

Agenda Item 6.7: Disturbance by Military Activities

Military Noise: A statement of concern from WDCS*

* Letter by K. C. Balcomb to J. S. Johnson (cf. References, p4) is submitted as Doc. AC8/Doc. 15 (O)

Submitted by: The Whale and Dolphin Conservation Society



ASCOBANS

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Background.

For marine mammals sound is a vital mediator of information. However, the dependency of these animals on sound and the fact that they live in a medium that can transmit powerful sound pulses very efficiently, also makes them especially vulnerable to “acoustic pollution”. In this context and in just the last few years, concerns have been increasingly expressed about various military activities as significant sources of noise and disturbance to marine wildlife.

Military activities create loud noises in the world’s oceans in a variety of ways. For example, congregations of military vessels, explosions during exercises and low-level flights. However, it is LFAS (Low Frequency Active Sonar) that has recently come to the fore as a particular concern for cetaceans. The US Navy and others (including NATO and the German military) are developing SURTASS LFAS (Surveillance Towed Array Sensor System Low Frequency Active Sonar) for the detection of enemy submarines. Put simply, LFAS is a method which uses multiple, high intensity sound sources to send low frequency signals. As we understand it, LFA sonar is being developed because it allows long-range detection and tracking of foreign submarines.

We know almost all that we do about LFAS because of the legal requirement in the US, that all activities likely to cause a “take” of marine mammals are subject to public scrutiny through the Marine Mammal Protection Act (MMPA) 1994. There is no such legislation in Europe.

Nonetheless, the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS) clearly recognises noise as a potential problem for small cetaceans and stipulates that Parties should “work towards... the prevention of other significant disturbance, especially of an acoustic nature”. The second meeting of the Parties took this further in a resolution which invited Parties and Non-Party Range States to “Introduce, where appropriate, guidelines and other measures to reduce disturbance to small cetaceans”. This was echoed in another resolution on disturbance concluded at last year’s Meeting of Parties and which specifically referred to the prevention of noise pollution from military activities, inviting

“Parties and Range States to work with military authorities to introduce codes of conduct and similar measures – such as environmental impact assessments and standing orders – to reduce disturbance of small cetaceans”.

The European “Habitats and Species Directive” (EU Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora) makes similar commitments to address noise and disturbance. It lists harbour porpoises and bottlenose dolphins in Annex II as species that require SACs (Special Areas of Conservation) and all cetaceans in Annex IV as strictly protected. Provisions applicable to disturbance are Article 12, (1) which states that “Member States shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV (a) in their natural range, prohibiting; (b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration. For the bottlenose dolphin and the harbour porpoise, Article 6 (2) is of great importance as it states that

“Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive”.

We would like to draw to the attention of the members of the Advisory Committee and ASCOBANS Parties two related matters: firstly military activities impinging on conservation areas (taking the case of Schleswig-Holstein as an example); and, secondly, new information about military sonar.

1. Protected areas, military activities and attempts at mitigation.

In Germany, we note that the law that established the Schleswig-Holstein part of the North Sea as a Special Area of Conservation for harbour porpoises states that

“all activities which can cause destruction, damage, changes or continued disturbance to the protected area or its components, except measures and uses which are explicitly authorized, are inappropriate. In particular it is forbidden, to harass wild animals, disturb them with noise or in any other way, [and] injure or kill them...”.

Despite this, the Environment Ministry of Schleswig-Holstein has reported military manoeuvres taking place in late August around Sylt near and inside the harbour porpoise sanctuary. Klaus Müller, Environment Minister of Schleswig-Holstein commented that the military were acting like “a rowdy within a nature reserve” and noted that this might also harm the tourism in the area. Low flights, helicopter operations and detonations are all reported within the Special Area of Conservation (MfU-SH, 2000).

The disturbance caused by military activities in this area and at this time is of particular concern because harbour porpoises predominantly give birth in the summer months and the area is the only known „Kinderstube“ for this cetacean species in German waters.

Subsequently, in October 2000, the German PDS Party filed a written “little request” addressed to the German Government regarding “impacts of manoeuvres by the German military on marine mammals” (Bulling-Schröter, Lippmann, PDS Party, 2000). In the official reply, the German Government confirmed that the German Military is involved in the development of a “Low Frequency Active Sonar (LFAS)” (Kolbow, 2000). However, they also commented that, as far as they knew, “no manoeuvres have taken place so far during which LFAS-Systems have been employed, in or near protected areas for harbour porpoises” (Kolbow, 2000).

Moreover, in order to avoid adverse impacts on whales and dolphins during active LFAS-tests, the German Government noted that the military would use

“a visual and passive acoustic survey of the sea area (three nautical miles)” and “gradually increased the intensity of acoustic emissions to avoid making any marine mammal that has not been detected by the prior criteria, panic”.

We believe that this attempt at mitigation is inadequate. Cetaceans are frequently difficult to detect visually and this is exacerbated by conditions of poor visibility (e.g. nighttime and foggy conditions). Dr. Peter Tyack an expert in cetacean acoustics based at the Woods Hole Oceanographic Institute, has recently observed, that the likelihood of spotting any single animal during daylight hours, as far as most of the endangered and threatened species are concerned, is only 10%. At nighttime this sighting rate drops to 5% and these rates may drop even lower where the spotters are not trained marine mammal biologists.

Furthermore, passive acoustic monitoring only works if animals are vocalising and they do not vocalise continually.

According to Tyack:

“So many animals will be missed by both the visual and acoustic monitoring that it is not credible to assume that turning off the source when whales are sighted will mitigate the impact on more than about half of the potentially exposed animals”.

In addition, there is no scientific justification for the assumption that the gradual increase of the intensity of acoustic emissions avoids cetaceans being harmed. There is no scientific evidence to support this (Weilgart, pers. comm.). In fact, the lower initial intensities could cause whales and dolphins to come closer and investigate the noise sources.

(These considerations relate equally well to seismic testing.)

Table 1: Impacts of noise on cetaceans (Simmonds and Dolman, 1999).

Physical

Non Auditory

Damage to body tissue
Induction of the “bends”

Auditory

Gross damage to ears
Permanent hearing threshold shift
Temporary hearing threshold shift

Perceptual

Masking of communication with conspecifics
Masking of other biologically important noises
Interference with ability to acoustically interpret environment
Adaptive shifting of vocalisations (with efficiency and energetic consequences)

Behavioural

Gross interruption of normal behaviour (i.e. behaviour acutely changed for a period of time)
Behaviour modified (i.e. behaviour continues but is less effective/efficient)
Displacement from area (short or long term)

Chronic/Stress

Decreased viability of individual
Increased vulnerability to disease
Increased potential for impacts from negative cumulative effects (e.g. chemical pollution combined with noise-induced stress)
Sensitisation to noise (or other stresses) – exacerbating other effects
Habituation to noise – causing animals to remain close to damaging noise sources

Indirect Effects

Reduced availability of prey.
Increased vulnerability to predation

2. New Information about military sonar

In recent years, a relationship has been found between military activities and very unusual mass strandings of certain species of cetacean. Most recently, in March 2000, at least seventeen whales (mainly beaked whales) stranded in the Bahamas at the same time as the US Navy was conducting military activities in the area. Many of these animals died on the shore and others were returned to the sea where they may also have died. Both the large number of coincident live strandings and the fact that the event involved several species can be considered highly unusual.

Retrospective analyses of reported beaked whale mass strandings indicate that there have been 49 mass strandings from 1838 to 1999. Of these, the most commonly mass stranded species was Cuvier’s beaked whale, which featured in 19 stranding events. Eight of those strandings have been associated with military activities. Only 6 mass strandings of mixed species of beaked whales have occurred (1974-1999), and all of those have been associated with military activities (IWC, 2000).

Recent findings by the independent researcher Dr Ken Balcomb (presented here as Annex 1) provide strong evidence that active sonar is responsible for the March 2000 strandings. He found death to be largely due to resonance in the whales’ cranial airspaces causing tearing of delicate tissues around the brains and ears and he comments that the Bahamas incident

“unequivocally demonstrated the lethality of high-powered sonars, and it provided the opportunity to understand how sonar has been inadvertently killing whales in vast expanses of ocean around the world”.

Our concerns about loud noises have hitherto largely focused on a range of behavioural responses and potential temporary or permanent physical damage to the animals, particularly their hearing (table 1).

However, Balcomb has now identified a new lethal concern and “this is an entirely different issue from auditory thresholds and traumas...”.

Cuviers beaked whales were reasonably common in Balcomb’s field study area prior to the Bahamas incident; about thirty-five of them had been photo-identified, many repeatedly. Small groups of these whales were typically sighted a dozen or more times per year in any month. Since the Bahamas sonar incident this species has only been seen once in an entire year, and that was a sighting of two previously unidentified whales (i.e., new arrivals to study area) about two months after the sonar exercise. None of the whales that were rescued have been seen again. In retrospect, Balcomb considers it is probable that all Cuviers beaked whales in the region when the naval exercise commenced were killed by the sonar.

He also notes that the impact distances for this phenomenon can be calculated and are likely to be 20-100 kilometers and concludes:

“Considering the facts of multiple whale deaths and their almost certain cause are now known to me, I cannot legally or morally support any recommendation to deploy SURTASS/LFA as proposed...”.

Whilst WDCS awaits the responses to Balcomb’s conclusions from the military and from other independent scientists, we believe that the possibility of widespread whale deaths being caused by LFAS is enough for further development to be halted.

References

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