

International Conference



Nyborg Denmark, August 13th to 17th 2007

# Conference Programme



Danish Agency for Science  
Technology and Innovation  
Ministry of Science

**SNAK**

Graduate School on Sense organs, Nerve  
Systems, Behavior and Communication



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## Registration & Opening Reception/Dinner

Registration for the conference will be done automatically when you check-in at the Nyborg Strand Hotel. In addition, a welcome desk will be open starting at 14:00 on the afternoon of Sunday, August 12 and will continue on Monday, August 13 to answer any questions about the meeting.

A Reception/Dinner for conference participants and their accompanying persons who have registered for this event will take place at 19:00 on the evening of Sunday, August 12. Conference participants and accompanying persons who have not registered for the opening dinner can check at the registration desk to determine if individual tickets are still available.

A programme of excursions for accompanying persons who are not attending the sessions is found on page 4. We anticipate that the welcome desk will also have information about other things to do in Nyborg and the surrounding regions.

## Additional Information about the Meeting

**Internet Access.** Internet access is available in all hotel rooms. The cost for this service is determined by the hotel. We also have several computers near the poster room where free internet access is available to participants and accompanying persons. We ask that individuals using the internet access limit themselves to a maximum of 15 minutes when others are awaiting use of the internet.

**Closing Banquet.** The closing banquet will take place on Thursday evening. Dress is informal (as it is at the rest of the meeting). If you have not purchased a banquet ticket as part of your registration package, it may still be possible to purchase a ticket at the registration desk. However, additional seats are limited and should be purchased as soon as possible.

**Questions.** If you have any questions during the meeting please contact one of the organizers or Dr. Wysocki. Or, find one of the students working with us in conference organization. All of these people will have ribbons on their name badges

**Photography, Filming and/or Recording.** Photography, filming, and/or recording of scientific presentations and posters are forbidden without the express permission of the speaker or poster presenter. We will endeavour to have our photographer take pictures of each speaker, and these will be made available after the meeting.

**Meals.** Participants (and accompanying persons) who have registered for meals, the opening reception, and the closing banquet will receive tickets to each meal when they register at the hotel. If you do not register for a meal, there are several restaurants in the Nyborg Strand where meals can be purchased.

**Conference CD.** Each participant has received a CD with the abstracts of all of the presentations. Please note that this CD may not be copied or distributed in any format either printed or electronic. Authors retain full rights to their abstracts. Anyone wishing to distribute or use an abstract must obtain permission from the author.

## Excursions

### The following excursions are available for accompanying persons

#### **Tuesday, August 14: Hans Christian Andersen Museum, Odense City and Funen Village**

Depart 09:00 from the Hotel Nyborg Strand by bus. Visit Odense where guides are ready at 10:00 to conduct a tour of the HC Andersen Museum and the old part of Odense, the writer's town of birth. Visit the places where the famous writer spent time in his youth.

At 12:00, lunch will be taken at Sortebro Kro, next to Funen Village.

Funen Village is an open-air museum. The museum consists of a number of houses and mansions as they would have been 200 years ago. A trip to Funen Village is like a tour of the country where HC Andersen lived. The buildings are in the traditional thatched roof style, with flower gardens, domestic animals, and a village street – all surrounded by farm fields. Two hours will be spent at the village.

At 17:00, the bus returns to the Hotel Nyborg Strand.

Price per person is 520 DKK (approximately \$94), including entrance fee and guide fees at the HC Andersen house and Odense old town, entrance to Funen Village, lunch on the Sortebro Kro and bus transportation.

#### **Thursday, August 16: Egeskov Castle**

Depart 09:00 from the Hotel Nyborg Strand by bus. Visit one of the Island of Funen's most beautiful castles, Egeskov Slot, spending two hours in the beautiful park and main building as well as at several different exhibitions. For several generations, the park has been open for the public. The restoration of the gardens to their present state began in 1959. In 1967, a museum was opened in the impressive barn, and since then, it has been expanded to several of the surrounding buildings.

Lunch will be taken in the Café Jomfru Rigborg in the park.

After lunch, the bus will drive down along Svendborgsund, through the picturesque city of Svendborg and along the beautiful Great Belt coast towards Nyborg.

At 17:00, the bus returns to the Hotel Nyborg Strand.

Price per person is 498 DKK (approximately \$90), including entrance fee to Egeskov park, castle and museum, lunch at the Café Jomfru Rigborg and bus transportation.

### **Excursion for Conference Participants and Accompanying Persons**

#### **Wednesday, August 15: An Evening in Kerteminde**

Depart 16:30 from Hotel Nyborg Strand by bus for an evening bus trip to Kerteminde, a picturesque Funen fishing town. Visit the art museum at the farm and studio of the exquisite early 20th century painter Johannes Larsen. There is a special exhibition featuring Danish art and literature that has received critical acclaim. A cold Danish-style dinner will be brought from the hotel and served in the beautiful garden of the museum overlooking the waters of the Great Belt. After dinner, the bus will continue to Fjord&Bælt, where we will watch a training session with harbour seals and harbour porpoises and see the exhibitions.

Return to the Hotel Nyborg Strand at around 21:00.

The price of this excursion is 200 DKK (approximately \$36) and is payable at the registration desk.

Dinner will be available at the hotel for those who do not wish to take part in this excursion.

## Acknowledgments

We are grateful to the following for their generous support of this conference:

**Carlsberg Foundation**, Denmark  
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**University of Southern Denmark**, Odense  
**Graduate School on Sense Organs, Nerve Systems, Behavior and Communication**, Denmark

We thank the following organisations for their assistance in making this conference possible:

**Center for Comparative and Evolutionary Biology of Hearing, University of Maryland**, USA  
**The Fjord and Bælt Centre of Kerteminde**, Denmark  
**University of Southern Denmark, Odense**, Denmark  
**University of Maryland, College Park, Maryland**, USA

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Finally, we thank the members of the Conference Advisory Board:

**Dr. Douglas Cato**, Defence Science and Technology Organisation & University of Sydney Institute of Marine Science, Australia  
**Dr. Roger Gentry**, ProScience Inc, Poolesville, MD, USA  
**Dr. Robert Gisiner**, Office of Naval Research, Arlington, VA, USA  
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**Dr. Peter Madsen**, University of Aarhus, Denmark  
**Dr. Lee Miller**, University of Southern Denmark, Odense, Denmark  
**Dr. Sofie van Parijs**, Northeast Fisheries Science Center, Woods Hole, MA, USA  
**Dr Mark Tasker**, Joint Nature Conservation Committee, UK  
**Dr. Lidia Wysocki**, University of Vienna, Austria

## Programme Organisers

**Anthony D. Hawkins**, Loughine Ltd & University of Aberdeen, UK  
**Arthur N. Popper**, University of Maryland, USA  
**Peter Tyack**, Woods Hole Oceanographic Institute, USA  
**Magnus Wahlberg**, Fjord & Bælt Centre, Denmark

With the assistance of **Lidia Eva Wysocki**, University of Vienna, Austria

NB. Instead of handing out expensive conference mementos, we have used those funds to provide support for additional students to attend the meeting. Individuals wishing “mementos” of the meeting should go to [www.NoiseEffects.umd.edu](http://www.NoiseEffects.umd.edu) for a selection of shirts, hats, mugs and other items with the meeting logo.

**Programme**  
**Day 1: Monday Morning**

**Opening**  
**Chair: Arthur N. Popper**

- 08:30 Opening of the meeting – *Arthur N. Popper*
- 08:40 Welcome to Denmark – *Axel Michelsen*
- 08:50 Effects of noise on aquatic life: The key issues – *Anthony D. Hawkins*
- 09:10 Keynote Talk: Effects of noise on aquatic life: Much known, much unknown – *W. John Richardson*

**Session 1: Background on hearing and effects of sound on animals**  
**Chair: Arthur N. Popper**

- 09:40 Creation of noise standards for man: 50 years of research – *Donald Henderson*
- 10:10 Break
- 10:30 Masking – *Robert J. Dooling*
- 11:00 Auditory scene analysis – *Richard R. Fay*
- 11:30 Designing experiments to test for behavioural effects of sound - *Peter K. McGregor*
- 12:00 Marine mammal noise exposure criteria: Initial scientific recommendations – *Roger L. Gentry, Brandon L. Southall, Ann E. Bowles, William T. Ellison, James J. Finneran, Charles R. Greene, Jr., David Kastak, Darlene R. Ketten, James H. Miller, Paul E. Nachtigall, W. John Richardson, Jeanette A. Thomas and Peter L. Tyack*
- 12:30 Lunch

**Day 1: Monday Afternoon**

**Session 2: How animals use sound**  
**Chair: Roger Gentry**

- 13:30 How do marine invertebrates detect and use acoustic stimuli? - *Hans Erik Karlsen*
- 13:50 Acoustic communication in marine fishes – *David A. Mann and James V. Locascio*
- 14:10 Sound communication in fishes and the influence of ambient and anthropogenic noise - *Friedrich Ladich*
- 14:30 Hearing and acoustic communication underwater in the clawed frog *Xenopus l. laevis* - *Andreas Elepfandt*
- 14:50 The effects of noise on echolocating odontocetes - *Whitlow W. L. Au*
- 15:10 Acoustic communication in mysticetes - *Susan E. Parks and Christopher W. Clark*
- 15:30 Break
- 16:00 Discussion and questions
- 17:00 Poster Session One (see page 11)
- 19:15 Dinner

## Day 2: Tuesday Morning

### Session 3: The detection of sound by aquatic organisms Chair: *Robert Gisin*

- 08:30 Anthropogenic sound sources and the lateral line system - *Sheryl Coombs*
- 08:50 A review of auditory function of sea turtles - *Soraya Moein Bartol*
- 09:10 Amphibian underwater hearing: Biophysics and neurophysiology - *Jakob Christensen-Dalsgaard and Taffeta M. Elliott*
- 09:30 Detection of sound by fish: A minireview - *Olav Sand*
- 09:50 Hearing in marine carnivores – *Colleen Reichmuth*
- 10:10 Recent directions in odontocete cetacean hearing - *Paul E. Nachtigall*
- 10:30 Break
- 10:50 Discussion and questions

### Session 4: Sources of underwater sound Chair: *Mardi Hastings*

- 11:20 Ambient noise and its significance to aquatic life - *Douglas H. Cato*
- 11:40 The contribution of biological sound sources to underwater ambient noise levels - *Magnus Wahlberg*
- 12:00 Ocean noise budgets - *James H. Miller, Jeffrey A. Nystuen and David I. Bradley*
- 12:20 Discussion and questions
- 12:30 Lunch

## Day 2: Tuesday Afternoon

- 13:30 Poster Session One continued

### Session 5: Presentation of selected posters and discussion of posters Chair: *Soraya Moein Bartol*

- 15:00 Presentation of selected posters: A8 (*Cranford et al.*); A14 (*Kastak*); A19 (*Luczkovich & Keusenkothen*); A20 (*Lugli*); A23 (*Mulsow & Reichmuth*); A26 (*Picciulin et al.*) (Five minutes/poster)
- 15:30 General discussion of all posters

### **Day 3: Wednesday Morning**

#### **Session 6: Anthropogenic sources**

**Chair: Lee Miller**

- 08:30 Metrics - *Charles R. Greene, Jr.*
- 09:00 Underwater sound from marine pile driving – *Richard B. Rodkin and James A. Reyff*
- 09:20 Criteria for assessing ship noise and other broadband pseudo-random noise - *Richard A. Hazelwood*
- 09:40 Underwater noise from construction and operation of offshore wind farms - *Jakob Tougaard, Peter T. Madsen and Magnus Wahlberg*
- 10:00 The marine seismic airgun - *Robert M. Laws and David Hedgeland*
- 10:20 Break
- 10:40 Air gun arrays as noise sources: Output, impact zones and frequency content - *Peter T. Madsen*
- 11:00 Active sonar acoustics - *David M. Fromm*
- 11:20 Discussion and questions
- 12:00 Break
- 12:30 Lunch

### **Day 3: Wednesday Afternoon**

#### **Session 7: Effects of anthropogenic sound on aquatic animals**

**Chair: Lidia Eva Wysocki**

- 13:30 Underwater ears and the physiology of impacts: Comparative liability for hearing loss in sea turtles, birds and mammals – *Darlene R. Ketten*
- 13:50 Auditory effects of intense sounds on odontocetes: Continuous, intermittent and impulsive exposures – *James J. Finneran*
- 14:10 Effects of underwater sound fields on tissues containing gas – *Diane Dalecki*
- 14:30 Barotrauma in aquatic animals – *Mardi Hastings and Thomas Carlson*
- 15:00 Break
- 15:20 Discussion and questions
- 16:00 Excursion**

## **Day 4: Thursday Morning**

### **Session 8: Effects of anthropogenic sound on aquatic animals**

**Chair: Mark Tasker**

- 08:30 Marine invertebrates, intense anthropogenic noise and squid response to seismic survey pulses – *Robert D. McCauley and Jane Fewtrell*
- 08:50 Effects of anthropogenic sounds on fish – *Arthur N. Popper and Svein Løkkeborg*
- 09:10 Valuable lessons from studies evaluating impacts of cetacean-watch tourism - *Lars Bejder and David Lusseau*
- 09:30 Assessing effects of anthropogenic noise on the behaviour of marine mammals - *Douglas P. Nowacek and Peter L. Tyack*
- 09:50 Elaboration of the NRC population consequences of acoustic disturbance (PCAD) model – *Douglas Wartzok and Peter Tyack*
- 10:10 Break
- 10:30 Discussion and questions
- 11:30 Poster Session Two (see page 13)
- 12:20 Lunch

## **Day 4: Thursday Afternoon**

### **Session 9: Regulatory issues**

**Chair: Peter Madsen**

- 13:30 Mitigation – *Charles Greene and Susanna B. Blackwell*
- 14:00 Overview of regulations for the conservation and protection of organisms in European seas - *Mark L. Tasker*
- 14:20 U.S. regulation of the effects of sound on marine life: NOAA's mandates and use of scientific information - *Brandon Southall, Craig Johnson, Amy Scholik, Tammy Adams, Jolie Harrison and Ken Hollingshead*
- 14:40 Environmental compliance by the Royal Australian Navy – *Stephen Cole*
- 15:00 Break

### **Session 10: Presentation of selected posters and discussion of posters**

**Chair: Olav Sand**

- 15:20 Presentation of selected posters: B5 (*Carr & Erbe*); B8 (*Götz & Janik*); B21 (*Mate*); B28 (*Polglaze*); B39 (*Supin & Popov*); B45 (*Wilson et al.*) (Five minutes/poster)
- 3:50 Discussion of all posters and regulatory issues
- 19:15 Banquet**

## **Day 5: Friday Morning**

### **Final discussion session**

**Chair: *Darlene Ketten***

- 08:30 Regulation: Rapporteur – *Anthony D. Hawkins*  
Detection and use of sound: Rapporteur – *W. John Richardson*  
Effects of sound: Rapporteur – *Douglas H. Cato*  
Sources: Rapporteur – *Sarah Dolman*
- 10:30 Break
- 11:00 Final discussion, questions and thoughts – *Chaired by Magnus Wahlberg*
- 11:40 Closing remarks by organizers
- 12:30 Lunch
- 13:30 Depart**

## Poster Papers

### Session A (Monday and Tuesday)

*Posters should be placed on the board corresponding to the assigned poster number given below. Posters can be put in place on Sunday afternoon or evening or early Monday morning.*

1. **Acebes, J.M., Darling, J. & Aca, E.Q.** Dynamite blasts in a humpback whale (*Megaptera novaeangliae*) breeding ground, Babuyan Islands, Philippines.
2. **André, M., Månuel, A., Danobeitia, J-J., Rolin, J.-F. & Person, R.** Biological and anthropogenic sound sources: Effects and control in the European seas observatory network (ESONET).
3. **Arbelo, M., Bernaldo de Quirós, Y., Sierra, E., Méndez, M., Godinho, A., Ramírez, G., Caballero, M.J. & Fernández, A.** Atypical beaked whale mass stranding in Almería's coasts: Pathological study.
4. **Boebel, O., Klinck, H., Kindermann, L. & El Naggar, S.** PALAOA: Broadband recordings of the Antarctic coastal soundscape.
5. **Codarin, A., Spoto, M. & Picciulin, M.** One-year characterization of sea ambient noise in a coastal marine protected area: A management tool for inshore MPAs.
6. **Codarin, A., Wysocki, L.E., Ladich, F. & Picciulin, M.** Hearing under ambient and ship noise conditions: A case study on fishes from a protected area in the Adriatic Sea.
7. **Cowan, D.F.** Pathological assessment of acoustic noise effects in stranded dolphins.
8. **Cranford, T. Krysl, P. & Hildebrand, J.** Sound pathways revealed: Simulated sound transmission and reception in Cuvier's beaked whale (*Ziphius cavirostris*) using the vibro-acoustic toolkit.
9. **Di Iorio, L.** Potential masking of blue whale calls through seismic air gun noise.
10. **Doksæter, L., Kvadsheim, P.H., Godø, O.R., Benders, F.P.A., Miller, P.J.O., Lam, F.-P., Handegard, N.O. & Hjellvik, V.** Observations of the behaviour of herring exposed to low- (1-2 kHz) and mid- (6-7 kHz) frequency sonar signals.
11. **Elepfandt, A.** Lateral line scene analysis.
12. **Holt, M.M., Veirs, V. & Veirs, S.** Noise effects on the call amplitude of southern resident killer whales (*Orcinus orca*).
13. **Jensen, F.H., Wahlberg, M., Bejder, L. & Madsen, P.T.** Noise levels and masking potential of small whale watching and research vessels around two delphinid species.
14. **Kastak, D.** Effects of noise on seals and sea lions: Laboratory approaches.
15. **Kastelein, R.A.** Effects of vibrations on the behaviour of cockles (bivalve molluscs).
16. **Langård, L., Øvredal, J.T., Johannessen, A., Nøttestad, L., Skaret, G., Fernö, A. & Wahlberg, M.** Sound production in prespawning herring, cod and haddock in a naturally enclosed ecosystem.
17. **Lemon, M., Cato, D., Lynch, T. & Harcourt, R.** Short-term behavioural response of bottlenose dolphins (*Tursiops aduncus*) to recreational powerboats.
18. **Lucke, K., Lepper, P., Blanchet, M.-A. & Siebert, U.** Testing the acoustic tolerance of harbour porpoise hearing for impulsive sounds.
19. **Luczkovich, J.J. & Keusenkothen, M.A.** Can longspine squirrelfish hear bottlenose dolphin?
20. **Lugli, M.** The role of ambient noise as selective factor for frequencies used in fish acoustic communication.

21. **McCauley, R.D., & Fewtrell, J.** Experiments and observations of fish exposed to nearby seismic survey pulses.
22. **Mountain, D.C., Zosuls, A., Newburg, S. & Ketten, D.R.** Predicting cetacean audiograms.
23. **Mulsow, J. & Reichmuth, C.** Amplitude-vs.-rate transfer functions to tone burst stimuli in the California sea lion (*Zalophus californianus*).
24. **Murphy, M.** Seismic survey: Promoting coexistence between the fishing and petroleum industries in Newfoundland and Labrador.
25. **Parks, S.E., Clark, C.W. & Tyack, P.L.** Long- and short-term changes in right whale acoustic behavior in increased low-frequency noise.
26. **Picciulin, M., Codarin, A. & Spoto, M.** Characterization of small-boat noises compared with the chorus of *Sciaena umbra* (Sciaenidae).
27. **Popper, A.N., Comeau, L.A. & Campana, S.** Determination of the effects of seismic exploration on fish (project SELFISH).
28. **Radford, C.A., Jeffs, A.G., Tindle, C.T. & Montgomery, J.C.** Ambient noise in shallow temperate waters around northeastern New Zealand.
29. **Robinson, N.E., Chaudry, F., Clark, N.M., Duguid, G. & Walker, R.N.** Is passive acoustic monitoring during seismic surveys a valuable tool for mitigation?
30. **Schack, H.B., Malte, H. & Madsen, P.T.** Effects of intense ultrasound on Atlantic cod, *Gadus morhua*.
31. **Simard, Y., Roy, N. & Gervaise, C.** Masking of blue and fin whales low-frequency vocalizations by shipping noise in the Saguenay—St. Lawrence Marine Park.
32. **Simpson, S.D.** The sounds of the reef: Can we learn to listen before it is too late?
33. **Smies, M. & Gentry, R.L.** Oil and gas activities and sound and marine life: An international joint industry research and development programme.
34. **Southall, B.L., Bowles, A.E., Ellison, W.T., Finneran, J.J., Gentry, R.L., Greene, C.R., Jr., Kastak, D., Ketten, D.R., Miller, J.H., Nachtigall, P.E., Richardson, W.J., Thomas, J.A. & Tyack, P.L.** Marine mammal noise exposure criteria: Initial scientific recommendations.
35. **Spinks, J.A.L., Stead, S.M., Downie, M.J. & Bentley, M.G.** Perceptions of underwater noise from offshore wind farms and effects on the environment and local communities.
36. **Stage, B., Stæhr, K.-J., Nielsen, R. & Lundgren, B.** Observed reactions of fish in captivity to replayed vessel noise sounds from the fisheries research vessel Dana.
37. **Stimpert, A.K. & Au, W.W.L.** Humpback whale (*Megaptera noveangliae*) social sounds in Hawai'i.
38. **Streever, B., Angliss, R.P., Suydam, R., Ahmaoga, M., Bailey, C., Blackwell, S.B., George, J.C., Greene, C.R., Jr., Jakubczak, R.S., Lefevre, J., McDonald, T.L., Napageak, T. & Richardson, W.J.** Progress through collaboration: A case study examining effects of industrial sounds on bowhead whales.
39. **Stummer, M. & Ladich, F.** How does aquaria and pond noise affect hearing in different fish species?
40. **Thomsen, B.** An experiment on how seismic shooting affects caged fish.
41. **Thomsen, F., Luedemann, K., Piper, W., Judd, W. & Kafemann, R.** Potential effects of offshore wind farm noise on fish.
42. **Tsoflias, S.L. & Young, J.** Marine seismic operations.
43. **Tun, T.** Sound signals used in castnet fishing with the help of Irrawaddy dolphins.
44. **Vasconcelos, R.O., Amorim, C.P. & Ladich, F.** Ship noise affects acoustic communication in the Lusitanian toadfish.

45. **Vigness Raposa, J.J., Scowcroft, G., Knowlton, C. & Worcester, P.F.** The *Discovery of Sound in the Sea website*: An educational resource.
46. **Von Lüders, S. & Gill, A.** Marine mammal observers: Real-time mitigation of anthropogenic noise.
47. **Winsor, M. & Mate, B.R.** Seismic survey activity and the proximity of satellite-tagged sperm whales (*Physeter macrocephalus*) in the Gulf of Mexico.
48. **Nøttestad, L., Brehmer, P., Josse, E., Doksæter, L., Pavan, G., Sancho, G., Gosselin, J.-F., Lebourges-Dhaussy, A., Georgakarakos, S., Aumeeruddy, R. & Dalen, J.** Do whales really care about conventional fisheries acoustics?

## Poster Papers

### Session B (Wednesday and Thursday)

*Posters should be placed on the board corresponding to the assigned poster number given below. Posters can be put in place on Wednesday morning.*

1. **Babaran, R., Anraku., K., Ishizaki, M., Watanabe, K. & Matsuoka, T.** Comparison of auditory sensitivity of pelagic fish with the sound generated by a fish aggregation device.
2. **Borsani, J.F., Clark, C.W. & Scarpiniti, M.** Fin whales avoid loud rhythmic low-frequency sounds in the Ligurian Sea.
3. **Burkhardt, E., Boebel, O., Bornemann, H. & Ruholl, C.** Risk assessment of scientific sonars.
4. **Cameron, B., Mageau, C. & Smyth, R.** Canada's approach to mitigation of seismic sound in the marine environment.
5. **Carr, S.A. & Erbe, C.** Assessing the impact of underwater noise on marine fauna: A software tool.
6. **Coers, A., Bouton, N., Vincourt, D. & Slabbekoorn, H.** Fluctuating noise conditions may limit acoustic communication distance in the rock-pool blenny.
7. **Dolman, S.J., Jopling, B.C. & Simmonds, M.P.** The worldwide extent of seismic exploration, 1994-2004.
8. **Götz, T. & Janik, V.** The acoustic startle response in phocids: An initiator of extreme behavioural responses to anthropogenic noise.
9. **Halvorsen, M., Carlson, T. & Popper, A.N.** Effects of exposure to pile-driving sounds on fish.
10. **Hastings, M.** Sound exposure metrics for aquatic animals.
11. **Heise, K. & Barrett-Lennard, L.** The calm before the storm: The need for baseline acoustic studies off the central and north coasts of British Columbia, Canada.
12. **Houser, D.S., Dankiewicz, L.A., Stockard, T.K. & Ponganis, P.J.** Ultrasound inspection for intravascular bubbles in a repetitively diving dolphin.
13. **Kastelein, R.A., Van der Heul, S., Verboom, W. & Reijnders, P.** Acoustic dose-response effects in marine fish.
14. **Knudsen, F.R., Gammelsæter, O.B., Kvadsheim, P.H. & Nøttestad, L.** Evaluation of fisheries sonars for whale detection in relation to seismic survey operations.
15. **Lavender, A.L., Avery, H.W., Bien, W.F., Spotila, J.R. & Standora, E.A.** The behavioural and physiological effects of anthropogenic sound on the diamondback terrapin, a model estuarine vertebrate.

16. **Lazauski, C. & Mitchell, G.** Use of Monte Carlo methods to determine the sensitivity of acoustic exposure simulations.
17. **Li, S., Akamatsu, T., Wang, D., Wang, K., Dong, S., Zhao, X., Wei, Z., Zhang, X., Taylor, B., Barrett, L.A., Turvey, S.T., Reeves, R.R., Stewart, B.S., Richlen, M. & Brandon, J.R.** Indirect evidence of boat avoidance behaviour of Yangtze finless porpoises.
18. **Luczkovich, J.J. & Sprague, M.W.** Does boat noise affect spawning sound production of soniferous fish in shallow estuarine systems?
19. **Ludwig, S., Nissen, I. & Knoll, M.** The German sound propagation model MOCASSIN: Integration of a marine mammal database for improving protection measures.
20. **Martin, J.S. & Rogers, P.H.** Sound exposure chamber for assessing the effects of high-intensity sound on fish.
21. **Mate, B.R.** Technical instrumentation issues related to the design and execution of a controlled exposure experiment (CEE) for large cetaceans to assess possible behavioural responses and potential impacts.
22. **McCauley, R.D., Rennie, S.R., Hughes, J.R. & Duncan, A.J.** Transmission of marine seismic signals in Australian waters.
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