

Agenda Item 4.2

Review of New Information on Threats to
Small Cetaceans

Underwater Noise

Document 4.2

**Report of the Joint
CMS/ACCOBAMS/ASCOBANS
Noise Working Group**

Action Requested

- Take note
- Give guidance

Submitted by

Noise Working Group



**NOTE:
DELEGATES ARE KINDLY REMINDED
TO BRING THEIR OWN COPIES OF DOCUMENTS TO THE MEETING**

Report of the Joint CMS/ACCOBAMS/ASCOBANS Noise Working Group (Joint NWG)

19th August 2015

Joint NWG Co-Chairs: Sigrid Lüber and Yanis Souami

I. Working group history

1. In 2011 the Working Group on Noise became a joint ACCOBAMS/ASCOBANS Noise Working Group, and then in 2013 the ASCOBANS Advisory Committee and ACCOBAMS MOP agreed to evolve it further to become a Joint CMS/ACCOBAMS/ASCOBANS Noise Working Group (Joint NWG) reflecting that the CMS Family was addressing this issue with more seriousness.
2. A broadened Terms of Reference for the Joint Noise Working Group was adopted by ASCOBANS and ACCOBAMS, reflecting the natural evolution of this group and the important work that it needs to address on behalf of these bodies: ACCOBAMS, ASCOBANS and CMS.
3. The invitation to join the Working Group was accepted by the CMS Scientific Council in July 2014.

II. Report focus and report period

4. The Joint NWG continues to work to the work programme as revised by both ASCOBANS and ACCOBAMS processes.
5. This report builds on AC21/Doc.3.2.1 and provides details on the activities between July 2014 and July 2015.

III. Anthropogenic Noise/cetacean international hotspots in the ACCOBAMS area and Monitoring guidance on marine noise for Ecological Objective (EO)11

6. In July-September 2014 the ACCOBAMS Secretariat worked directly with members of the Joint NWG to:
 - a) identify anthropogenic noise/cetacean interaction hot spots in the ACCOBANS are and to map and developed a monitoring of sea ambient noise, particularly in critical habitats; and
 - b) develop monitoring guidance on marine noise for Ecological Objective (EO)11.

IV. CMS Scientific Council decisions

7. In July 2014, the CMS Scientific Council, at its 18th meeting, agreed to become a member of the Joint NWG. The Scientific Council also agreed that Environmental Impact Assessment should become a regular work area of the Aquatic Mammals Working Group, working in close cooperation with the Joint NWG.
8. Once developed, guidance notes on the drafting and assessment of EIAs for marine noise should be presented to the CMS Parties for their consideration.

V. Adriatic Sea

9. In late 2014, at the request of the Chair of the ACCOBAMS Scientific Committee, the Joint NWG developed a Statement of Concern relating to activities in the Adriatic Sea.
10. At the further request of the ACCOBAMS Secretariat, guidelines for offshore exploration activities in the Adriatic Sea were also developed in early 2015 for distribution by the Secretariat as needed.

VI. Input to CBD SBSTTA20

11. In May 2015 members of the Joint NWG were invited to input technical papers for compilation and presentation to SBSTTA20.

VII. IGC Group and OSPAR

12. During 2015, initial contacts were made with the IGC Noise of OSPAR. The Co-Chairs believe it is important to create a cooperation with the IGC Noise Group since similar work areas shared with the Joint NWG, including: Development of an Impulsive Noise Indicator, Development of Ambient Noise Indicator Strategy, Joint Monitoring Program and Noise mitigation.

VIII. Drafting key area statements for key regions of the Mediterranean

13. In July 2015 the Joint NWG began to identify further areas statements at the request of the ACCOBAMS Secretariat. These will be modelled on the Adriatic Statement (as presented in Annex B) and will be developed in the latter half of 2015 and into early 2016.

IX. Online workspace

14. Provision has been made for the Joint NWG to operate through the ASCOBANS online workspace. The ASCOABSN Secretariat has kindly established the space and the discussions are being channelled to it, but it will take some time to transfer the group across to the workspace fully.

X. Operational procedures

15. At the request of one of the Co-Chairs of the Joint NWG, through the second half of 2014 the three Secretariats developed Operational Procedures for the Joint NWG. These were finalised in September and circulated by the Secretariats to all members of the Joint NWG.

XI. Annex

16. To support this report three Annexes are also provided:

- a) Annex A – Work Program of the Joint CMS, ASCOBANS and ACCOBAMS Noise Working Group
- b) Annex B – Joint CMS, ASCOBANS and ACCOBAMS Noise Working Group Guidelines for offshore exploration activities in the Adriatic Sea
- c) Annex C – Summary table of Joint ACCOBAMS/ASCOBANS/CMS Noise Working Group Members

Annex A – Work Program of the Joint CMS, ASCOBANS and ACCOBAMS Noise Working Group

This work program proposes a range of activities for the Joint NWG in the coming 1-3 years. These activities have been prioritized by ACCOBAMS SC and ASCOBAMS AC to meet both the timing requirements of ASCOBANS and ACCOBAMS processes as well as the volunteer capacity of the Joint NWG.

Joint NWG ToR	Activities Priorities assigned by ASCOBANS and ACCOBAMS are <u>underlined</u> . Shared priorities are <u>bold underlined</u>	Activities completed
I. Update and complete information on: a) Relevant activities and developments in other international bodies (both regional and global) and under the EU Marine Strategy Framework Directive	1) Develop a list of forthcoming meetings of relevance to the Joint NWG	#1, this was completed for 2014. It needs to be done again for 2015 and 2016.
b) Relevant developments and new literature especially with respect to technologies aimed at mitigating the propagation of marine noise and noise sources that may present a threat to marine life and how cetaceans are affected	2) Contact the Secretariats, sending recent information as appropriate, requesting them to add the information to Conf. docs or Inf. docs or to make the information available to Parties in appropriate way 3) Develop a summary document that presents quick and accessible information about technologies aimed to mitigate noise on marine mammals and noise sources; engage in workshops with the industry	#2, the co-Chairs circulate information to the Secretariat as becomes available.
c) Parties' progress in implementation of: <ul style="list-style-type: none"> - CMS Res.9.19: Adverse Anthropogenic Marine/Ocean Noise Impacts on Cetaceans and other Biota - CMS Res.10.24: Further Steps to Abate Underwater Noise Pollution for the Protection of 	4) With the assistance of the Secretariats, collect information from Parties about their progress and the effectiveness in implementing the listed Resolutions.	

<p>Cetaceans and other Migratory Species</p> <ul style="list-style-type: none"> - ACCOBAMS Res.3.10: Guidelines to Address the Impact of Anthropogenic Noise on Marine Mammals in the ACCOBAMS Area - ACCOBAMS Res.4.17: Guidelines to Address the Impact of Anthropogenic Noise on Cetaceans in the ACCOBAMS Area - ACCOBAMS Res.5.13: Conservation of Cuvier's beaked whales in the Mediterranean - ACCOBAMS Res.5.15: Addressing the impact of anthropogenic noise - ASCOBANS Res.6.2: Adverse Effects of Underwater Noise on Marine Mammals during Offshore - Construction Activities for Renewable Energy Production - ASCOBANS Res.7.2: Activities of the ASCOBANS Advisory Committee and Work Plan <p>And any relevant Resolutions still to be passed.</p>		
<p>II. Improvement of existing guidelines based on new scientific findings, detailing available mitigation measures, alternative technologies and standards required for achieving the conservation goals of the treaties, in particular by:</p>	<p>5) Request an update from the CMS Secretariat about progress on communications with Parties and any information received, as well as any additional information that might be presented to CBD SBSTTA18 and then</p>	<p>#5, a request was sent in late 2014. This is awaiting further communication from CMS</p>

<p>d) Updating and structuring the recommendations in the ACCOBAMS and ASCOBANS noise guidelines and making them applicable globally</p> <p>e) Updating the guidance on relevant mitigation technologies and management measures, and their effectiveness and cost</p> <p>f) Continuing to consult stakeholders for advice on operational constraints to take into account</p> <p>g) Recommending appropriate biological indicators and thresholds</p>	<p>also CBD CoP12</p> <p>6) Develop a matrix of noise guidelines in use around the world (including the ACCOBAMS guidelines) for discussions by the Joint NWG –</p> <p>7) Once discussed, develop draft CMS noise guideline advice for presentation to the CMS Scientific Council – the emphasis of this should be to prepare something that is simple and short</p> <p>8) <u>Develop a Standard for geophysical surveys (seismic, multi-beam research activities,...) in the Mediterranean Sea (GNCC/ACCOBAMS Guidelines Doc. 22 provides a basis for this work) To develop this standard, collect information on :</u></p> <ul style="list-style-type: none"> – <u>which guidelines are applied in Mediterranean Sea; look at the effectiveness of the measures.</u> – <u>what are the best practices of industries ?</u> – <u>what are the geophysical activities in the area ?</u> – <u>what need to be included in the standard (certified training of MMO, PAM, etc.)</u> – <u>organise a workshop with the industry</u> <p>[For II (d) Please refer to the item IV regarding collaboration with UNEP/MAP]</p>	
<p>III. Further develop the documents:</p> <p>h) ACCOBAMS-MOP5/2013/Doc.22 on Anthropogenic noise and marine mammals: review of the effort in addressing the impact of</p>	<p>9) <u>Develop further comments on :</u></p> <p>a) <u>ACCOBAMS-MOP5/2013/Doc.22;</u></p> <p>b) <u>ACCOBAMS-MOP5/2013/Doc.23 and</u></p> <p>c) <u>ACCOBAMS-MOP5/2013/Doc.24</u></p> <p><u>Continue to update these three</u></p>	

<p>anthropogenic underwater noise in the ACCOBAMS and ASCOBANS areas,</p> <p>i) ACCOBAMS-MOP5/2013/Doc.23 on Implementation of underwater noise mitigation measures by industries: Operational and economical constraints, and</p> <p>j) ACCOBAMS-MOP5/2013/Doc.24 Methodological Guide: “Guidance on underwater noise mitigation measures” according to available knowledge and to report about progress made to the next Meeting of Parties to ACCOBAMS</p>	<p><u>documents</u></p>	
<p>IV. Provision of advice on:</p> <p>k) Collaboration with other international bodies, such as OSPAR, HELCOM, CBD, IMO and IWC</p>	<p>10) <u>Collaborate and engage with IMO on the next work plan related with the Sub-Committee on Ship Design and Construction</u></p> <p>11) <u>Write to OSPAR for additional information and update on their noise mitigation considerations</u></p> <p>12) <u>Pursue the ACCOBAMS collaboration with UNEP/MAP to develop specific indicator related to EO11</u></p> <p>13) <u>Pursue relevant collaboration activities with CBD</u></p>	<p>#11, contacts has been made with the IGC Noise Group of OSPAR</p> <p>#12, Joint NWG members provided further support to ACCOBAMS directly for indicator EO11</p> <p>#13, Joint NWG provided an expert paper to the CBD workshop, and members provided update information directly to CBD following their recent call. At this stage the Joint NWG is waiting for further advice from the CMS Secretariat in relation to #5</p>
<p>l) Requirements of the relevant other bodies that countries have elected to adhere to with respect to underwater noise, such as European Directives (i.e. the Marine Strategy Framework Directive and the Habitats Directive)</p>	<p>14) Give recommendations on a development of an indicator on noise, with the overall aim of updating the list of the COP18 agreed GES, targets, indicators by COP19 in 2015 (UNEP/MAP).</p> <p>15) Further develop table presented during the COR GEST Meeting regarding EO11 for adoption of noise indicator by COP19</p>	<p>#15, Joint NWG members provided further support to ACCOBAMS directly for indicator EO11</p>

	<p>(UNEP/MAP)</p> <p>16) With the assistance of the Secretariats, collect information from Parties about their progress and the effectiveness in implementing the Habitat Directive</p> <p>17) With the assistance of the Secretariats, collect information from Parties about their progress and the effectiveness in implementing the MSFD (descriptor 11)</p>	
<p>m) Opportunities for influencing decisions of other relevant bodies in order to achieve more effective protection of marine life from impacts of underwater noise</p>	<p>18) Develop a draft advisory note for governments about factors to consider for effective mitigation of noise propagation into MPAs or other protected areas, and seeking comment from the:</p> <ul style="list-style-type: none"> a) IUCN SSC/WCPA Marine Mammal Taskforce b) IUCN WCPA Transboundary Conservation Specialist Group c) IUCN SSC Cetacean Specialist Group, Pinniped Specialist Group, Sirenian Specialist Group, Polar Bear Specialist Group, Shark Specialist Group and CMS ScC Aquatic Mammals Working Group <p>19) With comments incorporated, present the advisory note to the CMS Scientific Council, ASCOBANS Advisory Committee and ACCOBAMS Scientific Committee for comment and forward recommendation</p> <p>20) <u>Engage industries, Parties, NGO with implementing ship quieting guidelines</u></p>	
<p>V. Design, and help implement as appropriate, pilot projects to test and improve the existing noise guidelines (ACCOBAMS Res. 4.17 and</p>	<p>21) <u>Define 2 or 3 priorities of pilot project (ex.: define save levels (at least for MPAs), test quieting technologies, etc.)</u></p> <p>22) Propose 2 or 3 pilot projects to</p>	

<p>ASCOBANS AC17/Doc.4-08) and mitigation measures for their application in the field</p>	<p>ASCOBANS/ACCOBAMS/CMS</p> <p>23) Engage with Gvmt and non Gvmt Parties in implementing the IMO ship quieting Guidelines within the region.</p> <p>The new guidelines:</p> <ul style="list-style-type: none"> – recognize that shipping noise can have short-term and long-term impacts on marine life; – call for measurement of shipping noise according to objective ISO standards, which are themselves on the verge of adoption; – identify computational models for determining effective quieting measures; – provide guidance for designing quieter ships and for reducing noise from existing ships, especially from propeller cavitation; and – advise owners and operators on how to minimize noise through ship operations and maintenance, such as by polishing ship propellers to remove fouling and surface roughness. <p>While these (as yet) are voluntary guidelines, not mandatory code, they put the IMO’s imprimatur on noise reduction.</p>	
<p>VI. Follow up activities specified by ACCOBAMS Parties related to conservation of Cuvier’s beaked whales in the Mediterranean, by:</p> <p>n) Developing, in collaboration with Parties, non-Parties, as well as NATO and other stakeholders as</p>	<p>24) Create dialogue with stakeholders and other potential organisation to reduce impacts</p> <p>25) Review of existing measures and if they could be applied in other regions</p> <p>26) Extend this activities to other regions than ACCOBAMS</p>	

<p>necessary, implementable measures to reduce impacts of intense noise activities within areas identified as of special concern for Cuvier's beaked whales for consideration by the next Meeting of the Parties of ACCOBAMS</p>	<p>27) <u>Establish dialogue with stakeholders to develop implementable measures.</u> 28) <u>Dialogue needs to go through the secretariats and will need to be reviewed by Scientific Committee, Advisory Committee and Scientific Council</u> 29) <u>Attend September Meeting in Amsterdam, which focuses on military noise and organise a meeting around that workshop on which most NATO countries attend,</u> 30) <u>Develop a review of what the Navy does in EU waters</u></p>	
<p>o) Supporting the ACCOBAMS Scientific Committee over the study on the extent and temporal variability of the habitat of species that are known to be particularly vulnerable to man-made noise (eg <i>Ziphius cavirostris</i>), in order to ensure that more data are made available, to increase the model's robustness and to compare different algorithms for best results</p>	<p>31) Define the process of exchange and communication with the Scientific Committee 32) Propose a technical presentation of models (methodology, advantage/disadvantage, performance/limit, etc.) both for scientific and non-scientific 33) Develop the models in other area</p>	
<p>VII. Responding to relevant Resolutions and priorities of CMS, ACCOBAMS and ASCOBANS</p>	<p>34) <u>Further develop contacts with the industry, including writing to industry about the ACCOBAMS guidelines. Develop a summary document that present quick and accessible information about measures to mitigate noise on marine mammals: rules, tools and procedures</u> 35) Organize workshop with different industries (i.e. special workshop for geophysical Industry) and develop a standard. 36) Aquatic mammal conference 2015 will</p>	<p>#37, An Environmental Impact Assessment workshop was held in the margins of the ECS meeting #38, a member of the Joint NWG brought a discussion paper, based on the Joint NWG expert advice to CBD, to the CMS ScC. This needs to be pursued again. #40, Joint NWG members are providing further support to ACCOBAMS directly to identify and map anthropogenic noise/cetaceans interactions hot spots in the ACCOBAMS area</p>

	<p>dedicate one day on policy. Attend and establish and improve dialogue with member states.</p> <p>37) Attend 2015 Barcelona Conference on ONP. Host an Noise and Environmental Impact Assessment workshop at the ECS meeting (Remark: Risk assessment is a different audience, how to bring all people related to risk assessment in the process?)</p> <p>38) Develop CMS level guidelines (i.e. broader than European context) for EIA relating to marine noise for the CMS Scientific Council to consider, and possibly recommend to the CMS Conference of the Parties</p> <p>39) <u>Develop European level guidelines for EIA relating to marine noise for ASCOBANS and ACCOBAMS to consider</u></p> <p>40) <u>Identify and map anthropogenic noise/cetaceans interactions hot spots in the ACCOBAMS area</u></p> <p>41) <u>Identify and map anthropogenic noise hot spots</u></p> <p>42) Identify and map cetacean hot spots</p>	
<p>Other) Increasing the Joint NWG Profile in coordination with the Secretariats</p>	<p>43) <u>Prepare general presentation about the Joint NWG for use in meetings with other organisations</u></p> <p>44) Prepare the Joint NWG online workspace, and launch it to the whole Joint NWG -</p> <p>45) Invite international bodies to join the Joint NWG and exchange information where possible (including seeking to have Joint NWG document distributed to member States of key organisations)</p> <p>46) Invite additional expert members to</p>	<p>#44, the online workspace has been developed and is now in use</p> <p>#45, key international bodies have been invited to participate as members of the Joint NWG. This needs to be pursued further to complete the activity fully</p> <p>#46, additional experts are periodically added to the members of the Joint NWG</p> <p>#47, a Joint NWG meeting was held in the margins of the ECS meeting</p> <p>#49, the aims and purpose of the Joint NWG</p>

	<p>participate in the Joint NWG</p> <p>47) <u>Host a Joint NWG meeting in the margins of the ECS meeting</u></p> <p>48) Further develop contacts with the industry, including writing to industry about the ACCOBAMS guidelines</p> <p>49) Recirculate list of participants/members and reconfirm the aim and purpose of the NWG (i.e. to serve the ACCOBAMS SC, ASCOBANS AC and CMS SC as advisory group with the purpose to ensure cetacean conservation from ONP) into the work program.</p>	<p>were circulated and further discussed with all Joint NWG members.</p> <p>#49, the members table is regularly updated and appear as Annex C to this report</p>
Other) General	<p>50) Define what is to be produce for each meeting (ACCOBAMS, ASCOBANS, CMS)</p> <p>51) Clarify the organisation of the Joint NWG</p> <p>52) Organise more meetings of the Joint NWG</p>	<p>#51, Operational Procedures for the Joint NWG were developed and circulated to the Joint NWG by the three Secretariats</p>

Reference documents:

- Report of the 21st ASCOBANS Advisory Committee Meeting. Annex 11 Priorities of the Joint Noise Working Group.
- Report of the 9th ACCOBAMS Scientific Committee Meeting. Paragraph 4.2.2. Anthropogenic Noise

Annex B – Joint CMS, ASCOBANS and ACCOBAMS Noise Working Group guidelines for offshore exploration activities in the Adriatic Sea

ACCOBAMS Resolution 4.17: ‘Guidelines to Address the Impact of Anthropogenic Noise on Cetaceans in the ACCOBAMS Area ([ACCOBAMS Noise Guidelines](#))’ specifically “[r]ecogniz[es] that anthropogenic ocean noise is a form of pollution, caused by the introduction of energy into the marine environment, that can have adverse effects on marine life, ranging from disturbance to injury and death”.

In April 2014 the ACCOBAMS Scientific Committee recommended that all seismic explorations in the ACCOBAMS area, including the Adriatic Sea, should comply with Resolution 4.17 and Resolution 5.15.

1. The Adriatic Sea

In October 2014, during CBD COP12, Parties adopted Decision XII/22: ‘Marine and coastal biodiversity: ecologically or biologically significant marine areas (EBSAs)’. This decision encourages CBD Parties to make use of the scientific information regarding the description of the EBSAs criteria when carrying out marine spatial planning and provides clarity about the agreed international values that should be protected in the Adriatic.

The Northern Adriatic Basin is important for several threatened species. It hosts a population of the highest density of bottlenose dolphin (*Tursiops truncatus*) in the Mediterranean, it is one of the most important feeding grounds in the Mediterranean of the loggerhead turtle (*Caretta caretta*) and it is a nursery area for a number of vulnerable species (blue shark (*Prionace glauca*), sandbar shark (*Carcharinus plumbeus*), anchovies (*Engraulis encrasicolus*), etc.). The area hosts a strong diversity of benthic and pelagic habitats due to an important gradient of environmental factors from its western portion to its eastern coasts. It is also one of the most productive areas in the Mediterranean Sea. The area has been ranked high for

- Special importance for life-history stages of species
- Importance for threatened, endangered or declining species and/or habitats; and
- Biological productivity

The Jabuka/Pomo Pit area is a sensitive and critical spawning and nursery zone for important Adriatic demersal resources, especially European hake (*Merluccius merluccius*). This area hosts the largest populations of Norway lobster (*Nephrops norvegicus*) and is important especially for juveniles in the depths over 200 m. Based on available scientific data it is a high density area for the giant devil ray (*Mobula mobular*), an endemic species listed on Annex II SPA/BD protocol and listed as endangered on the IUCN Red List. The Pit could function as a favourable environment for some key life history stages of the porbeagle shark (*Lamna nasus*), which is critically endangered, and listed on Annex II SPA/BD Protocol. Regarding benthic species, several types of corals can be found (*Scleractinia* and *Actiniaria*). The area has been ranked high for:

- Uniqueness or rarity
- Special importance for life-history stages of species; and
- Biological productivity

The South Adriatic Ionian Straight area contains important habitats for Cuvier’s beaked whales (*Ziphius cavirostris*), an Annex II species of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean (SPA/BD Protocol) in the framework of Barcelona Convention, and significant densities of other megafauna such as the giant devil ray (*Mobula mobular*), striped dolphin (*Stenella coeruleoalba*), Mediterranean monk seal (*Monachus monachus*) and loggerhead turtle (*Caretta caretta*), all of which are listed in Annex II of SPA/BD Protocol. Benthos includes deep-sea cold-water coral communities and deep-sea sponge aggregations,

representing important biodiversity reservoirs and contributing to the trophic recycling of organic matter. Tuna, swordfish and sharks are also common in this area. The area has been ranked high for:

- Uniqueness or rarity
- Special importance for life-history stages of species
- Importance for threatened, endangered or declining species and/or habitats
- Vulnerability, fragility, sensitivity, or slow recovery; and
- Biological diversity

In addition to the species identified in the EBSA statements, the Joint NWG also cautions that the area is important habitat for Risso's dolphins (*Grampus griseus*) and striped dolphins (*Stenella coeruleoalba*).

2. ACCOBAMS, CMS, CBD and EU commitments

The weight of decisions taken by governments at an international level is now considerable.

ACCOBAMS Resolution 4.17 “[e]ncourages Parties: - to address fully the issue of anthropogenic noise in the marine environment, including cumulative effects, in the light of the best scientific information available and taking into consideration the applicable legislation of the Parties, particularly as regards the need for thorough environmental impact assessments being undertaken before granting approval to proposed noise-producing activities”.

The ACCOBAMS Noise Guidelines further detail specific considerations relating to seismic surveys.

ACCOBAMS Resolution 5.15 calls on the Parties implementation through their national legislation the requirements of ACCOBAMS Res.4.17 and in CMS Resolution 10.24, in particular by:

- ensuring that Environment Impact Assessments take full account of the effects of activities on cetaceans;
- implementing the recommended use of Best Available Techniques and Best Environmental Practice in their efforts to reduce or mitigate marine noise pollution;
- integrating the issue of anthropogenic noise into the management plans of marine protected areas;

Resolution 5.15 also underlines that Environment Impact Assessments should include specific details that mirror those articulated in the ‘Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area;

CMS Resolution 10.24: ‘Further Steps to Abate Underwater Noise Pollution for the Protection of Cetaceans and Other Migratory Species’ also strongly urges Parties to prevent adverse effects on cetaceans and on other migratory marine species by restricting the emission of underwater noise, understood as keeping it to the lowest necessary level with particular priority given to situations where the impacts on cetaceans are known to be heavy” and urges Parties to ensure that Environmental Impact Assessments take full account of the effects of activities on cetaceans and other marine species.

CBD Decision XII/23: ‘Marine and coastal biodiversity: Impacts on marine and coastal biodiversity of anthropogenic underwater noise ...’ specifically encourages CBD Parties to take appropriate measures within their competencies to avoid, minimize and mitigate the potential significant adverse impacts of anthropogenic underwater noise on marine and coastal biodiversity, including:

- combining acoustic mapping with habitat mapping of sound-sensitive species when developing spatial risk assessments to identify areas where those species may be exposed to noise impact;
- using spatio-temporal management, including detailed temporal and spatial knowledge of species or population distribution patterns, to mitigate and manage noise activities, and avoiding generating noise in the area at critical times;

- conducting Environmental Impact Assessments for activities that may have significant adverse impacts on noise-sensitive species

Assessment of likely impacts is also an emerging legal requirement in the European Union. The European Parliament and Council Environmental Impact Assessment Directive 2014/52/EU requires that Environmental Impact Assessments are carried out before development consent is given to activities (2014/52/EU Art 2.1) to identify impacts to biodiversity with particular attention to species and habitat protected under Directive 92/43/EEC and Directive 2009/147/EC (2014/52/EU Art 3.1). While seismic surveys are not included in the Annexes, the Directive introduction states that “[w]ith a view to ensuring a high level of protection of the marine environment, especially species and habitats, environmental impact assessment and screening procedures for projects in the marine environment should take into account the characteristics of those projects with particular regard to the technologies used (for example seismic surveys using active sonars).”

These four inter-governmental bodies provide significant clarity about the expectations to conduct Environmental Impact Assessments in order to fully assess and effectively manage impacts associated with offshore seismic and drilling activities, among other underwater noise producing activities.

3. ACCOBAMS Guidelines

The ACCOBAM Noise Guidelines that were adopted by ACCOBAMS Parties in 2010 provide important detail for Parties to apply in their domestic jurisdictions.

Besides procedures for specific activities, the general guidelines and concepts within the [ACCOBAMS Noise Guidelines](#) should be taken into account for any activity.

The generated sound field in relation with oceanographic features (depth/temperature profile, sound channels, water depth, seafloor characteristics) should be modelled to assess the area possibly affected by relevant acoustic impacts. Cumulative acoustic impacts should be considered in the subsequent Environmental Impact Assessment. This assessment should demonstrate that cetaceans’ (and other protected/endangered/threatened species’) key habitats and marine protected areas are being avoided with regards to activities emitting sound at excessive levels and with appropriate buffer zones around them; considering the possible impact of long-range propagation. Closed areas are avoided and also surrounded by appropriate buffer zones. There should be a scientific and precautionary basis for the exclusion zone (EZ) rather than an arbitrary and/or static designation. The safest, most precautionary option that minimises impact should be proposed. Expanded exclusion zones aimed at reducing behavioural disruption should also be considered.

In addition to the general guidelines:

- a) Seismic surveys should be planned so as to avoid key cetacean habitat and areas of cetacean density, so that entire habitats or migration paths are not blocked, so that cumulative seismic noise is limited within any particular area, and so that multiple vessels operating in the same or nearby areas at the same time are specifically regulated or prohibited.
- b) Use of the lowest practicable source power
- c) Limit horizontal propagation by adopting suitable array configurations and pulse synchronization and eliminating unnecessary high frequencies.
- d) Adapt the sequencing of seismic lines to account for any predictable movements of animals across the survey area and avoid blocking escape routes
- e) Modelling of the generated sound field in relation with oceanographic features (depth/temperature profile, water depth, seafloor characteristics) to dynamically set the Exclusion Zone. Confirm models by Exclusion Zone tests in the field.
- f) Mitigation procedures should be practical in that they should use data that can be readily collected by cetacean observers during offshore operations, account for operating conditions and constraints of seismic surveys and, as far as possible, minimize disruption of surveys while maximizing environmental protection

- g) Continuous visual and passive acoustic monitoring (PAM) with a specialized team of cetacean observers and bioacousticians to ensure that cetaceans are not in the Exclusion Zone before turning on the acoustic sources and while sources are active.
- h) Equipment for visual monitoring should include suitable binoculars and big eyes to be used according to the monitoring protocol
- i) Ideally, high power airgun configurations should be prohibited at night, during other periods of low visibility, and during significant surface-ducting conditions, since current mitigation techniques may be inadequate to detect and localize cetaceans. Because of the impact of adverse weather conditions on the visual detection of mammals, emissions during unfavourable conditions should be restricted as well
- j) PAM (towed array technology or other suitable technologies with enough bandwidth to be sensitive to the whole frequency range of cetaceans expected in the area) should be used to improve detection capabilities. PAM should be mandatory for night operations or when visibility is scarce. However, PAM may be inadequate mitigation for night operations if cetaceans in the area are not vocal or easily heard.
- k) At least two dedicated Cetacean Observers should be on watch at one time on every operative ship; shifts should be organized to allow enough rotation and resting periods to Marine Mammal Observers (MMOs). In the case of acoustic monitoring, at least one operator should be on watch and shifts should be organized to allow 24/24h operation., unless automatic detection/alerting systems with proven effectiveness are available
- l) Before beginning any emission there should be a dedicated watch of at least 30 minutes to ensure no animals are within the EZ
- m) Extra mitigation measures should be applied in deep water areas if beaked whales have been seen diving on the vessel trackline or if habitats suitable for beaked whales are approached: in such a cases the watch should be at least 120 minutes to increase the probability that deep-diving species are detected (e.g. Cuvier's beaked whales).
- n) Every time sources are turned on, there should be a slow increase of acoustic power (ramp-up or soft start) to allow cetaceans sufficient opportunity to leave the ensonified area in the event that visual and passive searches are unsuccessful (the effectiveness of this procedure is still debatable)
- o) The beginning of emissions should be delayed if cetacean species are observed within the exclusion zone (EZ) or approaching it. Ramp-up may not begin until 30 minutes after the animals are seen to leave the EZ or 30 minutes after they are last seen (120 minutes in case of beaked whales)
- p) Exposing animals to harmful acoustic levels should be avoided by preventing them from entering the EZ, by changing the ship course, if applicable, or by reducing (power-down) or ceasing (shut-down) the acoustic emissions
- q) There should be a shut-down of source(s) whenever a cetacean is seen to enter the EZ and whenever aggregations of vulnerable species (such as beaked whales) are detected anywhere within the monitoring area
- r) If more than one seismic survey vessel is operating in the same area, they should maintain a minimum separation distance to allow escape routes between sound fields.
- s) Data sharing among surveyors should be encouraged to minimize duplicate surveying. Also, if old seismic data can be usefully re-analyzed using new signal processing or analysis techniques, this should be encouraged.

4. Joint NWG Recommendations for offshore exploration activities in the Adriatic Sea

Given the strong potential for impact to cetaceans and other CMS-listed marine species including Cuvier's beaked whales (*Ziphius cavirostris*), fin whales (*Balaenoptera physalus*), common bottlenose dolphins (*Tursiops truncatus*), Risso's dolphins (*Grampus griseus*), striped dolphins (*Stenella coeruleoalba*) and other cetacean species, Mediterranean monk seals (*Monachus monachus*) as well as a significant number of fish, crustacean and cephalopod species and possibly loggerhead turtles (*Caretta caretta*), the Joint NWG strongly recommends:

- Environmental Impact Assessments should conform to [ACCOBAMS Noise Guidelines](#) and should be based on accurate data including characteristics of the specific survey being conducted; and professional modelling of sound transmission of the area to be surveyed.
- Environmental Impact Assessments should include assessments of the seasonal distribution patterns of vulnerable species and likely seasonal changes in sound propagation conditions such that the timing of any survey could be chosen to minimise impacts.
- The modelling should be used to assess the potential impact on Cuvier's beaked whales (*Ziphius cavirostris*), fin whales (*Balaenoptera physalus*), common bottlenose dolphins (*Tursiops truncatus*) and other cetacean species, Mediterranean monk seals (*Monachus monachus*) and loggerhead turtles (*Caretta caretta*) to define exclusion zones. The results should be validated in the field with empirical measurements (as indicated in the ACCOBAMS Noise Guidelines).
- Transmission of noise into protected areas within the region should also be considered.
- Engaging an independent review of Environmental Impact Assessment before approvals are given is highly recommended.
- Marine Mammal Observer and Passive Acoustic Monitoring reports should be made transparently available at the end of exploration surveys (within 2 months) either through an online mechanism or by submission to the ACCOBAMS Secretariat for circulation.

Annex C – Summary table of Joint CMS, ASCOBANS and ACCOBAMS Noise Working Group Members

The following table provides information about members of the Joint Noise Working Group that were able to provide their details by 20 August 2015. All respondents gave permission for their details to be made available to Parties.

Current: 20 August 2015

This table will be updated and additional member details provided before the next relevant ACCOBAMS, ASCOBANS or CMS meeting.

Joint Noise Working Group Chairs:

Yanis Souami and Sigrid Lüber

Legend to level of participation:

active member: capacity to draft documents, take responsibility for topics

informative member: capacity to exchange information, but having limited active involvement

Amundin, Mats	<i>Organization/ Affiliation (if any):</i> Research director at Kolmarden Wildlife Park, Sweden; Guest professor at Linköping University, Sweden	<i>Languages:</i> Swedish, English	<i>Joined the NWG</i> 2012	<i>Level of participation:</i> active member
	<i>Relevant experience or academic background:</i> Over 40 years of research experience in bioacoustics, marine mammal behaviour, sound production and hearing in Odontocetes. Invited expert in ASCOBANS representing Swedish Agency for Marine and Water Management.	<i>Contribution areas:</i> Effects of noise on marine mammals, in particular small cetaceans. Passive acoustic monitoring of small cetaceans and noise.	<i>Comments:</i> Will retire part time in beginning of 2016. Would be happy to participating in workshop with travel support.	
André, Michel	<i>Organization/ Affiliation (if any):</i> Technical University of Catalonia, Barcelona Tech (UPC)	<i>Languages:</i> French, Spanish, English	<i>Joined the NWG</i>	<i>Level of participation:</i> active member

	<i>Relevant experience or academic background:</i> 20 years of experience in research on ocean noise	<i>Contribution areas:</i> Effects on marine fauna, passive acoustics, signal processing	<i>Comments:</i>	
Campbell, John	<i>Organization/ Affiliation (if any):</i> International Association of Oil & Gas Producers (OGP)	<i>Languages:</i> English	<i>Joined the NWG</i> 2013	<i>Level of participation:</i> active member
	<i>Relevant experience or academic background:</i> I have a BSC in pure chemistry and a PhD in nuclear Geochemistry both from the University of Glasgow. Following a period in oceanographic research I work as a senior adviser on marine pollution matters for the UK government and represented UK at a number of international conventions and agreements. I joined OGP in 1997 and have held a brief there on Environmental and Legal issues. Since 2005, I have been involved with the Joint Industry Programme (JIP) on E&P Sound and Marine Life as programme coordinator and represent the industry at a number of international conventions on a range of issues including marine sound. The JIP has committed in excess of \$30 million to fundamental and applied research. The research has focuses in five areas, source characterisation, physical and physiological effects, behavioural effects and biological significance, mitigation and monitoring and technology development. All data and results from the programme are readily accessible and there would be access to industry specialists who have overseen the technical work in the JIP. ACCOBAMS/ASCOBANS/CMS parties may see this information	<i>Contribution areas:</i>	<i>Comments:</i> I would be willing to participate and would encourage industry colleagues to participate in workshops over the next 12 months. This would very much depend on the topics around which a workshop event was framed.	

Castellote, Manuel	<i>Organization/ Affiliation (if any):</i> National Marine Mammal Laboratory, National Marine Fisheries Service, NOAA.	<i>Languages:</i> Spanish, English, French	<i>Joined the NWG:</i> 2012	<i>Level of participation:</i> active member
	<i>Relevant experience or academic background:</i> BSc in biology, MSc in marine biology and PhD in animal behavior. Research in cetacean acoustics both in captivity and wild since 2000, in topics such as effects of noise in behavior and physiology for wild cetaceans and effects in welfare for captive cetaceans, use of sound by cetaceans, noise mitigation techniques, passive acoustic monitoring. Marine mammal acoustics and noise mitigation advisor to the National Marine Fisheries Service, Spanish Ministry of the Environment and U.S. Department of Energy Marine Hydrokinetics Working group (marine renewable energies). Member of the E.U. Marine Strategy Framework Directive Technical Subgroup on Underwater Noise, the NOAA Ocean Noise Strategy Group and the NOAA Acoustic Guidelines Review Panel.	<i>Contribution areas:</i> Effects of noise in cetaceans. Noise mitigation techniques and strategies. Underwater noise regulation. Permitting review process for activities involving underwater noise. Experience in both the Western Mediterranean Sea and northeast North Atlantic Ocean of the ACCOBAMS/ ASCOBANS areas.	<i>Comments:</i> It would be useful to have a more effective dedicated NWG internet site. Happy to participate in a face to face workshop with travel support (resides in Seattle)	
DeHaan, Dick	<i>Organization/ Affiliation (if any):</i>	<i>Languages:</i>	<i>Joined the NWG:</i>	<i>Level of participation:</i>
	<i>Relevant experience or academic background:</i>	<i>Contribution areas:</i>	<i>Comments:</i>	
Dolman, Sarah	<i>Organization/ Affiliation (if any):</i> Whale and Dolphin Conservation	<i>Languages:</i> English	<i>Joined the NWG:</i>	<i>Level of participation:</i> active member

	<p><i>Relevant experience or academic background:</i></p> <p>Published a number of peer-reviewed publications and reports on management and mitigation of various noise sources and I have led and participated in various international meetings and workshops on the issue</p>	<p><i>Contribution areas:</i></p>	<p><i>Comments:</i></p>	
<p>Dubois, Fannie</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>Permanent Secretariat of the Pelagos Sanctuary (France - Italy - Monaco)</p>	<p><i>Languages:</i></p> <p>French, English, Italian</p>	<p><i>Joined the NWG:</i></p> <p>2014</p>	<p><i>Level of participation:</i></p> <p>informative member</p>
	<p><i>Relevant experience or academic background:</i></p> <p>As Executive Secretary of the Pelagos Sanctuary, I support Pelagos working groups, CST and COP in the preparation of the Pelagos resolutions, and I am responsible of their implementation. In particular, I contributed to the elaboration of the Pelagos resolution 4.1 « impact on anthropogenic activities » and resolution 4.4 « maritime traffic ». A new project has just be funded by French delegation on maritime traffic and noise impact on cetaceans in the French Pelagos Sanctuary area and results will be communicated to me soon.</p>	<p><i>Contribution areas:</i></p> <p>Western Mediterranean Sea (France, Italy and Monaco). Pelagos Sanctuary is a pilot area of ACCOBAMS for implementing research activities, protecting measures and develop new initiatives.</p>	<p><i>Comments:</i></p> <p>Participation in a face to face meeting will depend on the location.</p> <p>The NWG increases Pelagos and ACCOBAMS cooperation and complies with their resolutions.</p>	
<p>Entrup, Nicolas</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>Independent Consultant; contract work includes cooperation with OceanCare, NRDC and the Humane Society International</p>	<p><i>Languages:</i></p> <p>German, English</p>	<p><i>Joined the NWG:</i></p> <p>2012</p>	<p><i>Level of participation:</i></p> <p>informative member</p>

	<p><i>Relevant experience or academic background:</i></p> <p>Extensive international political experience, working on multiple multilateral environmental agreements, participating in more than 20 various regional and international conferences including Meetings of the International Whaling Commission (IWC), Conferences of the Parties of the Convention on the International Trade in Endangered Species (CITES), the Convention on Migratory Species (CMS), the Convention on Biological Diversity (CBD), Meetings of the Parties of the Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) as well as the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS).</p> <p>Invited as expert to attend several Meetings of the ACCOBAMS Scientific Committee and participated Meetings of the Advisory Committee of ASCOBANS</p>	<p><i>Contribution areas:</i></p> <p>Political and legislative information within a regional and international context; broad overview and understanding of noise activities in the region, especially focusing on military and seismic activities. Stakeholder communication, awareness raising activities, strategic advise</p>	<p><i>Comments:</i></p> <p>The NWG should, via support of the Secretariat of ACCOBAMS and ASCOBANS as well as the CMS Secretariat, increase its visibility and contribution in consultation with EU institutions to feed into these processes. Current understanding is that, so far, this is only done via individuals who are also Member to the NWG, but not by the NWG itself.</p>	
<p>Geelhoed, Steve</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>IMARES Wageningen UR, researcher</p>	<p><i>Languages:</i></p> <p>Dutch, English, German</p>	<p><i>Joined the NWG:</i></p> <p>2012</p>	<p><i>Level of participation:</i></p> <p>informative member</p>
	<p><i>Relevant experience or academic background:</i></p> <p>I have been involved in owf research in relation to porpoises by means of aerial surveys and PAM.</p>	<p><i>Contribution areas:</i></p> <p>Linking spatial and temporal distribution of cetaceans to noise disturbance.</p>	<p><i>Comments:</i></p>	
<p>Haelters, Jan</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>Royal Belgian Institute of Natural Sciences (RBINS)</p>	<p><i>Languages:</i></p> <p>Dutch, English, French</p>	<p><i>Joined the NWG:</i></p> <p>2010</p>	<p><i>Level of participation:</i></p> <p>informative member</p>

	<p><i>Relevant experience or academic background:</i> Experience in impact studies on marine mammals; Experience in EIA; Information provision on national guidelines concerning UW noise</p>	<p><i>Contribution areas:</i></p>	<p><i>Comments:</i> The work delivered so far, with very little contribution from myself, has been useful in a.o. EIA work.</p>	
<p>Leaper, Russell</p>	<p><i>Organization/ Affiliation (if any):</i> IFAW/ University of Aberdeen</p>	<p><i>Languages:</i> English</p>	<p><i>Joined the NWG:</i></p>	<p><i>Level of participation:</i> active member</p>
	<p><i>Relevant experience or academic background:</i> Member of the EU Technical sub-group on noise established under the MSFD and also of the IWC Scientific Committee. Also attended IMO meetings and participated in the development of the IMO's guidelines for reducing shipping noise. Research interest in practical ways of reducing shipping noise (Leaper and Renilson, 2012) and in quantifying the effectiveness of mitigation measures for seismic surveys and other loud noise sources.</p>	<p><i>Contribution areas:</i> Communication between the groups mentioned in <i>Relevant experience or academic background</i>.</p>	<p><i>Comments:</i> With so many other noise related meetings, not sure there is a need for another workshop.</p>	
<p>Lewis, Tim</p>	<p><i>Organization/ Affiliation (if any):</i> Consultant, previously worked for IFAW and represented them at ACCOBAMS SCs and MOPs.</p>	<p><i>Languages:</i> English</p>	<p><i>Joined the NWG:</i> 2008</p>	<p><i>Level of participation:</i> active member / informative member</p>

	<p><i>Relevant experience or academic background:</i></p> <p>PhD in exploration geophysics. Over 20 year's experience in cetacean acoustics working primarily as a researcher on IFAW's "Song of the Whale" but also as a consultant.</p> <p>As a researcher, worked mainly on the acoustics/acoustic surveys of sperm whales and porpoises, but also right, blue and beaked whales and rough-toothed dolphins.</p> <p>As a consultant, continue to work on acoustic surveys but also on passive acoustic monitoring (PAM) for the renewable energy and hydrocarbon industries (acoustic monitoring of cetacea prior to and during noise generating activities such as piling and seismic), and have been involved in the development of PAM systems.</p> <p>Have occasionally attended the ACCOBAMS MOPs and regularly participate in the ACCOBAMS scientific committee meetings especially in relation to acoustic and noise issues; Was involved in the drafting of the current Recommendation for the conservation of Cuvier's Beaked Whales in the Mediterranean</p>	<p><i>Contribution areas:</i></p> <p>Matters relating to cetacean acoustics and noise generating activities.</p> <p>Work with noise generating industries to monitor and mitigate their impact on cetacea - so have an insight into this side of the issues.</p>	<p><i>Comments:</i></p> <p>Continue to contribute to drafting and commenting on documents/proposals/issues where my expertise is pertinent, but not take the lead - due to time constraints.</p>	
<p>Lüber, Sigrid</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>OceanCare</p>	<p><i>Languages:</i></p> <p>German, English, French, Italian</p>	<p><i>Joined the NWG:</i></p> <p>2007</p>	<p><i>Level of participation:</i></p> <p>active member (co-Chair)</p>

	<p><i>Relevant experience or academic background:</i></p> <p>Close to 25 years of professional experience progressing ocean policy and science, and is the President of OceanCare where she oversees a team of experts on a range of issues including ocean noise.</p> <p>Has been an observer at the annual meetings of the International Whaling Commission (IWC) since 1992, also has also worked towards the protection of small cetaceans through the IWC, promoting discussion and agenda items on environmental threats to cetaceans, and introducing political as well as scientific initiatives on the issue of cetacean meat contamination and its effects on human consumers.</p> <p>In the past decade has focused on the regulation and reduction of ocean noise pollution.</p> <p>Is also professionally concerned with the growing problem of economic development aid bound on conditions such as voting behaviour.</p> <p>Through UN processes, works towards the increase of transparency, good governance of oceans and the involvement of NGOs in international policy making, in order to make Governments more conscious of demands by the civil society.</p>	<p><i>Contribution areas:</i></p> <p>Very well developed negotiation skills, combined with a solid depth of understanding about marine noise and the science that underpins it.</p> <p>Strongest contribution will be well developed skill in translating science into policy and regulation contexts.</p>	<p><i>Comments:</i></p>	
<p>Maglio, Alessio</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>SINAY</p>	<p><i>Languages:</i></p> <p>Italian, French, Spanish, English</p>	<p><i>Joined the NWG:</i></p> <p>2013</p>	<p><i>Level of participation:</i></p> <p>informative member</p>
	<p><i>Relevant experience or academic background:</i></p> <p>Marine biologist. Experience in research on cetacean ecology, impact studies on marine wildlife. MMO/PAM onboard research cruises and seismic surveys. Participated and contributed to national and international meetings and workshops on underwater noise and marine mammals.</p>	<p><i>Contribution areas:</i></p>	<p><i>Comments:</i></p>	

Martin, Nikki C	<i>Organization/ Affiliation (if any):</i> Environmental Regulatory & Legal Affairs, International Association of Geophysical Contractors (IAGC) Karen St. John, Group Vice President – Environment (alternate)	<i>Languages:</i> English	<i>Joined the NWG:</i> 2014	<i>Level of participation:</i> active member
	<i>Relevant experience or academic background:</i> IAGC is the international trade association representing the industry that provides geophysical services (geophysical data acquisition, processing and interpretation, geophysical information ownership and licensing, associated services and product providers) to the oil and natural gas industry. IAGC member companies play an integral role in the successful exploration and development of offshore hydrocarbon resources through the acquisition and processing of geophysical data.	<i>Contribution areas:</i> IAGC is an important stakeholder and active participant in the development of research and understanding on the potential effects of underwater sounds on marine biodiversity.	<i>Comments:</i>	
Pantoja, Javier	<i>Organization/ Affiliation (if any):</i> Division for the Protection of the Sea. Spanish Ministry of Agriculture, Food and Environment	<i>Languages:</i> Spanish, English	<i>Joined the NWG:</i> From the beginning	<i>Level of participation:</i> informative member

	<p><i>Relevant experience or academic background:</i></p> <p>Responsible for the implementation and monitoring of initiatives on conservation of marine biodiversity, with the following main features:</p> <p>Monitoring and international participation and implementation in Spain of international agreements and EU directives on conservation of marine biodiversity, especially on species and marine habitats. Such agreements include working groups of the UN, regional seas conventions, agreements protecting migratory species, Convention on Biological Diversity, the Marine Strategy Directive and the Birds and Habitats Directives.</p> <p>Planning, reporting and management of marine protected areas in state jurisdiction.</p> <p>Monitoring and implementation of national legislation on the protection of marine species and habitats, coordination with other units and departments of the Central Government and the Autonomous Communities of Spain.</p> <p>Coordination and development proposed measures to protect threatened marine species and habitats.</p> <p>Technical management of research projects, inventory and conservation of species and marine habitat types.</p>	<p><i>Contribution areas:</i></p> <p>Management aspects of noise impacts on marine biodiversity (policy)</p>	<p><i>Comments:</i></p>
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<p>Pavan, Gianni</p>	<p><i>Organization/ Affiliation (if any):</i> Università di Pavia Centro Interdisciplinare di Bioacustica e Ricerche Ambientali (CIBRA), Dipartimento di Scienze della Terra e dell' Ambiente (DISTA), Via Taramelli 24, 27100 Pavia, Italy</p>	<p><i>Languages:</i> Italian, English, French (reading only)</p>	<p><i>Joined the NWG:</i> From the beginning</p>	<p><i>Level of participation:</i> informative member at time also an active member</p>
	<p><i>Relevant experience or academic background:</i> Runs the Laboratory of Marine Bioacoustics at CIBRA since 1989 Professor of Ecology at the IUAV University of Venice 1995-2005 Professor of Bioacoustic at the University of Pavia since 2006 President of CIBRA since 2007 Author of the ACCOBAMS guidelines on noise (2005-2006), cooperates with ACCOBAMS and the Italian Ministry of the Environment since 2004 MMO and PAM leader on seismic cruises with Columbia University and Lamonth Doherty Earth Observatory (2004-2007) PAM expert on NURC research cruises 1999-2011 Cooperates with the IT Navy since 1995, with NURC since 1998, with EDA since 2010 to support mitigation policies for the protection of marine mammals Runs the Italian Online Strandings Database http://www.unipv.it/cibra http://mammiferimarini.unipv.it</p>	<p><i>Contribution areas:</i> Impact of noise, acoustic behaviour of animals, acoustics and bioacoustics, field experience, technical equipment, noise measures</p>		<p><i>Comments:</i> As there is a difficult to manage increase of entropy in scientific literature, technical documents, guidelines, recommendations, etc. I think it is important to produce joint documents to consolidate the baseline scientific knowledge and to produce summary documents that must be clear and concise to support clear new recommendations and/or rules.</p>

Petropoulos, Vasilios	<i>Organization/ Affiliation (if any):</i> University Of Athens/ Hellenic Navy Hydrographic Service	<i>Languages:</i> English, German, French	<i>Joined the NWG:</i>	<i>Level of participation:</i> informative member
	<i>Relevant experience or academic background:</i> Msc in Marine Biology, Thesis in Bioacoustics. Phd in Bioacoustics (ongoing). PAM on Board of POURQOUI PAS? during Seismic Survey at Ionian Sea.	<i>Contribution areas:</i> Document review	<i>Comments:</i>	
Reyes, Vanesa	<i>Organization/ Affiliation (if any):</i> Whale and Dolphin Conservation	<i>Languages:</i> Spanish, English	<i>Joined the NWG:</i> 2015	<i>Level of participation:</i> active member
	<i>Relevant experience or academic background:</i> I'm working at WDC as an acoustic and research analyst leading the noise work of the organization. I'm part of the EU MSFD Noise Task Group and I've been participating of the IWC SC meetings where the increase in underwater noise levels is a relevant issue. I'm a PhD candidate at the University of Buenos Aires working on acoustic behaviour of Commerson's dolphins and possible impacts of vessel noise in Patagonia, Argentina. I'm also conducting acoustic research on franciscanas in Patagonia and cetaceans in the Antarctic Peninsula as part of the Southern Ocean Research Partnership of the IWC.	<i>Contribution areas:</i> WDC has been actively working on ACCOBAMS and ASCOBANS relevant areas to effectively contribute to delineate mitigation measures to address the impacts of underwater noise on cetaceans. We would like to continue contributing to the joint work of this group.	<i>Comments:</i>	
Schild, Guido	<i>Organization/ Affiliation (if any):</i> Stichting De Noordzee (North Sea Foundation)	<i>Languages:</i> Dutch / English / German / Norwegian / French	<i>Joined the NWG:</i> 2014	<i>Level of participation:</i> informative member

	<p><i>Relevant experience or academic background:</i></p> <p>I have a background in international law, with special emphasis on nature conservation law and the law of the sea. My professional experience mostly relates to marine nature conservation, both area-based and species-focused. As such, I am interested in the potential threats underwater noise poses to marine mammals and other species, particularly considering the expected increase in vessel traffic and offshore construction activities in the North Sea region.</p>	<p><i>Contribution areas:</i></p> <p>My knowledge on the functioning of the IMO and the criteria for the establishment of PSSAs</p>	<p><i>Comments:</i></p>	
<p>Souami, Yanis</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>French Navy</p>	<p><i>Languages:</i></p> <p>French , English</p>	<p><i>Joined the NWG:</i></p> <p>From the beginning</p>	<p><i>Level of participation:</i></p> <p>active member</p>
	<p><i>Relevant experience or academic background:</i></p> <p>Since 2008, CEO of SINAY which is dedicated to EIA of acoustic and marine mammal.</p> <p>SINAY manage various program such as marine mammal and birds aerial survey, cetacean bycatch survey and marine renewable acoustic impact on aquatic life. SINAY also have a research and development activities such as pingers, passive acoustic monitoring software and acoustic real time buoy.</p>	<p><i>Contribution areas:</i></p> <p>Coordination. Contact with industries.</p> <p>Communication between scientists, NGOs, industries and governments.</p>	<p><i>Comments:</i></p> <p>Noise working group need a budget to organize face meeting and be more efficient</p>	
<p>Tougaard, Jakob</p>	<p><i>Organization/ Affiliation (if any):</i></p> <p>Aarhus University, Department of Bioscience</p>	<p><i>Languages:</i></p> <p>English, Danish, Swedish, Norwegian</p>	<p><i>Joined the NWG:</i></p> <p>From the beginning</p>	<p><i>Level of participation:</i></p> <p>informative member</p>

	<i>Relevant experience or academic background:</i> 20 years professional experience in hearing physiology and bioacoustics, last 10 years as senior scientist with main emphasis on effects of underwater noise on marine mammals. Central advisor to Danish Nature Agency, Danish Energy Agency and Greenland Government on issues relating to noise and marine mammals	<i>Contribution areas:</i> Effects of noise on marine mammals, in particular small cetaceans, but also seals. Issues relating to auditory physiology of marine mammals. Passive acoustic monitoring of small cetaceans and noise.	<i>Comments:</i> Have no resources to pay for the time on Working Group work. Would be happy to participating in a face to face workshop with travel support	
Tyack, Peter L.	<i>Organization/ Affiliation (if any):</i> Sea Mammal Research Unit, University of St Andrews	<i>Languages:</i> English	<i>Joined the NWG:</i> 2012	<i>Level of participation:</i> informative member
	<i>Relevant experience or academic background:</i> Studies on effects of anthropogenic sound on marine mammals, especially cetaceans, since 1982. Bioacoustics and behaviour of cetaceans.	<i>Contribution areas:</i> Effects of anthropogenic sound on marine mammals, especially cetaceans. Behavioural ecology of marine mammals. Passive acoustic monitoring of marine mammals.	<i>Comments:</i>	
Weilgart, Lindy	<i>Organization/ Affiliation (if any):</i> Dalhousie University	<i>Languages:</i> English, German	<i>Joined the NWG:</i>	<i>Level of participation:</i> active member / informative member

	<p><i>Relevant experience or academic background:</i></p> <p>Specialized in underwater noise pollution and its effects on whales and other marine life since 1994. Have studied whales since 1982, primarily sperm whales, and M.Sc., Ph.D., and post-doctoral studies were all in the field of whale acoustic communication in the wild.</p> <p>Have served as invited expert on several panels, workshops, and committees on underwater noise impacts and published numerous peer-reviewed papers.</p> <p>Currently adjunct to the Biology Department, Dalhousie University, Canada, as well as scientific advisor for the International Ocean Noise Coalition.</p> <p>Formerly worked for the private Okeanos Foundation, mainly on underwater noise issues. Co-organized five Okeanos-sponsored scientific workshops on noise: 1) Alternative Technologies to Seismic Airgun Surveys for Oil and Gas Exploration and their Potential for Reducing Impacts on Marine Mammals; 2) Assessing the Cumulative Impacts of Underwater Noise with Other Anthropogenic Stressors on Marine Mammals; 3) Noise from Shipping Operations and Marine Life: Technical, Operational and Economic Aspects of Noise Reduction; Noise-Related Stress in Marine Mammals; and 4) Spatio-Temporal Management of Noise.</p> <p>In 2013, was a Scientific technical review panel member and invited expert for the Workshop on Quieting Technologies for Reducing Noise During Seismic Surveying and Pile Driving, BOEM, Silver Spring, MD, 25-27 February.</p>	<p><i>Contribution areas:</i></p> <p>Reviewing policy documents about noise issues, assessing scientific studies, giving presentations, attending workshops, etc.</p>	<p><i>Comments:</i></p> <p>Self-employed and have no outside income. Would need financial support to carry out Working Group duties.</p> <p>Obviously, we all want to be as effective as possible in making actual change in the marine environment.</p>
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