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Contribution from the Baltic Marine Environment Protection Commission (HELCOM) to the Part I of the report of the Secretary-General on oceans and the law of the sea, pursuant to General Assembly draft resolution A/71/257, entitled “Oceans and the law of the sea”

Challenges posed by anthropogenic underwater noise

The Baltic Sea holds some of the busiest shipping lanes in the world as well as some of the largest cities in Northern Europe. There is furthermore a large range of off-shore construction work and other human activities in this area. Increasing noise levels can be problematic to species relying on sound for most parts of their life cycle. Noise may disrupt behaviours, mask important signals and/or reduce the hearing sensitivity either temporarily or permanently in an individual (Richardson et al., 1995¹; Southall et al., 2007²). By causing disturbance to single individuals the effects of noise have the potential to decrease fitness which could lead to reduced recruitment to the next generation and thereby affect a population. There is increasing knowledge on noise impacts on individual fish and marine mammals (see Popper and Hawkins, 2012³, 2016⁴), but to which extent this could affect an animal's fitness is still unknown, making it difficult to define the maximum level of underwater noise that is consistent with good status at the population level.

Actions and activities

Underwater noise has received increased attention from Contracting Parties (nine Baltic Sea countries and EU) in HELCOM in recent years. HELCOM Ministerial Meetings from 2010 and 2013 highlighted the need to focus attention to the pressure on the marine environment from anthropogenic noise. In 2013, the [HELCOM Ministerial Meeting](#) agreed that:

- the level of ambient and the distribution of impulsive sounds in the Baltic Sea should not have negative impact on marine life;
- human activities that are assessed to result in negative impacts on marine life should be carried out only if relevant mitigation measures are in place.

Accordingly, the Ministerial Meeting agreed on specific actions which implementation is to be achieved guided by the '[Regional Baltic Underwater Noise Roadmap 2015-2017](#)'. A summary of the status of implementation of these actions is provided in this section.

¹ Richardson, W. J., Greene, C. R. Jr., Malme, C. I., Thomson, D. H. 1995. Marine mammals and noise. Academic Press, New York.

² Southall, B. L., Bowles, A. E., Ellison, W. T., Finneran, J. J., Gentry, R. L., Greene, C. R. J., Kastak, D., Ketten, D. R., Miller, J. H., Nachtigall, P. E., Richardson, W. J., Thomas, J. A. & Tyack, P. 2007. Marine mammal noise exposure criteria: initial scientific recommendations. *Aquatic Mammals*, 33, 411-521.

³ Popper, A.N., Hawkins, A. (eds). 2012. The effects of noise on aquatic life. *Advances in experimental medicine and biology* 730. Springer Science + Business Media LLC.

⁴ Popper, A.N., Hawkins, A. (eds). 2016. The effects of noise on aquatic life II. *Advances in experimental medicine and biology* 875. Springer Science + Business Media LLC.

Two **indicators**, one on continuous and one on impulsive sound, are under development to follow up anthropogenic sources of underwater noise. The indicators aim to define a threshold value for underwater noise, for which the work has not been finalized yet.

HELCOM is in the process of finalizing and adopting regional **monitoring guidelines for continuous noise** and **monitoring programme of continuous noise**, to be implemented by the Baltic Sea countries. The programme proposal includes measurements and modelling, as well as data arrangements to compile and visualize regional monitoring data.

In 2015, a regional [registry](#) of **licensed impulsive events** such as pile driving, controlled explosions from naval operations and other activities that release energy was established by HELCOM and countries are reporting their national data. The registry is joint with OSPAR.

HELCOM is finalizing a report presenting the rationale for choosing **Baltic species which have the potential to be impacted by noise** together with a preliminary identification of biologically sensitive areas. The report includes a prioritized list of seven noise sensitive species: harbour porpoise, harbour seal, ringed seal, grey seal, cod, herring and sprat. The species have been identified based on the following criteria: hearing sensitivity, known (or suspected) noise impact on the species, threat status, commercial value, and data availability. For each of the prioritized species the distribution of species and biologically sensitive areas is presented based on available data. The report has been approved by the Contracting Parties and will be published in 2017.

HELCOM has also produced an overview [report](#) of **underwater noise mitigation measures** including country specific information, to provide background information what type of measures already exist in the Baltic Sea region.

Based on the new knowledge and information gathered, HELCOM for the first time has included [underwater noise](#) in its newest assessment the '[State of the Baltic Sea report, June 2017](#)'.

Suggestions for further action

HELCOM will continue working on the operationalization of underwater noise indicators. The indicators will enable the evaluation of progress towards the goal of achieving good status with respect to underwater noise in the Baltic Sea. No work has started yet in HELCOM on an impact indicator, being the work so far focused on pressure indicators. Further research is needed to close gaps in knowledge on the impact of anthropogenic noise on noise sensitive species at a population level.