

## **Taking Marine Mammals Incidental to U.S. Space Force Launches and Supporting Activities at Vandenberg Space Force Base, Vandenberg, California**

### ***References: 2024 Proposed Rule***

- American National Standards Institute. 1986. Methods for measurement of impulse noise (ANSI S12.7- 1986). New York: Acoustical Society of America.
- ANSI. 2005. Measurement of Sound Pressure Levels in Air (ANSI S1.13-2005). Acoustical Society of America, Woodbury, NY.
- American National Standards Institute (ANSI). 1995. Bioacoustical Terminology (ANSI S3.20-1995). Acoustical Society of America, Woodbury, NY
- Aurioles-Gamboa, D., and F. J. Camacho-Rios. (2007). Diet and feeding overlap of two otariids, *Zalophus californianus* and *Arctocephalus townsendi*: Implications to survive environmental uncertainty. *Aquatic Mammals* 33(3): 315–326.
- Ball, M. (2017). Personal Observation of Stellar Sea Lions During Routine Flyover. Mantech SRS, Inc.
- Barlow, J., Rankin, S., Jackson, A., & Henry, A. (2008). Marine mammal data collected during the Pacific Islands cetacean and ecosystem assessment survey (PICEAS) conducted aboard the NOAA ship McArthur II, July- November 2005. U.S. Department of Commerce, NOAA, National Marine Fisheries Service, Southwest Fisheries Science Center.
- Carretta, J., K.A. Forney, E. Oleson, K. Martien, M.M. Muto, M.S. Lowry, J. Barlow, J. Baker, D. Hanson, D. Lynch, L. Carswell, R.L. Brownell, Jr., J. Robbins, D.K. Mattila, K. Ralls, and M.C. Hill. 2011. U.S. Pacific Marine Mammal Stock Assessments: 2011. NOAA Technical Memorandum 476, NMFS, Southwest Fisheries Science Center.
- Carretta, J., E. Oleson, D.W. Weller, A.R. Lang, K.A. Forney, J. Baker, B. Hanson, K. Martien, M.M. Muto, M.S. Lowry, J. Barlow, D. Lynch, L. Carswell, R.L. Brownell, Jr., D.K. Mattila, and M.C. Hill. 2012. U.S. Pacific Marine Mammal Stock Assessments: 2012 (Draft). NMFS, Southwest Fisheries Science Center.
- Carretta, J. V., K. A. Forney, E. M. Oleson, D. W. Weller, A. R. Lang, J. Baker, M. M. Muto, B. Hanson, A. J. Orr, H. Huber, M. S. Lowry, J. Barlow, J. E. Moore, D. Lynch, L. Carswell, and R. L. Brownell Jr. (2020). U.S. Pacific Marine Mammal Stock Assessments: 2019 (NOAA-TMNMFS-SWFSC-629). La Jolla, CA: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center.
- Carretta, J. V., M. S. Lowry, C. E. Stinchcomb, M. S. Lynn, and R. E. Cosgrove. (2000). Distribution and abundance of marine mammals at San Clemente Island and surrounding offshore waters: Results from aerial and ground surveys in 1998 and 1999. La Jolla, CA: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Fisheries Science Center.
- Carretta, J. V., E. M. Oleson, J. Baker, D. W. Weller, A. R. Lang, K. A. Forney, M. M. Muto, B. Hanson, A. J. Orr, H. Huber, M. S. Lowry, J. Barlow, J. E. Moore, D. Lynch, L. Carswell, and R. L. Brownell, Jr. (2017). U.S. Pacific Marine Mammal Stock Assessments: 2016 (NOAA Technical Memorandum NMFS-SWFSC-561). La Jolla, CA: Southwest Fisheries Science Center.

- DeLong, R. (2019). [Personal communication on characterization of Steller Sea Lion sightings in Southern California in support of the PMSR EIS (R. DeLong {National Oceanic and Atmospheric Administration}, G. Sanders {U.S. Navy, NAVAIR}, T. Orr {National Oceanic and Atmospheric Administration}, C. Erkelens {Mantech}, M. Zickel {Mantech})].
- DeLong, R. L., S. R. Melin, J. L. Laake, P. A. Morris, A. J. Orr, and J. D. Harris. (2017b). Age and sex-specific survival of California sea lions (*Zalophus californianus*) at San Miguel Island, California. *Marine Mammal Science* 33(4): 1097–1125. Erbe *et al.*, 2017;
- Evans, R. (2020). [Personal Communication Between Rhys Evan (Biologist, 30 CES/CEIEA, VAFB) and John LaBonte (Biologist, Mantech SRS, Inc.) Regarding Marine Mammal Use of North Base Haul Outs, November 2020].
- Ellison, W. T., B. L. Southall, C. W. Clark, and A. S. Frankel. (2011/2012). A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. *Conservation Biology*, 26(1), 21–28.
- Finneran, J. J., R. Dear, D. A. Carder, and S. H. Ridgway. (2003). Auditory and behavioral responses of California sea lions (*Zalophus californianus*) to single underwater impulses from an arc-gap transducer. *The Journal of Acoustical Society of America*, 114(3), 1667–1677.
- Gallo-Reynoso, J. P., A. L. Figueroa-Carranza, I. D. Barba-Acuña, D. Borjes-Flores, and I. J. Pérez-Cossío. (2020). Stellar sea lions (*Eumetopias jubatus*) along the western coast of Mexico. *Aquatic Mammals* 46(4): 411–416.
- Garcia-Aguilar, M. C., C. Turrent, F. R. Elorriaga-Verplancken, A. Arias-Del-Razo, and Y. Schramm. (2018). Climate change and the northern elephant seal (*Mirounga angustirostris*) population in Baja California, Mexico. *PLoS ONE* 13(2): e0193211.
- Green, G. A., J. J. Brueggeman, R. A. Grotefendt, C. E. Bowlby, M. L. Bonnell, and K. C. Balcomb, III. (1992). *Cetacean Distribution and Abundance off Oregon and Washington, 1989– 1990*. Los Angeles, CA: U.S. Department of the Interior, Minerals Management Service.
- Gentry, R. 2009. E-Eared Seals: Otariidae. *Encyclopedia of Marine Mammals* (Second Edition). 339-342. <https://doi.org/10.1016/B978-0-12-373553-9.00083-3>.
- Gordon J., Gillespie D., Potter J., Frantzis A., Simmonds M. P., Swift R., Thompson D. 2004. A review of the effects of seismic surveys on marine mammals. *Mar. Tech. Soc. J.* **37**, 16–34
- Harris, C.M. (ed.). 1998. *Handbook of Acoustical Measurements and Noise Control*. Acoustical Society of America, Woodbury, NY.
- Hastings MC, Popper AN (2005). *Effects of Sound on Fish*. California Department of Transportation Contract 43A0139, Task Order 1. Available from URL: [http://www.dot.ca.gov/hq/env/bio/files/Effects\\_of\\_Sound\\_on\\_Fish23Aug05.pdf](http://www.dot.ca.gov/hq/env/bio/files/Effects_of_Sound_on_Fish23Aug05.pdf)
- Holst, M. and C.R. Greene, Jr., with W.J. Richardson, T.L. McDonald, K. Bay, R.E. Elliott, and V.D. Moulton. 2005a. Marine mammal and acoustical monitoring of missile launches on San Nicolas Island, California, August 2001 – May 2005. LGL Rep. TA2665-5. Rep. from LGL Ltd., King City, Ont., and Greeneridge Sciences Inc., Santa Barbara, CA, for Naval Air Warfare Center Weapons Division, Point Mugu, CA, and Nat. Mar. Fish. Serv., Silver Spring, MD, and Long Beach, CA.
- Holst, M., J.W. Lawson, W.J. Richardson, S.J. Schwartz, and G. Smith. 2005b. Pinniped responses during Navy missile launches at San Nicolas Island, California. In: D.K.

- Garcelon and C.A. Schwemm (eds.), Proc. 6th Calif. Isl. Sympos., Ventura, CA, Dec. 2003. Nat. Park Serv. Tech. Publ. CHIS-05-01. Inst. Wildl. Stud., Arcata, CA. p.p. 477-484.
- Holst, M. and C.R. Greene, Jr., with W.J. Richardson, T.L. McDonald, K. Bay, R.E. Elliott, and R. Norman. 2008. Marine mammal and acoustical monitoring of missile launches on San Nicolas Island, California, August 2001 – March 2008. LGL Rep. TA4617-1. Rep. from LGL Ltd., King City, Ont., and Greeneridge Sciences Inc., Santa Barbara, CA, for Naval Air Warfare Center Weapons Division, Point Mugu, CA, and Nat. Mar. Fish. Serv., Silver Spring, MD, and Long Beach, CA.
- Holst, M. and C.R. Greene, Jr. 2010. Marine mammal and acoustical monitoring during vehicle launches on San Nicolas Island, California, June 2009 – June 2010. LGL Rep. TA4896-2. Rep. from LGL Ltd., King City, Ont., and Greeneridge Sciences Inc., Santa Barbara, CA, for Naval Air Warfare Center Weapons Division, Point Mugu, CA, and Nat. Mar. Fish. Serv., Silver Spring, MD, and Long Beach, CA. 59 p.
- Holst, M. 2011. Responses of Pinnipeds to Navy Missile Launches at San Nicolas Island, California. *Aquatic Mammals*. 37(2): 139-150. DOI:10.1578/AM.37.2.2011.139
- ISO (International Organization for Standardization). 2003. Acoustics – Description, measurement and assessment of environmental noise – Part 1: Basic quantities and assessment procedures (ISO 1996-1:2003(E)). International Organization for Standardization, Geneva.
- Jefferson, T. A., M. A. Webber, and R. L. Pitman. (2008). *Marine Mammals of the World: A Comprehensive Guide to Their Identification*. London, United Kingdom: Elsevier.
- Keiper, C. A., D. G. Ainley, S. G. Allen, and J. T. Harvey. (2005). Marine mammal occurrence and ocean climate off central California, 1986 to 1994 and 1997 to 1999. *Marine Ecology Progress Series* 289: 285.
- Kenyon, K.W. and Wilke, F. 1953. Migration of the Northern Fur Seal, *Callorhinus ursinus*. *Journal of mammalogy*. 34(1). 86-98. <https://doi.org/10.2307/1375947>.
- Laake, J. (2017). [Personal Communication between Dr. Jeff Laake, Statistician (California Current Ecosystems Program at National Oceanic and Atmospheric Administration) and John Ugoretz (U.S. Navy, NAVAIR Sustainability Office) regarding 2016 surveys that found better growth and body condition for sea lions at both San Nicolas and San Miguel Islands].
- Le Boeuf, B. J., and M. L. Bonnell. (1980). Pinnipeds of the California Islands: Abundance and distribution. In D. M. Power (Ed.), *The California Islands: Proceedings of a Multidisciplinary Symposium* (pp. 475–493). Santa Barbara, CA: Santa Barbara Museum of Natural History.
- Lowry, M. S., P. Boveng, R. J. DeLong, C. W. Oliver, B. S. Stewart, H. DeAnda, and J. Barlow. (1992). Status of the California sea lion (*Zalophus californianus californianus*) population in 1992. Silver Spring, MD: National Marine Fisheries Service.
- Lowry, M. S., R. Condit, B. Hatfield, S. G. Allen, R. Berger, P. A. Morris, B. J. Le Boeuf, and J. Reiter. (2014). Abundance, distribution, and population growth of the northern elephant seal (*Mirounga angustirostris*) in the United States from 1991 to 2010. *Aquatic Mammals* 40(1): 20– 31.
- Lowry, M. S., and K. A. Forney. (2005). Abundance and distribution of California sea lions (*Zalophus californianus*) in central and northern California during 1998 and summer 1999. *Fishery Bulletin* 103(2): 331–343.

- Lowry, M. S., S. E. Nehasil, and E. M. Jaime. (2017). Distribution of California Sea Lions, Northern Elephant Seals, Pacific Harbor Seals, and Steller Sea Lions at the Channel Islands During July 2011–2015 (National Oceanic and Atmospheric Administration Technical Memorandum NMFS-SWFSC-578). Springfield, VA: Southwest Fisheries Science Center.
- Lowry, M. S., E. M. Jaime, and J. E. Moore. 2021. Abundance and distribution of pinnipeds at the Channel Islands in southern California, central and northern California, and southern Oregon during summer 2016–2019. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-SWFSC-656." <https://doi.org/10.25923/6qhf-0z55>
- Melin, S. R., and R. L. DeLong. (2000). At-sea distribution and diving behavior of California sea lion females from San Miguel Island, California (Proceedings of the Fifth California Islands Symposium). Santa Barbara, CA: U.S. Department of the Interior, Minerals Management Service.
- Melin, S. R., R. L. DeLong, and D. B. Siniff. (2008). The effects of El Niño on the foraging behavior of lactating California sea lions (*Zalophus californianus californianus*) during the nonbreeding season. *Canadian Journal of Zoology* 86(3): 192–206.
- Morton, A.B. and Symonds, H.K. 2002. Displacement of *Orcinus orca* (L.) by high amplitude sound in British Columbia, Canada. *ICES J. Mar. Sci.* 59: 71-80.
- MMCG and SAIC. 2012a. Technical report: population trends and current population status of harbor seals at Vandenberg Air Force Base, California. 1993-2012. September 2012.
- Moore, J.E., and J.P. Barlow. 2013. Declining abundance of beaked whales (Family Ziphiidae) in the California Current Large Marine Ecosystem. *PLoS ONE* 8(1), e52770.
- Muto, M. M., V. T. Helker, B. J. Delean, R. P. Angliss, P. L. Boveng, J. M. Breiwick, B. M. Brost, M. F. Cameron, P. J. Clapham, S. P. Dahle, M. E. Dahlheim, B. S. Fadely, M. C. Ferguson, L. W. Fritz, R. C. Hobbs, Y. V. Ivashchenko, A. S. Kennedy, J. M. London, S. A. Mizroch, R. R. Ream, E. L. Richmond, K. E. W. Sheldon, K. L. Sweeney, R. G. Towell, P. R. Wade, J. M. Waite, and A. N. Zerbini. (2020). Alaska Marine Mammal Stock Assessments, 2019 (NOAA Technical Memorandum NMFS-AFSC-404). Juneau, AK: U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Fisheries Science Center.
- National Institute for Occupational Safety and Health (NIOSH). 1998. Criteria for a recommended standard: Occupational noise exposure. United States Department of Health and Human Services, Cincinnati, OH
- National Marine Fisheries Service. (2008). Recovery Plan for the Steller Sea Lion. Silver Spring, MD: National Marine Fisheries Services, Office of Protected Resources.
- Nowacek, D.P., Thorne, L.H., Johnston, D.W., Tyack, P.L., 2007. Responses of cetaceans to anthropogenic noise. *Mammal Rev.* 37, 81–115. <http://dx.doi.org/10.1111/j.1365-2907.2007.00104.x>
- Norris, T., G. DeRango, R. DiGiovanni, and C. Field. 2015. Distribution of and threats to Guadalupe fur seals off the California coast. In. San Francisco, CA: Society of Marine Mammalogy.
- Norris, T., G. DeRango, R. DiGiovanni, and C. Field. 2015. Distribution of and threats to Guadalupe fur seals off the California coast. In. San Francisco, CA: Society of Marine Mammalogy.

- Norris, T. 2017 (August 18, 2017). Updated abundance estimate for Guadalupe fur seals. Personal communication between Tenaya Norris (The Marine Mammal Center) and Michael Zickel (Mantech International) via email.
- Norris, T.A., and F.R. Elorriaga Verplancken. 2020. Guadalupe Fur Seal Population Census and Tagging in Support of Marine Mammal Monitoring Across Multiple Navy Training Areas in the Pacific Ocean. Technical Report. Prepared for Commander, Pacific Fleet, Environmental Readiness Division. Submitted to Naval Facilities Engineering Command (NAVFAC) Southwest, Environmental Corp, San Diego, California, under Contract No. N62473-18-2-004.
- National Research Council. (2003). *Ocean Noise and Marine Mammals*. Washington, DC: National Academies Press.
- Perrin, W. F. (2009). Common dolphins, *Delphinus delphis* and *D. capensis*. In W. F. Perrin, B. Wursig, & J. G. M. Thewissen (Eds.), *Encyclopedia of Marine Mammals* (2nd ed., pp. 255–259). Cambridge, MA: Academic Press.
- Pitcher, K. W., P. F. Olesiuk, R. F. Brown, M. S. Lowry, S. J. Jeffries, J. L. Sease, W. L. Perryman, C. E. Stinchcomb, and L. F. Lowry. (2007). Abundance and distribution of the eastern North Pacific Steller sea lion (*Eumetopias jubatus*) population. *Fisheries Bulletin* 107: 102–115 Robinson *et al.*, 2012;
- Pomeroy, P., O'Connor, L., Davies, P. 2015. Assessing use of and reaction to unmanned aerial systems in gray and harbor seals during breeding and molt in the UK. *Journal of Unmanned Vehicle Systems*. 3. 102-113. [dx.doi.org/10.1139/juvs-2015-0013](https://doi.org/10.1139/juvs-2015-0013)
- Richardson, W. J., C. R. Greene, Jr., C. I. Malme, and D. H. Thomson. (1995). *Marine Mammals and Noise*. San Diego, CA: Academic Press.
- Ridgway, S.H.; Carter, D.A.; Smith, R.R.; Kamolnick, T.; Schlundt, C.E. 1997. Behavioral Responses and Temporary Shift in Masked Hearing Threshold of Bottlenose Dolphins, *Tursiops truncatus*, to 1-Second Tones of 141 to 201 dB re 1  $\mu$ Pa; Naval Command, Control, and Ocean Surveillance Center, RDT&E Division: San Diego, CA, USA.
- Southall, B. L., A. E. Bowles, W. T. Ellison, J. J. Finneran, R. L. Gentry, C. R. Greene, Jr., D. Kastak, D. R. Ketten, J. H. Miller, P. E. Nachtigall, W. J. Richardson, J. A. Thomas, and P. L. Tyack. (2007). Marine mammal noise exposure criteria: Initial scientific recommendations. *Aquatic Mammals*, 33(4), 411–521.
- Southall, B. L., D.P. Nowacek, A.E. Bowles, V. Senigaglia, L. Bejder, P.L. Tyack. (2021). Marine mammal noise exposure criteria: Assessing the severity of marine mammal behavioral responses to human noise. *Aquatic Mammals* 47(5): 421–464.
- Sterling, J.T. and Ream, R.R. 2004. At-sea behavior of juvenile male northern fur seals (*Callorhinus ursinus*). *Canadian Journal of Zoology*. 82(10): 1621-1637. <https://doi.org/10.1139/z04-136>
- Sweeney, K.L., Helker, V.T., Perryman, W.L., LeRoi, D.J., Fritz, L.W., Gelatt, T.S., Angliss, R.P. 2016. Flying beneath the clouds at the edge of the world: using a hexacopter to supplement abundance surveys of Steller sea lions (*Eumetopias jubatus*) in Alaska. *Journal of Unmanned Vehicle Systems*. 4: 70–81. [dx.doi.org/10.1139/juvs-2015-0010](https://doi.org/10.1139/juvs-2015-0010)
- Thomas, K., J. Harvey, T. Goldstein, J. Barakos, and F. Gulland. (2010). Movement, dive behavior, and survival of California sea lions (*Zalophus californianus*) posttreatment for domoic acid toxidosis. *Marine Mammal Science* 26(1): 36–52.
- Thorson, P. and J.A. Reyff. 2006. San Francisco-Oakland Bay Bridge East Span Seismic Safety Project: marine mammal and acoustic monitoring for the marine foundations at piers E2

- and T1, January September 2006. Prepared by SRS Technologies and Illingworth & Rodkin, Inc. for the California Department of Transportation, 51 p.
- U.S. Air Force. (2020). Annual Report Letters of Authorization: Taking Marine Mammals Incidental to Space Vehicle and Missile Launches and Aircraft Test Flight and Helicopter Operations at Vandenberg Air Force Base, California: 1 January to 31 December 2019. Vandenberg Air Force Base, CA: United States Air Force.
- Urick, R. J. (1983). Principles of underwater sound. 3rd ed. New York: McGraw-Hill.
- Urrutia, Y. S., and G. H. Dziendzielewski. (2012). Diagnóstico de la vulnerabilidad de las cuatro especies de pinnípedos (lobo marino, lobo fino, foca de Puerto y elefante marino) en México, frente al cambio climático global. Ensenada, Mexico: Fonsec Semarnat-Conacyt.
- Ugoretz, J. and C.R. Greene, Jr. 2012. Pinniped Monitoring During Missile Launches on San Nicolas Island, California, September 2011 - September 2012. Naval Air Warfare Center Weapons Division, Point Mugu, CA. 65 p.
- Urick, R. J. (1983). *Principles of Underwater Sound* (3rd ed.). Los Altos, CA: Peninsula Publishing.
- Viada, S.T., Hammer, R.M., Racca, R., Hannay, D., Thompson, M.J., Balcom, B.J., Phillips, N.W. 2008. Review of potential impacts to sea turtles from underwater explosive removal of offshore structures. Environmental Impact Assessment Review 28. 267–285.
- Ward, W. D. 1997. Effects of high intensity sound. In M. J. Crocker (Ed.) Encyclopedia of acoustics, (Volume III, pp. 1497–1507). New York: John Wiley & Sons.
- Wartzok, D., Popper, A. N., Gordon, J., and Merrill, J. (2003). “Factors affecting the responses of marine mammals to acoustic disturbance,” Mar. Tech. Soc. J. 37, 6–15
- Wiles, G. J. (2015). Periodic Status Review for the Steller Sea Lion. Olympia, WA: Washington Department of Fish and Wildlife.
- Yelverton, J. T., D. R. Richmond, E. R. Fletcher, and R. K. Jones. 1973. Safe distance from underwater explosions for mammals and birds. Technical Report DNA 3114 T. Defense Nuclear Agency, Department of Defense, Washington, D.C.
- Zavala-Gonzalez, A., and E. Mellink. (2000). Historical exploitation of the California sea lion, *Zalophus californianus*, in Mexico. Marine Fisheries Review 62(1): 35–40.