasing public awareness of the correct procedure for reporting dead or injured animals and the necessary actions to be taken is crucial to improve the management of these cases.</p> |
| <p>Monitoring of free ranging animals</p> | <p>Morigenos is the only group in Slovenia carrying out monitoring of marine sentinel species. Specifically, Morigenos carries out</p> |



dedicated monitoring of marine mammals, but it also collects sightings data on sea turtles during its surveys. The public and agencies operating at sea report sightings to Morigenos by phone or online.

Human Interactions and Conservation Concerns – Key Issues Identified

1. Boat Traffic (especially recreational vessels, which generally pose greater risks to marine sentinel species compared to commercial ships).

2. Port Expansions and Underwater Work create noise pollution and potential sediment resuspension, affecting dolphins.

3. Capris boat party: events like boat parties can cause additional significant impact on marine life.

4. Pollution, a major problem for the marine environment at large.

5. Waste monitoring is not currently included in the work program, but the Ministry will shortly issue a call for tenders to carry out this monitoring. It is foreseen that this task will be taken over by the Institute for Water of the Republic of Slovenia, but in the future monitoring waste that could specifically affect dolphins and turtles will need to be carried out.

6. Pingers and their impact: MPA managers wonder about the potential benefits of pingers to mitigate damages and economic loss to local fishermen. However, for such purpose, the use of pingers in MPAs is controversial and



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| | <p>ultimately inappropriate. The priority of MPAs is wildlife protection, and pingers may affect a range of organisms not limited to sentinel species. Additionally, it is worth mentioning that studies show that pingers may not be much effective with bottlenose dolphins (the only regular cetacean species in Slovenia), since animals become accustomed to the sounds and may even associate them to the presence of food. If pingers were to be used elsewhere, it would be necessary to closely monitor their use and potential impact.</p> |
| <p>Sea turtle nest monitoring</p> | <p>Not relevant for Slovenia.</p> |



WP1 – Activity 1.2

DELIVERABLE 1.2.1

Local Round Tables report

Partner 7 - MONTENEGRO DOLPHIN RESEARCH

| | |
|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

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| Action: | W.1 - Joint development of the transnational strategy for the monitoring of sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 22/01/2025 |
| Name of the partner | PP7 – Montenegro Dolphin Research |
| Authorship | Aylin Akkaya |

ROUND TABLE

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| Date | 22.01.2025 |
| Time | 10:00-14:00 |
| Location | Kotor, Montenegro |
| Target groups invited | 8 Target groups were invited: Academics and Researchers; Aquaculture; Divers and dive operators; NGOs; INGOs; Local communities; National Authorities; Touristic Boat Operators |
| Number of participants | 19 |

INTRODUCTION: STATE OF THE ART

Strandings:

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| Year of reference: 2014-2024 | |
| Number of strandings per species | 14 stranding report, of which two specimens belonged to striped dolphins, |



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| | three undetermined and the rest was bottlenose dolphins. |
| Main demographic characteristics | Seven specimens identified as adult, four subadult and the rest is unknown. |
| Cause of death determined by necropsy (natural and anthropic) | No necropsy was done. |
| Number of stranding hypothesized to be correlated to human interaction (fishery interaction, vessel collision, marine litter ingestion, etc.) | Unknown, none of the fishery, vessel collision signs were found. |

Free ranging animals:

All the information is summarized in the “Minutes summary per topic” section.

Sea turtle nest:

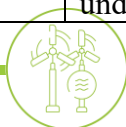
| Year of reference: 2014-2024 | |
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| Number of sea turtle nests recorded | 1 |
| Number of nests per species | 1 <i>C. caretta</i> |
| Nesting hotspot areas | Montenegro is not within the nesting zone of sea turtles but in 2024, two hatchlings were documented in the Veliko Plaza, Ulcinj. |

MINUTES SUMMARY PER TOPIC

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| Strandings monitoring | <p>There is no national stranding network or systematic stranding monitoring in Montenegro. Tour boat operators typically report strandings on Facebook, which serves as the main platform for stranding reports, though nothing official exists. The Institute of Marine Biology was mentioned as the responsible body for the stranding reports.</p> <p>Reports are primarily limited to dolphins and sea turtles, and there is no official database for recording strandings. Although in early 1970, the last seal was reported as stranded after the intentional killing by the tourist. Since then no known stranding report of seals exists.</p> |
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| | <p>Most people are uncertain about what to do or where to report strandings. The public enterprise <i>Morsko Dobro</i>, responsible for protected areas, has stated that they are in charge of strandings occurring within MPA zones.</p> <p>Most people are uncertain about the appropriate procedures or where to report strandings. While the public enterprise <i>Morsko Dobro</i>, responsible for marine protected areas, has stated they are "in charge," their role appears limited to recording incidents and notifying other entities. The lack of a legally defined framework leaves the responsibilities, such as involving veterinarians or Communal Services, subject to informal agreements, which can result in confusion and inaction.</p> <p>When discussing the causes of strandings, they were generally unknown, though natural causes were considered the most likely, with noise pollution and collisions also mentioned as potential factors. In the past, the strandings were mainly caused by dynamite fishing but not anymore according to the participants.</p> <p>The stranding discussion was mainly attended by tour boat operators, local communities, NGOs, and divers, as well as <i>Morsko Dobro</i>. Each group reported encountering strandings from time to time but expressed confusion about the proper course of action. They estimated around two to four stranding of dolphins per year, yet they did not state any extra knowledge for sea turtles on the topic.</p> <p>Government representatives at the roundtable acknowledged the concern on confusion and expressed their willingness to improve the current situation, while underlining that they cannot do it alone and</p> |
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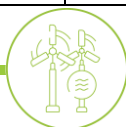


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| | <p>they need the contribution of the stakeholders.</p> <p>All participants emphasized the urgent need for a common database with a simple protocol where strandings can be reported consistently, along with clear guidelines on what and how to report. A mussel farmer shared an example of a dolphin stranding from a few years ago; no one responded to remove it, and its skeleton remains on the beach to this day.</p> |
| <p>Monitoring of free ranging animals</p> | <p>There is no national sighting network for sentinel species in Montenegro. However, when individuals encounter these species, they often report their sightings on social media, mainly Facebook. When there is an encounter of Monk Seals, the report is also directly sent to CZIP and MedCEM. Additionally, the Institute of Marine Biology receives sighting information. A dedicated network for monk seal, although not national, sightings does exist, coordinated by MedCEM and CZIP, supported by Monk Seal Alliance. However, none of these efforts function at a national network level, and there is no official reporting system or publicly available database. While a database for seal sightings exists, it is not accessible to the public.</p> <p>Montenegro currently has three marine nature parks and two new marine protected areas, but their designation is mainly based on the presence of corals, seagrass, and fish, with no direct consideration for sentinel species. NGOs noted that seals were briefly mentioned in the Platamuni Protected Area, but only in a sentence or two. However, Morsko Dobro, the public enterprise responsible for protected areas, expressed interest in incorporating sentinel species into the management plans for these MPAs and in strengthening protection measures.</p> |

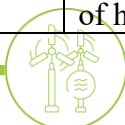


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| | <p>An NGO highlighted that monitoring sentinel species within MPAs or elsewhere remains challenging, as these species travel long distances, making transboundary protection essential. Morsko Dobro also pointed out that rangers operate within MPA zones and conduct monitoring, though not specifically for sentinel species. They also added that these efforts are still in the early stages, and observers are encouraged to report sightings to the Environmental Protection Agency, which collaborates with MPA managers. By law, sightings should be reported, but participants expressed confusion over where, what, and how to report.</p> <p>Public awareness of sentinel species is relatively high, with strong local support for their conservation. However, tourists often lack knowledge about these species. Additionally, according to the participants of the round table, fear-driven narratives, such as reports of sea turtles biting people, contribute to misunderstandings in Montenegro</p> <p>Dolphins are commonly used as a tourism promotion tool by tour boat operators, but fishers do not track them to locate fish. Intentional killings of sentinel species no longer occur, and negative interactions are rare, as locals generally value these species. However, concerns remain regarding sea turtles, particularly after a recent incident where a turtle was killed, photographed, and shared on social media as a trophy, an act widely not appreciated by locals.</p> <p>The participants highlight that the primary benefit of these species to Montenegro is their contribution to tourism, but they are also recognized by the community as key biodiversity indicators. The main threats to their survival were identified as a lack of knowledge regarding their protection, as well as increasing concerns over cruise ship</p> |
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| | <p>activity. Additionally, speed regulations are not enforced, raising concerns for marine species, though tour operators expressed willingness to comply with speed limits. Anchoring was frequently mentioned as a significant cause of habitat destruction. Long to short, sentinel species sightings in Montenegro are frequent, particularly during warmer seasons when more time is spent at sea. While Boka Kotorska was highlighted as a hotspot, sightings occur throughout Montenegro. Despite the high number of observations, most people remain uncertain about how and where to report them. Some individuals report dolphin sightings to MDR and the Institute of Marine Biology, but most sightings are shared informally through Facebook groups. For seals, MedCEM and CZIP serve as key contacts, with databases being developed but not publicly accessible. Sea turtles remain the least studied among these species, with little clarity on reporting procedures. Participants demonstrated strong enthusiasm for the topic and expressed a clear desire to actively participate in monitoring protocols.</p> |
| <p>Sea turtle nest monitoring</p> | <p>Sea turtles are the least known species from the sentinel species in Montenegro, with no known dedicated institute or NGO focusing on them. There is no national network or publicly accessible database, nor is there a formal monitoring program—though some monitoring exists for freshwater turtles, which falls outside the scope of this project.</p> <p>Tour boat operators and fishers reported seeing sea turtles regularly throughout the year. However, they were unaware that feeding them was discouraged, emphasizing that knowledge is crucial in preventing well-intentioned but harmful actions. While the presence of adult sea turtles in Montenegro was known, nesting was not. The discovery of hatchlings last year in 2024 summer came</p> |



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| | as a surprise to all the participants of the round table. Following this talk, fishers recalled having seen small sized turtles at sea in the past but had not recognized their significance at the time. |
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CONCLUSION AND RECOMMENDATIONS

The round table was highly productive, following an inclusive approach with extensive discussions on the current state of sentinel species in Montenegro and potential ways forward. It brought together a diverse group of stakeholders, including fishers, divers, tour boat operators, government officials, university representatives, and NGOs. This diversity on the participations allowed for a comprehensive exchange of ideas on the topics identified for the round table.

Overall, participants demonstrated a strong understanding of the importance of sentinel species and the need for well-structured protocols, emphasizing the necessity of a unified stranding and sighting network that is easily accessible and straightforward to follow. While awareness of the need for protection was high, participants also highlighted the importance of gaining a more detailed understanding of the species present, their ecological significance, and the best approaches on their protection. Concerns were raised regarding the lack of awareness among tourists, as well as the growing impact of cruise ship traffic, anchoring, and pollution.

The take home messages of the round table in Montenegro was;

- Knowledge is essential for effective in-situ protection.
- There is an urgent need for user-friendly, publicly accessible unified databases with clear structures and protocols to avoid confusion about where and how to report sightings and strandings.
- Participants expressed willingness to collaborate and saw the SAMESEA project as the first step for establishing a shared network and databases, which could also support MPAs.
- Regulations on cruise ships and speed limits should be implemented and, most importantly, effectively enforced to ensure the protection of sentinel species.

In conclusion, the round table set the stage for future collaborative efforts, gaining the commitment of stakeholders for the monitoring and mitigation effort of sentinel species in Montenegro.



WP1 – Activity 1.2

DELIVERABLE 1.2.1

Local Round Tables report

Partner 9 - Archipelagos Institute of Marine Conservation

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|---------------------------|---|
| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

| | |
|-----------------------------|--|
| Action: | W.1 - Joint development of the transnational strategy for the monitoring sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 28/01/2025 |
| Name of the partner | PP9 - Archipelagos Institute of Marine Conservation |
| Authorship | Anastasia Miliou, Beatriz Tintoré, Guido Pietrolungo, Marta Azzolin, Antonis Mazaris |

ROUND TABLE

| | |
|-------------------------------|----------------------------------|
| Date | 28/01/2025 |
| Time | 10.00-14.00 |
| Location | Agios Kostantinos, Samos, Greece |
| Target groups invited | 8 |
| Number of participants | 30 |

INTRODUCTION: STATE OF THE ART

Use the following paragraphs to drive the round table preliminary discussion and to describe the local situation.

Strandings:

- Does your country have a national stranding network?
For marine mammals there is an official stranding network.
- How is the stranding network organized (please, report all the bodies that are part of the network and the flow of response)?



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On 2023, the common Ministerial Decree on Monitoring Strandings of Marine Wildlife Species in Greek territorial waters of the Ministries of Environment and Energy (<https://ypen.gov.gr>), Agriculture and Food (<http://www.minagric.gr/index.php/en/>), Marine Affairs and Insular Policy (<https://www.ynanp.gr/en/>) and Finances (<https://www.minfin.gr/web/guest/nomiko-plaisio1>) was discussed and modified after an open consultations with the Hellenic Scientific Community of NATURA 2000, related scientists, NGOs and stakeholders. It will be signed soon by the Hellenic Parliament. This Ministerial Decree, among others, is going to become the legal framework for the evaluation, the management and the protection of the species and for the processes of information and data gathering by specialists (veterinarians and other scientists) following scientific international protocols on rescue, necropsies, sampling, and properly processing samples from the stranded marine wildlife.

- If no national network exists, does your country have someone responding to strandings? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the region of intervention.

1. SCHOOL OF VETERINARY MEDICINE-FACULTY OF HEALTH SCIENCES, ARISTOTLE UNIVERSITY OF THESSALONIKI (AUTH), St. Voutyra 11 Street, 54627 Thessaloniki, GREECE. Contact: Prof. KOMNENOU Anastasia, DVM, PhD. Email: natakomn@vet.auth.gr; natakomn@gmail.com; info@vet.auth.gr. Website: www.vet.auth.gr

NATIONAL LEVEL

2. HELLENIC CENTRE FOR MARINE RESEARCH, INSTITUTE OF MARINE BIOLOGICAL RESOURCES AND INLAND WATERS, Former US Base at Gourmes, P.C. 71500, Heraklion, Crete, Greece Contact: Dr GIANNOULAKI Marianna, Research Director. Email: marianna@hcmr.gr. NATIONAL LEVEL

3. MARINE MAMMAL BIOMONITORING UNIT, LABORATORY OF HYDROBIOLOGY AND ICHTHYOLOGY, DEPT. OF ICHTHYOLOGY AND AQUATIC ENVIRONMENT, SCHOOL OF AGRICULTURAL SCIENCES, UNIVERSITY OF THESSALY, Fytokou str., 38446, Volos, Hellas, Contact: Prof GKAFAS Georgios. Email: gkafas@googlemail.com. NATIONAL LEVEL

4. NATIONAL AGRICULTURAL RESEARCH FOUNDATION (N.AG.RE.F) FISHERIES RESEARCH INSTITUTE (FRI) OF KAVALA, GREECE, Nea Peramos, 640 07, Kavala, GREECE. Contact: Dr. KOUTRAKIS Emanuil Email: koutrman@otenet.gr, fri@otenet.gr. NATIONAL LEVEL

5. ARION-CETACEAN RESCUE & REHABILITATION RESEARCH CENTER, Limenas Moudanion, Chalkidiki/ M. Botsari 119, 544-53 Thessaloniki. Contact: Prof. KOMNENOU Anastasia, Dr. DROUGAS Aimilia, Email:



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natakomn@gmail.com; adrougas@gmail.com, adrouga@prv.ypeka.gr;
arion@arion.org.gr. Website: www.arion.org.gr. NATIONAL LEVEL

6. PELAGOS CETACEAN RESEARCH INSTITUTE, Terpsichoris 21, 16671 Vouliagmeni, GREECE, Contact: Dr. FRANTZIS Alexandros, Email: afrantzis@otenet.gr, Website: www.pelagosinstitute.gr LOCAL LEVEL

7. ARCHIPELAGOS INSTITUTE FOR MARINE CONSERVATION, Pythagorio 83103, Samos. Contact: MHLIOU Anastasia Email: info@archipelago.gr REGIONAL LEVEL

8. iSEA-ENVIRONMENTAL ORGANISATION FOR THE PRESERVATION OF THE AQUATIC ECOSYSTEMS, Kritis 12, Thessaloniki, Greece, Contact: GIOVOS Ioannis Email: Info@isea.com.gr, Website: www.isea.com.gr

- How many stranding were recorded in the last 10 years (2014-2024)?

No official data are available.

- Is there any official report and database? If yes, please, report the links and the main results:

There isn't an official report available. Stranding data are available through the "National Marine Mammal Stranding Databank" where data are provided through daily alerts by the port police or the locals to the School of Veterinary Medicine, Faculty of Health Sciences of Aristotle University of Thessaloniki and the Hellenic Marine Research Centre. Also, there are stranding data and tissue bank available through the "ARION-Cetacean Rescue and Rehabilitation Rescue Centre" (since late 1870), the "Pelagos Cetacean Research Institute" (since late 1870s) and the "Hellenic Society for the Protection of Monk Seal *Monachus monachus* -Mom" (since 1980s).

Free ranging animals:

- Does your country have a national monitoring network of sentinel species?
No, there isn't an official national monitoring network. However, when general public encounters these species they often report them on social media or they share it with the NGOs working on the area by email.
- If no national network exists, does your country have someone monitoring free ranging cetacean, sea turtle and monk seal? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the area of intervention.

1. HELLENIC CENTRE FOR MARINE RESEARCH, INSTITUTE OF MARINE BIOLOGICAL RESOURCES AND INLAND WATERS, Former US



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Base at Gournes, P.C. 71500, Heraklion, Crete, Greece Contact: Dr GIANNOULAKI Marianna, Research Director. Email: marianna@hcmr.gr. NATIONAL LEVEL

2. PELAGOS CETACEAN RESEARCH INSTITUTE, Terpsichoris 21, 16671 Vouliagmeni, GREECE, Contact: Dr. FRANTZIS Alexandros, Email: afrantzis@otenet.gr, Website: www.pelagosinstitute.gr LOCAL LEVEL

3. ARCHIPELAGOS INSTITUTE FOR MARINE CONSERVATION, Pythagorio 83103, Samos. Contact: MHLIOU Anastasia Email: info@archipelago.gr REGIONAL LEVEL

4. GAIA RESEARCH INSTITUTE, Milokopi0, 20300 Perachora (Korinthia). Contact: Dr. AZZOLIN Marta, Email: marta.azzolin@gmail.com / info@gaiaresearch.org. REGIONAL LEVEL

- Is there any official report and database? If yes, please, report the links. No
- Are there marine protected areas (MPAs) established to protect directly and indirectly these species? If yes, please report the ID Code and the name of the management authority body as well as the legal representative.

The management authority for all Greek protected area is the Natural Environment & Climate Change Agency (N.E.C.C.A. <https://necca.gov.gr/en/home/>)

1. GULF OF KORINTHOS (GR2530007)
2. ALONISSOS NATIONAL PARK (GR1430005)
3. IONIAN ARCHIPELAGO (GR2220003)

- If there are MPAs dedicated to the protection of these species, is there regular monitoring of the species? Please provide details about methodologies and protocols applied during the monitoring activities.
In the Alonissos National Park and the Ionian Archipelago for monk seals through cave monitoring
- How widespread is the sensitivity towards issues related to the protection of sentinel species (cetaceans, sea turtles, monk seal) at the level of citizens, local and national authorities?
There is a wide interest by citizens about these sentinel species, their conservation and the threats they afford
- What is the degree of sensitivity towards key marine species by economic operators (fishermen, maritime sector companies, etc.)?
From medium to low.



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- Are there documented cases of negative interaction (killings, capture, etc.) with human activities?
Yes

Sea turtle nest:

- Does your country have a national sea turtle nest monitoring network?
The network is coordinated by ARCHELON, the Sea Turtle Protection Society of Greece.
- How is the network organized (please, report all the bodies that are part of the network and the flow of response)?
Each Region has its own network based on the occurrence of nesting. The report-flow starts with the Port Police-Coast Guard receiving the call and inform the regional contact person/s.
- How many sea turtle nests were recorded in the last 10 years (2014-2024)?
The Greek data are fragmented. On Samos Island, the number of nests recorded in the last 10 years are 5 during 2018 and 2019 (Pietroluongo et al., 2021).
- Is there any official report and database? If yes, please, report the links and the main results:
No official national reports are available. Official reports are available at regional-basis.

| Year of reference: 2014-2024 | |
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| Number of sea turtle nests recorded (2016-2024) | 5 |
| Number of nests per species | 5 (<i>C. caretta</i>) |
| Nesting hotspot areas | Votsalakia beach is considered “Diffuse” nesting site (Pietroluongo et al., 2021) |

MINUTES SUMMARY PER TOPIC

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| Strandings monitoring | Greece has been working during the last decade, for the first time in the Mediterranean, and considering the recent conservation measures/actions of the proposed “National Action Plan” to guarantee through legal framework and regulate under protocols the marine mammals’ strandings, rescue, rehabilitation, and reintroduction, as well as necropsies and tissue sampling. A “National Marine Wildlife Stranding and Sighting |
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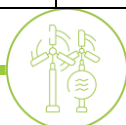
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| | <p>Databank (marine mammals, sea turtles and sharks)” is being digitally designed and will be available by the Natural Environment & Climate Change Agency (NECCA-https://necca.gov.gr/en/home/) in Greece. A national tissue bank of marine mammals has been established at the approved Laboratories of the School of Veterinary Medicine of Aristotle University of Thessaloniki (AUTH) and at the Laboratories of the Dept. of Ichthyology and Aquatic Environment, School of Agricultural Science of the University of Thessaly.</p> <p>Monitoring approaches follow ACCOBAMS documents, but their application is still regional. The research, rescue and data analysis for cetaceans is accomplished mainly by NGO work with minimum financial coverage.</p> <p>In general, the main threats recognized in Greece are fishery interaction, vessel collision, and noise pollution.</p> |
| <p>Monitoring of free ranging animals</p> | <p>Much of the monitoring efforts of free-ranging animals in Greek waters have been carried out using dedicated research vessels or land monitoring. Some other successful approaches have been utilizing citizen science reports and stationing observers on the command deck of ferry routes, which are key areas to expand upon. There is no national sighting network, although most of the sightings are reported on social media or on platforms such as the Internet.</p> <p>The sentinel species (cetaceans, monk seals & sea turtles) have been monitored at differing levels across different regions in the eastern Mediterranean. There has been some success in the passive acoustic monitoring of monk seals, photo identification, and behavioural monitoring. Dolphin species are monitored based on photo-identification techniques, and distance sampling. Dolphins can be monitored on a broader scale through different platforms to identify migration routes or seasonal movements. Behavioural data is also collected</p> |



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| | <p>to define habitat use and provide evidence for protection.</p> <p>There are currently no designated MPAs for cetaceans in Greece. Nevertheless, the Corinth Gulf is a Natura 2000 area for the protection of bottlenose dolphin, loggerhead sea turtle, and monk seal. Moreover, there are designated Important Marine Mammal Areas (IMMAs) for the Mediterranean monk seal.</p> <p>During the discussion, the NGO highlighted the challenges Greek organizations face in monitoring the species due to their proximity to Turkish waters.</p> <p>When discussing the general perception of free-ranging species, some participants highlighted the problematic relationship with the fishermen as most blame the monk seals or dolphins for stealing their fish and breaking their nets. As identified by one of the NGOs, there are records of dolphins with tail cuts or sea turtles with bycatch indications. However, all the participants also emphasize these species' ecological role in the ecosystem and the benefits of having these species present.</p> |
| <p>Sea turtle nest monitoring</p> | <p>The nest monitoring is conducted at the regional level differently under the coordination of ARCHELON. Some regions have an established network, but many others continue the work that started on a volunteer basis in the past. In recent years, nesting monitoring and outputs have been increased thanks to LIFE projects. Sea turtle strandings are more frequent during the summer months due to nesting patterns and the increased presence of tourists. A key finding from the data is that juvenile sea turtles use the Ionian Sea as a key developmental habitat and that males and females are present throughout the year. The stranding data has also revealed the presence of the critically endangered green sea turtle in the region, suggesting that the Ionian Sea serves as an important foraging area. Climate change also poses new challenges for monitoring and conservation, as turtles are</p> |



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| | <p>shifting their nesting sites to new places. Identifying high-risk areas and the need for effective management and conservation plans is vital. By integrating data on human presence, such as fishing, pollution and shipping, a risk map has been created to identify areas with higher threats to sea turtles. This information can be used to develop informed conservation policies, particularly within the context of the Ionian Sea MPA. Finally, new technologies and protocols could be developed to improve monitoring efficiency, including low-cost hydrophones for citizen science projects and methods to assess beach conditions and habitat changes. The aim is to provide actionable data for policymakers and conservationists to ensure the protection of critical marine habitats and species.</p> |
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CONCLUSION AND RECOMMENDATIONS

Science Recommendations

- Implement the study of sea turtle stranding to assess health and conservation status;
- Conduct post-mortem examinations of stranded marine mammals using standardized forensic procedures, aiming to identify causes of death and contributing factors, while maintaining an evidence-based approach;
- Ensure periodic training to update the regional stranding network and post-mortem procedures;
- Use centralized databases for data exchange, enabling accessible information for management and policy-making purposes;
- Enforce the monitoring of region-specific risks to local fishing practices in influencing marine specie health and distribution, such as bottlenose dolphin and setnet;
- Extend the monitoring activity to all Greek waters;
- Expand the area for the conservation of these sentinel species.

Management Recommendations

- Ensure a standardized digital reporting method to support stranding and nest monitoring networks and authorities for streamlined coordination and effective data sharing;
- Empower and standardize the logistics to collect and deliver stranded animals to veterinary laboratories equipped to perform post-mortem examinations;
- Implement monitoring systems to identify and address hotspots risks or nesting area, guided by modeling studies;
- Enforce the sea turtle stranding network connecting it to the cetacean one;



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- Establishment of an “Emergency Task Force” consisted by international experts (veterinarians, biologists, etc.), for marine mammal morbidity and mortality and special events, affecting marine mammal populations or their critical habitats;
- Financial support for systematic cetacean population research, habitat conservation and health monitoring;
- Employ a dynamic approach to conservation that consider the movement of the sentinel species across the whole EUSAIR Region.

Policy Recommendations

- Establish functional, fully funded stranding networks in every region, coordinated at the national and ACCOBAMS level to standardize and harmonize data collection for conservation purposes;
- Implement common procedures and national protocols for handling stranded marine animals and managing nests, supported by reference laboratories with fully trained veterinarians performing necropsies;
- Enforce regional cooperation in addressing fishery-interaction in the Mediterranean Sea, emphasizing the importance of rigorous monitoring and joint policy enforcement.



WP1 – Activity 1.2

DELIVERABLE 1.2.1

Local Round Tables report

Partner 10 – Municipality of Neum and Partner 5 -CETEOR

| | |
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| WP1 | Joint development of the transnational strategy for the monitoring sentinel species |
| Activity 1.2 | Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| D.1.2.1 | Local Round tables report |
| Report description | The report will contain the needs, requirements, approaches and methodologies used by different local actors involved in monitoring and conservation activities at the local, regional and national levels. |

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| Action: | W.1 - Joint development of the transnational strategy for the monitoring sentinel species |
| Activity: | 1.2 - Creation of the coordination model and monitoring protocols in the EUSAIR Region |
| Name of deliverable: | Local Round Tables report |
| Date: | 13/01/2025 |
| Name of the partner | PP 10 - Neum Municipality and PP 5 Ceteor |
| Authorship | Project teams of the Municipality of Neum and CETEOR |

ROUND TABLE

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| Date | 13/01/2025 |
| Time | 11:00 |
| Location | Neum |
| Target groups invited | Federal Ministry of Environment and Tourism - Adla Kahrić, FBiH Environmental Protection Fund, Faculty of Science and Mathematics, University of Sarajevo, National Museum of Bosnia and Herzegovina - Dejan Kulijer, National Museum of Bosnia and Herzegovina - Adnan Zimić, Regional Education and Information Centre for Sustainable Development in South – East Europe - REIC, Association for biological research and nature protection - BIO.LOG, Herpetological Association in Bosnia and Herzegovina ATRA, |



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| | Institute of Hydrotechnics Ltd. Sarajevo - HEIS, Admir Aladzuz, NGO Shark Lab - Andrej Gajić, Department for Projects of the Municipality of Neum, Center for Economic, Technological and Environmental Development – CETEOR Ltd. Sarajevo, Port Authority of Neum, Ministry of Agriculture, Forestry and Water Management of the Herzegovina-Neretva County, Environmental Protection Fund of the Herzegovina-Neretva County, University of Mostar, Diving Club of Neum, Tourist Board of the Herzegovina-Neretva County, Tourist Board of the Municipality of Neum, Agency for the Adriatic Sea Water Area, Fishermens. |
| Number of participants | 24 + 2 online |

INTRODUCTION: STATE OF THE ART

Strandings:

- Does your country have a national stranding network?
Bosnia and Herzegovina don't have any national stranding network.
- If no national network exists, does your country have someone responding to strandings? At what level? Please, report the name of the person/group (association, NGO, public body, research institute, etc.) and the region of intervention.
The only scientist monitoring the situation in our Adriatic Sea Bay is the internationally awarded scientist, marine biologist Andrej Gajić, who participated in the roundtable via an online connection. He provided all attendees with detailed insights into the status of sentinel species in the Neum Bay and the results of systematic monitoring, which he conducted with his team from 2010 to 2019, focusing on sharks and rays as part of the USAID project. Unfortunately, he also confirmed that there is no national network for monitoring these species.
- How many stranding were recorded in the last 10 years (2014-2024)? In this period, not a single stranding was recorded, only one dead turtle was found, two years ago, under unknown circumstances, as stated by the Neum Diving Club.



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- Is there any official report and database? If yes, please, report the links and the main results:
There are no official reports or databases.

Free ranging animals:

- Does your country have a national monitoring network of sentinel species?
Bosnia and Herzegovina don't have a national monitoring network of sentinel species. In Bosnia and Herzegovina, there is neither a network nor a database for the species mentioned in the questionnaire. According to scientist Andrej Gajić, who spoke at the Round Table, species such as turtles and dolphins have been observed but are not systematically monitored. Additionally, a monk seal was once recorded in the nearby Mali Ston Bay. He also mentioned that a tool is being developed to enable species monitoring in the future. The lack of focus on these species is primarily due to the priority given to monitoring other marine species, such as specific fish species, algae, and shellfish.

Sea turtle nest:

- Does your country have a national sea turtle nest monitoring network?
Bosnia and Herzegovina don't have a national sea turtle nest monitoring network.

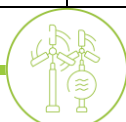
MINUTES SUMMARY PER TOPIC

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| <p>Strandings monitoring</p> | <p>There are no recorded cases of frequent strandings of sea turtles, dolphins, or Mediterranean monk seals (<i>Monachus monachus</i>) in the Neum Bay, nor is there continuous monitoring of such incidents for any of these species. According to members of the Neum Diving Club, only one dead turtle was found under unknown circumstances in the past decade, two years ago, while no stranding incidents have been recorded.</p> <p>However, strandings of marine animals occasionally occur throughout the Adriatic Sea, which serves as an important habitat for several endangered species. These incidents highlight the delicate balance of the marine ecosystem and the challenges its species face.</p> |
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| | <p>However, it is important to note that this area is part of the Natura 2000 ecological network – Klek Peninsula BA8200061 and is characterized by an exceptionally high level of biodiversity and valuable ecosystems. Monitoring the status of marine organisms and the marine environment could contribute to the preservation of these valuable species and their habitats.</p> |
| <p>Monitoring of free-ranging animals</p> | <p>In Bosnia and Herzegovina, there is neither a network nor a database for target species. According to scientist Andrej Gajić, who spoke at the Round Table, species such as turtles and dolphins have been observed but are not systematically monitored. Additionally, a monk seal was once recorded in the nearby Mali Ston Bay. He also mentioned that a tool is being developed to facilitate species monitoring in the future. However, the limited focus on target species is primarily due to the priority placed on monitoring other marine species, such as certain fish species, algae, and shellfish.</p> <p>Currently, there is no continuous monitoring of free-ranging species in the Neum Bay, which presents a challenge for tracking the condition of local ecosystems and endangered species.</p> <p>Although the area has rich biodiversity, the lack of ongoing surveillance prevents the timely collection of data on populations, migration patterns, and the identification of potential threats to these species. By implementing continuous monitoring, significant improvements could be made in understanding the status of free-ranging species, contributing to their conservation and the sustainable management of this valuable ecosystem.</p> |
| <p>Sea turtle nest monitoring</p> | <p>The Neum Bay is a micro-location in the eastern and southern Adriatic. Due to its configuration, it is considered an unsuitable nesting habitat for sea turtles, but it remains</p> |



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| | <p>part of their broader habitat. Additionally, due to the lack of official data on the presence of sea turtles and systematic research, it is impossible to assess their current state. However, there are several photographic records confirming the presence of two sea turtle species, verified by representatives of diving clubs and marine biologists during the round table meeting. Since these are highly mobile animals, it is necessary to consider the broader context, establishing cooperation and monitoring of the neighboring waters of the Republic of Croatia to obtain accurate data for the Neum Bay area.</p> |
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CONCLUSION AND RECOMMENDATIONS

Significant support at the roundtable was provided by scientist and marine biologist Andrej Gajić, who joined via video link and briefly explained to the participants the importance of sentinel species and the purpose of monitoring them. One of the main benefits of monitoring these species is the early detection of ecological changes in the ecosystem, as they are the first to respond to habitat changes. They are easily accessible and observable, suitable for sampling and research. These species play a crucial role in the ecosystem because changes in their populations provide a broader picture of the state of the ecosystem being monitored. Their importance lies in enabling timely implementation of protective measures and assisting in the early detection of pollution and its types.

Factors that should be monitored in Neum include the accumulation of heavy metals (mercury, lead) and organic pollutants due to tourism development. The number and presence of sentinel species can indicate the ecological balance of the bay's ecosystem and the various impacts of human activities, such as tourism, habitat degradation, and fishing.

Beyond the target species of this project, it would be beneficial to monitor species in the Neum Bay such as the common smooth-hound shark (*Mustelus mustelus*), the sandy ray (*Leucoraja circularis*), locally known as the "butterfly fish," and the marbled electric ray (*Torpedo marmorata*), which is widely distributed in local waters. Shellfish and echinoderms, including mussels and sea urchins (with 6 to 7 species present in the Neum Bay), can also serve as good indicators of pollution. Additionally, monitoring should encompass green algae, which accumulate copper and zinc and whose overabundance indicates eutrophication, as well as brown algae, known for accumulating radionuclides, and red algae, which are used to track nitrate and phosphate pollution.



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Gajić emphasized that through other projects, certain sentinel species will, for the first time, be directly monitored, providing precise insights into what is happening with these species and the long-term changes occurring in the ecosystem.

The Neum Diving Club confirmed the presence of sea turtles and dolphins in the bay, noting that the number of dolphin pods visiting the bay increases each year. One of the negative impacts on these species is the mass tourism in the city and the large number of speedboats and jet skis during the summer season, a concern echoed by the Port Authority.

Adla Kahrić, a representative of the Federal Ministry of Environment and Tourism, also joined online and confirmed all the stated findings, adding that as a marine biologist, she had participated in previous research in the Neum Bay, primarily focusing on shark and shellfish species.

It is important to note that none of the participants were aware of any legal regulations related to the monitoring and protection of sentinel species.

Neum Bay, part of the Natura 2000 ecological network, is recognized for its exceptional biodiversity and valuable ecosystems. However, the absence of continuous monitoring of free-ranging species, such as sea turtles, dolphins, and Mediterranean monk seals, significantly limits efforts to understand and preserve the local marine environment. While sporadic observations and photographic evidence confirm the presence of target species, the lack of systematic research and a national database prevents an accurate assessment of their status and potential threats.

Monitoring sentinel species is of particular importance in this context. Sentinel species, such as sea turtles, dolphins, and specific types of algae, play a critical role in detecting ecological changes and pollution within the ecosystem. Their populations serve as indicators of environmental health, allowing early identification of issues like heavy metal accumulation, plastic pollution, and habitat degradation.

Establishing regular monitoring programs for sentinel species and other free-ranging animals, alongside enhancing cooperation with neighboring regions like the Republic of Croatia, is vital for effective conservation. This approach would enable timely data collection on populations, migration patterns, and environmental pressures, supporting the sustainable management of the Neum Bay and the broader Adriatic ecosystem while ensuring the preservation of its endangered species and habitats.

