

CRS Report for Congress

Active Military Sonar and Marine Mammals: Events and References

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Summary

The deployment of active sonar by the U.S. Navy and its potential impacts on marine mammals has been an ongoing issue of intense debate; regulatory, legislative, and judicial activity; and international concern. Some peacetime use of military sonar has been regulated under the Marine Mammal Protection Act (MMPA) and other statutes due to concerns that active military sonars are operated at frequencies used by some cetaceans (i.e., whales, porpoises, and dolphins), and their high-intensity sound pulses may travel long distances in the ocean. There is also concern that sonar transmissions of sufficiently high intensity might physically damage the hearing in cetaceans or cause them to modify their behavior in ways that are detrimental. Although mid-frequency sonar has been implicated in several beaked whale strandings, there is scientific uncertainty surrounding the totality of the effects active sonar transmissions may have on marine mammals.

This report summarizes legal and political events related to active sonar and marine mammals since 1994. Prior to the late 1990s, concerns focused primarily on the use of underwater sound as a research tool. While strandings and mortality of marine mammals, primarily beaked whales, have been observed in concurrence with mid-frequency sonar operation, additional controversy has focused on the development of low-frequency active (LFA) sonar. Environmental interests are concerned with LFA sonar because low-frequency sound travels farther than mid-frequency sound and is closer in frequency to those known to be used by baleen whales.

Additional questions involve how to balance obligations of the military to comply with MMPA provisions (as well as provisions of the National Environmental Policy Act and the Endangered Species Act) with national security concerns. In 2003, Congress passed P.L. 108-136, wherein §319 amended the MMPA to authorize exemptions from restrictions on harassing and otherwise taking marine mammals for “national defense.”

Generally speaking, concern about the environmental effects of ocean noise is now principally focused on three activities — military sonar exercises, oil and gas exploration, and commercial shipping. This report summarizes some of the more significant recent events pertaining to active military sonar, in particular.

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Active Military Sonar and Marine Mammals: Events and References

Introduction

The Marine Mammal Protection Act of 1972 (MMPA; 16 U.S.C. §§1361, et seq.) established a moratorium¹ on the *taking* of marine mammals in U.S. waters and by U.S. nationals on the high seas. Under the MMPA, *take* means “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill.”² In addition, *harassment* encompasses both behavioral disruption and physical injury, short of death.³ However, the MMPA does allow U.S. citizens to apply for and obtain authorization for taking small numbers of mammals incidental to certain activities (e.g., offshore oil and gas exploration and development), if that taking would have no more than a negligible effect on any marine mammal species or stock, and mitigation and monitoring requirements and other conditions are met.

Some peacetime use of military sonar has been regulated under the MMPA and other statutes due to concerns that active military sonars⁴ operate at frequencies⁵ used by some cetaceans⁶ and may travel long distances in the ocean. Current sonars in widespread use are primarily mid-frequency sonars. Mid-frequency active sonar operates between 2 and 20 KiloHertz (KHz), with most current systems using 3-5 KHz and 7-10 KHz. Low-frequency sonar is being developed to detect quieter submarines at greater distances.⁷ Low-frequency active (LFA) sonar operates below

¹ Although the MMPA (16 U.S.C. §1371) refers to this action as a “moratorium,” some consider this action a ban or prohibition because it was (and is) permanent.

² 16 U.S.C. §1362(13).

³ 16 U.S.C. §1362(18).

⁴ Active sonar involves the transmission of various sounds (pulses, tonal signals, or bands of acoustic energy) and the interpretation of received echoes as a way of sensing the environment. Passive sonar involves listening without transmitting these sounds. Non-military active sonars, such as the Integrated Marine Mammal Monitoring Protection System (IMAPS) active tracking system and high-frequency bathymetric mapping sonars, are not the primary focus of this report.

⁵ Frequency is expressed as the number of cycles or completed alternations per unit time of a sound wave, most often measured in Hertz (Hz).

⁶ Baleen whale sounds are usually below frequencies of 500 Hz and predominantly below 100 Hz; exceptionally some clicks can reach 3000 Hz. Toothed cetaceans, such as sperm whales, beaked whales, dolphins, and porpoises, are characterized by their higher frequency sounds, from 400 Hz to as high as 8000 Hz.

⁷ The U.S. Navy committed to developing a low-frequency active sonar system in the late
(continued...)

2 KHz, with most operation between 600 and 1500 Hz, except the U.S. Navy's Surveillance Towed Array Sensor System (SURTASS) which operates between 100 and 500 Hz. When the transmission power is sufficiently high in intensity,⁸ there is concern that sonar transmissions could physically damage the hearing in cetaceans or cause them to modify their behavior in ways that are detrimental to their well-being, invoking the requirements of the MMPA moratorium on taking. Although mid-frequency sonar has been implicated in several beaked whale strandings, there is scientific uncertainty surrounding the totality of the effects active sonar transmissions may have on marine mammals.

This report summarizes administrative, legal, and political events related to active sonar and marine mammals. Prior to the late 1990s, concerns focused primarily on the use of underwater sound as a research tool.⁹ While strandings and mortality of marine mammals, primarily beaked whales, have been observed in concurrence with mid-frequency sonar operation, additional controversy has focused on the development of LFA sonar. Environmental interests are concerned with LFA sonar because low-frequency sound travels further than mid-frequency sound and is closer in frequency to those known to be used by baleen whales. Additional questions involve how to balance the obligations of the military to comply with MMPA provisions (as well as provisions of the National Environmental Policy Act and the Endangered Species Act) with national security concerns. Generally speaking, concern about the environmental effects of ocean noise is now principally focused on three activities — military sonar exercises, oil and gas exploration, and commercial shipping. This report summarizes some of the more significant recent events pertaining to active military sonar, in particular.

Additional information and background can be obtained from the Navy's website at [<http://www.whalesandsonar.navy.mil/>], from the National Marine Fisheries Service's (NMFS, National Oceanic and Atmospheric Administration, U.S. Department of Commerce) "Ocean Acoustics Program" website at [<http://www.nmfs.noaa.gov/pr/acoustics/>], and from the University of Rhode Island's "Discovery of Sound in the Sea" website at [<http://www.dosits.org/>]. Detailed information on the Navy's SURTASS-LFA sonar system is available at [<http://www.surtass-lfa-eis.com/>]. Four National Research Council reports provide substantial technical background and summarize the scientific progress in understanding these

⁷ (...continued)
1980s.

⁸ Sound intensity is measured in decibels; a decibel (dB) is a unit used to express the intensity of a sound wave, equal to 20 times the common logarithm of the ratio of the pressure produced by the sound wave to a reference pressure (typically 1 micropascal at 1 meter, in water; 20 micropascals at 1 meter, in air). Thus, direct numerical comparisons of noise intensity from sources in air and sources underwater cannot be made without taking into account the differences in reference pressure. For example, a sound intensity of 235 dB underwater is equivalent to 209 dB in air. For additional background, see [http://www.atlantic.drdc-rddc.gc.ca/factsheets/elusive_decibel_e.shtml].

⁹ For background on early research concerns, see out-of-print CRS Report 95-603 ENR, *Acoustic Thermometry of Ocean Climate: Marine Mammal Issues*, by Eugene H. Buck, available from the author.

interactions. The concerns of environmental interest groups are summarized by the Natural Resources Defense Council at [<http://www.nrdc.org/wildlife/marine/sonar.asp>] and in their 2005 report *Sounding the Depths II: The Rising Toll of Sonar Shipping, and Industrial Ocean Noise on Marine Life*.¹⁰

Events

- 03/00/1994 — The National Research Council published *Low Frequency Sound and Marine Mammals: Current Knowledge and Research Needs*.¹¹
- 05/12-13/1996 — A mass stranding of 12 Cuvier's beaked whales occurred in the Kyparissiakos Gulf, Greece, coincident with a NATO Shallow Water Acoustic Classification research exercise.¹²
- 07/18/1996 — The U.S. Navy published a notice of intent to prepare environmental impact statements for deployment of its SURTASS LFA sonar.¹³
- 01/31/1997 — The Marine Mammal Commission (MMC), an independent federal agency, noted significant concerns in its annual report that marine mammals could be affected by SURTASS LFA deployment and recommended that uncertainties in understanding potential impacts be addressed.¹⁴
- 06/15-17/1998 — The SACLANTCEN (Supreme Allied Commander, Atlantic, Undersea Research Center) Bioacoustics Panel met in La Spezia, Italy, to investigate the May, 1996 mass stranding.
- 07/23/1999 — The U.S. Navy released for public comment a draft environmental impact statement on the world-wide deployment of its SURTASS LFA sonar system.
- 08/12/1999 — The U.S. Navy submitted an application for a Letter of Authorization from NMFS to harass marine mammals incidental to operating SURTASS LFA sonar.¹⁵ NMFS subsequently asked the Navy to modify its application.

¹⁰ [<http://www.nrdc.org/wildlife/marine/sound/sound.pdf>].

¹¹ [<http://www.nap.edu/books/0309050251/html/>].

¹² [<http://www.pelagosinstitute.gr/en/pelagos/pdfs/Frantzis%202003%20Active%20Sonar%20Workshop.pdf>].

¹³ 61 *Fed. Reg.* 37452-37453.

¹⁴ U.S. Marine Mammal Commission, *Annual Report to Congress, 1997* (Bethesda, MD), p. 168-170.

¹⁵ [<http://www.surtass-lfa-eis.com/docs/Request%20for%20LOA%2012%20Aug%201999.pdf>].

- 10/04/1999 — The Navy submitted a request to NMFS for formal consultation on SURTASS LFA pursuant to §7 of the Endangered Species Act.
- 10/22/1999 — NMFS gave advance notice of proposed rulemaking and requested public comment on the Navy's application.¹⁶
- 03/03/2000 — The National Research Council published *Marine Mammals and Low Frequency Sound: Progress Since 1994*.¹⁷
- 03/15-16/2000 — Mass stranding of multiple whale species in the Northeast and Northwest Province Channels of the Bahamas coincident with tactical mid-frequency active sonar training exercises by the U.S. Navy. Mortalities included five Cuvier's beaked whales and one Blainville's beaked whale.
- 04/06/2000 — The U.S. Navy submitted a revised application for a Letter of Authorization from NMFS to incidentally harass marine mammals incidental to operating SURTASS LFA sonar.¹⁸
- 05/09-10/2000 — Three Cuvier's beaked whales stranded at Madeira Island, Portugal, coincident to the NATO Linked Seas 2000 exercise. The pattern of injury to the auditory system of the stranded whales was consistent with that observed in the Bahamas strandings.
- 01/26/2001 — The U.S. Navy released its Final Environmental Impact Statement for the SURTASS LFA system.¹⁹
- 03/19/2001 — NMFS published a proposed rule authorizing the U.S. Navy to harass marine mammals incidental to operating SURTASS LFA sonar.²⁰
- 06/05/2001 — The MMC commented to NMFS that its proposed rule was insufficient to be confident that the proposed action would affect only small numbers of marine mammals and have only negligible effects on the affected species and stocks. In addition, MMC viewed proposed monitoring and mitigation

¹⁶ 64 *Fed. Reg.* 57026-57029.

¹⁷ [<http://books.nap.edu/books/030906886X/html/index.html/>].

¹⁸ [<http://www.surtass-lfa-eis.com/docs/Request%20for%20LOA%206%20Apr%202000.pdf>].

¹⁹ [<http://www.surtass-lfa-eis.com/docs/FEIS%20Vol%20I.pdf>].

²⁰ 66 *Fed. Reg.* 15375-15394.

programs as insufficient to confirm the validity of assumptions.²¹

- 09/00/2001 — The Natural Resources Defense Council and a coalition of environmental groups sued the U.S. Navy to force the preparation of a programmatic Environmental Impact Statement on the Navy's Littoral Warfare Advanced Development (LWAD) program.²²
- 10/11/2001 — The House Resources Subcommittee on Fisheries Conservation, Wildlife, and Oceans held a hearing on the MMPA, including Panel V on SURTASS LFA.²³
- 12/20/2001 — NMFS and the U.S. Navy completed a *Joint Interim Report — Bahamas Marine Mammal Stranding Event of 15-16 March 2000*.²⁴ The stranding was attributed to the Navy's intensive use of multiple tactical mid-frequency sonar units over an extended period of time and contributory factors, including the presence of a strong surface duct, unusual underwater bathymetry, and a constricted channel with limited egress.
- 05/30/2002 — NMFS issued a biological opinion for SURTASS LFA in accordance with §7 of the Endangered Species Act.
- 06/10/2002 — The General Accounting Office (GAO, now Government Accountability Office) issued a report entitled *Testing Needed to Prove SURTASS/LFA Effectiveness in Littoral Waters*.²⁵
- 07/16/2002 — NMFS published a final rule authorizing the U.S. Navy to harass marine mammals incidental to operating SURTASS LFA sonar.²⁶ This final rule became effective on August 15, 2002, and remains in effect until August 15, 2007.

²¹ U.S. Marine Mammal Commission, *Annual Report to Congress, 2001*, Bethesda, MD, Mar. 31, 2002, p. 175.

²² LWAD's purpose is to develop and test techniques and technology, including several operational and new experimental active sonars to detect and track submarines in shallow coastal waters where SURTASS LFA would be ineffective.

²³ [<http://republicans.resourcescommittee.house.gov/archives/107cong/fisheries/2001oct11/agenda.htm>].

²⁴ [http://www.nmfs.noaa.gov/pr/pdfs/acoustics/bahamas_stranding.pdf].

²⁵ [<http://www.gao.gov/new.items/d02692.pdf>].

²⁶ 67 *Fed. Reg.* 46712-46789.

- 07/23/2002 — The U.S. Navy published its record of decision on the worldwide deployment of its SURTASS LFA sonar system.²⁷
- 08/07/2002 — Five environmental groups and a concerned individual filed a lawsuit in federal district court in San Francisco seeking to halt Navy deployment of SURTASS LFA sonar (*Natural Resources Defense Council v. Evans*).
- 08/30/2002 — NMFS announced that a one-year Letter of Authorization had been issued to the Navy authorizing the taking of specified marine mammals within specified areas of operation.²⁸
- 09/19/2002 — The Federal District Court (Central District of California, Western Division) found that the National Environmental Policy Act (NEPA) applies to LWAD activities, but that the LWAD program, as distinct from its component parts, is not subject to programmatic challenge under NEPA or the Endangered Species Act.²⁹
- 09/24/2002 — At least 14 beaked whales of three species were stranded on the Canary Islands of Fuerteventura and Lanzarote coincident with NATO naval exercise *Neo Tapon 2002*.
- 10/31/2002 — U.S. Magistrate Judge Elizabeth LaPorte granted a preliminary injunction limiting Navy deployment of SURTASS LFA after finding NMFS issued the Navy a permit that likely violated federal law.³⁰
- 11/15/2002 — U.S. Magistrate Judge Elizabeth LaPorte approved a stipulated agreement between the Navy and environmental groups allowing limited testing of SURTASS LFA while the federal court considered the lawsuit challenging deployment.³¹
- 01/17/2003 — Because NMFS granted authorization on a categorical exclusion for research rather than on an environmental assessment, U.S. District Judge Samuel Conti granted a temporary injunction to block testing of a low-power, high-frequency (above 20 KHz) civilian whale-finding sonar (the Integrated Marine Mammal

²⁷ 67 *Fed. Reg.* 48145-48154; [<http://www.surtass-lfa-eis.com/docs/LFA%20EIS%20ROD.pdf>].

²⁸ 67 *Fed. Reg.* 55818.

²⁹ *NRDC v U.S. Department of the Navy*, No. CV-01-07781 CAS (C.D. Cal. Sept. 19, 2002); 2002 U.S. Dist Lexis 26360.

³⁰ NRDC press release at [<http://www.nrdc.org/media/pressreleases/021031.asp>]. *Natural Resources Defense Council v. Evans*, N.D. Cal., No. C-02-3805, 232 F. Supp. 2d 1003 at [<http://www.animallaw.info/cases/caus232fsupp2d1003.htm>].

³¹ [<http://www.ens-newswire.com/ens/nov2002/2002-11-18-06.asp>].

Monitoring Protection System or IMAPS) off the California coast.³²

- 02/10/2003 — The National Research Council published *Ocean Noise and Marine Mammals*.³³
- 02/13/2003 — Language in the conference report on H.J.Res. 2 (P.L. 108-7), providing FY2003 omnibus appropriations, directed the MMC to fund an international conference, or series of conferences, to share findings, survey “acoustic threats” to marine mammals, and develop means of reducing those threats while maintaining the oceans as a global highway of international commerce.³⁴
- 03/08/2003 — A workshop on Active Sonar and Cetaceans was held at Las Palmas, Gran Canaria, Canary Islands, immediately before the start of the 17th Annual Conference of the European Cetacean Society.³⁵
- 05/05/2003 — Fourteen harbor porpoises were found beached and killer whales were videotaped showing behavioral reaction to sonar coincident with *U.S.S. Shoup* transit of Haro Strait, WA, while using tactical mid-frequency sonar.
- 08/20/2003 — NMFS announced that two one-year Letters of Authorization had been issued to the Navy authorizing the taking of specified marine mammals within specified areas of operation.³⁶
- 08/26/2003 — U.S. Magistrate Judge Elizabeth LaPorte issued an opinion concluding that the NMFS marine mammal take authorization to the U.S. Navy had violated several federal laws and ordered the parties to meet and confer on the terms of a permanent injunction that would allow the Navy to operate SURTASS LFA in a limited fashion.³⁷

³² *Hawaii County Green Party v. Evans*, C-03-0078-SC (N.D. CA 24 January 2003). This sonar was designed for shallow water use, to detect subsurface whales before they came too close to potentially risky situations, such as harbor blasting or LFA. For additional information on IMAPS, see [<http://www.scisol.com/imaps.htm>].

³³ [http://books.nap.edu/openbook.php?record_id=10564&page=R1].

³⁴ H.Rept. 108-10, p. 777; [http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=108_cong_reports&docid=f:hr010.108.pdf].

³⁵ [<http://www.mail-archive.com/bioacoustics-l@cornell.edu/msg00315.html>].

³⁶ 68 *Fed. Reg.* 50123-50124.

³⁷ *Natural Resources Defense Council v. Evans*, N.D. Cal., No. C-02-3805, 279 F. Supp. 2d 1129.

- 10/08/2003 — The parties to the LFA litigation filed a stipulation regarding the permanent injunction, which the court entered as an order on October 14, 2003.³⁸
- 11/00/2003 — The United Kingdom’s Ministry of Defence released “Sonar 2087 and the Environment” to consider and address public concerns about active sonar.³⁹
- 11/24/2003 — President Bush signed P.L. 108-136, the National Defense Authorization Act for FY2004, wherein §319 amended the MMPA to exempt military readiness activities from “specified geographical region” and “small numbers” requirements, and to modify the definition of “harassment” applicable to military readiness activities.⁴⁰
- 12/11/2003 — The MMC announced the establishment of an Advisory Committee on Acoustic Impacts on Marine Mammals.⁴¹
- 01/29/2004 — After NMFS prepared an environmental assessment, U.S. District Judge Samuel Conti denied a permanent injunction to block IMAPS testing off the California coast.⁴²
- 02/09/2004 — NMFS announced release of preliminary report investigating the acoustic exposure of stranded porpoises in Haro Strait, WA. Although no conclusive link between Navy sonar and porpoise deaths was found, the possibility of acoustic trauma as a contributory factor in the mortalities was not ruled out. Killer whales experienced acoustic levels likely to induce behavioral reactions but insufficient to cause either temporary or permanent hearing loss.
- 02/09/2004 — The U.S. Navy released its report on the *U.S.S. Shoup*/Haro Strait porpoise incident.⁴³

³⁸ [<http://www.nrdc.org/media/pressreleases/031013.asp>].

³⁹ [<http://192.5.30.131/dpa/projects/sonarenvir.htm>].

⁴⁰ For more information on these amendments, see pp. 20-22 of CRS Report RL32183, *Defense Cleanup and Environmental Programs: Authorization and Appropriations for FY2004*, by David M. Bearden.

⁴¹ 68 *Fed. Reg.* 69089-69090; see also [<http://www.mmc.gov/sound/>].

⁴² *Australians for Animals v. Evans*, 301 F. Supp. 2d 1114 (N.D. CA 2004), see [<http://www.whalesafety.net/OPINION.pdf>].

⁴³ [[http://www.cpf.navy.mil/news_images/special_projects/shoup/SHOUP%20Final%20REPORT%209%20Feb%2004\(1530\).pdf](http://www.cpf.navy.mil/news_images/special_projects/shoup/SHOUP%20Final%20REPORT%209%20Feb%2004(1530).pdf)].

- 04/13-16/2004 — The MMC convened a workshop in Baltimore, MD, to discuss the vulnerability of beaked whales to anthropogenic sound.⁴⁴
- 06/03/2004 — U.S. Navy submitted an annual report to NMFS on SURTASS LFA sonar operations.
- 06/16/2004 — NMFS received an application from the U.S. Navy for two Letters of Authorization for taking marine mammals by harassment incidental to deploying the SURTASS LFA sonar system.
- 06/29/2004 — NMFS published a proposed rule to amend its July 16, 2002 final rule and regulations on SURTASS LFA sonar to implement provisions of P.L. 108-136 related to a military readiness activity.⁴⁵
- 06/00/2004 — The MITRE Corporation's JASON Program Office completed a study for the Office of Naval Research, seeking, in response to whale strandings, to recommend modifications of the sonar waveform as a mitigation strategy. The study's conclusion was that not enough was known about the damage mechanism and the chain of causation for an engineering solution to be developed to address this problem.⁴⁶
- 07/03/2004 — Coincident with joint U.S.-Japan military exercises involving tactical mid-frequency sonar, 150 to 200 melon-headed whales were observed milling in Hanalei Bay, Kauai, HI.
- 07/00/2004 — The Standing Working Group on Environmental Concerns of the International Whaling Commission's Scientific Committee held a Mini-Symposium on Acoustics and reported that the accumulated evidence is very convincing and appears overwhelming, associating mid-frequency military sonar with atypical beaked whale mass strandings.⁴⁷
- 07/14/2004 — The Natural Resources Defense Council and three other environmental groups sent a letter to Secretary of the Navy Gordon R. England requesting a review of naval actions involving mid-frequency active sonar.⁴⁸

⁴⁴ [http://www.mmc.gov/sound/beakedwhalewrkshp/pdf/bwhale_wrkshpsummary.pdf].

⁴⁵ 69 *Fed. Reg.* 38873-38876.

⁴⁶ [<http://www.fas.org/irp/agency/dod/jason/sonar.pdf>].

⁴⁷ [http://www.iwcoffice.org/_documents/sci_com/SCRepFiles2004/56annexk.pdf].

⁴⁸ [<http://www.nrdc.org/media/docs/040714.pdf>].

- 08/24/2004 — NMFS published a notice announcing issuance of two one-year Letters of Authorization to the U.S. Navy to take marine mammals by harassment incidental to operation of the SURTASS LFA sonar system.⁴⁹
- 09/28-30/2004 — The U.S. MMC and the U.K. Joint Nature Conservation Committee held an international workshop in London, UK, on the policy on sound and marine mammals.⁵⁰
- 10/00/2004 — NMFS published a final report on the necropsy analysis of stranded porpoises in Haro Strait, WA. Although the examinations did not reveal definitive signs of acoustic trauma in any of the porpoises examined, the multidisciplinary team noted that lesions consistent with acoustic trauma can be difficult to interpret or obscured, especially in animals in advanced postmortem decomposition.⁵¹
- 10/20/2004 — The 9th Circuit Court of Appeals affirmed that marine mammals do not have standing to sue the government over the Navy's testing of SURTASS LFA.⁵²
- 10/28/2004 — The European Union's (EU) Parliament passed, by a vote of 441-15, a non-binding resolution urging EU member states "... to adopt a moratorium on the deployment of high-intensity active naval sonars until a global assessment of their cumulative environmental impact on marine mammals, fish and other marine life has been completed."⁵³
- 11/12/2004 — At the second meeting of the parties to the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (ACCOBAMS; Nov. 9-12, 2004, in Palma, Majorca), the 16 member nations adopted Resolution 2.16 addressing man-made ocean noise, including naval sonar, and guidelines for its use.⁵⁴
- 11/24/2004 — The 3rd IUCN-World Conservation Union Congress (Bangkok, Thailand, Nov. 17-25, 2004) passed a resolution encouraging governments to reduce undersea noise, restrict military active

⁴⁹ 69 *Fed. Reg.* 51996-51998.

⁵⁰ [<http://www.mmc.gov/sound/internationalwrkshp/internationalwrkshp.html>].

⁵¹ [<http://www.nmfs.noaa.gov/pr/pdfs/acoustics/porpoise.pdf>].

⁵² *Cetacean Community v. Bush*, U.S. District Court of Appeals for the Ninth Circuit, No. 03-15866, 386 F.3d 1169.

⁵³ [<http://www2.europarl.eu.int/omk/sipade2?PUBREF=-//EP//NONSGML+MOTION+B6-2004-0089+0+DOC+PDF+V0//EN&L=EN&LEVEL=2&NAV=S&LSTDOC=Y>].

⁵⁴ [<http://www.accobams.mc/Accob/Wacco.nsf/Fram5Gb!OpenFrameSet>].

sonar training to low-risk areas and develop “... international standards that regulate its use.”⁵⁵ The United States abstained from voting on this resolution.

- 11/11/2004 — The National Research Council published *Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects*.⁵⁶
- 01/21/2005 — NMFS published a technical analysis of acoustic exposures to killer whales in Haro Strait, WA.⁵⁷
- 01/15/2005 — A multispecies mass stranding event occurred in North Carolina, associated in time and space with naval activity using mid-frequency active sonar, but with no gas emboli lesions (considered diagnostic of sonar-associated strandings) apparent in stranded animals.⁵⁸
- 02/00/2005 — The International Council for the Exploration of the Sea⁵⁹ released an assessment of the impact of sonar on cetaceans.⁶⁰
- 02/10/2005 — A coalition of international conservation organizations petitioned NATO to modify active sonar naval exercise protocols to lessen potential harm to whales and other marine mammals.⁶¹
- 02/28/2005 — The United States was reported to be drafting a policy position stating strong opposition to any international regulatory framework addressing military use of active sonar because of the potential to restrict the ability of individual nations to balance the relevant security and environmental interests.⁶²

⁵⁵ [http://www.iucn.org/congress/2004/members/Individual_Res_Rec_Eng/wcc3_res_068.pdf].

⁵⁶ [<http://books.nap.edu/catalog/11147.html>].

⁵⁷ [<http://www.nmfs.noaa.gov/pr/pdfs/acoustics/assessment.pdf>].

⁵⁸ [<http://www.nmfs.noaa.gov/pr/pdfs/health/umese0501sp.pdf>].

⁵⁹ Created by the 1964 Convention for the International Council for the Exploration of the Sea, this organization coordinates and promotes marine research in the North Atlantic among its 19 Member nations.

⁶⁰ [<http://www.ices.dk/advice/Request/EC/DG%20Env/sonar/agisc05.pdf>], [<http://www.ices.dk/advice/cetaceans/sonaradvice.pdf>], and [<http://www.ices.dk/advice/Request/EC/DG%20Env/sonar/sonaradvice.asp>].

⁶¹ [<http://www.nrdc.org/media/pressreleases/050210b.asp>] and [<http://www.nrdc.org/media/docs/050210a.pdf>].

⁶² [<http://www.washingtonpost.com/wp-dyn/articles/A58339-2005Feb27.html>].

- 06/01/2005 — The Natural Resources Defense Council filed suit in U.S. District Court (Manhattan) under the Freedom of Information Act, seeking the release of documents by NMFS relating to mass strandings, deaths of marine mammals, and the impacts of mid-frequency active sonar on marine life.⁶³
- 06/08/2005 — At the sixth meeting of the United Nations Open-Ended Informal Consultative Process on Oceans and the Law of the Sea (UNICPOLOS), a coalition of more than 120 environmental organizations urged that steps be taken to protect cetaceans from increasing human-generated underwater noise as a largely unregulated form of pollution.⁶⁴
- 07/05/2005 — The parties to the SURTASS LFA sonar litigation filed an amendment to the stipulation regarding the permanent injunction with Judge Elizabeth LaPorte, agreeing to expand the operational area to include most of the Pacific between Japan and Hawaii. Judge LaPorte approved this amendment on July 8, 2005.
- 08/25/2005 — NMFS announced that two one-year Letters of Authorization had been issued to the Navy authorizing the taking of specified marine mammals within specified areas of operation.⁶⁵
- 09/20-22/2005 — The MMC's expert panel on marine mammals and acoustics met.⁶⁶
- 10/03/2005 — The Coast Guard announced the availability of a Draft Programmatic Environmental Assessment on an Integrated Anti-Swimmer System, potentially based on sonar, to be deployed to enhance security at U.S. ports.⁶⁷
- 10/19/2005 — The Natural Resources Defense Council and four other environmental groups filed suit against the U.S. Navy, alleging violation of environmental laws in mid-frequency sonar testing and training.⁶⁸

⁶³ *NRDC v. NMFS*, Civ. Action No. 05-CV-5172 (S.D. NY), see [<http://www.nrdc.org/media/docs/050601.pdf>].

⁶⁴ "Coalition Urges UN Curbs on Harmful Ocean Sounds," Reuters (June 8, 2005); see also [<http://www.earthisland.org/project/genPage2.cfm?generalID=211&pageID=196&subSiteID=51>].

⁶⁵ 70 *Fed. Reg.* 49914-49915.

⁶⁶ [<http://www.mmc.gov/sound/>].

⁶⁷ 70 *Fed. Reg.* 57612-57613.

⁶⁸ [<http://www.nrdc.org/media/docs/051019.pdf>].

- 10/21/2005 — The U.S. Navy released its Draft Environmental Impact Statement on a proposed sonar training range about 50 miles off the NC coast.⁶⁹
- 11/16/2005 — The U.S. Navy announced public hearings on its Draft Supplemental Environmental Impact Statement providing supplemental analyses for the Navy's use of SURTASS LFA sonar systems.⁷⁰
- 04/24/2006 — NMFS sought public comment on the U.S. Navy's application for an Incidental Harassment Authorization to harass marine mammals during summer 2006 Rim of the Pacific (RIMPAC) anti-submarine warfare training events, using mid-frequency sonar in the U.S. Navy's Hawaiian Operating Area.⁷¹
- 06/27/2006 — NMFS issued an Incidental Harassment Authorization to the U.S. Navy, authorizing the small take of marine mammals incidental to mid-frequency sonar use during RIMPAC exercises, effective through August 15, 2006.⁷²
- 06/28/2006 — In response to the NMFS authorization, the National Resources Defense Council and other environmental groups filed a lawsuit to block sonar use during RIMPAC.⁷³
- 06/30/2006 — In response to the lawsuit filing, the Department of Defense granted the U.S. Navy a six-month national defense exemption from MMPA regulations for use of sonar during military exercises on established ranges and operating areas.⁷⁴
- 07/03/2006 — Ruling that the national defense exemption did not cover NEPA, U.S. District Court Judge Florence-Marie Cooper issued a temporary restraining order to block (until a July 18th hearing) Navy use of sonar during RIMPAC exercises.⁷⁵
- 07/10/2006 — The Navy and environmental groups reached an agreement to settle the pending lawsuit, allowing use of sonar in RIMPAC exercises, with the Navy prohibited from using sonar within 25

⁶⁹ Marc Kaufman, "Navy Moves Forward on Sonar Facility Despite Concerns About Whales," *Washington Post*, Oct. 23, 2005, p. A9.

⁷⁰ 70 *Fed. Reg.* 69526; see also [<http://www.surtass-lfa-eis.com/Impactstate05.htm>].

⁷¹ 71 *Fed. Reg.* 20986-21003.

⁷² 71 *Fed. Reg.* 38710-38738 (July 7, 2006).

⁷³ [http://docs.nrdc.org/water/wat_06062801A.pdf]

⁷⁴ [<http://www.defenselink.mil/Releases/Release.aspx?ReleaseID=9706>] and [http://www.nmfs.noaa.gov/pr/pdfs/permits/rimpac_biop.pdf].

⁷⁵ [<http://www.nrdc.org/media/docs/060703.pdf>].

miles of the Northwestern Hawaiian Islands Marine National Monument and required to use a variety of methods to monitor and report the presence of marine mammals.⁷⁶

- 07/24/2006 — U.S. Ninth Circuit Court of Appeals dismissed the Administration's request to overturn an October 2003 lower court decision limiting the peacetime deployment of SURTASS LFA sonar.⁷⁷
- 11/14/2006 — NRDC was reported as intending to expand its lawsuit against Navy use of mid-frequency sonar, based on claims of violations in additional training exercises.⁷⁸
- 01/11/2007 — The California Coastal Commission voted to approve naval exercises off California for two years, with certain modifications protective against mid-frequency sonar.⁷⁹
- 01/23/2007 — The Department of Defense granted the Navy a two-year exemption from MMPA requirements for use of sonar during military exercises off all U.S. coasts.⁸⁰

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⁷⁶ [<http://www.nrdc.org/media/pressreleases/060707.asp>].

⁷⁷ [<http://www.nrdc.org/media/docs/060726.pdf>].

⁷⁸ "Environmentalists Eye Expanded Lawsuit Over Navy Sonar Impacts," *Defense Environment Alert*, v. 14, no. 23 (Nov. 14, 2006).

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⁸² Available at [<http://www.eurocbc.org/Gas-bubble%20lesions%20in%20stranded%20cetaceans.pdf>].

⁸³ Available at [<http://www.nmfs.noaa.gov/pr/pdfs/acoustics/cetaceans.pdf>].

⁸⁴ Available at [<http://www.mmc.gov/sound/internationalwrkshp/pdf/vandykeetal.pdf>].