

## CURRICULUM VITAE

### **Karin Anne Forney, PhD**

NOAA, National Marine Fisheries Service  
Southwest Fisheries Science Center  
Marine Mammal and Turtle Division  
7544 Sandholdt Rd, Moss Landing, CA 95039  
Phone: 831-771-4155  
e-mail: Karin.Forney@noaa.gov

#### PRESENT POSITION:

*Research Biologist, 1990-present.* Perform all aspects of research on population dynamics and status of marine mammals and other protected species, with emphasis on abundance, distribution, ecology, habitat-based modeling, fishery bycatch, and impacts of other anthropogenic activities. Includes the design and implementation of research projects; shipboard and aerial field work conducting surveys of North Pacific marine mammals and sea turtles; quantitative analyses using advanced statistical methods, and publication of results in peer-reviewed journals and technical reports.

#### DISCIPLINE:

Applied Marine Ecology – Marine mammals and sea turtles

#### EDUCATION:

1997 Ph.D. in Oceanography, Scripps Institution of Oceanography, Univ. of California, San Diego.  
1987 M.S. in Biology, University of California, San Diego.  
1985 B.A., *Cum Laude*, in Ecology, Behavior and Evolution, University of California, San Diego.  
1982 Abitur, Erding, Germany

#### RESEARCH INTERESTS:

Predictive habitat-based models of marine mammal distribution and density.  
Assessment and mitigation of anthropogenic impacts (e.g. bycatch, ocean noise) on marine species  
Statistical techniques and sampling design in marine ecological research  
Ecology and behavior of seabirds, marine mammals and sea turtles.

#### PREVIOUS EXPERIENCE:

*1987-2000, Consultant*, Behavior Division, Center for Reproduction of Endangered Species, Zoological Society of San Diego. Provide computer consulting, conduct analyses of behavioral and demographic data, and collaborate in research projects on wild and captive endangered species.  
Develop and implement computer applications for behavioral research on California condors  
*1987-1990, Computer Programmer*, NMFS, Southwest Fisheries Science Center. Provide computer programming and biological field support for research on dynamics and status of marine mammals.  
*1985-1987, Teaching Assistant*, Dept. of Biology, University of California, San Diego. Serve as primary instructor and coordinator for course 'Computer Programming for Biological Applications'. Assisted teaching advanced courses in Genetics, Evolution, and Systems Biology.

#### PROFESSIONAL AFFILIATIONS:

Research Affiliate, Moss Landing Marine Laboratories, San Jose State University (*2018-present*)  
Research Associate, Institute of Marine Sciences, U. C. Santa Cruz (*2000-present*)  
Society for Marine Mammalogy  
International Sea Turtle Society

#### SELECTED SERVICE ON SCIENTIFIC COMMITTEES:

Scientific Advisor, California Dungeness Crab Fishing Gear / Whale Entanglement Working Group

Scientific Advisory Group for U.S. Navy Marine Species Monitoring  
Scientific Advisor, Monterey Bay National Marine Sanctuary/SIMoN, CA  
NMFS Liaison, Pacific Scientific Review Group

#### AWARDS:

U.S. Department of Commerce, Group Silver Medal Award, 2003 and 2014.  
NOAA Office of the General Counsel Team Award, 2010  
National Marine Fisheries Service, Employee of the Year, 2001.  
U.S. Department of Commerce, Bronze Medal Award, 1999.  
Best Doctoral Student Presentation, World Marine Mammal Science Conference, 1998.

#### SELECT PEER-REVIEWED PUBLICATIONS:

- Forney KA**, Moore JE, Barlow J, Carretta JV, Benson SR. (In Press). A multi-decadal Bayesian trend analysis of harbor porpoise (*Phocoena phocoena*) populations off California relative to past fishery bycatch. *Marine Mammal Science*.
- Simonis AE, **Forney KA**, Rankin S, Ryan J, Zhang Y, DeVogelaere A, Joseph J, Margolina T, Krumpel A Baumann-Pickering S. 2020. Seal bomb noise as a potential threat to Monterey Bay harbor porpoise. *Front. Mar. Sci.* 7:142. doi: 10.3389/fmars.2020.00142
- Santora JA, Mantua NJ, Schroeder ID, Field JC, Hazen EL, Bograd SJ, Sydeman WJ, Wells BK, Calambokidis J, Saez L, Lawson D, **Forney KA**. 2020. Habitat compression and ecosystem shifts as potential links between marine heatwave and record whale entanglements. *Nature Communications* 11:536, <https://doi.org/10.1038/s41467-019-14215-w>.
- Woodman SM, **Forney KA**, Becker EA, DeAngelis ML, Hazen EL, Palacios DM, Redfern JV. 2019. eSDM: A tool for creating and exploring ensembles of predictions from species distribution and abundance models. *Methods in Ecology and Evolution* 2019;00:1–11. DOI: 10.1111/2041-210X.13283
- Ryan JP, Cline DE, Joseph JE, Margolina T, Santora JA, Kudela RM, Chavez FP, Pennington JT, Wahl C, Michisaki R, Benoit-Bird K, **Forney KA**, Stimpert AK, DeVogelaere A, Black N, Fischer M. 2019. Humpback whale song occurrence reflects ecosystem variability in feeding and migratory habitat of the northeast Pacific. *PLoS ONE* 14(9): e0222456. <https://doi.org/10.1371/journal.pone.0222456>
- Palacios, DM, Bailey H, Becker EA, Bograd SJ, DeAngelis ML, **Forney KA**, Hazen EL, Irvine LM and Mate BR. 2019. Ecological correlates of blue whale movement behavior and its predictability in the California Current Ecosystem during the summer-fall feeding season. *Movement Ecology* 7:26, <https://doi.org/10.1186/s40462-019-0164-6>
- Becker EA, **Forney KA**, Redfern JV, Barlow J, Jacox MG, Roberts JJ, Palacios DM. 2018. Predicting cetacean abundance and distribution in a changing climate. *Diversity and Distributions* 2018;1–18. doi: 10.1111/ddi.12867
- Fiedler PC, Redfern JV, **Forney KA**, Palacios DM, Sheredy C, Rasmussen K, García-Godos I, Santillán L, Tetley MJ, Félix F and Ballance LT. 2018. Prediction of large whale distributions: a comparison of presence-absence and presence-only modeling techniques. *Front. Mar. Sci.* 5:419. doi: 10.3389/fmars.2018.00419
- Boyd C, Barlow J, Becker EA, **Forney KA**, Gerrodette T, Moore JE, Punt AE. 2018. Estimation of population size and trends for highly mobile species with dynamic spatial distributions. *Diversity and Distributions* 2018;24:1–12. <https://doi.org/10.1111/ddi.12663>
- Forney KA**, B Southall, E Slooten, S Dawson, AJ Read, RW Baird, RL Brownell Jr. 2017. Nowhere to go: Noise impact assessments for marine mammal populations with high site fidelity. *Endangered Species Research, Special Issue "21st Century Paradigms for Measuring and Managing the Effects of Anthropogenic Ocean Noise"*. doi: 10.3354/esr00820
- Bradford AL, **KA Forney**, EM Oleson, J Barlow. 2017. Abundance estimates of cetaceans from a line-transect survey within the U.S. Hawaiian Islands Exclusive Economic Zone. *Fishery Bulletin* 115: 129-142. doi: 10.7755/FB.115.2.1
- Jacobson EJ, **KA Forney**, J Barlow. 2017. Using paired visual and passive acoustic surveys to estimate

- passive acoustic detection parameters for harbor porpoise abundance estimates. *Journal of the Acoustical Society of America* 141, 219, doi: 10.1121/1.4973415
- Eguchi T, SR Benson, DG Foley, **KA Forney**. 2017. Predicting overlap between drift gillnet fishing and leatherback turtle habitat in the California Current Ecosystem. *Fisheries Oceanography*, 26:1, 17–33, doi:10.1111/fog.12181.
- Hazen EL, DM Palacios, **KA Forney**, EA Howell, E Becker, AL Hoover, L Irvine, M DeAngelis, SJ Bograd, BR Mate, H Bailey. 2016. WhaleWatch: a dynamic management tool for predicting blue whale density in the California Current. *Journal of Applied Ecology*, doi: 10.1111/1365-2664.12820
- Gilles A, S Viquerat, EA Becker, **KA Forney**, SCV Geelhoed, J Haelters, J Nabe-Nielsen, M Scheidat, U Siebert, S Sveegaard, FM van Beest, R van Bemmelen, G Aarts. 2016. Seasonal habitat- based density models for a marine top predator, the harbor porpoise, in a dynamic environment. *Ecosphere* 7(6):e01367. 10.1002/ecs2.1367
- Becker EA, **KA Forney**, PC Fiedler, J Barlow, SJ Chivers, CA Edwards, AM Moore, JV Redfern. 2016. Moving towards dynamic ocean management: How well do modeled ocean products predict species distributions? *Remote Sensing* 2016, 8, 149; doi:10.3390/rs8020149
- Forney, KA**, EA Becker, DG Foley, J Barlow, EM Oleson. 2015. Habitat-based models of cetacean density and distribution in the central North Pacific. *Endangered Species Research* 27: 1–20. [doi: 10.3354/esr00632]
- Becker EA, **KA Forney**, DG Foley, RC Smith, TJ Moore, J. Barlow. 2014. Predicting seasonal density patterns of California cetaceans based on habitat models. *Endangered Species Research* 23: 1–22 [doi: 10.3354/esr00548]
- Bradford AL, **KA Forney**, EM Oleson, and J Barlow. 2014. Accounting for subgroup structure in line-transect abundance estimates of false killer whales (*Pseudorca crassidens*) in Hawaiian Waters. *PLoS ONE* 9(2): e90464. doi:10.1371/journal.pone.0090464
- Jacobson EK, **KA Forney**, JT Harvey. 2014. Acoustic evidence that harbor porpoises (*Phocoena phocoena*) avoid bottlenose dolphins (*Tursiops truncatus*). *Marine Mammal Science* 31: 386–397. doi: 10.1111/mms.12154
- Seminoff JA, T Eguchi, J Carretta, CD Allen, D Prosperi, R Rangel, JW Gilpatrick, Jr, **KA Forney**, AL Sarti-Martinez, SH Peckam. 2014. Loggerhead sea turtle abundance at a fisheries bycatch hotspot in the eastern Pacific Ocean: implications for at-sea conservation. *Endangered Species Research* 24: 207–220 [doi: 10.3354/esr00601]
- Slooten E, JY Wang, SZ Dungan, **KA Forney**, SK Hung, TA Jefferson, KN Riehl, L Rojas-Bracho, PA Ross, A Wee, R Winkler, SC Yang, CA Chen. 2013. Impacts of fisheries on the Critically Endangered humpback dolphin (*Sousa chinensis*) population in the eastern Taiwan Strait. *Endangered Species Research* [doi: 10.3354/esr00518]
- Redfern JV, MF McKenna, TJ Moore, J Calambokidis, ML DeAngelis, EA Becker, J Barlow, **KA Forney**, PC Fiedler, SJ Chivers. 2013. Assessing the risk of ships striking large whales in marine spatial planning. *Conservation Biology* 27:292-302.
- St. Aubin DJ, **KA Forney**, SJ Chivers, MD Scott, K Danil, T Romano, RS Wells, FMD Gulland. 2013. Hematological, serum, and plasma chemical constituents in pantropical spotted dolphins (*Stenella attenuata*) following chase, encirclement, and tagging. *Marine Mammal Science* 29:14–35. [doi:10.1111/j.1748-7692.2011.00536.x]
- Forney KA**, MC Ferguson, EA Becker, PC Fiedler, JV Redfern, J Barlow, IL Vilchis, LT Ballance. 2012. Habitat-based spatial models of cetacean density in the eastern Pacific Ocean. *Endangered Species Research* 16: 113–133 [doi: 10.3354/esr00393].
- Becker EA, DG Foley, **KA Forney**, J Barlow, JV Redfern, CL Gentemann. 2012. Forecasting cetacean abundance patterns to enhance management decisions. *Endangered Species Research* 16: 97–112 [doi: 10.3354/esr00390].
- Benson SR, T Eguchi, DG Foley, **KA Forney**, H Bailey, C Hitipeuw, BP Samber, RF Tapilatu, V Rei, P Ramohia, J Pita, PH. Dutton. 2011. Large-scale movements and high-use areas of western Pacific leatherback turtles, *Dermochelys coriacea*. *Ecosphere*. 2(7):art84. doi:10.1890/ES11-00053.
- Forney KA**, DR Kobayashi, DW Johnston, JA Marchetti, MG Marsik. 2011. What’s the catch? Patterns

- of cetacean bycatch and depredation in Hawaii-based pelagic longline fisheries. *Marine Ecology* 32:380–391 [doi:10.1111/j.1439-0485.2011.00454.x]
- Becker EA, **KA Forney**, MC Ferguson, DG Foley, RC Smith, J Barlow, JV Redfern. 2010. Comparing California Current cetacean-habitat models developed using in situ and remotely sensed sea surface temperature data. *Marine Ecology Progress Series* 413: 163–183.
- Lowry MS, JV Carretta, **KA Forney**. 2008. Pacific harbor seal census in California during May-July 2002 and 2004. *California Fish and Game* 94(4):180-193.
- Yoklavich MM, MS Love, **KA Forney**. 2007. A fishery-independent assessment of an overfished rockfish stock, cowcod (*Sebastes levis*), using direct observations from an occupied submersible. *Canadian Journal of Fisheries and Aquatic Sciences* 64:1-10.
- Barlow J, **KA Forney**. 2007. Abundance and density of cetaceans in the California Current ecosystem. *Fishery Bulletin* 105(4): 509-526.
- Benson SR, **KA Forney**, JT Harvey, JV Carretta, PH Dutton. 2007. Abundance, distribution and habitat of leatherback turtles (*Dermochelys coriacea*) off California, 1990-2003. *Fishery Bulletin* 105:337-347.
- Redfern, JV, MC Ferguson, EA Becker, KD Hyrenbach, C Good, J Barlow, K Kaschner, MF Baumgartner, **KA Forney**, LT Ballance, P Fauchald, P Halpin, T Hamazaki, AJ Pershing, SS Qian, A Read, SB Reilly, L Torres, F Werner. Techniques for Cetacean-Habitat Modeling: A Review. 2006. *Marine Ecology Progress Series* 310:271-295.
- Forney KA**, P Wade. 2006. Worldwide distribution and abundance of killer whales. Pages 145-162 In: JA Estes, RL Brownell, Jr., DP DeMaster, DF Doak, TM Williams (eds), "*Whales, whaling and ocean ecosystems*", University of California Press. 418p.
- Lowry MS, **KA Forney**. 2005. Abundance and distribution of California sea lions in central and northern California during 1998 and summer 1999. *Fishery Bulletin* 103:331-343.
- Springer AM, JA Estes, GN van Vliet, TM Williams, DF Doak, EM Danner, **KA Forney**, B. Pfister. 2003. Sequential megafaunal collapse in the North Pacific Ocean: An ongoing legacy of industrial whaling? *Proceedings of the National Academy of Sciences* 100: 12223-12228.
- Forney KA**, SR Benson, GA Cameron. 2001. Central California gillnet effort and bycatch of sensitive species, 1990-98. p. 141-160 In: EF Melvin, JK Parrish (eds), "*Seabird Bycatch: Trends, Roadblocks and Solutions*". University of Alaska Sea Grant Publication AK-SG-01-01, Fairbanks, Alaska. 212p.
- Zhu X, DG Lindburg, W Pan, **KA Forney**, D Wang. 2001. The reproductive strategy of giant pandas (*Ailuropoda melanoleuca*): infant growth and development and mother-infant relationships. *London Journal of Zoology* 253: 141-155.
- Hyrenbach KD, **KA Forney** PK Dayton. 2000. Marine protected areas and ocean basin management. *Aquatic Conservation: Marine and Freshwater Ecosystems* 10: 437-458.
- Forney KA**. 2000. Environmental models of cetacean abundance: reducing uncertainty in population trends. *Conservation Biology* 14(5):1271-1286.
- Carretta JV, **KA Forney**, JL Laake. 1998. Abundance of southern California coastal bottlenose dolphins estimated from tandem aerial surveys. *Marine Mammal Science* 14:655-675.
- Forney KA**, J Barlow. 1998. Seasonal patterns in the abundance and distribution of California cetaceans, 1991-92. *Marine Mammal Science* 14:460-489.
- Forney KA**, J Barlow, JV Carretta. 1995. The abundance of cetaceans in California waters: Part II. Aerial surveys in winter and spring of 1991 and 1992. *Fishery Bulletin* 93:15-26.
- Barlow J, L Fleischer, **KA Forney**, O Maravilla-Chavez. 1993. An experimental aerial survey for vaquita (*Phocoena sinus*) in the northern Gulf of California, Mexico. *Marine Mammal Science* 9:89-94.
- Lindburg DG, **KA Forney**. 1992. Long-term studies of captive lion-tailed macaques. *Primate Report* 32:133-142.
- Forney KA**, DA Hanan, J Barlow. 1991. Detecting trends in harbor porpoise abundance from aerial surveys using analysis of covariance. *Fishery Bulletin* 89:367-377.
- Forney KA**, AJ Leete, DG Lindburg. 1991. A bar code scoring system for behavioral research. *American Journal of Primatology* 23:127-135.
- Forney K**, ME Gilpin. 1989. Spatial structure and population extinction: A study with *Drosophila* flies. *Conservation Biology* 3: 45-51.