

Agenda Item 4.6

Review of New Information on threats to  
Small Cetaceans

Underwater Unexploded Ordnance

**Document 4.6**

**Underwater Unexploded Ordnance  
in the ASCOBANS Area**

**Action Requested**

- Take note
- Decide whether to prepare a draft resolution

Submitted by

Secretariat



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



## Underwater Unexploded Ordnance in the ASCOBANS Area

1. AC21 asked the Secretariat to liaise with HELCOM and OSPAR to ascertain how ASCOBANS can best support their processes regarding underwater ordnance (AC21/AP23). In line with this mandate, the Secretariat used the opportunity to attend the Second Meeting of the HELCOM Expert Group on environmental risks of hazardous submerged objects (HELCOM SUBMERGED 2-2015), held on 22-23 April 2015 in Bonn, Germany. The report of this meeting has been made available as [AC22/Inf.4.6.a](#).
2. AC21 also asked for an overview to be provided on the status of knowledge (AC21/AP24), which is attempted in this paper. Further, some recommendations are made for the possible way forward for ASCOBANS to address this topic, which is an item in the quadrennium work plan (Activity 5) contained in Resolution 7.2.

### The Issue at Hand

3. There is considerable uncertainty surrounding what specific threat unexploded ordnance or chemical weapons pose to marine life in general or cetaceans in particular. It is only in the past twenty years that the issue has garnered more attention and data are limited.
4. Long after they had supposedly been put out of commission, munitions may still pose a threat to human, environmental, and animal health. Chemical and conventional weapons were abandoned under the belief that deep at sea they would remain undisturbed and that ocean water would dilute their lethal effects. Neither of these assumptions has withstood the test of time. Modern advances and exploration for sources of energy, shifting ocean tides and water columns and expanded fishing opportunities have again brought humans into proximity with these weapons and raised the potential for a higher frequency of disturbance which could severely and adversely affect marine life.
5. It is also now becoming known that leakages from chemical weapons, and the corrosive degradation and disintegration of conventional weapons casings and materials (such as TNT), are releasing contaminants into critical marine habitats. These chemicals may pose a possible risk to the marine food chain and surrounding habitat.
6. The total tonnage of weapons dumped remains unknown, as the numbers provided only account for accurate minimums. There may be more source-points of munition contamination than currently known. The location of many of these dump sites also remains unknown. Previous surveys have shown that many munitions were dumped negligently, with ships failing to reach the appropriate dump sites, taking shortcuts or losing portions of their cargo en route. In addition, ocean currents and tides have the potential to move ordnance to new locations. These factors complicate the knowledge of the few published dump sites which raises the risk for humans and the marine environment.
7. The contaminating agents also have the potential to spread beyond their dump sites, for reasons both natural and anthropogenic. Contaminants have been found in the sediment around dump sites, but nothing has yet been detected in measurable quantities in the water column. However, much of the future ramifications are unknown, with studies in other areas suggesting the possibility of harm for marine life from contaminants.
8. With a view to impacts on cetaceans and other large marine biota, conventional munitions pose a threat, not just from disintegration and rusting of casings and explosive materials, but from underwater explosions. In the decades that these munitions have been sitting in heavily frequented fishing grounds and shipping lanes, and in critical marine habitat, they have become more susceptible to accidental explosions. The casings age, compromising their integrity, increasing both the chemicals released into the surrounding environment and the risk of explosions as they become more unstable.

9. Underwater explosions occur both when munitions are disturbed accidentally, posing also a threat to human safety, or when they are destroyed on purpose. In order to mitigate threats to human life and property, underwater detonations are frequently employed to eliminate potentially hazardous munitions, with other less potentially harmful methods of removal being used much less frequently. For cetaceans, explosions form the greatest direct risk from underwater munitions.
10. In cases of chemical weapons, underwater detonation also transforms a slow or non-existent leak into a sudden burst of harmful chemicals. This is particularly true of mustard gas, which has shown to maintain its chemical composition long after being submerged.
11. These concerns have been brought to the attention of the Advisory Committee in the following papers:
  - [AC19/Doc.4-10](#): Underwater Noise Pollution from Munitions Clearance and Disposal, Possible Effects on Marine Vertebrates, and Its Mitigation
  - [AC20/Doc.3.5](#): Environmental Non-governmental Organizations' Perspective on Underwater Munitions
  - [AC22/Inf.4.6.a](#): Outcome of the Second Meeting of the HELCOM Expert Group on Environmental Risks of Hazardous Submerged Objects (SUBMERGED 2-2015)
  - [AC22/Inf.4.6.b](#): HELCOM: Chemical Munitions Dumped in the Baltic Sea
  - [AC22/Inf.4.6.c](#): OSPAR Recommendation 2010/20 on an OSPAR framework for reporting encounters with conventional and chemical munitions in the OSPAR Maritime Area
  - [AC22/Inf.4.6.d](#): Risk Management for Unexploded Ordnance (UXO) in the Marine Environment
  - [AC22/Inf.4.6.e](#): Underwater Unexploded Ordnance – Methods for a Cetacean-friendly Removal of Explosives as Alternatives to Blasting

## Major Organizations Involved (relevant to ASCOBANS)

### OSPAR

12. The Convention for the Protection of the Marine Environment of the North-East Atlantic (the 'OSPAR Convention') is the mechanism by which fifteen Governments of the western coasts and catchments of Europe, together with the European Union, cooperate to protect the marine environment of the North-East Atlantic.<sup>1</sup> The new annex on biodiversity and ecosystems was adopted in 1998 to cover non-polluting human activities that can adversely affect the sea.
13. As recently as 2010, OSPAR has published reports detailing the dumping of chemical and traditional weapons at sea.<sup>2</sup> Annex IV<sup>3</sup> covers protection of marine habitat and Annex V<sup>4</sup> of OSPAR includes protection for marine life and a mandate that Contracting Parties shall "take the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area, and to restore, where practicable, marine areas which have been adversely affected." OSPAR has since worked within its member states to create best practices for reporting and data collection.

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<sup>1</sup> See Figure 1

<sup>2</sup>

[http://www.ospar.org/documents/dbase/publications/p00519/p00519\\_2010%20revised%20dumping%20at%20sea%20of%20munitions%20and%20weapons.pdf](http://www.ospar.org/documents/dbase/publications/p00519/p00519_2010%20revised%20dumping%20at%20sea%20of%20munitions%20and%20weapons.pdf)

<sup>3</sup> [http://www.ospar.org/html\\_documents/ospar/html/ospar\\_convention\\_e\\_updated\\_text\\_2007\\_annex\\_iv.pdf](http://www.ospar.org/html_documents/ospar/html/ospar_convention_e_updated_text_2007_annex_iv.pdf)

<sup>4</sup> [http://www.ospar.org/html\\_documents/ospar/html/ospar\\_convention\\_e\\_updated\\_text\\_2007\\_annex\\_v.pdf](http://www.ospar.org/html_documents/ospar/html/ospar_convention_e_updated_text_2007_annex_v.pdf)

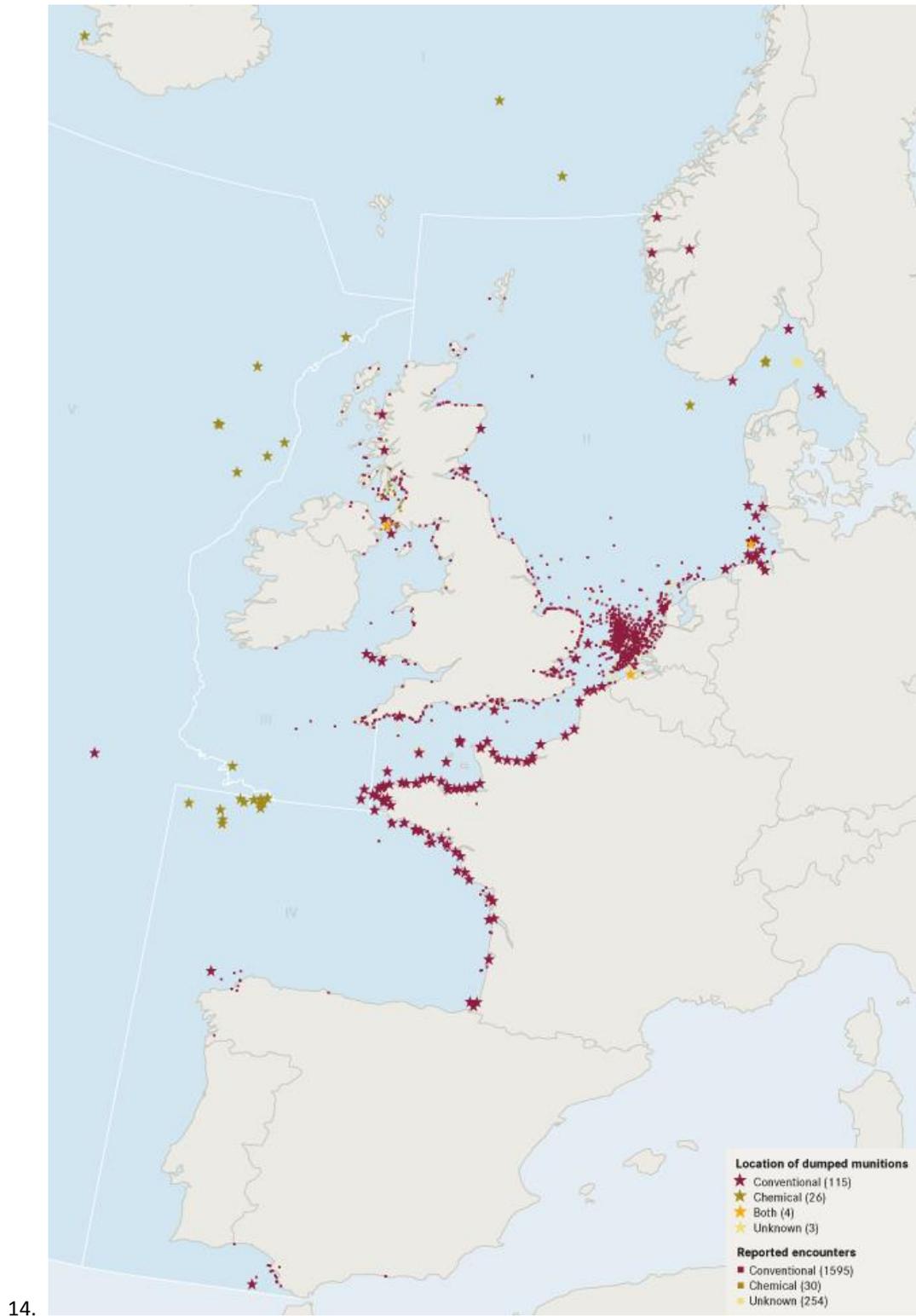


Figure 1: Location of dumped munitions in the Northeast Atlantic, Celtic and North Sea areas, discovered between 1999 and 2008. Courtesy of OSPAR and available at [http://qsr2010.ospar.org/en/ch09\\_09.html](http://qsr2010.ospar.org/en/ch09_09.html)

## HELCOM

15. HELCOM<sup>5</sup> is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, known as the [Helsinki Convention](#). The Contracting Parties are Denmark, Estonia, the European Union, Finland, Germany, Latvia, Lithuania, Poland, the Russian Federation and Sweden<sup>6</sup>.
16. HELCOM was established four decades ago to protect through intergovernmental cooperation the marine environment of the Baltic Sea from all sources of pollution. Its work encompasses all forms of marine pollution, including underwater chemical munitions.<sup>7 8</sup> The Working Group on Dumped Chemical Munitions in the Baltic Sea (see HELCOM's 2013 CHEMSEA report for more information<sup>9</sup>) has primarily focused on dumped chemical munitions, such as mustard gas, following the end of both World Wars. Previously, HELCOM primarily focused on chemical munitions but the recently created HELCOM SUBMERGED working group is looking to expand its scope of inquiry.<sup>10</sup> The 2013 HELCOM Copenhagen Declaration "Taking Further Action to Implement the Baltic Sea Action Plan – Reaching Good Environmental Status for a Healthy Baltic Sea"<sup>11</sup> does reaffirm the organization's commitment to investigating the threats of both chemical and traditional warfare materials.

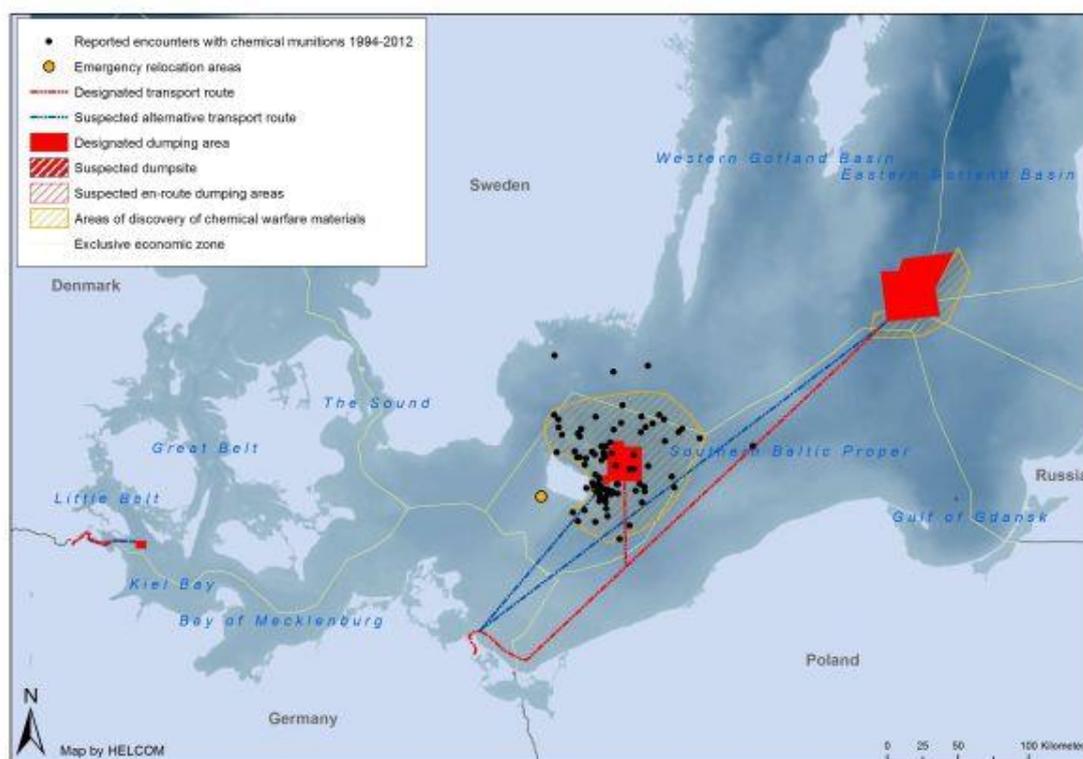


Figure 2: Chemical and suspected chemical underwater munition sites in the Baltic between 1994 and 2012. Courtesy of HELCOM and available at <http://www.helcom.fi/baltic-sea-trends/hazardous-substances/sea-dumped-chemical-munitions/>

<sup>5</sup> <http://www.helcom.fi/>

<sup>6</sup> See Figure 2

<sup>7</sup> <http://www.helcom.fi/baltic-sea-trends/hazardous-substances/sea-dumped-chemical-munitions/>

<sup>8</sup> <http://www.helcom.fi/Lists/Publications/Report%20on%20chemical%20munitions%20dumped%20in%20the%20Baltic%20Sea.pdf>

<sup>9</sup> <http://www.chemsea.eu/admin/uploaded/CHEMSEA%20Findings.pdf>

<sup>10</sup> <http://www.helcom.fi/helcom-at-work/groups/response/submerged/>

<sup>11</sup>

<http://www.helcom.fi/Documents/Ministerial2013/Ministerial%20declaration/2013%20Copenhagen%20Ministerial%20Declaration%20w%20cover.pdf>

### London Convention

17. The London Convention<sup>12</sup> and subsequent London Protocol, administered by the International Maritime Organization (IMO), initially provided a list of items that could not be dumped at sea. However, the 1996 Protocol prohibited all items, with the exception of Annex I substances. This strengthened the agreement which could now be interpreted as prohibiting government agencies from dumping munitions at sea. The London Protocol stresses the “precautionary approach”, which requires that “appropriate preventative measures are taken when there is reason to believe that wastes or other matter introduced into the marine environment are likely to cause harm even when there is no conclusive evidence to prove a causal relation between inputs and their effects.” It also states that “the polluter should, in principle, bear the cost of pollution” and emphasizes that Contracting Parties should ensure that the Protocol should not simply result in pollution being transferred from one part of the environment to another.
18. This convention does not address the removal of previously dumped objects nor does it make clear what it qualifies as pollution and dumping. The status of military objects and procedures appears unclear and ambiguous as the London Convention or IMO were not referenced by other stakeholder organizations.

### NATO

19. NATO has previously been involved in reviewing the impact of some underwater munitions on the environment.<sup>13</sup> There does not appear to be much recent progress. Because of the nature of the materials involved, it is imperative that a coalition is built with military and chemical experts to ensure proper disposal of munitions and to prevent further unnecessary harm to marine life and habitat. At present NATO’s environmental mission aims to “reduce the harmful impacts of military activities on the environment.”<sup>14</sup> Its expertise, sonar capabilities and willingness to use a collaborative approach would be necessary for the proper removal of these underwater munitions.

### UNEP

20. In the latest GEO-5 Report,<sup>15</sup> there was no mention of underwater munitions or ordnance. While the threat of other forms of pollution and possible threat from off-shore energy extraction and refinement were elaborated upon, the continued threat from underwater munitions was ignored. With preparations underway for GEO-6, there remains an opportunity to bring this issue again to the foreground of public and policymaker knowledge.

## **Recommendations Identified from the Literature and Expert Advice**

21. From the information outlined above and consultations with experts, some of the major areas requiring attention could be summarized as outlined below. However, it should be noted that this is by no means to be considered an exhaustive list.
- a) Precautionary Approach
- A precautionary approach should be encouraged for all mitigation and removal methods. Other relevant organizations should be requested to support the same aim.

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<sup>12</sup> <http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/Convention-on-the-Prevention-of-Marine-Pollution-by-Dumping-of-Wastes-and-Other-Matter.aspx>

<sup>13</sup> [http://www.underwatermunitions.org/EnvironmentalImpact\\_of\\_Munition\\_and\\_propellant\\_disposal\\_-\\_NATO.pdf](http://www.underwatermunitions.org/EnvironmentalImpact_of_Munition_and_propellant_disposal_-_NATO.pdf)

<sup>14</sup> [http://www.nato.int/cps/en/natohq/topics\\_91048.htm?](http://www.nato.int/cps/en/natohq/topics_91048.htm?)

<sup>15</sup> Available here [http://www.unep.org/geo/pdfs/geo5/GEO5\\_report\\_full\\_en.pdf](http://www.unep.org/geo/pdfs/geo5/GEO5_report_full_en.pdf)

- The choice of mitigation and removal techniques should take into account wider environmental effects and potential negative impacts for marine life. With detonations probably being the major threat from underwater ordnance to marine life, alternative methods of removal should be favoured.
- These alternative methods might include, but are not limited to, the use of underwater robotics, water abrasive suspension cutting or mobile detonation chambers. If no alternatives are feasible, observation techniques and the use of acoustic deterrents should ensure that no marine mammals are near the explosion site.

b) International Cooperation

- The issue is a global one with wide implications for the marine environment, far beyond concerns related to cetaceans and other marine life. UNEP should be invited to address the issue and take a leading and coordinating role, e.g. by creating a joint task force that includes the Regional Seas Conventions, the CMS Family and other relevant intergovernmental organizations.
- Based on work done e.g. under the auspices of OSPAR, HELCOM and national governments to develop guidelines for removal of munitions, overarching guidelines should be developed, perhaps under UNEP's lead, involving all relevant stakeholders and organizations.
- An international conference should be held on the issue, ensuring that an overview of the status of knowledge and practices in different parts of the world is gained and that cooperation can be fostered for capacity-building.
- Military organizations such as NATO should be urged to take a leading role in efforts to detect, categorize and remove, in the most environmentally-friendly way feasible, any potentially hazardous material.

c) Monitoring and Research

- Knowledge of actual locations and contents of official and unofficial dump sites remains incomplete. Coordinated efforts should be made to gather this information and make it available, for example through tools like the HELCOM map service<sup>16</sup>.
- All vessels, when encountering underwater munitions, should be requested to notify relevant national authorities. Simple ways for submitting this information should be provided.
- Data remains either inconclusive or unknown as to the effects of decaying submerged munitions on the marine environment and marine life. Necropsies performed on marine life should test for chemicals typical of chemical or conventional munitions, or signs of underwater detonations as a possible cause of death.
- Range State governments, academia and NGOs should encourage more scientific research to analyse the risk of chemicals emanating from chemical or conventional munitions on the marine food chain. At present, information is either incomplete, inconclusive or on species other than cetaceans<sup>17</sup>

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<sup>16</sup> HELCOM map service available at <http://maps.helcom.fi/website/mapservice/index.html>

<sup>17</sup>Belden, et. al. found that concentration of TNT in catfish was negligible, however the authors admit that more research is needed. See: Belden, J., Ownby, D., Lotufo, G. & Lydy, M. (2005). Accumulation of trinitrotoluene (TNT) in aquatic organisms: Part 2 – Bioconcentration in aquatic invertebrates and potential for trophic transfer to channel catfish (*Ictalurus punctatus*). *Chemosphere*, 58(9), 1161-1168. <http://dx.doi.org/10.1016/j.chemosphere.2004.09.058>

### **The Way Forward**

22. There is a clear role for ASCOBANS in supporting current efforts in other fora and in drawing attention to the issue with other stakeholders. ASCOBANS could encourage the type of international support needed to address this increasingly pressing issue unequivocally.
23. Parties may wish to consider developing a draft resolution on the subject, which could draw attention to the importance of the matter for marine conservation and outline possible ways to address the matter through other fora and collaborative efforts.