

This list was generated from the Aquatic Acoustic Archive (<http://aquaticacousticarchive.com/literaturelibrary.php>), a database of acoustic and bioacoustic publications maintained by the International Quiet Ocean Experiment (IQOE), which is a project of the Scientific Committee on Oceanic Research (SCOR) and the Partnership for Observation of the Global Ocean (POGO). Links are included in the document where these could be found. (Version 2—2 March 2018)

Effects of Data Transmission Sounds

- [Kastelein, R.A., van der Heul, S., Verboom, W.C., Triesscheijn, R.J.V., and Jennings, N.V. 2006. The influence of underwater data transmission sounds on the displacement behaviour of captive harbour seals \(*Phoca vitulina*\). *Marine Environmental Research*, 61\(1\), 19-39, doi: 10.1016/j.marenvres.2005.04.001.](#)
- [Kastelein, R.A., Verboom, W.C., Muijsers, M., Jennings, N.V., and van der Heul, S. 2005. The influence of acoustic emissions for underwater data transmission on the behaviour of harbour porpoises \(*Phocoena phocoena*\) in a floating pen. *Marine Environmental Research*, 59\(4\), 287-307, doi: 10.1016/j.marenvres.2004.05.005.](#)
- [Stansbury, A.L., Götz, T., Deecke, V.B., & Janik, V.M. 2015. Grey seals use anthropogenic signals from acoustic tags to locate fish: evidence from a simulated foraging task. *Proc. R. Soc. B*. 282:20141595.](#)

Effects of Noise from Aerial Vehicles

- [Christiansen, F., Rojano-Doñate, L., Madsen, P.T., and Bejder, L. 2016. Noise Levels of Multi-Rotor Unmanned Aerial Vehicles with Implications for Potential Underwater Impacts on Marine Mammals. *Frontiers in Marine Science*, 3\(277\), doi: 10.3389/fmars.2016.00277.](#)
- [Patenaude, N.J., Richardson, W.J., Smultea, M.A., Koski, W.R., Miller, G.W., Würsig, B., and Greene, C.R. 2002. Aircraft sound and Disturbance to Bowhead and Beluga whales during spring migration in the Alaskan Beaufort Sea. *Marine Mammal Science*, 18\(2\), 309-335, doi: 10.1111/j.1748-7692.2002.tb01040.x.](#)
- [Perry, E.A., Boness, D.J., and Insley, S.J. 2002. Effects of sonic booms on breeding gray seals and harbor seals on Sable Island, Canada. *The Journal of the Acoustical Society of America*, 111\(1\), 599-609.](#)

Effects of Noise from Aquaculture Production

- [Davidson, J., Bebak, J., and Mazik, P. 2009. The effects of aquaculture production noise on the growth, condition factor, feed conversion, and survival of rainbow trout, *Oncorhynchus mykiss*. *Aquaculture*, 288\(3-4\), 337-343, doi: 10.1016/j.aquaculture.2008.11.037.](#)
- [Wysocki, L.E., Davidson, J.W., Smith, M.E., Frankel, A.S., Ellison, W.T., Mazik, P.M., Popper, A.N., and Bebak, J. 2007. Effects of aquaculture production noise on hearing, growth, and disease resistance of rainbow trout *Oncorhynchus mykiss*. *Aquaculture*, 272\(1-4\), 687-697, doi: 10.1016/j.aquaculture.2007.07.225.](#)

Effects of Noise from AUVs

- [Patel, R., Handegard, N.O., and Godo, O.R. 2004. Behaviour of herring \(*Clupea harengus* L.\) towards an approaching autonomous underwater vehicle. *ICES Journal of Marine Science*, 61\(7\), 1044-1049, doi: 10.1016/j.icesjms.2004.07.002.](#)

Effects of Noise as a Deterrent

- Andersen, S., and Hawkins, A. 1978. Scaring seals by sound. *Mammal Review*, 8(1-2), 19-24.
- Brandt, M.J., Hoschle, C., Diederichs, A., Betke, K., Matuschek, R., and Nehls, G. (2013). Seal scarers as a tool to deter harbour porpoises from offshore construction sites. *Marine Ecology Progress Series*, 475, 291-302.
- [Erbe, C., and McPherson, C. 2012. Acoustic characterisation of bycatch mitigation pingers on Queensland Shark Control nets. *Endangered Species Research*, 19\(2\), 109-121, doi: 10.3354/esr00467.](#)
- Gervaise, C., and Andre, M. 2008. Optimal design of a whale of anti-collision system. *Traitement Du Signal*, 25(1-2), 13-27.
- Goodson, A.D. 1997. Developing deterrent devices designed to reduce the mortality of small cetaceans in commercial fishing nets. *Marine and Freshwater Behaviour and Physiology*, 29(1-4), 211-236.
- [Gotz, T., and Janik, V.M. 2010. Aversiveness of sounds in phocid seals: psycho-physiological factors, learning processes and motivation. *Journal of Experimental Biology*, 213\(9\), 1536-1548, doi: 10.1242/Jeb.035535.](#)
- Gotz, T., and Janik, V.M. 2013. Acoustic deterrent devices to prevent pinniped depredation: Efficiency, conservation concerns and possible solutions. *Marine Ecology Progress Series*, 492, 285-302.
- Götz, T., and Janik, V.M. 2010. Aversiveness of sounds in phocid seals: psycho-physiological factors, learning processes and motivation. *Journal of Experimental Biology*, 213, 1536-1548.
- Hardy, T., Williams, R., Caslake, R., and Tregenza, N. 2012. An investigation of acoustic deterrent devices to reduce cetacean bycatch in an inshore set net fishery. *Journal of Cetacean Research and Management*, 12(1):85-90.
- Jacobs, S.R., and Terhune, J.M. 2002. The effectiveness of acoustic harassment devices in the Bay of Fundy, Canada: Seal reactions and a noise exposure model. *Aquatic Mammals*, 28:147-158.
- Johnston, D.W. 2002. The effect of acoustic harassment devices on harbour porpoises (*Phocoena phocoena*) in the Bay of Fundy, Canada. *Biological Conservation* 108(1):113-118, doi: 10.1016/s0006-3207(02)00099-x.
- Kastelein, R.A., de Haan, D., Vaughan, N., Staal, C., & Schooneman, N.M. 2001. The influence of three acoustic alarms on the behaviour of harbour porpoises (*Phocoena phocoena*) in a floating pen. *Mar. Environ. Res.* 52:351-371.
- Kastelein, R.A., Jennings, N., Verboom, W.C., de Haan, D., & Schooneman, N.M. 2006. Differences in the responses of a striped dolphin (*Stenella coeruleoalba*) and a harbour porpoise (*Phocoena phocoena*) to an acoustic alarm. *Marine Environmental Research* 61:363-378.
- [Kastelein, R.A., van der Heul, S., Terhune, J.M., Verboom, W.C., and Triesscheijn, R.J.V. 2006. Deterring effects of 8-45 kHz tone pulses on harbour seals \(*Phoca vitulina*\) in a large pool. *Marine Environmental Research*, 62\(5\), 356-373, doi: 10.1016/j.marenvres.2006.05.004.](#)
- [Kastelein, R.A., Verboom, W.C., Jennings, N., and de Haan, D. 2008. Behavioural avoidance threshold level of a harbour porpoise \(*Phocoena phocoena*\) for a continuous 50 kHz pure tone \(L\). *Journal of the Acoustical Society of America*, 123\(4\), 1858-1861, doi: 10.1121/1.2874557.](#)

McPherson, G.R., Lien, J., Gribble, N.A., and Lane, B. 2000. Utilisation of an acoustic alarm strategy to minimise bycatch of humpback whales in Queensland coastal gill net fisheries. Humpback Whale Conference, 1-10.

[Stansbury, A.L., Gotz, T., Deecke, V.B., and Janik, V.M. 2014. Grey seals use anthropogenic signals from acoustic tags to locate fish: evidence from a simulated foraging task. *Proceedings of the Royal Society B*, 282\(1798\), doi: 10.1098/rspb.2014.1595.](#)

Effects of Noise from Dredging

[Todd, V.L.G., Todd, I.B., Gardiner, J.C., Morrin, E.C.N., Macpherson, N.A., Dimarzio, N.A., and Thomsen, F. 2015. A review of impacts of marine dredging activities on marine mammals. *ICES Journal of Marine Science* 77\(2\):328-340, doi: 10.1093/icesjms/fsu187](#)

Effects of Noise from Explosions

Demarchi, M., Holst, M., Robichaud, D., Waters, M., and MacGillivray, A. 2012. Responses of Stellar Sea Lions (*Eumetopias jubatus*) to In-Air Blast Noise from Military Explosions. *Aquatic Mammals* 38(3):279-289.

Finneran, J.J., Schlundt, C.E., Carder, D.A., Clark, J.A., & Young, J.A., Gaspin, J.B., and Ridgway, S.H. 1999. Auditory and behavioral responses of bottlenose dolphins (*Tursiops truncatus*) and a beluga whale (*Delphinapterus leucas*) to impulsive sounds resembling distant signatures of underwater explosions. *Journal of the Acoustical Society of America* 108:417-431.

Koschinski, S. 2011. Underwater Noise Pollution From Munitions Clearance and Disposal, Possible Effects on Marine Vertebrates, and Its Mitigation. *Marine Technology Society Journal* 45(6):80-88.

[Lien, J., Todd, S., Stevick, P., Marques, F., and Ketten, D. 1993. The reactions of humpback whales to underwater explosions: Orientation, movements, and behavior. *Journal of the Acoustical Society of America* 94\(3, Pt. 2\):1849.](#)

Todd, S., Stevick, P., Lien, J., Marques, F., and Ketten, D. 1996. Behavioural effects to underwater explosions in humpback whales (*Megaptera novaeangliae*). *Canadian Journal of Zoology* 74:1661-1672.

Viada, S.T., Hammer, R.M, Racca, R., Hannay, D., Thompson, M.J., Balcom, B.J., and Phillips, N.W. 2008. Review of potential impacts to sea turtles from underwater explosive removal of offshore structures. *Environmental Impact Assessment Review* 28(4-5):267-285.

Effects of Noise from Petroleum Production

[Awbrey, F.T., and Stewart, B.S. 1983. Behavioural responses of wild beluga whales \(*Delphinapterus leucas*\) to noise from oil drilling. *The Journal of the Acoustical Society of America* 74\(S1\):S54.](#)

[Blackwell, S.B., Lawson, J.W., and Williams, M.T. 2004. Tolerance by ringed seals \(*Phoca hispida*\) to impact pipe-driving and construction sounds at an oil production island. *Journal of the Acoustical Society of America* 115\(5\):2346-2357.](#)

Kyhn, L.A., Sveegaard, S., & Tougaard, J. 2014. Underwater noise emissions from a drillship in the Arctic. *Marine Pollution Bulletin* 86(1):424-433.

- Moulton, V.D., Richardson, W.J., and Williams, M.T. 2003. Ringed seal densities and noise near an icebound artificial island with construction and drilling. *Acoustics Research Letters Online* 4(4):112-117.
- Richardson, J.W., Fraker, M.A., Würsig, B., and Wells, R.S. 1985. Behaviour of Bowhead Whales *Balaena mysticetus* summering in the Beaufort Sea: Reactions to industrial activities. *Biological Conservation* 32(3):195-230, doi: 10.1016/0006-3207(85)90111-9.
- Richardson, W.J., Würsig, B., and Greene Jr., C.R. 1990. Reactions of Bowhead Whales, *Balaena mysticetus*, to Drilling and Dredging Noise in the Canadian Beaufort Sea. *Marine Environmental Research* 29:135-160.
- [Rossi-Santos, M.R. 2015. Oil Industry and Noise Pollution in the Humpback Whale \(*Megaptera novaeangliae*\) Soundscape Ecology of the Southwestern Atlantic Breeding Ground. *Journal of Coastal Research Online Journal* 31\(1\):184-195, doi: 10.2112/JCOASTRES-D-13-00195.1.](#)
- [Saxon Kendall, L., Sirovic, A., and Roth, E.H. 2013. Effects of construction noise on the Cook Inlet beluga whale \(*Delphinapterus leucas*\) vocal behavior. *Canadian Acoustics* 41\(3:3-13\).](#)
- Small, R.J., Brost, B., Hooten, M., Castellote, M., and Mondragon, J. 2017. Potential for spatial displacement of Cook Inlet beluga whales by anthropogenic noise in critical habitat. *Endangered Species Research* 32:43-57.
- 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.
- Würsig, B., and Greene Jr., C.R. 2002. Underwater sounds near a fuel receiving facility in western Hong Kong: relevance to dolphins. *Marine Environmental Research* 54:129-145.

Effects of Noise from Pile Driving

- Bailey, H., Senior, B., Simmons, D., Rusin, J., Picken, G., and Thompson, P.M. 2010. Assessing underwater noise levels during pile-driving at an offshore windfarm and its potential effects on marine mammals. *Marine Pollution Bulletin* 60(6):888-897, doi: 10.1016/j.marpolbul.2010.01.003.
- [Bellmann M.A. and P. Remmers, 2013. Noise mitigation systems \(NMS\) for reducing pile driving noise: Experiences with the “big bubble curtain” relating to noise reduction. *The Journal of the Acoustical Society of America* 134:4059 doi: <http://dx.doi.org/10.1121/1.4830813>](#)
- Brandt, M.J., Diederichs, A., Betke, K., and Nehls, G. 2011. Responses of harbour porpoises to pile driving at the Horns Rev II offshore wind farm in the Danish North Sea. *Marine Ecology Progress Series* 421:205-216.
- [Casper, B.M., Halvorsen, M.B., Matthews, F., Carlson, T.J., Popper, A.N. 2013. Recovery of Barotrauma Injuries Resulting from Exposure to Pile Driving Sound in Two Sizes of Hybrid Striped Bass. *PLoS One* 8\(9\):e73844.](#)
- David, J.A. 2006. Likely sensitivity of bottlenose dolphins to pile driving noise. *Water and Environment Journal* 20(1):48-54.
- [Kastelein, R.A., Gransier, R., and Jennings, N. 2013. Hearing thresholds of two harbour seals \(*Phoca vitulina*\) for playbacks of multiple pile driving strike sounds. *Journal of the Acoustical Society of America* 134\(3\):2307-2312.](#)

- Kendall, L.S., and Cornick, L.A. 2016. Behavior and distribution of Cook Inlet beluga whales, *Delphinapterus leucas*, before and during pile driving activity. *Marine Fisheries Review* 77(2):106-114, doi: 10.7755/MFR.77.2.6.
- [Paiva, E.G., Salgado Kent, C.P., Gagnon, M.M., McCauley, R., and Finn, H. 2015. Reduced detection of Indo-Pacific Bottlenose Dolphins \(*Tursiops aduncus*\) in an inner harbour channel during pile driving activities. *Aquatic Mammals* 41\(4\):455-468, doi: 10.1578/AM.41.4.2015.455.](#)
- Russel, D.J.F, Hastie, G.D., Thompson, D., Janik, V.M., Hammond, P.S., Scott-Hayward, L.A.S., Matthiopoulos, J., Jones, E.L., and McConnell, B.J. 2016. Avoidance of wind farms by harbour seals is limited to pile driving activities. *Journal of Applied Ecology* 53:1642–1652.
- [Thompson, P.M., Hastie, G.D., Nedwell, J., Barham, R., Brookes, K.L., et al. 2013. Framework for assessing impacts of pile-driving noise from offshore wind farm construction on a harbour seal population. *Environmental Impact Assessment Review* 43:73-85.](#)
- [Würsig, B., Greene Jr., C.R., and Jefferson, T.A. 2000. Development of an air bubble curtain to reduce underwater noise of percussive piling. *Marine Environmental Research* 49:79-93, doi: 10.1016/S0141-1136\(99\)00050-1.](#)

Effects of Noise from Research

- Boebel, O., Clarkson, P., Coates, R., Larter, R., O'Brien, P.E., Ploetz, J., Summerhayes, C., Tyack, T., Walton, D.W.H., and Wartzok, D. 2005. Risks posed to the Antarctic marine environment by acoustic instruments: a structured analysis. *Antarctic Science* 17(4):533-540, doi: 10.1017/S0954102005002956.
- [Bowles, A.E., Smultea, M., Würsig, B., DeMaster, D.P., and Palka, D. 1994. Relative abundance and behavior of marine mammals exposed to transmissions from the Heard Island Feasibility Test. *Journal of the Acoustical Society of America* 96:2469-2484.](#)
- Breitzke, M., and Bohlen, T. 2010. Modelling sound propagation in the Southern Ocean to estimate the acoustic impact of seismic research surveys on marine mammals. *Geophysical Journal International* 181(2):818-846, doi: 10.1111/j.1365-246X.2010.04541.x.
- [Costa, D.P., Crocker, D.E., Gedamke, J., Webb, P.M., Houser, D.S., Blackwell, S.B., Waples, D., Hayes, S.A., and Le Boeuf, B.J. 2003. The effect of a low-frequency sound source \(acoustic thermometry of the ocean climate\) on the diving behavior of juvenile northern elephant seals, *Mirounga angustirostris*. *Journal of the Acoustical Society of America* 113\(2\):1155-1165, doi: 10.1121/1.1538248.](#)
- Frankel, A.S., and Clark, C.W. 2002. ATOC and other factors affecting the distribution and abundance of humpback whales (*Megaptera novaeangliae*) off the north shore of Kauai. *Marine Mammal Science* 18(3):644-662.
- Herman, L.M. 1994. Hawaiian humpback whales and ATOC: A conflict of interests. *The Journal of Environment and Development* 3(2):63-76.

Effects of Noise from Seismic Surveys

- [Carroll, A.G., Przeslawski, R., Duncan, A., Gunning, M., and Bruce, B. 2017. A critical review of the potential impacts of marine seismic surveys on fish & invertebrates. *Marine Pollution Bulletin* 114\(1\):9-24, doi: 10.1016/j.marpolbul.2016.11.038.](#)

- [Castellote, M., Clark, C., and Lammers, M. 2012. Acoustic and behavioural changes by fin whales \(*Balaenoptera physalus*\) in response to shipping and airgun noise. *Biological Conservation* 147\(1\):115-122, doi: 10.1016/j.biocon.2011.12.021.](#)
- Cato, D.H., Noad, M.J., Dunlop, R.A., McCauley, R.D., Gales, N.J., Salgado Kent, C.P., Kniest, H., Paton, D., Jenner, K.C.S., Noad, J., Maggi, A.L., Parnum, I.M., and Duncan, A.J. 2013. A study of the behavioural response of whales to the noise of seismic air guns: design, methods and progress. *Acoustics Australia* 41(1):88-97.
- [Di Iorio, L., and Clark, C.W. 2010. Exposure to seismic survey alters blue whale acoustic communication. *Biology Letters* 6\(1\):51-54, doi: 10.1098/rsbl.2009.0651.](#)
- [Dunlop, R.A., Noad, M.J., McCauley, R.D., Kniest, E., Paton, D., and Cato, D.H. 2015. The behavioural response of Humpback Whales \(*Megaptera novaeangliae*\) to a 20 cubic inch air gun. *Aquatic Mammals* 41\(4\):412-433, doi: 10.1578/AM.41.4.2015.412](#)
- Dunlop, R.A., Noad, M.J., McCauley, R.D., Kniest, E., Slade, R., Paton, D., and Cato, D.H. 2016. Response of humpback whales (*Megaptera novaeangliae*) to ramp-up of a small experimental air gun array. *Marine Pollution Bulletin* 103:72-83.
- Engas, A., and Løkkeborg, S. 2002. Effects of seismic shooting and vessel-generated noise, on fish behaviour and catch rates. *Bioacoustics* 12(2-3):313-316.
- [Fewtrell, J.L., and McCauley, R.D. 2012. Impact of air gun noise on the behaviour of marine fish and squid. *Marine Pollution Bulletin* 64\(5\):984-993.](#)
- [Finneran, J.J., Dear, R., Carder, D.A., and Ridgway, S.H. 2003. Auditory and behavioral responses of California sea lions \(*Zalophus californianus*\) to single underwater impulses from an arc-gap transducer. *Journal of the Acoustical Society of America* 114\(3\):1667-1677, doi: 10.1121/1.1598194.](#)
- [Finneran, J.J., Schlundt, C.E., Dear, R., Carder, D.A., and Ridgway, S.H. 2002. Temporary shift in masked hearing thresholds in odontocetes after exposure to single underwater impulses from a seismic watergun. *Journal of the Acoustical Society of America* 111\(6\):2929-2940, doi: 10.1121/1.1479150.](#)
- Fitzgibbon, Q.P., Day, R.D., McCauley, R.D., Simon, C.J., and Semmens, J.M. 2017. The impact of seismic air gun exposure on the haemolymph physiology and nutritional condition of spiny lobster, *Jasus edwardsii*. *Marine Pollution Bulletin*, doi: <https://doi.org/10.1016/j.marpolbul.2017.08.004>.
- [Fossati, C., Mussi, B., Tizzi, R., Pavan, G., and Pace, D.S. 2017. Italy introduces pre and post operation monitoring phases for offshore seismic exploration activities. *Marine Pollution Bulletin* 120\(1-2\):376- 378, doi: <https://doi.org/10.1016/j.marpolbul.2017.05.017>.](#)
- [Goold, J.C., and Fish, P.J. 1998. Broadband spectra of seismic survey air-gun emissions, with reference to dolphin auditory thresholds. *Journal of the Acoustical Society of America* 103\(4\):2177-2184.](#)
- Gordon, J., Gillespie, D., Potter, J., Frantzis, A., Simmonds, M.P., Swift, R., and Thompson, D. 2003. A review of the effects of seismic surveys on marine mammals. *Marine Technology Society Journal* 37(4):16-34.
- [Harris, R.E., Miller, G.W., and Richardson, W.J. 2001. Seal responses to airgun sounds during summer seismic surveys in the Alaskan Beaufort Sea. *Marine Mammal Science* 17\(4\):795-812, doi: 10.1111/j.1748-7692.2001.tb01299.x.](#)

- Heide-Jørgensen, M.P., Guldborg Hansen, R., Westdal, K., Reeves, R.R., & Mosbech, A. 2013. Narwhals and seismic exploration: Is seismic noise increasing the risk of ice entrapments? *Biological Conservation* 158:50-54.
- [Hermanssen, L., Tougaard, J., Beedholm, K., Nabe-Nielsen, J., and Madsen, P.T. 2015. Characteristics and propagation of airgun pulses in shallow water with implications for effects on small marine mammals. PLoS ONE 10\(7\), e0133436, doi: 10.1371/journal.pone.0133436](#)
- [Jorgenson, J.K., and Gyselman, E.C. 2009. Hydroacoustic measurements of the behavioral response of arctic riverine fishes to seismic airguns. Journal of the Acoustical Society of America 126\(3\):1598-1606.](#)
- Kremser, U., Klemm, P., and Kotz, W.D. 2005. Estimating the risk of temporary acoustic threshold shift, caused by hydroacoustic devices, in whales in the Southern Ocean. *Antarctic Science* 17(1):3-10.
- [Lalas, C., and McConnell, H. 2016. Effects of seismic surveys on New Zealand fur seals during daylight hours: Do fur seals respond to obstacles rather than airgun noise? Marine Mammal Science 32\(2\):643-663, doi: 10.1111/mms.12293.](#)
- [Lucke, K., Siebert, U., Lepper, P.A., and Blanchet, M.-A. 2009. Temporary shift in masked hearing thresholds in a harbor porpoise \(*Phocoena phocoena*\) after exposure to seismic airgun stimuli. Journal of the Acoustical Society of America 125\(6\):4060-4070, doi: 10.1121/1.3117443.](#)
- Madsen, P.T., Johnson, M., Miller, P.J.O., Soto, N.A., Lynch, J., and Tyack, P. 2006. Quantitative measures of air-gun pulses recorded on sperm whales (*Physeter macrocephalus*) using acoustic tags during controlled exposure experiments. *Journal of the Acoustical Society of America* 120:2366-2379.
- 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.
- [Muir, J.E., Ainsworth, L., Racca, R., Bychkov, Y., Gailey, G., Vladimirov, V., Starodymov, S., and Bröker, K. 2016. Gray whale densities during a seismic survey off Sakhalin Island, Russia. *Endangered Species Research* 29\(3\):211-227, doi: 10.3354/esr00709.](#)
- [Nelms, S.E., Piniak, W.E., Weir, C.R. and Godley, B.J., 2016. Seismic surveys and marine turtles: An underestimated global threat? *Biological Conservation* 193:49-65.](#)
- [Nieukirk, S., Mellinger, D., Moore, S., Klinck, K., Dziak, R., and Goslin, J. 2012. Sounds from airguns and fin whales recorded in the mid-Atlantic Ocean, 1999–2009. *Journal of the Acoustical Society of America* 131\(2\):1102-1112.](#)
- Nieukirk, S.L., K.M. Stafford, D.K. Mellinger, R.P. Dziak, C.G. Fox, C.G. 2004. Low-frequency whale and seismic airgun sounds recorded in the mid-Atlantic Ocean. *Journal of the Acoustical Society of America* 115(4):1832-1843.
- Parente, C.L., and de Araujo, M.E. 2011. Effectiveness of monitoring marine mammals during marine seismic surveys off northeast Brazil. *Journal of Integrated Coastal Zone Management* 11(4):409-419.
- Parsons, E.C.M., Dolman, S.J., Jasny, M., Rose, N.A., Simmonds, M.P., and Wright, A.J. 2009. A critique of the UK's JNCC seismic survey guidelines for minimising acoustic disturbance to marine mammals: Best practise? *Marine Pollution Bulletin* 58(5):643-651, doi: 10.1016/j.marpolbul.2009.02.024.

- Paxton, A.B., Taylor, J.C., Nowacek, D.P., Dale, J., Cole, E., Voss, C.M., and Peterson, C.H. 2017. Seismic survey noise disrupted fish use of a temperate reef. *Marine Policy* 78:68-73, doi: <http://dx.doi.org/10.1016/j.marpol.2016.12.017>.
- Payne, J.F., Andrews, C.A., Fancy, L.L., Cook, A.L., and Christian, J.R. 2007. Pilot Study on the Effects of Seismic Air Gun Noise on Lobster (*Homarus americanus*). Canadian Technical Report of Fisheries and Aquatic Sciences 2712.
- Reeves, R.R., Ljungblad, D.K., and Clarke, J.T. 1984. Bowhead whales and acoustic seismic survey in the Beaufort Sea. *Polar Record* 22(138):271-280.
- [Reichmuth, C., Ghaul, A., Sills, J.M., Rouse, A., and Southall, B.L. 2016. Low-frequency temporary threshold shift not observed in spotted or ringed seals exposed to single air gun impulses. *Journal of the Acoustical Society of America* 140\(4\):2646-2658. doi: 10.1121/1.4964470.](#)
- [Richardson, W.J., Wursig, B., and Greene, C.R., Jr. 1986. Reactions of bowhead whales, *Balaena mysticetus*, to seismic exploration in the Canadian Beaufort Sea. *Journal of the Acoustical Society of America* 79\(4\):1117-1128.](#)
- [Rutenko, A.N., Borisov, S.V., Gritsenko, A.V., and Jenkerson, M.R. 2007. Calibrating and monitoring the western gray whale mitigation zone and estimating acoustic transmission during a 3D seismic survey, Sakhalin Island, Russia. *Environmental Monitoring and Assessment* 134\(1-3\):21-44, doi: 10.1007/s10661-007-9814-z.](#)
- Santulli, A., Modica, A., Messina, C., Ceffa, L., Curatolo, A., Rivas, G., Fabi, G., and D'amelio, V. 1999. Biochemical responses of European sea bass (*Dicentrarchus labrax* L.) to the stress induced by off shore experimental seismic prospecting. *Marine Pollution Bulletin* 38:1105-1114.
- Schlundt, C., Finneran, J., Branstetter, B., Trickey, J. et al. 2016. Auditory effects of multiple impulses from a seismic air gun on bottlenose dolphins (*Tursiops truncatus*). *The Effects of Noise on Aquatic Life. Advances in Experimental Medicine and Biology* 875:987-991
- [Sills, J.M., Southall, B.L., and Reichmuth, C. 2017. The influence of temporally varying noise from seismic air guns on the detection of underwater sounds by seals. *Journal of the Acoustical Society of America* 141\(2\):996-1008, doi: 10.1121/1.4976079.](#)
- Slotte, A., Hansen, K., Dalen, J., and Ona, E. 2004. Acoustic mapping of pelagic fish distribution and abundance in relation to a seismic shooting area off the Norwegian west coast. *Fisheries Research* 67(2):143-150, doi: 10.1016/j.fishres.2003.09.046.
- Stone, C.J., and Tasker, M.L. 2006. The effects of seismic airguns on cetaceans in UK waters. *Journal of Cetacean Resource Management* 8(3):255-263.
- Vilela, R., Pena, U., Esteban, R., and Koemans, R. 2016. Bayesian spatial modeling of cetacean sightings during a seismic acquisition survey. *Marine Pollution Bulletin* 109(1):512-520.
- [Wang, Z., Wu, Y., Duan, G., Cao, H., Liu, J., Wang, K., and Wang, D. 2014. Assessing the underwater acoustics of the world's largest vibration hammer \(OCTA-KONG\) and its potential effects on the Indo-Pacific humpbacked dolphin \(*Sousa chinensis*\). *PLoS ONE* 9\(10\), e110590, doi: 10.1371/journal.pone.0110590](#)
- [Wiggins, S.M., Hall, J.M., Thayre, B.J., and Hildebrand, J.A. 2016. Gulf of Mexico low-frequency ocean soundscape impacted by airguns. *Journal of the Acoustical Society of America* 140\(1\):176-183, doi: 10.1121/1.4955300.](#)

[Wright, A.J., and Cosentino, A.M. 2015. JNCC guidelines for minimising the risk of injury and disturbance to marine mammals from seismic surveys: We can do better. *Marine Pollution Bulletin* 100\(1\):231–239, doi: 10.1016/j.marpolbul.2015.08.045.](#)

Effects of Noise from Sonars

[Chapman, D. 1998. The elusive decibel: thoughts on sonars and marine mammals. *Canadian Acoustics* 26\(2\):29-31.](#)

[Clark, C.W., and Altman, N.S. 2006. Acoustic detections of blue whale \(*Balaenoptera musculus*\) and fin whale \(*B. physalus*\) sounds during a SURTASS LFA exercise. *IEEE Journal of Oceanic Engineering* 31\(1\):120-128, doi: 10.1109/Joe.2006.872213.](#)

[Craig, R.K. 2009. Beyond Winter V NRDC. A decade of litigating the Navy's active sonar around the environmental exemptions. *Environmental Affairs* 36\(353\):353-378.](#)

[Curé, C., Isojunno, S., Visser, F., Wensveen, P.J., Sivle, L.D., Kvadsheim, P.H., Lam, F.P.A., and Miller, P.J.O. 2016. Biological significance of sperm whale responses to sonar: comparison with anti-predator responses. *Endangered Species Research* 31:89-102, doi: 10.3354/esr00748.](#)

[Doksæter L., O.R. Godø, N.O. Handegard, P. Kvadsheim, F.P.A. Lam, C. Donovan and P. Miller. 2009. Behavioral responses of herring \(*Clupea harengus*\) to 1-2 kHz sonar signals and killer whale feeding sounds. *Journal of the Acoustical Society of America* 125:554-564.](#)

[Doksæter, L., Handegard, N., Godø, O., Kvadsheim, P., and Nordlund, N. 2012. Behaviour of captive herring exposed to naval sonar transmissions \(1.0–1.6 kHz\) throughout a yearly cycle. *Journal of the Acoustical Society of America* 131\(2\):1632-1642.](#)

[Espinosa, A., Reid, R.J., Jaber, J.R., Martin, V., Cunningham, A.A., and Fernandez, A. 2003. Gas- bubble lesions in stranded cetaceans: Was sonar responsible for a spate of whale deaths after an Atlantic military exercise? *Nature* 425:575-576.](#)

[Faerber, M.M., and Baird, R.W. 2010. Does a lack of observed beaked whale strandings in military exercise areas mean no impacts have occurred? A comparison of stranding and detection probabilities in the Canary and main Hawaiian Islands. *Marine Mammal Science* 26\(3\):602-613.](#)

[Falcone, E.A., Schorr, G.S, Douglas, A.B., Calambokidis, J., Henderson, E., McKenna, M.F., Hildebrand, J., and Moretti, D. 2009. Sighting characteristics and photo-identification of Cuvier's beaked whales \(*Ziphius cavirostris*\) near San Clemente Island, California: a key area for beaked whales and the military? *Marine Biology* 156\(12\):2631-2640.](#)

[Frantzis, A. 1998. Does acoustic testing strand whales? *Nature* 392:29.](#)

[Guan, S., Southall, B.L., Vignola, J.F., Judge, J.A., and Turo, D. 2017. Sonar inter-ping noise field characterization during cetacean behavioral response studies off Southern California. *Acoustical Physics* 63\(2\):204-215, doi: 10.1134/s106377101702004x.](#)

[Isojunno, S., Curé, C., Kvadsheim, P.H., Lam, F.-P.A., Tyack, P.L., Wensveen, P.J., and Miller, P.J.O.M. 2016. Sperm whales reduce foraging effort during exposure to 1–2 kHz sonar and killer whale sounds. *Ecological Applications* 26\(1\):77-93, doi: 10.1890/15-0040.](#)

[Kane, A.S., Song, J., Halvorsen, M.B., Miller, D.L., Salierno, J.D., Wysocki, L.E., Zeddies, D., and Popper, A.N. 2010. Exposure of fish to high-intensity sonar does not induce acute pathology. *Journal of Fish and Biology* 76\(7\):1825-1840.](#)

- [Kastelein, R.A., Steen, N., de Jong, C., Wensveen, P.J., and Verboom, W.C. 2011. Effect of broadband-noise masking on the behavioral response of a harbor porpoise \(*Phocoena phocoena*\) to 1-s duration 6-7 kHz sonar up-sweeps. *Journal of the Acoustical Society of America* 129\(4\):2307-2315, doi: 10.1121/1.3559679.](#)
- [Hilary L. Maybaum. H.L. 1993. Responses of humpback whales to sonar sounds. *Journal of the Acoustical Society of America* 94:1848.](#)
- Kastelein, R.A., van den Belt, I., Helder-Hoek, L., Gransier, R., and Johansson, T. 2015. Behavioral responses of a harbor porpoise (*Phocoena phocoena*) to 25-kHz fm sonar signals. *Aquatic Mammals* 41(3):311-326, doi: 10.1578/AM.41.3.2015.311.
- [Kvadsheim, P.H., Miller, P.J.O., Tyack, P., Sivle, L.D., Lam, F.P.A., and Fahlman, A. 2012. Estimated tissue and blood N₂ levels and risk of in vivo bubble formation in deep-, intermediate and shallow diving toothed whales during exposure to naval sonar. *Frontiers in Aquatic Physiology* 3: article 125.](#)
- 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., and 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.
- [Moretti, D., Thomas, L., Marques, T., Harwood, J., Dilley, A., Neales, B., Shaffer, J., McCarthy, E., New, L., Jarvis, S., and Morrissey, R. 2014. A risk function for behavioral disruption of Blainville's beaked whales \(*Mesoplodon densirostris*\) from mid-frequency active sonar. *PloS One* 9\(1\), e85064.](#)
- Parsons, E.C.M., Birks, I., Evans, P.G.H., Gordon, J.C.D., Shrimpton, J.H., and Pooley, S. 2000. The possible impacts of military activity on cetaceans in West Scotland. *European Research on Cetaceans* 14:185-190.
- [Parsons, E.C.M., Dolman, S.J., Wright, A.J., Rose, N.A., and Burns, W.C.G. 2008. Navy sonar and cetaceans: Just how much does the gun need to smoke before we act? *Marine Pollution Bulletin* 56\(7\):1248-1257, doi: 10.1016/j.marpolbul.2008.04.025.](#)
- [Sivle, L.D., Kvadsheim, P.H. and Ainslie, M.A. 2014. Potential for population-level disturbance by active sonar in herring. *ICES Journal of Marine Science* 72\(2\):558-567 doi: 10.1093/icesjms/fsu154](#)
- [Sivle, L.D., Kvadsheim, P.H., Ainslie, M.A., Solow, A., Handegard, N.O., Nordlund, N., Lam, F.P.A. 2012. Impact of naval sonar signals on herring \(*Clupea harengus*\) during summer feeding. *ICES Journal of Marine Science* 69\(6\):1078-1085, doi:10.1093/icesjms/fss080\).](#)
- [Sivle, L.D., Kvadsheim, P.H., Cure, C., Isojunno, S., Wensveen, P.J., Lam, F.-P.A., Visser, F., Kleivane, L., Tyack, P.L., Harris, C.M., and Miller, P.J.O. 2015. Severity of expert-identified behavioural responses of Humpback Whale, Minke Whale, and Northern Bottlenose Whale to naval sonar. *Aquatic Mammals* 41\(4\):469-502, doi: 10.1578/AM.41.4.2015.469](#)
- [Stimpert, A.K., Deruiter, S.L., Southall, B.L., Moretti, D.J., Falcone, E.A., Goldbogen, J.A., Friedlaender, A., Schorr, G.S., and Calambokidis, J. 2014. Acoustic and foraging behavior of a Baird's beaked whale, *Berardius bairdii*, exposed to simulated sonar. *Scientific Reports* 4:7031, doi: 10.1038/srep07031.](#)
- Talpalari, A.E., and Grossman, Y. 2005. Sonar versus whales: Noise may disrupt neural activity in deep-diving cetaceans. *Undersea & Hyperbaric Medicine* 32: 135-139.

- [Tyack, P.L., Zimmer, W.M.X., Moretti, D., Southall, B.L., Claridge, D.E., Durban, J.W., Clark, C.W., D'Amico, A., DiMarzio, N., Jarvis, S., McCarthy, E., Morrissey, R., Ward, J., and Boyd, I.L. 2011. Beaked whales respond to simulated and actual navy sonar. *PLoS ONE* 6\(3\), e17009, doi: 10.1371/journal.pone.0017009.](#)
- Van Dyke, J.M., Gardner, E.A., and Morgan, J.R. 2004. Whales, submarines, and active sonar. *Ocean Yearbook* 18:330-363.
- [Wensveen, P.J., Von Benda-Beckmann, A.M., Ainslie, M.A., Lam, F.-P.A., Kvadsheim, P.H., Tyack, P.L., and Miller, J.O. 2015. How effectively do horizontal and vertical response strategies of long-finned pilot whales reduce sound exposure from naval sonar? *Marine Environmental Research* 106:68-81, doi: 10.1016/j.marenvres.2015.02.005.](#)
- Yang, W.-C., Chou, L.-S., Jepson, P.D., Brownell, R.L., Jr., Cowan, D., Chang, P.-H., Chiou, H.-I., Yao, C.-J., Yamada, T.K., Chiu, J.-T., Wang, P.-J., Fernández. 2008. Unusual cetacean mortality event in Taiwan, possibly linked to naval activities. *Veterinary Record* 162:184-186.
- [Zirbel, K., Balint, P., and Parsons, E.C.M. 2011. Navy sonar, cetaceans and the US Supreme Court: A review of cetacean mitigation and litigation in the US. *Marine Pollution Bulletin* 63\(1-4\):40-48, doi: 10.1016/j.marpolbul.2011.03.018.](#)

Effects of Noise from Underwater Mining

- [Mann, D., Cott, P., and Horne, B. 2009. Under-ice noise generated from diamond exploration in a Canadian sub-arctic lake and potential impacts on fishes. *The Journal of the Acoustical Society of America* 126\(5\):2215-2222, doi: 10.1121/1.3203865.](#)

Effects of Noise from Vessels

- Aguilar Soto, N., Johnson, M., Madsen, P.T., Tyack, P.L., Bocconcelli, A., and Borsani, J.F. 2006. Does intense ship noise disrupt foraging in deep-diving Cuvier's beaked whales (*Ziphius cavirostris*)? *Marine Mammal Science* 22(3):690-699.
- [Allen, K., Peterson, M., Sharrard, G., Wright, D., and Todd, S. 2012. Radiated noise from commercial ships in the Gulf of Maine: Implications for whale/vessel collisions. *Journal of the Acoustical Society of America* 132\(3\):EL229-EL235.](#)
- [Amoser, S., Wysocki, L.E., and Ladich, F. 2004. Noise emission during the first powerboat race in an Alpine lake and potential impact on fish communities. *Journal of the Acoustical Society of America* 116\(6\):3789-3797.](#)
- Anderwald, P., Brandecker, A., Coleman, M., Collins, C., Denniston, H., Haberlin, M.D., O'Donovan, M., Pinfield, R., Visser, F., and Walshe, L. 2013. Displacement responses of a mysticete, an odontocete, and a phocid seal to construction-related vessel traffic. *Endangered Species Research* 21(3):231-240.
- Ando-Mizobata, N., Ichikawa, K., Arai, N., and Kato, H. 2014. Does boat noise affect dugong (*Dugong dugon*) vocalization? *Mammal Study* 39(2):121-127, doi: 10.3106/041.039.0208
- [Au, W.W.L., and Green, M. 2000. Acoustic interaction of humpback whales and whale-watching boats. *Marine Environmental Research*, 49\(5\), 469-481, doi: 10.1016/s0141-1136\(99\)00086-0.](#)
- Bauer, G.B., Mobley, J.R., and Herman, L.M. 1993. Responses of wintering humpback whales to vessel traffic. *Journal of the Acoustical Society of America* 94(3):1848.

- [Bracciali, C., Campobello, D., Giacomina, C., Sarà, G. 2012. Effects of Nautical Traffic and Noise on Foraging Patterns of Mediterranean Damselfish \(*Chromis chromis*\). PLoS One 7\(7\), e40582.](#)
- [Brierley, A.S., Fernandes, P.G., Brandon, M.A., Armstrong, F., Millard, N.W., McPhail, S.D., Stevenson, P., Pebody, M., Perrett, J., Squires, M., Bone, D.G., and Griffiths, G. 2003. An investigation of avoidance by Antarctic krill of RRS James Clark Ross using the Autosub-2 autonomous underwater vehicle. Fisheries Research 60\(2-3\):569-576, doi: Pii S0165-7836\(02\)00144-3.](#)
- Buckstaff, K.C. 2004. Effects of watercraft noise on the acoustic behaviour of bottlenose dolphins, *Tursiops truncatus*, in Sarasota Bay, Florida. Marine Mammal Science 20(4):709-725.
- [Castellote, M., Clark, C., and Lammers, M. \(2012\). Acoustic and behavioural changes by fin whales \(*Balaenoptera physalus*\) in response to shipping and airgun noise. Biological Conservation 147\(1\):115-122, doi: 10.1016/j.biocon.2011.12.021.](#)
- Chen, F., Shapiro, G.I., Bennett, K.A., Ingram, S.N., Thompson, D., Vincent, C., Russell, D.J.F., and Embling, C.B. 2017. Shipping noise in a dynamic sea: a case study of grey seals in the Celtic Sea. Marine Pollution Bulletin 114(1):372-383, doi: <http://dx.doi.org/10.1016/j.marpolbul.2016.09.054>.
- [Chion, C., Lagrois, D., Dupras, J., Turgeon, S., McQuinn, I.H., Michaud, R., Ménard, N., and Parrott, L. 2017. Underwater acoustic impacts of shipping management measures: Results from a social-ecological model of boat and whale movements in the St. Lawrence River Estuary \(Canada\). Ecological Modelling 354:72-87, doi: 10.1016/j.ecolmodel.2017.03.014.](#)
- [Codarin, A., Wysocki, L.E., Ladich, F., and Picciulin, M. 2009. Effects of ambient and boat noise on hearing and communication in three fish species living in a marine protected area \(Miramare, Italy\). Marine Pollution Bulletin 58\(12\):1880-1887, doi: 10.1016/j.marpolbul.2009.07.011.](#)
- Cosens, S.E., and Dueck, L.P. 1993. Icebreaker noise in Lancaster Sound, N.W.T., Canada: implications for marine mammal behaviour. Marine Mammal Science 9(3):285-300.
- [Cunningham, K.A., and Mountain, D.C. 2014. Simulated masking of right whale sounds by shipping noise: Incorporating a model of the auditory periphery. Journal of the Acoustical Society of America 135\(3\):1632-1640.](#)
- Dahlheim, M.E., Schempp, J.D., Swartz, S.L., and Jones, M.L. 1981. Attraction of gray whales, *Eschrichtius robustus*, to underwater outboard engine noise in Laguna San Ignacio, Baja California Sur, Mexico. Journal of the Acoustical Society of America 70(Supplement 1):S83-S84.
- De Robertis, A., and Wilson, C.D. 2010. Silent ships sometimes do encounter more fish. 2. Concurrent echosounder observations from a free-drifting buoy and vessels. ICES Journal of Marine Science 67(5):996-1003.
- De Robertis, A., Wilson, C.D., Furnish, S.R., and Dahl, P.H. 2013. Underwater radiated noise measurements of a noise-reduced fisheries research vessel. ICES Journal of Marine Science 70(2):480-484.
- De Robertis, A., Wilson, C.D., Williamson, N.J., Guttormsen, M.A., and Stienessen, S. 2010. Silent ships sometimes do encounter more fish. 1. Vessel comparisons during winter pollock surveys. ICES Journal of Marine Science 67(5):985-995.

- [Dunlop, R.A. 2016. The effect of vessel noise on humpback whale, *Megaptera novaeangliae*, communication behaviour. *Animal Behaviour* 111:13-21, doi: <http://dx.doi.org/10.1016/j.anbehav.2015.10.002>.](#)
- [Dyndo, M., Wiśniewska, D.M., Rojano-Doñate, L., and Teglberg Madsen, P. 2015. Harbour porpoises react to low levels of high frequency vessel noise. *Scientific Reports* 5 \(Published online 22 June 2015\), doi: \[10.1038/srep11083\]\(https://doi.org/10.1038/srep11083\)](#)
- Engas, A., and Løkkeborg, S. 2002. Effects of seismic shooting and vessel-generated noise, on fish behaviour and catch rates. *Bioacoustics* 12(2-3):313-316.
- [Erbe, C. 2002. Underwater noise of whale-watching boats and its effects on killer whales \(*Orcinus orca*\). *Marine Mammal Science* 18\(2\):394-418, doi: \[10.1111/j.1748-7692.2002.tb01045.x\]\(https://doi.org/10.1111/j.1748-7692.2002.tb01045.x\).](#)
- [Erbe, C., and Farmer, D.M. 1998. Masked hearing thresholds of a beluga whale \(*Delphinapterus leucas*\) in icebreaker noise. *Deep-Sea Research Part II* 45\(7\):1373-1388, doi: \[10.1016/S0967-0645\\(98\\)00027-7\]\(https://doi.org/10.1016/S0967-0645\(98\)00027-7\).](#)
- [Erbe, C., and Farmer, D.M. 2000. Zones of impact around icebreakers affecting beluga whales in the Beaufort Sea. *Journal of the Acoustical Society of America* 108\(3\):1332-1340, doi: \[10.1121/1.1288938\]\(https://doi.org/10.1121/1.1288938\).](#)
- [Erbe, C., Williams, R., Sandilands, D., and Ashe, E. 2014. Identifying modelled ship noise hotspots for marine mammals of Canada's Pacific region. *PLoS ONE* 9\(3\), e89820, doi: \[10.1371/journal.pone.0089820\]\(https://doi.org/10.1371/journal.pone.0089820\).](#)
- Foot, A.D., Osborne, R.W., and Hoelzel, A.R. 2004. Whale-call response to masking boat noise. [10.1038/428910a]. *Nature* 428(6986), 910, doi: http://www.nature.com/nature/journal/v428/n6986/supinfo/428910a_S1.html.
- Fujieda, S., Inamoto, T., Yamanaka, Y., and Matsuno, Y. 1998. Interference of underwater noise emitted by cruising vessel. *Nippon Suisan Gakkaishi* 64(1):48-55.
- [Gervaise, C., Simard, Y., Roy, N., Kinda, B., and Menard, N. 2012. Shipping noise in whale habitat: Characteristics, sources, budget, and impact on belugas in Saguenay–St. Lawrence Marine Park hub. *Journal of the Acoustical Society of America* 132\(1\):76-89, doi: \[10.1121/1.4728190\]\(https://doi.org/10.1121/1.4728190\).](#)
- Goodwin, L., and Cotton, P.A. 2004. Effects of boat traffic on the behavior of bottlenose dolphins (*Tursiops truncatus*). *Aquatic Mammals* 30:279-283.
- Gordon, J., Leaper, R., Hartley, F. G., and Chappell, O. 1992. Effects of whale-watching vessels on the surface and underwater acoustic behaviour of sperm whales off Kaikoura, New Zealand. *Conservation Te Papa Atawhai* 48(6):1-64.
- [Guerra, M., Dawson, S.M., Brough, T.E., and Rayment, W.J. 2014. Effects of boats on the surface and acoustic behaviour of an endangered population of bottlenose dolphins. *Endangered Species Research* 24\(3\):221-236, doi: \[10.3354/esr00598\]\(https://doi.org/10.3354/esr00598\).](#)
- 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.
- [Heiler, J., Elwen, S.H., Kriesell, H.J., and Gridley, T. 2016. Changes in bottlenose dolphin whistle parameters related to vessel presence, surface behaviour and group composition. *Animal Behaviour* 117:167-177, doi: \[10.1016/j.anbehav.2016.04.014\]\(https://doi.org/10.1016/j.anbehav.2016.04.014\).](#)

- [Hermanssen, L., Beedholm, K., Tougaard, J., and Madsen, P.T. 2014. High frequency components of ship noise in shallow water with a discussion of implications for harbor porpoises \(*Phocoena phocoena*\). Journal of the Acoustical Society of America 136\(4\):1640-1653, doi: 10.1121/1.4893908.](#)
- Holles, S., Simpson, S.D., Radford, A.N., Berten, L., & Lecchini, D. 2013. Boat noise disrupts orientation behaviour in a coral reef fish. Marine Ecology Progress Series 485:295-300.
- Holt, M.M., Hanson, M.B., Giles, D.A., Emmons, C.K., and Hogan, J.T. 2017. Noise levels received by endangered killer whales *Orcinus orca* before and after implementation of vessel regulations. Endangered Species Research 34:15-26.
- [Holt, M.M., Noren, D.P., Veirs, V., Emmons, C.K., and Viers, S. 2009. Speaking up: Killer whales \(*Orcinus orca*\) increase their call amplitude in response to vessel noise. Journal of the Acoustical Society of America 125: EL27-32.](#)
- [Houghton, J., Holt, M.M., Giles, D.A., Hanson, M.B., Emmons, C.K., Hogan, J.T., Branch, T.A., and VanBlaricom, G.R. 2015. The Relationship between Vessel Traffic and Noise Levels Received by Killer Whales \(*Orcinus orca*\). PLOS One, doi: doi.org/10.1371/journal.pone.0140119.](#)
- [Isojunno, S. and Miller, P.J.O. 2015. Sperm whale response to tag boat presence: biologically informed hidden state models quantify lost feeding opportunities. Ecosphere 6:1-46](#)
- Janik, V.M., and Thompson, P.M. 1996. Changes in surfacing patterns of bottlenose dolphins in response to boat traffic. Marine Mammal Science 12(4):597-602.
- [Jensen, F.H., Bejder, L., Wahlberg, M., Soto, N.A., Johnson, M., and Madsen, P.T. 2009. Vessel noise effects on delphinid communication. Marine Ecology Progress Series 2009:161-175.](#)
- Jones, E.L., Hastie, G.D., Smout, S., Onoufriou, J., Merchant, N.D., Brookes, K.L., and Thompson, D. 2017. Seals and shipping: quantifying population risk and individual exposure to vessel noise. Journal of Applied Ecology 54(6):1930-1940.
- [La Manna, G., Manghi, M., Pavan, G., Lo Mascolo, F., and Sara, G. 2013. Behavioural strategy of common bottlenose dolphins \(*Tursiops truncatus*\) in response to different kinds of boats in the waters of Lampedusa Island \(Italy\). Aquatic Conservation-Marine and Freshwater Ecosystems 23\(5\):745-757, doi: 10.1002/aqc.2355.](#)
- Leaper, R., and Renilson, M. 2012. A review of practical methods for reducing underwater noise pollution from large commercial vessels. International Journal of Maritime Engineering 154:A79-A88.
- Leaper, R., Renilson, M.R., and Ryan, C. 2014. Reducing underwater noise from large commercial ships: current status and future directions. Journal of Ocean Technology 9(1):50-69.
- [Lemon, M., Lynch, T.P., Cato, D.H., and Harcourt, R.G. 2006. Response of travelling bottlenose dolphins \(*Tursiops aduncus*\) to experimental approaches by a powerboat in Jervis Bay, New South Wales, Australia. Biological Conservation 127\(4\):363-372, doi: 10.1016/j.biocon.2005.08.016.](#)
- [Lesage, V., Barrette, C., Kingsley, M.C.S., and Sjare, B. 1998. The effect of vessel noise on the vocal behaviour of belugas in the St. Lawrence River Estuary, Canada. Marine Mammal Science 15\(1\):65-84, doi: 10.1111/j.1748-7692.1999.tb00782.x.](#)

- [Li, S., Wu, H., Xu, Y., Peng, C., Fang, L., Lin, M., Xing, L., and Zhang, P. 2015. Mid- to high-frequency noise from high-speed boats and its potential impacts on humpback dolphins. *Journal of the Acoustical Society of America* 138:942-952, doi: 10.1121/1.4927416.](#)
- Liu, M., Wei, Q.W., Du, H., Fu, Z.Y., & Chen, Q.C. 2013. Ship noise-induced temporary hearing threshold shift in the Chinese sucker *Myxocyprinus asiaticus* (Bleeker, 1864). *Journal of Applied Ichthyology* 29:1416-1422.
- Ljungblad, D.K., Wursig, B., Swartz, S.L., and Keene, J.M. 1988. Observations on the behavioural responses of bowhead whales (*Balaena mysticetus*) to active geophysical vessels in the Alaskan Beaufort Sea. *Arctic* 41(3):183-194.
- [Luís, A.R., Couchinho, M.N., and dos Santos, M.E. 2014. Changes in the acoustic behavior of resident bottlenose dolphins near operating vessels. *Marine Mammal Science* 30\(4\):1417-1426, doi: 10.1111/mms.12125.](#)
- [Lusseau, D. 2005. Residency pattern of bottlenose dolphins *Tursiops* spp. in Milford Sound, New Zealand, is related to boat traffic. *Marine Ecology Progress Series* 295:265-272.](#)
- Lusseau, D., Bain, D.E., Williams, R., and Smith, J.C. 2009. Vessel traffic disrupts the foraging behavior of southern resident killer whales *Orcinus orca*. *Endangered Species Research* 6:211-221.
- Lusseau, D., Slooten, L., and Currey, R.J.C. 2006. Unsustainable dolphin-watching tourism in Fiordland, New Zealand. *Tourism in Marine Environments* 3:173-178.
- Maglio, A., Soares, C., Bouzidi, M., Zabel, F., Souami, Y., and Pavan, G. 2015. Mapping shipping noise in the Pelagos Sanctuary (French part) through acoustic modelling to assess potential impacts on marine mammals. *Scientific Report of Port-Cros National Park* 29:167-185.
- McCauley, R.D., Jenner, M.-N., Jenner, C., McCabe, K.A., and Murdoch, J. 1998. The response of humpback whales (*Megaptera novaeangliae*) to offshore seismic survey noise: Preliminary results of observations about a working seismic vessel and experimental exposures. *Australian Petroleum Production and Exploration Association Journal* 38:692-707.
- [McQuinn, I., Lesage, V., Carrier, D., Larrivee, G., Samson, Y., Chartrand, S., Michaud, R., and Theriault, J. 2011. A threatened beluga \(*Delphinapterus leucas*\) population in the traffic lane: Vessel-generated noise characteristics of the Saguenay-St. Lawrence Marine Park, Canada. *Journal of the Acoustical Society of America* 130\(6\):3661-3673.](#)
- 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(1-2):85-95.
- Noren, D.P., Johnson, A.H., Rehder, D., and Larson, A. 2009. Close approaches by vessels elicit surface active behaviors by southern resident killer whales. *Endangered Species Research* 8:179- 192.
- Norris, T.F. 1994. Effects of boat noise on the acoustic behavior of humpback whales. *Journal of the Acoustical Society of America* 96(5):3251.
- [Nowacek, D.P., Johnson, M.P., and Tyack, P.L. 2004. North Atlantic Right whales ignore ships but respond to alarm stimuli. *Proceedings of the Royal Society London, Part. B: Biological Sciences* 271:227-231.](#)

- [Picciulin, M., Sebastianutto, L., Codarin, A., Calcagno, G., and Ferrero, E. 2012. Brown meagre vocalization rate increases during repetitive boat noise exposures: A possible case of vocal compensation. *Journal of the Acoustical Society of America* 132\(5\):3118-3124.](#)
- Picciulin, M., Sebastianutto, L., Codarin, A., Farina, A., and Ferrero, E.A. 2010. In situ behavioural responses to boat noise exposure of *Gobius cruentatus* (Gmelin, 1789; fam. Gobiidae) and *Chromis chromis* (Linnaeus, 1758; fam. Pomacentridae) living in a Marine Protected Area. *Journal of Experimental Marine Biology and Ecology* 386(1-2):125-132, doi: 10.1016/j.jembe.2010.02.012.
- [Pirota, E., Merchant, N.D., Thompson, P.M., Barton, T.R., and Lusseau, D. 2015. Quantifying the effect of boat disturbance on bottlenose dolphin foraging activity. *Biological Conservation* 181:82-89, doi: 10.1016/j.biocon.2014.11.003.](#)
- Pirota, E., Milor, R., Quick, N., Moretti, D., Di Marzio, N., Tyack, P., Boyd, I., and Hastie, G. 2012. Vessel Noise Affects Beaked Whale Behavior: Results of a Dedicated Acoustic Response Study. *PLoS ONE* 7(8).
- Pirota, E., Thompson, P.M., Cheney, B., Donovan, C.R., and Lusseau, D. 2015. Estimating spatial, temporal and individual variability in dolphin cumulative exposure to boat traffic using spatially explicit capture–recapture methods. *Animal Conservation* 18(1):20-31.
- [Rako Gospić, N., and Picciulin, M. 2016. Changes in whistle structure of resident bottlenose dolphins in relation to underwater noise and boat traffic. *Marine Pollution Bulletin* 105\(1\):193-198, doi: 10.1016/j.marpolbul.2016.02.030.](#)
- Redfern, J.V., Hatch, L.T., Caldow, C., DeAngelis, M.L., Gedamke, J., Hastings, S., Henderson, L., McKenna, M.F., Moore, T.J., and Porter, M.B. 2017. Assessing the risk of chronic shipping noise to baleen whales off Southern California, USA. *Endangered Species Research* 32:153-167.
- Rolland, R.M., Parks, S.E., Hunt, K.E., Castellote, M., Corkeron, P.J., Nowacek, D.P., Wasser, S.K., and Kraus, S.D. 2012. Evidence that ship noise increases stress in right whales. *Proceedings of the Royal Society of London: Series B Biological Sciences* 279(1737):2363-2368.
- Romano, T.A., M.J. Keogh, C. Kelly, P. Feng, L. Berk, C.E. Schlundt, D.A. Carder and J.J. Sara, G., J.M. Dean, D. D’Amato, G. Buscaino, A. Oliveri, S. Genovese, S. Ferro, G. Buffa, M. Lo Martire and S. Mazzola. 2007. Effect of boat noise on the behaviour of bluefin tuna *Thunnus thynnus* in the Mediterranean Sea. *Marine Ecology Progress Series* 331:243-253.
- Rostad, A., Kaartvedt, S., Klevjer, T.A., and Melle, W. 2006. Fish are attracted to vessels. *ICES Journal of Marine Science* 63(8):1431-1437, doi: 10.1016/j.icesjms.2006.03.026.
- [Rudd, A.B., Richlen, M.F., Stimpert, A.K., and Au, W.W.L. 2015. Underwater sound measurements of a high-speed jet-propelled marine craft: Implications for large whales. *Pacific Science* 69\(2\):155-164, doi: 10.2984/69.2.2.](#)
- Sarà, G., Dean, J.M., D’Amato, D., Buscaino, G., Oliveri, A., Genovese, S., Ferro, S., Buffa, G., Lo Martire, M., and Mazzola, S. 2007. Effect of boat noise on the behaviour of bluefin tuna *Thunnus thynnus* in the Mediterranean Sea. *Marine Ecology Progress Series* 331:243-253

- [Scholik, A.R., and Yan, H.Y. 2002. Effects of Boat Engine Noise on the Auditory Sensitivity of the Fathead Minnow, *Pimephales promelas*. Environmental Biology of Fishes 63\(2\):203-209, doi: 10.1023/a:1014266531390.](#)
- Sebastianutto, L., Picciulin, M., Constantini, M., and Ferrero, E. 2011. How boat noise affects an ecologically crucial behaviour: the case of territoriality in *Gobius cruentatus* (Gobiidae). Environmental Biology of Fishes 92(2):207-215.
- Shiskova, E.V. 1958. Concerning the reactions of fish to sounds and the spectrum of trawler noise. Rybnoe Khoziaistvo 34(3):33-39.
- Simard, Y., Lepage, R., and Gervaise, C. 2010. Anthropogenic sound exposure of marine mammals from seaways: Estimates for Lower St. Lawrence Seaway, eastern Canada. Applied Acoustics 71(11):1093-1098, doi: 10.1016/j.apacoust.2010.05.012.
- [Simard, Y., Roy, N., and Gervaise, C. 2008. Passive acoustic detection and localization of whales: Effects of shipping noise in Saguenay-St. Lawrence Marine Park. Journal of the Acoustical Society of America 123\(6\):4109-4117, doi: 10.1121/1.2912453.](#)
- Sousa-Lima, R.S., and Clark, C.W. 2008. Modeling the effect of boat traffic on the fluctuation of humpback whale singing activity in the Abrolhos National Marine Park, Brazil. Canadian Acoustics/ Acoustique canadienne 36(1):174-181.
- Terhune, J.M., Stewart, R.E.A., and Ronald, K. 1979. Influence of vessel noises on underwater vocal activity of harp seals. Canadian Journal of Zoology 57(6):1337-1338.
- [Thode, A., Straley, J., Tiemann, C.O., Folkert, K., and O'Connell, V. 2007. Observations of potential acoustic cues that attract sperm whales to longline fishing in the Gulf of Alaska. Journal of the Acoustical Society of America 122\(2\):1265-1277, doi: 10.1121/1.2749450.](#)
- [Thode, A.M., Wild, L., Mathias, D., Straley, J., and Lunsford, C. 2014. A comparison of acoustic and visual metrics of sperm whale longline depredation. Journal of the Acoustical Society of America 135\(5\):3086-3100, doi: 10.1121/1.4869853.](#)
- Tripovich, J.S., Hall-Aspland, S., Charrier, I., and Arnould, J.P. 2012. The behavioural response of Australian fur seals to motor boat noise. PloS One 7(5), e37228.
- Van Parijs, S.M., and Corkeron, P. 2001. Boat traffic affects the acoustic behaviour of Pacific humpback dolphins, *Sousa chinensis*. Journal of the Marine Biological Association of the United Kingdom 81(3):533-538.
- [Vasconcelos, R.O., Amorim, M.C.P., and Ladich, F. 2007. Effects of ship noise on the detectability of communication signals in the Lusitanian toadfish. Journal of Experimental Biology 210\(12\):2104-2112, doi: 10.1242/Jeb.004317.](#)
- [Veirs, S., Veirs, V., and Wood, J.D. 2016. Ship noise extends to frequencies used for echolocation by endangered killer whales. PeerJ, doi: 10.7717/peerj.1657.](#)
- Watkins, W.A., and Goebel, C.A. 1984. Sonar observations explain behaviors noted during boat maneuvers for radio tagging of humpback whales (*Megaptera novaeangliae*) in the Glacier Bay area. Cetology 48:1-8.
- [Williams, R., Erbe, C., Ashe, E., Beerman, A., and Smith, J. 2014. Severity of killer whale behavioural responses to ship noise: A dose-response study. Marine Pollution Bulletin 79:254-260, doi: 10.1016/j.marpolbul.2013.12.004.](#)
- Williamson, M., Kavanagh, A. and Noad, N. 2016) The effect of close approached for tagging activities by small research vessels on the behavior of humpback whales (*Megaptera novaeangliae*). Marine Mammal Science 32:1234-1253.

Effects of Noise from Wave Energy Conversion

[Tougaard, J. 2015. Underwater noise from a wave energy converter is unlikely to affect marine mammals. PLOS ONE 10\(7\), e0132391, doi: 10.1371/journal.pone.0132391](#)

Effects of Noise from Wind Turbine Construction and Operation

Dähne, M., Peschko, V., Gilles, A., Lucke, K., Adler, S., Ronnenberg, K. and Siebert, U.

2014. Marine mammals and windfarms: Effects of alpha ventus on harbour porpoises.

Ecol. Res. Offshore Wind. alpha Vent. (doi:10.1007/978-3-658-02462-8_13)

[Koschinski, S., Culik, B.M., Henriksen, O.D., Tregenza, N., Ellis, G., Jansen, C., and Kathe, G. 2003. Behavioural reactions of free-ranging porpoises and seals to the noise of a simulated 2 MW windpower generator. Marine Ecology Progress Series 265:263-273.](#)

[Lucke, K., Lepper, P.A., Hoeve, B., Everaarts, E., van Elk, N., and Siebert, U. 2007. Perception of low-frequency acoustic signals by a harbour porpoise \(*Phocoena phocoena*\) in the presence of simulated offshore wind turbine noise. Aquatic Mammals 33\(1\):55-68, doi: 10.1578/AM.33.1.2007.55.](#)

[Madsen, P.T., Wahlberg, M., Tougaard, J., Lucke, K., and Tyack, P. 2006. Wind turbine underwater noise and marine mammals: Implications of current knowledge and data needs. Marine Ecology Progress Series 309:279-295.](#)

Skeate, E., Perrow, M., and Gilroy, J. 2012. Likely effects of construction of Scroby Sands offshore wind farm on a mixed population of harbour *Phoca vitulina* and grey *Halichoerus grypus* seals. Marine Pollution Bulletin 64(4):872-881.

[Thompson, P.M., Lusseau, D., Barton, T., Simmons, D., Rusin, J., and Bailey, H. 2010. Assessing the responses of coastal cetaceans to the construction of offshore wind turbines. Marine Pollution Bulletin 60\(8\):1200-1208, doi: 10.1016/j.marpolbul.2010.03.030.](#)

[Tougaard, J., Henriksen, O.D., and Miller, L.A. 2009. Underwater noise from three types of offshore wind turbines: Estimation of impact zones for harbor porpoises and harbor seals. Journal of the Acoustical Society of America 125\(6\):3766-3773, doi: 10.1121/1.3117444.](#)

General

Alter, S.E., Simmonds, M.P., and Brandon, J.R. 2010. Forecasting the consequences of climate-driven shifts in human behaviour on cetaceans. Marine Policy 34(5):943-954, doi: 10.1016/j.marpol.2010.01.026.

Amoser, S., and Ladich, F. 2003. Diversity in noise-induced temporary hearing loss in otophysine fishes. Journal of the Acoustical Society of America 113:2170–2179.

Andre, M. 2009. The sperm whale sonar: Monitoring and use in mitigation of anthropogenic noise effects in the marine environment. Nuclear Instruments & Methods in Physics Research Section a-Accelerators Spectrometers Detectors and Associated Equipment 602(1):262-267, doi:10.1016/j.nima.2008.12.223.

[Azzellino, A., Lanfredi, C., D'Amico, A., Pavan, G., Podestà, M., and Haun, J. 2011. Risk mapping for sensitive species to underwater anthropogenic sound emissions: Model development and validation in two Mediterranean areas. Marine Pollution Bulletin 63\(1-4\):56-70, doi: 10.1016/j.marpolbul.2011.01.003.](#)

- Barlow, J., and Gisiner, R. 2006. Mitigating, monitoring and assessing the effects of anthropogenic sound on beaked whales. *Journal of Cetacean Resource Management* 7(3):239-249.
- Bateson, M. 2007. Environmental noise and decision making: Possible implications of increases in anthropogenic noise for information processing in marine mammals. *International Journal of Comparative Psychology* 20:169–178.
- Bejder, L., Samuels, A., Whitehead, H., Gales, N., Mann, J., Connor, R., Heithaus, M., Watson-Capps, J., and Flaherty, C. 2006. Decline in relative abundance of bottlenose dolphins exposed to long- term disturbance. *Conservation Biology* 20:1791-1798.
- Bittencourt, L., Lima, I.M.S., Andrade, L.G., Carvalho, R.R., Bisi, T.L., Lailson-Brito Jr, J., and Azevedo, A.F. 2017. Underwater noise in an impacted environment can affect Guiana dolphin communication. *Marine Pollution Bulletin* 114(2):1130-1134, doi: <http://dx.doi.org/10.1016/j.marpolbul.2016.10.037>.
- Blaxter, J.H.S., Gray, J.A.B., and Denton, E.J. 1981. Sound and Startle Responses in Herring Shoals. *Journal of the Marine Biological Association of the United Kingdom* 61(04):851-869, doi: 10.1017/S0025315400023006.
- Borsani, J.F., Clark, C.W., Nani, B., Scarpiniti, M. 2007. Fin whales avoid loud rhythmic, low-frequency sounds in the Ligurian Sea. *Bioacoustics* 17:161-163.
- Boyd, I. 2012. Technology requirements to investigate the effects of sound on marine wildlife. *International Journal of the Society for Underwater Technology* 30:123-133.
- Bruintjies, R., and Radford, A.N. 2013. Context-dependent impacts of anthropogenic noise on individual and social behaviour in a cooperatively breeding fish. *Animal Behaviour* 85(6):1343-1349.
- Cato, D.H., Dunlop, R.A., Noad, M.J., McCauley et al. 2016. Addressing Challenges in Studies of Behavioral Responses of Whales to Noise. *The Effects of Noise on Aquatic Life II: Advances in Experimental Medicine and Biology* 875:145-152.
- Cox, T.M., Ragen, T.J., Read, A.J., Vos, E., Baird, R.W., Balcomb, K., Barlow, J., Caldwell, J., Cranford, T., Crum, L., Amico, A.D., Spain, G.D., Fernandez, A., Finneran, J., Gentry, R., Gerth, W., Gulland, F., Hidebrand, J., Houser, D., Hullar, T., Jepson, P.D., Ketten, D., MacLeod, C.D., Miller, P., Moore, S., Mountain, D.C., Palka, D., Ponganis, P., Rommel, S., Rowles, T., Taylor, B., Tyack, P., Wartzok, D., Gisiner, R., Mead, J., and Benner, L. 2006. Understanding the impacts of anthropogenic sound on beaked whales. *Journal of Cetacean Research and Management* 7(3):177-187.
- [Crum, L.A., Bailey, M.R., Guan, J., Hilmo, P.R., Kargl, S.G., Matula, T.J., and Sapozhnikov, O.A. 2005. Monitoring bubble growth in supersaturated blood and tissue ex vivo and the relevance to marine mammal bioeffects. *Acoustics Research Letters Online* 6:214-20.](#)
- Dahlheim, M. 1993. Responses of gray whales, *Eschrichtius robustus*, to noise. *Journal of the Acoustical Society of America* 94(3):1830.
- [Dahlheim, M., and Castellote, M. 2016. Changes in the acoustic behavior of gray whales *Eschrichtius robustus* in response to noise. *Endangered Species Research* 31:227-242, doi: 10.3354/esr00759.](#)
- [Dooling, R.J., Leek, M.R., and Popper, A.N. 2015. Effects of noise on fishes: what we can learn from humans and birds. *Integrative Zoology* 10\(1\):29-37, doi: 10.1111/1749-4877.12094.](#)

- Dotinga, H.M. and A.G. Oude Elferink. 2000. Acoustic pollution in the oceans: the search for legal standards. *Ocean Development and International Law* 31:151-182.
- [Doyle, L.R., McCowan, B., Hanser, S.F., Chyba, C., Bucci, T., and Blue, J.E. 2008. Applicability of Information Theory to the Quantification of Responses to Anthropogenic Noise by Southeast Alaskan Humpback Whales. *Entropy* 10\(2\):33-46, doi: 10.3390/entropy-e10020033.](#)
- Dungan, S., Riehl, K., Wee, A., and Wang, J. 2011. A review of the impacts of anthropogenic activities on the critically endangered eastern Taiwan Strait Indo-Pacific humpback dolphins (*Sousa chinensis*). *Journal of Marine Animals and their Ecology* 4(2):3-9.
- [Dunlop, R.A., Cato, D.H., and Noad, M.J. 2010. Your attention please: increasing ambient noise levels elicits a change in communication behaviour in humpback whales \(*Megaptera novaeangliae*\). *Proceedings of the Royal Society B-Biological Sciences* 277\(1693\):2521-2529, doi: 10.1098/rspb.2009.2319.](#)
- [Dunlop, R.A., Cato, D.H., and Noad, M.J. 2014. Evidence of a Lombard response in migrating humpback whales \(*Megaptera novaeangliae*\). *The Journal of the Acoustical Society of America* 136\(1\):430-437, doi: 10.1121/1.4883598.](#)
- Ellison, W., Southall, B., Clark, C., and Frankel, A. 2012. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. *Conservation Biology* 26(1):21-28.
- Erbe, C. 2013. Underwater passive acoustic monitoring & noise impacts on marine fauna--a workshop report. *Acoustics Australia* 41(1):113-119.
- [Erbe, C., and Farmer, D.M. 2000. A software model to estimate zones of impact on marine mammals around anthropogenic noise. *Journal of the Acoustical Society of America* 108\(3\):1327-1331, doi: 10.1121/1.1288938.](#)
- [Farcas, A., Thompson, P.M., and Merchant, N.D. 2016. Underwater noise modelling for environmental impact assessment. *Environmental Impact Assessment Review* 57:114-122, doi: 10.1016/j.eiar.2015.11.012.](#)
- [Fay, R. 2009. Soundscapes and the sense of hearing of fishes. *Integrative Zoology* 4\(1\):26-32, doi: 10.1111/j.1749-4877.2008.00132.x.](#)
- 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
- Forney, K.A., Southall, B.L., Sloaten, E., Dawson, S., Read, A.J., Baird, R.W., and Brownell, R.L., Jr. 2017. Nowhere to go: noise impact assessments for marine mammal populations with high site fidelity. *Endangered Species Research* 32:391-413.
- Francis, C.D., & Barber, J.R. 2013. A framework for understanding noise impacts on wildlife: an urgent conservation priority. *Frontiers in Ecology and the Environment* 11:305–313.
- Frankel, A.S., and Clark, C.W. 1998. Results of low-frequency playback of M-sequence noise to humpback whales, *Megaptera novaeangliae*, in Hawaii. *Canadian Journal of Zoology* 76(3):521-535.
- [Gillespie, A. 2006. Establishing reliable foundations for the international scientific investigation of noise pollution in the oceans. *RECIEL* 15:211-226.](#)
- Gisiner, R., Harper, S., Livingston, E., and Simmen, J. 2006. Effects of sound on the marine environment (ESME): an underwater noise risk model. *IEEE Journal of Oceanic Engineering* 31:4-7.

- [Gomez, C., Lawson, J., Wright, A.J., Buren, A., Tollit, D., and Lesage, V. 2016. A systematic review on the behavioural responses of wild marine mammals to noise: the disparity between science and policy. *Canadian Journal of Zoology* 94\(12\):801-819, doi: 10.1139/cjz-2016-0098.](#)
- Hastings, M.C. 2008. Coming to Terms with the Effects of Ocean Noise on Marine Animals. *Acoustics Today* 4(2):22-34.
- Hatch, L., Clark, C., Van Parijs, S., Frankel, A., and Ponirakis, D. 2012. Quantifying loss of acoustic communication space for right whales in and around a U.S. National Marine Sanctuary. *Conservation Biology* 26(6):983-994.
- Hatch, L.T., Wahle, C.M., Gedamke, J., Harrison, J., Laws, B., Moore, S. E., Stadler, J.H., and Van Parijs, S.M. 2016. Can you hear me here? Managing acoustic habitat in US waters. *Endangered Species Research* 30:171-186.
- 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.
- [Hawkins, A.D., Pembroke, A.E., & Popper, A.N. 2015. Information gaps in understanding the effects of noise on fishes and invertebrates. *Reviews in Fish Biology and Fisheries* 25:39-64.](#)
- [Hawkins, A.D., and Popper, A.N. 2017. A sound approach to assessing the impact of underwater noise on marine fishes and invertebrates. *ICES Journal of Marine Science* 74\(3\):635-651.](#)
- [Hildebrand, J.A. 2009. Anthropogenic and natural sources of ambient noise in the ocean. *Marine Ecology Progress Series* 395:5-20.](#)
- [Holt, M.M., Noren, D.P., Dunkin, R.C., and Williams, T.M. 2015. Vocal performance affects metabolic rate in dolphins: Implications for animals communicating in noisy environments. *Journal of Experimental Biology* 218\(11\):1647-1654, doi: 10.1242/jeb.122424.](#)
- Holt, M., Noren, D., and Emmons, C. 2011. Effects of noise levels and call types on the source levels of killer whale calls. *The Journal of the Acoustical Society of America* 130(5):3100-3106.
- Hotchkin, C., and Parks, S. 2013. The Lombard effect and other noise-induced vocal modifications: insight from mammalian communication systems. *Biological Reviews* 88(4):809-824.
- Kastak, D., Holt, M.M., Mulsow, J., Kastak, C.J.R., Schusterman, R.J., and Southall, B.L. 2006. Towards a predictive model of noise-induced temporary threshold shift for an amphibious marine mammal, the California sea lion (*Zalophus californianus*). *The Journal of the Acoustical Society of America* 120(5):3226.
- Kastak, D., Mulsow, J., Ghoul, A., and Reichmuth, C. 2008. Noise-induced permanent threshold shift in a harbour seal. *Journal of the Acoustical Society of America* 123(5):2986.
- [Kastak, D., and Schusterman, R.J. 1996. Temporary threshold shift in a harbour seal \(*Phoca vitulina*\). *Journal of the Acoustical Society of America* 100\(3\):1905-1908.](#)
- [Kastak, D., Schusterman, R.J., Southall, B.L., and Reichmuth, C.J. 1999. Underwater temporary threshold shift induced by octave-band noise in three species of pinniped. *Journal of the Acoustical Society of America* 106\(2\):1142-1148.](#)

- Kastak, D., Southall, B., Holt, M., Kastak, C.R., and Schusterman, R. 2004. Noise-induced temporary threshold shifts in pinnipeds: Effects of noise energy. *Journal of the Acoustical Society of America* 116(4):2531-2532.
- Kastak, D., Southall, B.L., Schusterman, R.J., and Kastak, C.R. 2005. Underwater temporary threshold shift in pinnipeds: Effects of noise level and duration. *Journal of the Acoustical Society of America* 118(5):3154-3163, doi: 10.1021/1.2047128.
- [Kastelein, R., Gransier, R., Hoek, L., Macleod, A., and Terhune, J. 2012. Hearing threshold shifts and recovery in harbour seals \(*Phoca vitulina*\) after octave-band noise exposure at 4 kHz. *Journal of the Acoustical Society of America* 132\(4\):2745-2761.](#)
- [Kastelein, R.A., Gransier, R., and Hoek, L. 2013. Comparative temporary threshold shifts in a harbour porpoise and harbor seal, and severe shift in a seal. *Journal of the Acoustical Society of America* 134\(1\):13-16.](#)
- [Kastelein, R., Gransier, R., Hoek, L., and Olthuis, J. 2012. Temporary threshold shifts and recovery in a harbour porpoise \(*Phocoena phocoena*\) after octave-band noise at 4 kHz. *Journal of the Acoustical Society of America* 132\(5\):3525-3537.](#)
- Kastelein, R.A., Steen, N., Gransier, R., and de Jong, C.A.F. 2013. Behavioural response threshold level of a harbour porpoise (*Phocoena phocoena*) to an impulsive sound. *Aquatic Mammals* 39(4):315-323.
- [Kastelein, R.A., Wensveen, P.J., Hoek, L., Au, W.W.L., Terhune, J.M., and de Jong, C.A.F. 2009. Critical ratios in harbour porpoises \(*Phocoena phocoena*\) for tonal signals between 0.315 and 150 kHz in random Gaussian white noise. *Journal of the Acoustical Society of America* 126\(3\):1588-1597, doi: 10.1121/1.3177274.](#)
- [Kastelein, R.A., Wensveen, P., Hoek, L., and Terhune, J.M. 2009. Underwater hearing sensitivity of harbour seals \(*Phoca vitulina*\) for narrow noise bands between 0.2 and 80 kHz. *Journal of the Acoustical Society of America* 126\(1\):476-483, doi: 10.1121/1.3132522.](#)
- [Kastelein, R.A., Wensveen, P.J., Hoek, L., Verboom, W.C., and Terhune, J.M. 2009. Underwater detection of tonal signals between 0.125 and 100 kHz by harbour seals \(*Phoca vitulina*\). *Journal of the Acoustical Society of America*, 125\(2\), 1222-1229, doi: 10.1121/1.3050283.](#)
- Kavanagh, A.S.; Noad, M.J., Blomberg, S.P., Goldizen, A.W., Kniest, E., Cato, D.H., and Dunlop, R.A. 2016. Factors driving the variability in diving and movement behavior of migrating humpback whales (*Megaptera novaeangliae*): implications for anthropogenic disturbance studies. *Marine Mammal Science* 33(2):413-439, doi: 10.1111/mms.12375.
- Kelly, B.P., Burns, J.J. and Quakenbush L.T. 1988. Responses of ringed seals (*Phoca hispida*) to noise disturbance, *Port and Ocean Engineering Under Arctic Conditions* 2:27-38.
- Ketten, D.R., O'Malley, J., Moore, P.W.B., Ridgway, S., and Merigo, C. 2001. Aging, injury, disease, and noise in marine mammal ears. *Journal of the Acoustical Society of America* 110(5):2721-2721.
- Knudsen, F.R., Enger, P.S., and Sand, O. 1992. Awareness reactions and avoidance responses to sound in juvenile Atlantic salmon, *Salmo salar* L. *Journal of Fish Biology* 40:523-534.
- [Kunc, H.P., McLaughlin, K.E., and Schmidt, R. 2016. Aquatic noise pollution: implications for individuals, populations, and ecosystems. *Proceedings of the Royal Society of London B: Biological Sciences* 283, Issue 1836.](#)

- Lagardère, J.-P. 1982. Effects of noise on growth and reproduction of *Crangon crangon* in rearing tanks. *Marine Biology* 71:177-185.
- [Lillis, A., Eggleston, D.B., & Bohnenstiehl, D.R. 2013. Oyster Larvae Settle in Response to Habitat-Associated Underwater Sounds. *PLoS ONE* 8\(10\), e79337.](#)
- Malme, C.I. 1993. Animal bioacoustics, acoustical oceanography, and underwater acoustics: Effects of noise on marine mammals II. *Journal of the Acoustical Society of America* 94:1848-1851.
- Marley, S.A., Erbe, C., Kent, C.P.S., Parsons, M.J.G., and Parnum, I.M. 2017. Spatial and temporal variation in the acoustic habitat of bottlenose dolphins (*Tursiops aduncus*) within a highly urbanised estuary. *Frontiers in Marine Science* 4:197, doi: 10.3389/fmars.2017.00197.
- [Marley, S.A., Erbe, C., and Salgado Kent, C.P. 2016. Underwater sound in an urban estuarine river: Sound sources, soundscape contribution, and temporal variability. *Acoustics Australia* 44\(1\):171-186, doi: 10.1007/s40857-015-0038-z.](#)
- [McCauley, R.D., Fewtrell, J., and Popper, A.N. 2003. High intensity anthropogenic sound damages fish ears. *Journal of the Acoustical Society of America* 113:638-642.](#)
- [Melcon, M., Cummins, A., Kerosky, S., Roche, L., Wiggins, S., and Hildebrand, J. 2012. Blue whales respond to anthropogenic noise. *PLoS ONE* 7\(2\).](#)
- Miksis, J.L., Grund, M.D., Nowacek, D.P., Solow, A.R., Connor, R.C., and Tyack, P.L. 2001. Cardiac responses to acoustic playback experiments in the captive bottlenose dolphin (*Tursiops truncatus*). *Journal of Comparative Psychology* 115(3):227-232.
- Miksis-Olds, J.L., Donaghay, P.L., Miller, J.H., Tyack, P.L., and Nystuen, J.A. 2007. Noise level correlates with manatee use of foraging habitats. *Journal of the Acoustical Society of America* 121:3011-3020.
- [Miksis-Olds, J.L., and Tyack, P.L. 2009. Manatee \(*Trichechus manatus*\) vocalization usage in relation to environmental noise levels. *Journal of the Acoustical Society of America* 125\(3\):1806-1815, doi: 10.1121/1.3068455.](#)
- [Miksis-Olds, J.L., and Wagner, T. 2011. Behavioral response of manatees to variations in environmental sound levels. *Marine Mammal Science* 27\(1\):130-148, doi: 10.1111/j.1748-7692.2010.00381.x.](#)
- [Miller, P.J.O., Kvadsheim, P.H., Lam, F.-P.A., Tyack, P.L., Cure, C., Deruiter, S.L., Kleivane, L., Sivle, L.D., Van Ijsselmuide, S.P., Visser, F., Wensveen, P.J., Von Benda-Beckmann, A.M., Martin Lopez, L.M., Narazaki, T., and Hooker, S.K. 2015. First indications that northern bottlenose whales are sensitive to behavioural disturbance from anthropogenic noise. *Royal Society Open Science*, 2, 140484, doi: 10.1098/rsos.140484](#)
- [Mitson, R.B., and Knudsen, H.P. 2003. Causes and effects of underwater noise on fish abundance estimation. *Aquatic Living Resources* 16\(3\):255-263, doi: 10.1016/S0990-7440\(03\)00021-4.](#)
- [Mooney, T.A., Nachtigall, P.E., Breese, M., Vlachos, S., and Au, W.W.L. 2009. Predicting temporary threshold shifts in a bottlenose dolphin \(*Tursiops truncatus*\): The effects of noise level and duration. *Journal of the Acoustical Society of America* 125\(3\):1816-1826, doi: 10.1121/1.3068456.](#)
- Moore, S., Reeves, R., Southall, B., Ragen, T., Suydam, R., and Clark, C. 2012. A new framework for assessing the effects of anthropogenic sound on marine mammals in a rapidly changing arctic. *Bioscience* 62(3):289-295.

- Morisaka, T., Shinohara, M., Nakahara, F., and Akamatsu, T. 2005. Effects of ambient noise on the whistles of Indo-Pacific bottlenose dolphin populations. *Journal of Mammalogy* 86:541-546.
- Morton, A.B., and Symonds, H.K. 2002. Displacement of *Orcinus orca* (L.) by high amplitude sound in British Columbia, Canada. *ICES Journal of Marine Science* 59(1):71-80.
- Nabe-Nielsen, J., Sibly, R. M., Tougaard, J., Teilmann, J., and Sveegaard, S. 2014. Effects of noise and by-catch on a Danish harbour porpoise population. *Ecological Modelling* 272:242-251.
- Nachtigall, P.E., Pawloski, J.L., and Au, W.W.L. 2003. Temporary threshold shifts and recovery following noise exposure in the Atlantic bottlenosed dolphin (*Tursiops truncatus*). *Journal of the Acoustical Society of America* 113(6):3425-3429.
- Nachtigall, P. E., Supin, A. Y., Pawloski, J., and Au, W.W.L. 2004. Temporary threshold shifts after noise exposure in the bottlenose dolphin (*Tursiops truncatus*) measured using evoked auditory potentials. *Marine Mammal Science* 20:673-687.
- Nakahara, F. 1999. Influences of the underwater man-made noise on acoustic behavior of dolphins. *Otsuchi Marine Science* 24:18-23.
- Neo, Y.Y., Seitz, J., Kastelein, R., Winter, H.V., ten Cate C. and Slabbekoorn, H. 2014. Temporal structure of sound affects behavioural recovery from noise impact in European seabass. *Biological Conservation* 178:65–73.
- [Neo, Y., Ufkes, E., Kastelein, R., Winter, H., ten Cate, C., and Slabbekoorn, H. 2015. Impulsive sounds change European seabass swimming patterns: influence of pulse repetition interval. *Marine Pollution Bulletin* 97\(1-2\):111-117, doi: 10.1016/j.marpolbul.2015.06.027.](#)
- Nowacek, D.P., Thorne, L.H., Johnston, D.W., and Tyack, P.L. 2007. Responses of cetaceans to anthropogenic noise. *Mammal Review* 37(2):81-115.
- [Papale, E., Gamba, M., Perez-Gil, M., Martin, V.M., and Giacoma, C. 2015. Dolphins adjust species-specific frequency parameters to compensate for increasing background noise. *PLoS ONE* 10\(4\), e0121711, doi: 10.1371/journal.pone.0121711](#)
- [Papoutsoglou, S.E., Karakatsouli, N., Papoutsoglou, E.S., and Vasilikos, G. 2010. Common carp \(*Cyprinus carpio*\) response to two pieces of music \("Eine Kleine Nachtmusik" and "Romanza"\) combined with light intensity, using recirculating water system. *Fish Physiology and Biochemistry* 36\(3\):539-554, doi: 10.1007/s10695-009-9324-8.](#)
- Parente, C.L., de Araújo, J.P., & de Araújo, M.E. 2007. Diversity of cetaceans as tool in monitoring environmental impacts of seismic surveys. *Biota Neotropica* 7(1).
- Parks, S.E., Clark, C.W., and Tyack, P.L. 2006. Acoustic Communication in the North Atlantic Right Whale (*Eubalaena glacialis*) and Potential Impacts of Noise. *Transactions, American Geophysical Union* 87(36).
- [Parks, S.E., Clark, C.W., and Tyack, P.L. 2007. Short- and long-term changes in right whale calling behavior: The potential effects of noise on acoustic communication. *Journal of the Acoustical Society of America* 122\(6\):3725-3731, doi: 10.1121/1.2799904.](#)
- Parks, S.E., Johnson, M., Nowacek, D., and Tyack, P.L. 2010. Individual right whales call louder in increased environmental noise. *Biology Letters* 7(1):33-35.
- [Parks, S.E., Urazghildiiev, I., and Clark, C.W. 2009. Variability in ambient noise levels and call parameters of North Atlantic right whales in three habitat areas. *Journal of the Acoustical Society of America* 125\(2\):1230-1239, doi: 10.1121/1.3050282.](#)

- [Pine, M.K., Jeffs, A.G., and Radford, A.C. 2014. The cumulative effect on sound levels from multiple underwater anthropogenic sound sources in shallow coastal waters. *Journal of Applied Ecology* 51:23-30.](#)
- Popov, V., Klishin, V., Nechaev, D., Pletenko, M., Rozhnov, V., Supin, A., Sysueva, E., and Tarakanov, M. 2011. Influence of acoustic noises on the white whale hearing thresholds. *Doklady Biological Sciences* 440(1):332-334.
- Popov, V.V., Supin, A.Y., Rozhnov, V.V., Nechaev, D.I., Sysuyeva, E.V., Klishin, V.O., Pletenko, M.G., and Tarakanov, M.B. 2013. Hearing threshold shifts and recovery after noise exposure in beluga whales, *Delphinapterus leucas*. *Journal of Experimental Biology* 216(9):1587-1596.
- Popper, A.N. 2003. Effects of anthropogenic sounds on fishes. *Fisheries* 28(10):24-31.
- Popper, A.N., and Hastings, M.C. 2009. The effects of anthropogenic sources of sound on fishes. *Journal of Fish Biology* 75:455-489.
- [Radford, A.N., Kerridge, E., and Simpson, S.D. 2014. Acoustic communication in a noisy world: Can fish compete with anthropogenic noise? *Behavioural Ecology* 25\(5\):1022-1030, doi: 10.1093/beheco/aru029.](#)
- Ray, C., and Schevill, W.E. 1967. Noisy underwater world of the Weddell seal. *Animals* 10(3):109-113.
- Rice, A.N., Tielens, J.T., Estabrook, B.J., Muirhead, C.A., Rahaman, A., Guerra, M., and Clark, C.W. 2014. Variation of ocean acoustic environments along the western North Atlantic coast: A case study in context of the right whale migration route. *Ecological Informatics* 21:89-99.
- Richardson, W.J., and Wursig, B. 1997. Influences of man-made noise and other human actions on cetacean behaviour. *Marine and Freshwater Behaviour and Physiology* 29(1-4):183-209.
- [Romagosa Verges, M., Cascão, I., Merchant, N., Lammers, M., Giacomello, E., Marques, T., and Silva, M. 2017. Underwater ambient noise in a baleen whale migratory habitat off the Azores. *Frontiers in Marine Science* 4\(109\), doi: 10.3389/fmars.2017.00109.](#)
- [Sabet, S.S., Neo, Y.Y., and Slabbekoorn, H. 2015. The effect of temporal variation in sound exposure on swimming and foraging behaviour of captive zebrafish. *Animal Behaviour* 107:49-50, doi: 10.1016/j.anbehav.2015.05.022.](#)
- Schecklman, S., Houser, D., Cross, M., Hernandez, D., and Siderius, M. 2011. Comparison of methods used for computing the impact of sound on the marine environment. *Marine Environmental Research* 71(5):342-350.
- [Scheifele, P.M., Andrew, S., Cooper, R.A., Darre, M., Musiek, F.E., and Max, L. 2005. Indication of a Lombard vocal response in the St. Lawrence River beluga. *Journal of the Acoustical Society of America* 117\(3\):1486-1492, doi: 10.1121/1.1835508.](#)
- Scholik, A.R., and Yan, H.Y. 2001. Effects of underwater noise on auditory sensitivity of a cyprinid fish. *Hearing Research* 152:17-24.
- [Schwarz, A.L., and Greer, G.L. 1984. Responses of Pacific Herring, *Clupea harengus pallasii*, to Some Underwater Sounds. *Canadian Journal of Fisheries and Aquatic Sciences* 41\(8\):1183-1192, doi:10.1139/f84-140.](#)
- Shannon, G., McKenna, M.F., Angeloni, L.M., Crooks, K.R., Frstrup, K.M., Brown, E., Warner, K.A., Nelson, M.D., White, C., Briggs, J., McFarland, S., and Wittemyer, G. 2015. A synthesis of two decades of research documenting the effects of noise on wildlife. *Biological Reviews* 91(4):982-1005, DOI: 10.1111/brv.12207

- Shyu, H.J. and R. Hillson. 2006. A software workbench for estimating the effects of cumulative sound exposure in marine mammals. *IEEE Journal of Oceanic Engineering* 31(1):8-21.
- Sierra-Flores, R., Atack, T., Migaud, H., Davie, A. 2015. Stress response to anthropogenic noise in Atlantic cod *Gadus morhua* L. *Aquacultural Engineering* 67:67-76.
- Sills, J., Southall, B., and Reichmuth, C. 2016. Psychoacoustic Studies of Spotted (*Phoca largha*) and Ringed (*Pusa hispida*) Seals. *The Effects of Noise on Aquatic Life II. Advances in Experimental Medicine and Biology* 875:1025-1030.
- [Simpson, S.D., Radford, A.N., Nedelec, S.L., Ferrari, M.C.O., Chivers, D.P., McCormick, M.I., and Meekan, M.G. 2016. Anthropogenic noise increases fish mortality by predation. *Nature Communications* 7:10544, doi: 10.1038/ncomms10544.](#)
- Simpson, S.D., Yan, H.Y., Wittenrich, M.L., and Meekan, M.G. 2005. Response of embryonic coral reef fishes (Pomacentridae: *Amphiprion* spp.) to noise. *Marine Ecology Progress Series* 287:201-208.
- [Slabbekoorn, H., Bouton, N., van Opzeeland, I., Coers, A., ten Cate, C., and Popper, A.N. 2010. A noisy spring: the impact of globally rising underwater sound levels on fish. *Trends in Ecology & Evolution* 25\(7\):419-427, doi: 10.1016/j.tree.2010.04.005.](#)
- [Smith, M.E., Kane, A.S., and Popper, A.N. 2004. Acoustical stress and hearing sensitivity in fishes: does the linear threshold shift hypothesis hold water? *Journal of Experimental Biology* 207\(20\):3591-3602, doi: 10.1242/Jeb.01188.](#)
- [Solé, M., Lenoir, M., Durfort, M., López-Bejar, M., Lombarte, A., and André, M. 2013. Ultrastructural Damage of *Loligo vulgaris* and *Illex coindetii* statocysts after Low Frequency Sound Exposure. *PLoS ONE*, 8\(10\), e78825, doi: 10.1371/journal.pone.0078825.](#)
- Solé, M., Lenoir, M., Durfort, M., Lopez-Bejar, M., Lombarte, A., van der Schaar, M., & André, M. 2013. Does exposure to noise from human activities compromise sensory information from cephalopod statocysts? *Deep-Sea Research II* 95:160-181.
- Southall, B.L., Bowles, A.E., Ellison, W.T., Finneran, J.J., Gentry, R.L., Greene, C.R.J., Kastak, D., Ketten, D.R., Miller, J.H., Nachtigall, P.E., Richardson, W.J., Thomas, J.A., and Tyack, P.L. 2007. Marine Mammal Noise Exposure Criteria: Initial Scientific Recommendations. *Aquatic Mammals* 33(4):411-521.
- [Southall, B.L., Schusterman, R.J., Kastak, D., and Kastak, C.R. 2005. Reliability of underwater hearing thresholds in pinnipeds. *Acoustics Research Letters Online-Arlo* 6\(4\):243-249, doi: 10.1121/1.1985956.](#)
- Southall, B.L., Schusterman, R.J., Kastak, D., Kastak, C.R., and Holt, M.M. 2001. Pinniped hearing and anthropogenic noise. *Journal of the Acoustical Society of America* 110(5):2722.
- [Speares, P., Holt, D., and Johnston, C. 2011. The relationship between ambient noise and dominant frequency of vocalizations in two species of darters \(Percidae: Etheostoma\). *Environmental Biology of Fishes* 90\(1\):103-110, doi: 10.1007/s10641-010-9722-x.](#)
- [Tenessen, J.B., and Parks, S.E. 2016. Acoustic propagation modeling indicates vocal compensation in noise improves communication range for North Atlantic right whales. *Endangered Species Research* 30:225-237, doi: 10.3354/esr00738.](#)
- [Todd, V.L.G. 2016. Mitigation of underwater anthropogenic noise and marine mammals: the 'death of a thousand' cuts and/or mundane adjustment? *Marine Pollution Bulletin* 102\(1\):1-3, doi: 10.1016/j.marpolbul.2015.11.059.](#)

- [Tougaard, J., Wright, A.J., and Madsen, P.T. 2015. Cetacean noise criteria revisited in the light of proposed exposure limits for harbour porpoises. *Marine Pollution Bulletin* 90\(1-2\):196-208, doi: 10.1016/j.marpolbul.2014.10.051.](#)
- [Tyack, P.L. 2008. Convergence of calls as animals form social bonds, active compensation for noisy communication channels, and the evolution of vocal learning in mammals. *Journal of Comparative Psychology* 122\(3\):319-331, doi: 10.1037/A0013087.](#)
- [Tyack, P.L. 2008. Implications for marine mammals of large-scale changes in the marine acoustic environment. *Journal of Mammalogy* 89:549-558.](#)
- Tyack, P.L. 2009. Acoustic playback experiments to study behavioral responses of free-ranging marine animals to anthropogenic sound. *Marine Ecology Progress Series* 395:187-200.
- Tyack, P., Gordon, J., and Thompson, D. 2004. Controlled exposure experiments to determine the effects of noise on large marine mammals. *Marine Technical Society Journal* 37:41-53.
- Voellmy, I.K., Purser, J., Flynn, D., Kennedy, P., Simpson, S.D., and Radford, A.N. 2014. Acoustic noise reduces foraging success in two sympatric fish species via different mechanisms. *Animal Behaviour* 89:191-198.
- Wartzok, D., Popper, A.N., Gordon, J., and Merrill, J. 2003. Factors affecting the responses of marine mammals to acoustic disturbance. *Marine Technology Society Journal* 37(4):6-15.
- Watkins, W.A. 1986. Whale reactions to human activities in Cape Cod waters. *Marine Mammal Science* 2(4):251-262.
- [Weilgart, L.S. 2007. The impacts of anthropogenic ocean noise on cetaceans and implications for management. *Canadian Journal of Zoology* 85\(11\):1091-1116, doi: 10.1139/Z07-101.](#)
- Weilgart, L.S. 2007. A brief review of known effects of noise on marine mammals. *International Journal of Comparative Psychology* 20:159-168.
- Williams, R., Clark, C.W., Ponirakis, D., and Ashe, E. 2014. Acoustic quality of critical habitats for three threatened whale populations. *Animal Conservation* 17(2):174-185.
- [Williams, R., Erbe, C., Ashe, E., and Clark, C.W. 2015. Quiet\(er\) marine protected areas. *Marine Pollution Bulletin* 100\(1\):154-161, doi: 10.1016/j.marpolbul.2015.09.012.](#)
- Williams, R., Lusseau, D., and Hammond, P.S. 2006. Estimating relative energetic costs of human disturbance to killer whales (*Orcinus orca*). *Biological Conservation* 133:301-311.
- [Wright, A.J. 2015. Sound science: maintaining numerical and statistical standards in the pursuit of noise exposure criteria for marine mammals. *Frontiers in Marine Science* 24 November 2015 doi: 10.3389/fmars.2015.00099.](#)
- [Wright, A.J., Deak, T., and Parsons, E.C.M. 2011. Size matters: Management of stress responses and chronic stress in beaked whales and other marine mammals may require larger exclusion zones. *Marine Pollution Bulletin* 63\(1-4\):5-9, doi: 10.1016/j.marpolbul.2009.11.024.](#)
- Wright, A.J., and Highfill, L. 2007. Noise-related stress and marine mammals: An introduction. *International Journal of Comparative Psychology* 20(2-3):iii-viii.
- Wright, A.J., and Highfill, L. eds. 2007. Considerations of the effects of noise on marine mammals and other animals. *International Journal of Comparative Psychology* 20:89-316.

- Wright, A.J., and Kyhn, L.A. 2014. Practical management of cumulative anthropogenic impacts with working marine examples. *Conservation Biology* 29:333-340, doi: 10.1111/cobi.12425.
- Wright, A.J., Soto, N.A., Baldwin, A.L., Bateson, M., Beale, C.M., Clark, C., Deak, T., Edwards, E.F., Fernandez, A., Godinho, A., Hatch, L.T., Kakuschke, A., Lusseau, D., Martineau, D., Romero, L.M., Weilgart, L.S., Wintle, B.A., and Notarbartolo-di-Sciara, G.M., Vidal. 2007. Do Marine Mammals Experience Stress Related to Anthropogenic Noise? *International Journal of Comparative Psychology* 20:247-316.
- Wright, A.J., Soto, N.A., Baldwin, A.L., Bateson, M., Beale, C.M., Clark, C., Deak, T., Edwards, E.F., Fernández, A., Godinho, A., Hatch, L. T., Kakuschke, A., Lusseau, D., Martineau, D., Romero, M.L., Weilgart, L.S., Wintle, B.A., Notarbartolo-di-Sciara, G., and Martin, V. 2007. Anthropogenic Noise as a Stressor in Animals: A Multidisciplinary Perspective. *International Journal of Comparative Psychology* 20(2):250-273.
- [Wysocki, L.E., and Ladich, F. 2005. Effects of noise exposure on click detection and the temporal resolution ability of the goldfish auditory system. *Hearing Research* 201\(1-2\):27-36, doi: 10.1016/j.heares.2004.08.015.](#)
- [Wysocki, L.E., and Ladich, F. 2005. Hearing in fishes under noise conditions. *Jaro-Journal of the Association for Research in Otolaryngology* 6\(1\):28-36, doi: 10.1007/s10162-004-4043-4.](#)
- Zitterbart, D.P., Kindermann, L., Burkhardt, E., and Boebel, O. 2013. Automatic Round-the-Clock Detection of Whales for Mitigation from Underwater Noise Impacts PLoS ONE, 8(8), e71217.

Masking

- Bagočius, D. 2015. Potential Masking of the Baltic Grey Seal Vocalisations by Underwater Shipping Noise in the Lithuanian Area of the Baltic Sea. *Environmental Research, Engineering and Management* 70(4):66-72.
- [Branstetter, B.K., Bakhtiari, K., Black, A., Trickey, J.S., Finneran, J.J., and Aihara, H. 2016. Energetic and informational masking of complex sounds by a bottlenose dolphin \(*Tursiops truncatus*\). *Journal of the Acoustical Society of America* 140\(3\):1904-1917, doi: <http://dx.doi.org/10.1121/1.4962530>.](#)
- [Branstetter, B.K., and Finneran, J.J. 2008. Comodulation masking release in bottlenose dolphins \(*Tursiops truncatus*\). *Journal of the Acoustical Society of America* 124\(1\):625-633, doi: 10.1121/1.2918545.](#)
- [Branstetter, B.K., Trickey, J.S., Aihara, H., Finneran, J.J., and Liberman, T.R. 2013. Time and frequency metrics related to auditory masking of a 10 kHz tone in bottlenose dolphins \(*Tursiops truncatus*\). *Journal of the Acoustical Society of America* 134\(6\):4556-4565, doi: 10.1121/1.4824680.](#)
- [Branstetter, B.K., Trickey, J.S., Bakhtiari, K., Black, A., Aihara, H., and Finneran, J.J. 2013. Auditory masking patterns in bottlenose dolphins \(*Tursiops truncatus*\) with natural, anthropogenic, and synthesized noise. *Journal of the Acoustical Society of America* 133\(3\):1811-1818, doi: 10.1121/1.4789939.](#)
- [Clark, C.W., Ellison, W.T., Southall, B.L., Hatch, L., Van Parijs, S.M., Frankel, A., and Ponirakis, D. 2009. Acoustic masking in marine ecosystems: intuitions, analysis, and implication. *Marine Ecology Progress Series* 395:201-222, doi: 10.3354/Meps08402.](#)

- [Erbe, C. 2008. Critical ratios of beluga whales \(*Delphinapterus leucas*\) and masked signal duration. *Journal of the Acoustical Society of America* 124\(4\):2216-2223, doi: 10.1121/1.2970094](#)
- [Erbe, C. \(2015\). The maskogram: A tool to illustrate zones of masking. *Aquatic Mammals* 41\(4\):434-443, doi: 10.1578/AM.41.4.2015.434.](#)
- [Erbe, C., King, A., Yedlin, M., and Farmer, D. \(1999\). Computer models for masked hearing experiments with beluga whales \(*Delphinapterus leucas*\). *Journal of the Acoustical Society of America* 105\(5\):2967-2978, doi: 10.1121/1.426945.](#)
- [Erbe, C., Reichmuth, C., Cunningham, K.C., Lucke, K., and Dooling, R.J. 2016. Communication masking in marine mammals: A review and research strategy. *Marine Pollution Bulletin* 103:15-38, doi: 10.1016/j.marpolbul.2015.12.007.](#)
- [Fay, R.R. 2011. Signal-to-noise ratio for source determination and for a comodulated masker in goldfish, *Carassius auratus*. *Journal of the Acoustical Society of America* 129\(5\):3367-3372.](#)
- [Holt, M.M., and Schusterman, R.J. 2007. Spatial release from masking of aerial tones in pinnipeds. *Journal of the Acoustical Society of America* 121\(2\):1219-1225, doi: 10.1121/1.2404929.](#)
- [Kastelein, R.A., and Wensveen, P.J. 2008. Effect of two levels of masking noise on the hearing threshold of a harbour porpoise \(*Phocoena phocoena*\) for a 4.0 kHz signal. *Aquatic Mammals* 34\(4\):420-425.](#)
- [Southall, B.L., Schusterman, R.J., and Kastak, D. 2000. Masking in three pinnipeds: Underwater, low-frequency critical ratios. *Journal of the Acoustical Society of America* 108\(3\):1322-1326, doi: 10.1121/1.1288409.](#)
- [Southall, B.L., Schusterman, R.J., and Kastak, D. 2003. Auditory masking in three pinnipeds: Aerial critical ratios and direct critical bandwidth measurements. *Journal of the Acoustical Society of America* 114\(3\):1660-1666, doi: 10.1121/1.1587733.](#)

Physiological and behavioral human noise effects on marine organisms

- [Amoser, S., and Ladich, F. 2003. Diversity in noise-induced temporary hearing loss in otophysine fishes. *Journal of the Acoustical Society of America* 113\(4\):2170-2179, doi: 10.1121/1.1557212.](#)
- [Banner, A., and Hyatt, M. 1973. Effects of noise on eggs and larvae of two estuarine fishes. *Transactions of the American Fisheries Society* 102\(1\):134-136.](#)
- [Belanger, A.J., Bobeica, I., and Higgs, D.M. 2010. The effect of stimulus type and background noise on hearing abilities of the round goby *Neogobius melanostomus*. *Journal of Fish Biology* 77\(7\):1488-1504, doi: 10.1111/j.1095-8649.2010.02773.x.](#)
- [Buscaino, G., Filiciotto, F., Buffa, G., Bellante, A., Di Stefano, V., Assenza, A., Fazio, F., Caola, G., and Mazzola, S. 2010. Impact of an acoustic stimulus on the motility and blood parameters of European sea bass \(*Dicentrarchus labrax* L.\) and gilthead sea bream \(*Sparus aurata* L.\). *Marine Environmental Research* 69\(3\):136-142.](#)
- [Croll, D.A., Clark, C.W., Calambokidis, J., Ellison, W.T., and Tershy, B.R. 2001. Effect of anthropogenic low-frequency noise on the foraging ecology of *Balaenoptera* whales. *Animal Conservation* 4\(1\):13-27, doi: 10.1017/s1367943001001020.](#)
- [Finneran, J.J. 2015. Noise-induced hearing loss in marine mammals: A review of temporary threshold shift studies from 1996 to 2015. *Journal of the Acoustical Society of America* 138\(3\):1702-1726, doi: 10.1121/1.4927418.](#)

- Finneran, J.J., Carder, D.A., Schlundt, C.E., and Dear, R.L. 2010. Growth and recovery of temporary threshold shift at 3 kHz in bottlenose dolphins: Experimental data and mathematical models. *Journal of the Acoustical Society of America* 127(5):3256-3266.
- Finneran, J.J., Carder, D.A., Schlundt, C.E., and Ridgway, S.H. 2005. Temporary threshold shift in bottlenose dolphins (*Tursiops truncatus*) exposed to mid-frequency tones. *Journal of the Acoustical Society of America* 119(4):2696-2705.
- Finneran, J.J., and Schlundt, C.E. 2010. Frequency-dependent and longitudinal changes in noise-induced hearing loss in a bottlenose dolphin (*Tursiops truncatus*) (L). *Journal of the Acoustical Society of America* 128(2):567-570.
- [Yamato, M., Khidas, K., Pyenson, N.D., Fordyce, R.E., and Mead, J.G. 2015. Extensively remodeled, fractured cetacean tympanic bullae show that whales can survive traumatic injury to the ears. *Journal of Anatomy* 228\(1\):125-136 doi: 10.1111/joa.12385.](#)

Policy

- Abate, R.S. 2010. NEPA, National Security, and Ocean Noise: The Past, Present, and Future of Regulating the Impact of Navy Sonar on Marine Mammals. *Journal of International Wildlife Law & Policy* 13:326-356.
- Dolman, S.J. 2007. Spatio-temporal restrictions as best practice precautionary response to ocean noise. *Journal of International Wildlife Law and Policy* 10:219-224.
- [Dolman, S.J., Evans, P.G.H., Notarbartolo-di-Sciara, G., and Frisch, H. 2011. Active sonar, beaked whales and European regional policy. *Marine Pollution Bulletin* 63\(1-4\):27-34, doi: 10.1016/j.marpolbul.2010.03.034.](#)
- Gillespie, A. 2007. The precautionary principle in the twenty-first century: A case study of noise pollution in the ocean. *International Journal of Marine and Coastal Law* 22:61-87.
- 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.
- Reeve, L.L.N. 2012. Of Whales and Ships: Impacts on the Great Whales of Underwater Noise Pollution from Commercial Shipping and Proposals for Regulation under International Law. *Ocean and Coastal Law Journal* 18(1):127-166.
- Reynolds, J.R. 2008. Submarines, Sonar, and the Death of Whales: Enforcing the Delicate Balance of Environmental Compliance and National Security in Military Training. *William & Mary Environmental Law & Policy Review* 32(3):759-802.
- Scott, K.N. 2004. International Regulation Of Undersea Noise, *International and Comparative Law Quarterly* 53:287-324.
- Scott, K.N. 2007. Sound and cetaceans: A regional response to regulating acoustic marine pollution. *Journal of International Law and Policy* 10:175-199.
- Weilgart, L.S. 2007. The need for precaution in the regulation and management of undersea noise. *J. Int. Wildlife Law and Policy* 10:3, 247-253.
- Williams, R., Ashe, E., Blight, L., Jasny, M., and Nowlan, L. 2014. Marine mammals and ocean noise: Future directions and information needs with respect to science, policy and law in Canada. *Marine Pollution Bulletin* 86:29-38.