

## **Important literature on ocean noise**

Amrhein, V. & Erne, N. (2006) Dawn singing reflects past territorial challenges in the winter wren. *Animal Behavior* 71, 1075-1080.

Antunes R., Kvadsheim P.H., Lam F.P.A., Tyack, P.L., Thomas, L., Wensveen P.J., Miller P. J. O. (2014). High response thresholds for avoidance of sonar by free-ranging long-finned pilot whales (*Globicephala melas*). *Mar. Poll. Bull.*83: 165-180. DOI: 10.1016/j.marpolbul.2014.03.056

Alves, A., Antunes, R., Bird, A., Tyack, P., Miller, P.J.O., Lam, F.P.A. and Kvadsheim, P.H. (2014). Vocal matching of naval sonar signals by long-finned pilot whales (*Globicephala melas*). *Marine Mammal Sci* 30: 1248-1257. DOI: 10.1111/mms.12099.

Aoki K, Sakai M, Miller PJO, Visser F, Sato K (2013) Body contact and synchronous dives in pilot whales. *Behavioural Processes* 99, 12-20.

Baggenstoss, P. (2011) An algorithm for the localization of multiple interfering sperm whale using multi-sensor time difference of arrival. *The Journal of the Acoustical Society of America*, 130

Baggenstoss, P. (2011) Separation of sperm whale click trains for multipath rejection. *The Journal of the Acoustical Society of America*, 130: 3598-3609

Beltran, R., Peterson, S., McHuron, E., Reichmuth, C. et al. (2016) Seals and sea lions are what they eat, plus what? Determination of trophic discrimination factors for seven pinniped species. *Rapid Communications in Mass Spectrometry*, 30: 1115-1122

Blickley, J. L., and Patricelli, G. L. (2010). "Impacts of Anthropogenic Noise on Wildlife: Research Priorities for the Development of Standards and Mitigation," *Journal of International Wildlife Law & Policy* 13, 274-292.

Block, B., Jonsen, I., Jorgensen, S., Winship, A. et al. (2011) Tracking apex marine predator movements in a dynamic ocean. *Nature Letter*, 475: 86-90

Boughter B., Hood, J., Theriault, J. and Moors, H. (2012) Generalized marine mammal detection based on improved band-limiting processing. *Proceedings of Meetings on Acoustics*, 17. ECUA 2012 11th European Conference on Underwater Acoustics

Boyd, I. (2012)

Cabrelli, A., Harwood, J., Matthiopoulos, J., New, L. et al. (2009). A critical review of the literature on population modelling. CREEM Technical Report 2009-2

Cato, D., Noad, M., Dunlop, R., McCauley, R. et al. (2012) Project BRAHSS: Behavioural response of Australian Humpback whales to seismic surveys. Proceedings of Acoustics 2012-Fremantle. 21-23 November.

Curé, C., Antunes, R., Alves, AC., Visser, F., Kvadsheim, PH., & Miller, PLO (2013). Responses of male sperm whales (*Physeter macrocephalus*) to killer whale sounds: implications for anti-

- Erbe, C., Reichmuth, C., Cunningham, C., Lucke, K., and Dooling, R. (2016). "Communication masking in marine mammals: A review and research strategy," *Marine Pollution Bulletin* 103, 15-38.
- Fahlman A, Tyack PL, Miller PJ and Kvadsheim PH (2014). How man-made interference might cause gas bubble emboli in deep diving whales? *Frontiers in Physiology* 5: 1-6.
- Fais, A., Aguilar Soto, N., Johnson, M. Pérez-González, C., Miller, P. J. O., Madsen, P. T. (2015) Sperm whale echolocation behaviour reveals a directed prior—based strategy informed by prey distribution. *Behavioural Ecology and Sociobiology* 69: 663-674.
- Farcas, A., Thompson, P. M., and Merchant, N. D. (2016) "Underwater noise modelling for environmental impact assessment," *Environmental Impact Assessment Review* 57, 114-122.
- Finneran, J. (2012) Auditory effects of underwater noise on odontocetes. *The Effects of Noise on Aquatic Life. Advances in Experimental Medicine and Biology* 730: 197-202
- Finneran, J., Branstetter, B. (2013) Effects of noise and sound perception in marine mammals.

- Tyack, P.L. (2013) Blue whales respond to simulated mid-frequency military sonar. *Proceedings of the Royal Society B*. 280(1765), 20130657. doi:10.1098/rspb.2013.0657
- Hassrick, J., Crocker, D., Teutschel, N., McDonald, B. et al. (2009) Condition and mass impact oxygen stores and dive duration in adult female northern elephant seals. *The Journal of Experimental Biology*, 213: 585-592
- Hastie, G.D., Russell, D.J.F., McConnell, B., Moss, S., Thompson, D. & Janik, V.M. (2015) Sound exposure in harbour seals during the installation of an offshore wind farm: predictions of auditory damage. *Journal of Applied Ecology* 52, 631-640.
- Hatch, L. T., and Wright, A. S. (2007). "A Brief Review of Anthropogenic Sound in the Oceans," *International Journal of Comparative Psychology* 20, 121-133.
- Hatch, L., Clark, C., Merrick, R., Van Parijs, S., Ponirakis, D., Schwehr, K., Thompson, M., and Wiley, D. (2008). "Characterizing the Relative Contributions of Large Vessels to Total Ocean Noise Fields: A Case Study Using the Gerry E. Studds Stellwagen Bank National Marine Sanctuary," *Environmental Management* 42, 735-752.
- Hatch, L. T., and Fristrup, K. M. (2009). "No barrier at the boundaries: implementing regional frameworks for noise management in protected natural areas," *Mar Ecol Prog Ser* 395, 223-244.
- Hatch, L. T., Clark, C. W., Van Parijs, S. M., Frankel, A. S., and Ponirakis, D. W. (2012). "Quantifying Loss of Acoustic Communication Space for Right Whales in and around a U.S. National Marine Sanctuary," *Conservation Biology* 26, 983-994.
- Hazen, E., Jorgensen, S., Rykaczewski, R., Bograd, S. et al. (2012) Predicted habitat shifts of Pacific top predators in a changing climate. *Letters. Nature Climate Change* doi: 10.1038/NCLIMATE1686
- Hildebrand, J. A. (2004). "Sources of Anthropogenic Sound in the Marine Environment," in *International Policy Workshop on Sound and Marine Mammals*, edited by Marine Mammal Commission, and Joint Nature Conservaton (London, U K), p. 16.
- Hildebrand, J. (2009). "Anthropogenic and natural sources of ambient noise in the ocean," *Mar Ecol Prog Ser* 395, 5-20.
- Hood, J., Flogeras, D. and Theriault, J. (2016) Improved passive acoustic band-limited energy detection for cetaceans. *Applied Acoustics*, 106: 36-41
- Hooker, S., Fahlman, A., Moore, M., Aguilar de Soto, N. et al. (2011) Deadly diving? Physiological and behavioural management of decompression stress in diving mammals. *Proceedings of the Royal Society B*, 279: 1041-50
- Horowitz, C., and Jasny, M. (2007). "Precautionary Management of Noise: Lessons from the U.S. Marine Mammal Protection Act," *Journal of International Wildlife Law & Policy* 10, 225 - 232.

Houser, D., Dankiewicz-

implications for anthropogenic disturbance studies. *Marine Mammal Science*. doi:  
10.1111/mms.12375

Koski, W., Abigail, P. and Yazvenko, S. (2009) A review and inventory of unmanned aerial systems for detection and monitoring of key biological resources and physical parameters affecting marine life during offshore exploration. Joint Industry Programme on E&P Sound and Marine Life

Küsel, E., Mellinger, D., Thomas, L., Marques, D. et al. (2011) Cetacean population density estimation from single fixed sensors using passive acoustics. *Journal of the Acoustical Society of America*, 129: 3610-3622

Kvadsheim, P, F Benders, P Miller, L Doksæter, F Knudsen, P Tyack, N Nordlund, FPA Lam, F Samarra, L Kleivane and OR Godø (2007). Herring (sild), killer whales (spekkhogger) and sonar – the 3S-2006 cruise report with preliminary results. FFI report 2007/01189

(<http://rapporter.ffi.no/rapporter/2007/01189.pdf>)  
L Kleivane and FPA (2007). Herring (sild), killer whales (spekkhogger) and sonar – the 3S-2006 cruise report with preliminary results. FFI report 2007/01189  
(<http://rapporter.ffi.no/rapporter/2007/01189.pdf>)

Lawson, G., Huckstadt, L., Lavery, A., Jaffre, F. et al. (2015) Development of an animal-borne sonar tag for quantifying prey availability: Test deployments on northern elephant seals. *Animal Biotelemetry*, 3:22 1-16

Mann, J. (1999) Behavioral sampling methods for cetaceans: a review and critique. *Marine Mammal Science*.15, 102-122. 37

Maresh, J., Simmons, S., Crocker, D., McDonald, B. et al. (2014) Free-swimming northern elephant seals have low field metabolic rates that are sensitive to an increased cost of transport. *The Journal of Experimental Biology*, 217: 1485-1495

Maresh, J., Adachi, T., Takahashi, A., Naito, Y. et al. (2015) Summing the strokes: Energy economy in northern elephant seals during large scale foraging migrations. *Movement Ecology*, 3:22 1-16

Marques, T., Thomas, L., Ward, J., DiMarzio, N. et al. (2009) Estimating cetacean population density using fixed passive acoustic: An example with Blainvilles beaked whales. *The Journal of the Acoustical Society of America*, 125: 1982-1994 1994 a4(s)-15t m7(r)4 Tw -288(r)5(a)-diJ ( )T4(t)- h



McHuron, E., Peterson, S., Ackerman, J., Melin, S. et al. (2015) Effects of age, colony and sex in mercury concentrations in California Sea Lions. *Archives of Environmental Contamination and Toxicology*, 70: 46-55

Mellinger, D., Martin, S., Morrissey, R., Thomas, L. et al. (2010) A method for detecting whistles, moans and other frequency contour sounds. *Journal of the Acoustical Society of America*, 129: 4055-4061

Merchant, N. D., Blondel, P., Dakin, D. T., and Dorocicz, J. (2012). "Averaging underwater noise levels for environmental assessment of shipping," *The Journal of the Acoustical Society of America* 132, EL343-EL349.

Merchant, N. D., Pirotta, E., Barton, T. R., and Thompson, P. M. (2014). "Monitoring ship noise to assess the impact of coastal developments on marine mammals," *Marine Pollution Bulletin* 78.

Merchant, N. D., Fristrup, K. M., Johnson, M. P., Tyack, P. L., Witt, M. J., Blondel, P., and Parks, S. E. (2015). "Measuring acoustic habitats," *Methods in Ecology and Evolution* 6, 257-265.

Merchant, N. D., Brookes, K. L., Faulkner, R. C., Bicknell, A. W. J., Godley, B. J., and Witt, M. J. (2016). "Underwater noise levels in UK waters," *Scientific Reports* 6, 36942.

Miller, P.J.O., Johnson, M.P., Madsen, P.T., Biassoni, N., Quero, M., & Tyack, P.L. (2009) Using at-sea experiments to study the effects of airguns on the foraging behavior of sperm whales in the Gulf of Mexico. *Deep-Sea Research I* 56, 1168-1181.

Miller, P.J.O., Antunes, R., Alves, A.C., Wensveen, P., Kvadsheim, P.H., Kleivane L., Nordlund, N., Lam, F.P., vanIjsselmuide, S., Visser, F., and Tyack, P. (2011). The 3S experiments: studying the behavioral effects of sonar on killer whales (*Orcinus orca*), sperm whales (*Physeter macrocephalus*), and long-finned pilot whales (*Globicephala melas*) in Norwegian waters. *Scottish Ocean Inst. Tech. Rept. SOI-2011-001* (<http://soi.st-andrews.ac.uk/documents/424.pdf>)

Miller, P.J.O., Kvadsheim, P.H., Lam, F.P.A., Wensveen, P.J., Antunes, R., Alves, A.C., Visser, F., Kleivane, L., Tyack, P.L., Sivle, L.D. (2012). The severity of behavioral changes observed during experimental exposures of killer (*Orcinus orca*), long-finned pilot (*Globicephala melas*), and sperm whales (*Physeter macrocephalus*) to naval sonar. *Aquatic Mammals* 38: 362-401.

Miller, P.J.O., R.N. Antunes, P.J. Wensveen, F.I.P. Samarra, A. Catarina Alves, P.H. Kvadsheim, L. Kleivana, F.-P.A. Lam, M.A. Ainsle, P.L. Tyack & L. Thomas. (2014) Dose-response relationships for the onset of avoidance of sonar rrcspe rof s4( r)c(5l(.,od .5A(c)-6(a)4())3(, l)-23d

Miller PJO, PH Kvadsheim, FPA Lam, PL Tyack, C. Cure, SL DeRuiter, L Kleivane, L Sivle, SP van IJsselmuide, F Visser, PJ Wensveen, AM von Benda-Beckmann, L Martin López, T Narazaki, SK Hooker (2015). First indications that northern bottlenose whales are sensitive to behavioural disturbance from anthropogenic noise. *R. Soc. open sci.* 2: 140484. <http://dx.doi.org/10.1098/rsos.140484> National Research Council (2003). *Ocean noise and marine mammals* (The National Academies Press, Washington).

Moretti, D., Marques, L., Thomas, N., DiMarzio, A. et al. (2010) A dive counting density estimation method for Blainvilles beaked whale (*Mesoplodon densirostris*) using a bottom-mounted hydrophone field as applied to a Mid-Frequency Active (MFA) sonar operation. *Applied Acoustics*, 71: 1036-2042

National Research Council (2005). *Marine mammal populations and ocean noise - determining when noise causes biologically significant effects* (National Academies Press, Washington).

Neo, Y.Y., Seitz, J., Kastelein, R., Winter, H.V., ten Cate C. & Slabbekoorn, H. (2014) Temporal structure of sound affects behavioural recovery from noise impact in European seabass. *Biological Conservation* 178:65–73.

Neo, Y.Y., Parie, L., Bakker, F., Snelderwaard, P., Tudorache, C., Schaaf, M. & Slabbekoorn, H. (2015) Behavioral changes in response to sound exposure and no spatial avoidance of noisy conditions in captive zebrafish. *Frontiers in Behavioral Neuroscience* 9:1–11. 38

New, L., Clark, J., Costa, D., Fleishman, E. et al. (2014) Using short-term measures of behaviour to estimate long-term fitness of southern elephant seals. *Marine Ecology Progress Series*, 496: 99-108

Noad, M. and Dunlop, R. (2016)

Peck, H., Costa, D. and Crocker, D. (2016) Body reserves influence allocation to immune response in capital breeding female northern elephant seals. *Functional Ecology*, 30:389-397

Reichmuth, C. (2012) Psychophysical studies of auditory masking in marine mammals: key concepts and new directions. *The Effects of Noise on Aquatic Life. Advances in Experimental Medicine and Biology*, 730: 23-27

Reichmuth, C., Ghaul, A., Sills, J., Rouse, A. et al. (2016) Low-frequency temporary threshold shift not observed in spotted or ringed seals exposed to single air gun impulses. *The Journal of the Acoustical Society of America*, 140 (4): 2646-2658

Richardson, W. J., Greene, C. R. J., Malme, C. I., and Thomson, D. H. (1995). *Marine mammals and noise* (Academic Press, San Diego).

Robinson, P., Simmons, S., Crocker, D. and Costa, D. (2010) Measurements of foraging success in a highly pelagic marine predator, the northern elephant seal. *Journal of Animal Ecology*, 79: 1146-1156

Rolland, R.M., Parks, S.E., Hunt, K.E., Castellote, M., Corkeron, P.J., Nowacek, D.P., Wasser, S.K. & Kraus, S.D. (2012) Evidence that ship noise increases stress in right whales.

Scott, K. N. (2004). "International Regulation Of Undersea Noise," *International and Comparative Law Quarterly* 53, 287-324.

Sills, J., Southall, B., Reichmuth, C. (2014) Amphibious hearing in spotted seals (*Phoca largha*): underwater audiograms, aerial audiograms and critical ratio measurements. *The Journal of Experimental Biology* 217: 726-734

Sills, J., Southall, B., Reichmuth, C. (2015) Amphibious hearing in ringed seals (*Pusa hispida*): underwater audiograms, aerial audiograms and critical ratio measurements. *The Journal of Experimental Biology* 218: 2250-2259 3.57 ()

Thomas, L. and Marques, T. (2012) Passive acoustic monitoring for estimating animal density. *Acoustics Today*, 8: 35-44

Thomsen, F., McCully, S., Weiss, L., Wood, D. et al. (2011) Cetacean stock assessments in relation to exploration and production industry activity and other human pressures: Review and data needs. *Aquatic Mammals* 37: 1-93

Tubelli, A., Zosuls, A., Ketten, D., Yamato, M. et al.

Winship, A., Jorgensen, S., Shaffer, S., Jonsen, I. et al. (2011) State-space framework for estimating measurement error from double-tagging telemetry. *Methods in Ecology and Evolution*, 3: 291-302

Young, K. and Keith, E. (2011) A comparative analysis of cetacean vital rates using matrix population modeling analysis of cetacean vital rates. *International Journal of Applied Science*

## **Papers submitted or in press**

Curé et al. (submitted). Biological significance of sperm whale responses to sonar: comparison with anti-predator responses. *Endangered Species Research*

Visser et al. (submitted). Disturbance-specific social responses in long-finned pilot whales.