

## Discussions of Day 1 (June 17, 2002)

Reporter Eric J. Woehler<sup>1</sup>, Chair

Note: Format followed here will comprise name of presenter and title, then the questions/comments raised by participants. No notes of the formal presentations have been included as the presenters are all providing abstracts of their talks. "?" indicates unidentified questioner during discussions.

W.J. RICHARDSON

Marine mammals versus seismic and other acoustic surveys: introduction to the noise issues.

1. Hemilä - questioned if baleen whales consistently avoided sonar surveys, and if there is a need to assume or recommend artificially increasing the beam used in a survey to facilitate avoidance by whales.

2. O'Brien - reminded attendees that beam shaping and focussing affected the area swept, including the footprint on the bottom.

3. Kock - questioned the lack of a mention of hydroacoustic surveys in Richardson's talk, asked if it was appropriate to assume that bathymetric surveys were approximately equivalent to side-beam equipment used vertically.

4. Nachtigall - reported that pinnipeds are more sensitive to TTS than odontocetes, suggested not to increase the 190 dB level/threshold as the 190 dB datum may have large inherent errors.

P.E. O'BRIEN

Report from SCAR *ad hoc* Group on marine Acoustic Technology and the Environment workshop.

1. Hofman - identified another variable re the Bahamas stranding (increased sensitivity of Beaked Whales), and suggested that soft-starts are an untested issue that may not mitigate.

2. Ketten - noted that source level is not equivalent to tolerance and exposure.

3. Weilgart - suggested need to avoid repeated surveys, support for risk analyses. Suggested caution in applying results from Bahamas to the Antarctic.

4. Miller - noted that baleen whales may be aggressive to conspecifics, noted rapid attenuation of signals.

5. Dinter - indicated need for caution: deep-diving abilities may reduce observations of mammals at the surface.

J.A. van FRANEKER

Distribution and population densities of marine mammals south of 60 °S.

1. Kock - queried reported numbers of some whale species, in particular recent increases reported from surveys of Blue Whales, but noted that some results may be artefacts of areas surveyed.

P.E. NACHTIGALL

Low frequency hearing in odontocetes and evoked auditory potentials measuring recovery from temporary threshold shifts in the Bottlenosed Dolphin *Tursiops truncatus*.

1. Richardson - questioned why TTS lower levels than ABR (acoustic brainstem response), and whether ABR could be used for repeated pulses.

2. ? - A Leipzig institute currently testing ABR to noise by measuring activity of the brain - could this be applied to marine mammals?  
[Nachtigall - yes.]

3. ? - questioned plot shown where higher frequencies TTS was below zero?  
[Nachtigall - yes, signal was 7 kHz, negative value was artefact.]

P.M. SCHEIFELE

Effects of low-frequency anthropogenic noise on the St. Lawrence Beluga hearing and communication processes: a model.

1. Richardson - what impact of survey vessel?  
[Scheifele - 151 dB at low idle at dock.]

2. Hofman - what profile of the bottom and sides of St Lawrence seaway?

3. ? - any restrictions planned for shipping operations?  
[Scheifele - no.]

D.R. KETTEN

Marine mammal auditory systems: a summary of audio-metric and anatomical data and implications for underwater acoustic impacts.

1. Kappen - queried function of the brain, and its ability to suppress noise, act as filter

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2. Miller - can the ear cope with rapid and high pressure changes? Is the damage different at depth compared with surface exposure?

[Ketten - yes, possible anatomical responses at depth.]

L. WEILGART

The threat of underwater noise on whales: management in light of scientific limitations.

1. Scheifele - questioned at what depth in water were Humpback Whales trapped in nets?

2. Hofman - reported that clangers had been attached to nets.

3. Thiede - noted that noise under discussion minimal relative effect compared to noise generated during WW2, especially in North Atlantic Ocean.

4. Arntz - reported on attempt to follow guidelines in Antarctic, no work was achieved in 24 hr period.

5. de Moustier - queried if there were any government agencies that have guidelines?

6. O'Brien - reminded attendees that not all gear has the same effect, sonar is not equivalent to fish finders etc.

7. Richardson - noted that short-term indicators may not be good indicators for long-term impacts/effects, noted that noise generated in large area/volume, resulting in low levels.

8. Jokat - noted scale of noise generated at mid-ocean ridges

9. Ketten - reminded attendees that Humpback Whales' stranding rates doubled one month, all showed explosive trauma to tissue. Bahama stranding event was precipitated by sonar (but no data on causality); unlikely to be missing stranding events.

J. CALDWELL

Are seismic air-gun sources harmful to marine mammals?

1. ? - questioned potential for marine vibrators as alternatives in areas of environmental sensitivity? [Caldwell - not obvious that they were more benign.]

2. Richardson - suggested that they would be likely to cause additional masking.

3. O'Brien - commented on level of air-gun usage in the Antarctic.

4. Dinter - commented on difficulty in interpreting terminology with regard to decision-making process, allowing for activities under permit.

5. Caldwell - suggested that Risk Analysis approach should be included in discussions of Working Groups.

6. Weilgart - queried status and source(s) of funding for trials.