



MARINE NOISE

A THREAT TO MIGRATORY SPECIES AND THEIR PREY

Whales, dolphins and porpoises are among the species threatened by marine noise - Photo: Humpback whales © Vanessa Mignon

SOUND IN THE MARINE ENVIRONMENT

The ocean environment is filled with natural sound - some produced by marine animals relying on it for vital life functions, including communication, prey and predator detection, orientation and for sensing surroundings. Natural physical processes, such as earthquakes, wind, ice and rain, also fill the sea with noise. Species living in this environment are adapted to these sounds.

Over the past century, noise levels in the ocean have significantly increased, due to the many human activities taking place in the marine environment. Anthropogenic noise is a form of pollution, which is affecting critical habitat and protected areas alike, and may have adverse effects on marine life also across borders. Noise sources are diverse and include military and civil high-powered sonar, shipping and vessel traffic, seismic surveys, construction works, offshore platforms, playback and sound exposure experiments, pingers, acoustic data transmission, and wind, tidal and wave turbines. These activities are usually divided into 'non-impulsive' (or continuous) noise – the constant drone caused for example by shipping or oil and gas installations – and 'impulsive' noise – intense short pulses of very loud sound, repeated over a period of time.

These modern anthropogenic noises have the potential for physical, physiological and behavioural impacts on marine wildlife.

Impacts of Noise on Marine Wildlife

Animals exposed to elevated or prolonged anthropogenic noise can suffer direct injury and/or temporary or permanent hearing loss. Noise can mask important natural sounds, such as the call of a mate, or the sound made by prey or predator. Exposure to elevated or prolonged ocean noise can cause physical injury or even death. Anthropogenic noise alters the behaviour of animals by stressing, distracting or confusing them, and can displace wildlife from important habitats. All of this can affect reproduction and growth rates of many marine species, in turn influencing the long-term viability of populations.

These impacts are experienced by a wide range of species including fish, crustaceans, cephalopods, pinnipeds (seals, sea lions and walruses), sirenians (dugongs and manatees), sea turtles, polar bears, marine otters and cetaceans (whales, dolphins and porpoises). It has become clear that not only migratory or other protected species are affected, but also their prey, composed of fish and invertebrates – the very basis of the marine ecosystem.

Table: Potential results of sound exposure

Impact	Effects on animal
Mortality	Death from damage sustained during noise exposure
Injury to tissues; disruption of physiology	Damage to body tissues, such as internal haemorrhaging, injury of gas-filled organs like the swim bladder, poor immune response, stress
Damage to the auditory system	Injury to hearing or sensory organs (hair cells, statocysts), temporary or permanent hearing impairment (threshold shifts)
Masking	Obliteration of biologically important sounds including sounds from other members of the same group or population
Behavioural changes	Interruption of normal activities including feeding, reproduction, schooling, migration, and displacement from favoured areas
These effects will vary depending on various factors such as the noise level and distance.	

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Guidelines on Environmental Impact Assessments for Marine Noise-generating Activities – a tool for decision-makers

Applying the emerging knowledge on the effects of underwater noise on marine species in local and national decision-making is a challenge. Assessing in advance what the impact of any activity on marine life will be can best be achieved by making effective use of Environmental Impact Assessments (EIA).

CMS Parties in October 2017 through [Resolution 12.14](#) endorsed a set of guidelines, which detail the requirements for EIAs that allow managers to make informed decisions. They cover the most important sources of both continuous and impulsive noise, and are designed as a tool for governments wishing to improve their ability to assess, regulate and address the impacts of underwater noise on marine life.

The Guidelines are accompanied by detailed Technical Support Information ([CMS/COP12/Inf.11](#)), which explains how underwater noise works, how it affects marine life, and what the specific vulnerability of different groups of species is – both migratory species and their prey.

The CMS Family is Taking Action

Parties to the Convention on Migratory Species (CMS), the Agreement on the Conservation of Cetaceans in the Black Sea Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) and the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS) have long recognized underwater noise as a major threat to many marine species. Several resolutions have been passed calling for effective measures to mitigate and minimize the impact of noise pollution on marine life, and urging that noise be taken into account as early as the planning stages of activities.

Recent Resolutions:

- CMS Resolution 12.14 on Adverse Impacts of Anthropogenic Noise on Cetaceans and Other Migratory Species
- ACCOBAMS Resolution 6.17 on Anthropogenic Noise
- ASCOBANS Resolution 8.11 on CMS Family Guidelines on Environmental Impact Assessments for Marine Noise-generating Activities



Negative impacts of marine noise are of serious concern both for migratory species and their prey - Photos: Krill © Norkrill/flickr.com; Green Turtle © Alessandro Cere

About CMS

The Convention on the Conservation of Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, works for the conservation of a wide array of endangered migratory animals worldwide through negotiation and implementation of agreements and species action plans. It has 126 Parties (as of 1 March 2018).

CMS engages all relevant stakeholders in addressing threats to migratory species in concert with all other aspects of wildlife conservation and management.

CMS Instruments

Animals receive protection under CMS through listing on its two Appendices, through global or regional agreements and through action plans.

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