

# Samantha Elisabeth Simmons, Ph.D.

## *Curriculum vita*

### PROFESSIONAL

Feb 2018 – Present:

Scientific Program Director  
(June 2009 - Feb 2018: Assistant Scientific Program Director)  
US Marine Mammal Commission  
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August 2011- Present:

Research Associate  
University of California Santa Cruz  
Institute of Marine Sciences  
100 Shaffer Road  
Santa Cruz, CA. 95010

### EDUCATION

2008 – 2009	University of California Santa Cruz	Postdoctoral Researcher. EEB.
2003 – 2008	University of California Santa Cruz	PhD. Ecology & Evolutionary Biology (EEB)
2001 – 2003	University of California Santa Cruz	MSc. Marine Science
1996 – 2000	University of St. Andrews, Scotland.	BSc (Hons) Marine & Environmental Biology

PhD Dissertation: Environmental and individual effects on the foraging success of an apex predator, the northern elephant seal (*Mirounga angustirostris*). Advisor: Dan Costa.

MS Thesis: Remotely sensed satellite data used to quantify factors that drive foraging in northern elephant seals (*Mirounga angustirostris*): oceanography vs. bathymetry.

### SELECT PROFESSIONAL ACTIVITIES

2016-current	Scientific Advisory Panel: <a href="#">PCoD+</a> Population Consequences of Disturbance
2016-current	Member: <a href="#">Subcommittee on Ocean Science and Technology</a> (SOST)
2014-current	Steering Committee: <a href="#">Marine Mammal Health M.A.P.</a> and IOOS working group
2013-current	Member: Ocean Noise and Marine Life Task Force (SOST)
2012-current	Steering Group: <a href="#">Animal Telemetry Network</a> (ATN)
2010-current	Member: Interagency Ocean Observing Committee (IOOC)
2009-current	Member: Interagency working group on Biodiversity (Ad-hoc)
2003-current	Member: Society for Marine Mammalogy
2016-2018	Scientific Planning Committee and Oral Session Chair for SMM Biennial 2017
2014-2018	Co-Chair: Global Ocean Observing System <a href="#">Biology and Ecosystems Panel</a>
2015 Dec	Co-Organizer: Society for Marine Mammalogy Biennial Conference Workshop: <a href="#">Career-Life Balance and How to Make a Successful Career in Marine Mammal Science</a>
2014 Nov	Chair: BIO-TT workshop: Biological and Ecosystem Observations within U.S. Waters II: A Workshop report to Inform Priorities for the U.S. Integrated Ocean Observing System (IOOS®)
2012 Nov	Session co-lead: IOOS Summit break out: Beyond Chlorophyll: Expanding the biological component of IOOS.
2012 May	Steering Committee: CetSound Symposium ( <a href="#">final report</a> )
2013-2015	Chair: IOOC <a href="#">Biological Integration and Observation Task Team</a> (BIO-TT)
2011-2014	Member: IOOC Data Management and Communications Steering Team (DMAC-ST)
2009-2013	Member: Working Group Marine Mammal Unusual Mortality Events (WGMMUME)

- 2010-2011 Member: Interagency working group on Human Health, Hypoxia and Harmful Algal Blooms (IWG-4H).
- 2006-2009 UCSC IACUC Committee member and voting proxy for Prof. Dan Costa
- 2005-2015 Member: ASLO American Society of Limnology and Oceanography
- 2004-2015 Member: SICB Society for Integrative and Comparative Biology

## PUBLICATIONS

- Simmons, S.E., Crocker, D.E., Hassrick, J.L., Kuhn, C.E., Robinson, P.W., Tremblay, Y and Costa, D.P. 2010. Climate scale hydrographic features related to foraging success in a capital breeder: the northern elephant seal (*Mirounga angustirostris*). *Endangered Species Research*, 10: 233-243.
- Simmons, S.E., Tremblay, Y. and Costa, D.P. 2009. Pinnipeds as ocean temperature samplers: calibrations, validations and data quality. *Limnology and Oceanography Methods*, 7:648-656.
- Simmons, S.E., Crocker, D.E., Kudela, R.M., Costa, D.P. 2007. Linking foraging behaviour with oceanography and bathymetry at mesoscales in the northern elephant seal. *Marine Ecology Progress Series*. 346: 265-275.

## Co-authored

- Bax, N.J., **Simmons, S.E.**, Miloslavich, P., Appeltans, W., Aburto-Oropeza, O., Batten, S., Benedetti-Cecchi, L., Checkley, D., Chiba, S., Duffy, J.E., Dunstan, P.K., Fischer, A., Andersen Garcia, M., Gunn, J., Klein, E., Kudela, R., Marsac, F., Muller-Karger, F., Obura, D. and Shin, Y.J. (*In Review*) Essential Ocean Variables: priorities for sustained global observing of marine biology and ecosystems. *Frontiers in Marine Science*.
- Harrison, A.L., Costa, D.P., Winship, A.J., Benson, S.R., Bograd, S.J., Carlisle, A.B., Dewar, H., Dutton, P.H., Jorgensen, S.J., Antolos, M., Kohin, S., Mate, B.R., Robinson, P.W., Shaffer, S.A., Shillinger, G.L., **Simmons, S.E.**, Weng, K.C., Gjerde, K.M., and Block, B.A. (*In Press*) The Political Biogeography of Migratory Marine Predators. *Nature Ecology and Evolution*.
- Goetsch, C., Conners, M., Budge, S. M., Mitani, Y., Walker, W., Bromaghin, J., **Simmons, S. E.**, Reichmuth, C., and Costa, D. P. (*In Review*) Upending a Dietary Paradigm for a Mesopelagic Predator using Quantitative Fatty Acid Signature Analysis. *Frontiers in Marine Science*.
- Pirotta, E., Booth, C.G., Costa, D.P., Fleishman, E., Krause, K., Lusseau, D., Morett, D., New, L., Schick, R.S., Schwarz, L.K., **Simmons, S.E.** Thomas, L., Tyack, P.L., Weise, M.J., Wells, R.S., and Harwood, J. (*In Press*). Understanding the population consequences of disturbance.
- Sloyan, B.M., Tanhua, T., Telszewski, M., Hill, K., **Simmons, S.E.**, and others (*In Prep*) The global ocean observing system Essential Ocean Variables (EOVs).

## 2018

- Miloslavich, P., Bax, N.J., **Simmons, S.E.**, Klein, E., Appeltans, W., Aburto-Oropeza, O., Andersen Garcia, M., Batten, S., Benedetti-Cecchi, L., Checkley, D., Chiba, S., Duffy, J.E., Fischer, A., Gunn, J., Kudela, R., Marsac, F., Muller-Karger, F., Obura, D. and Shin, Y.J. (2018) Essential Ocean Variables for sustained observations of marine biodiversity and ecosystems. *Global Change Biology* 24:6 pp. 2416-2433. DOI: 10.1111/gcb.14108
- Muller-Karger, F.E., Miloslavich, P., Bax, N., **Simmons, S.E.**, Costello, M.J., Sousa Pinto, I., Canonico, G., Turner, W., Geller, G., Gill, M., Montes, E., Best, B., Pearlman, J., Halpin, P., Dunn, D., Benson, A., Martin, C.S., Weatherdon, L.V., Appeltans, W., Provoost, P., Klein, E., Kelble, C., Miller, R.J., Chavez, F., Iken, K., Chiba, S., Obura, D., Navarro, L.M., and Pereira, H.M. (2018) Advancing Marine Biological Observations linking the Essential Ocean Variables (EOVs) and Essential Biodiversity Variables (EOVs) Frameworks. *Frontiers in Marine Science*. 27 June 2018. <https://doi.org/10.3389/fmars.2018.00211>

## 2017

- Hooker, S.K., **Simmons, S.E.**, Stimpert, A and McDonald, B.I. (2017). Equity and Career-Life Balance in Marine Mammal Science? *Marine Mammal Science*. DOI: 10.1111/mms.12407

## 2016

- Block, B.A., Holbrook, C.M., **Simmons, S.E.**, Holland, K.N., Ault, J.S., Costa, D.P., Mate, B.R., Seitz, A.C., Arendt, M.D., Payne, J., Mahmoudi, B., Moore, P., Price, J.M., Levenson, J.J., Wilson, D., Kochevar, R.E. 2016. Toward a national Animal Telemetry Network for aquatic observations in the United States. *Animal Biotelemetry* 4 :6 DOI: 10.1186/s40317-015-0092-1.

- Fleishman, E., Costa, D.P., Harwood, J., Kraus, S., Moretti, D., New, L.F., Schick, R.S., Schwarz, L.K., **Simmons, S.E.**, Thomas, L., Wells, R.S. 2016. Monitoring population-level responses of marine mammals to human activities. *Marine Mammal Science early view*: DOI: 10.1111/mms.12310.
- Fleishman, E., Streever, B., Angliss, R., Clark, C.W., Ellison, W.T., Frankel, A., Gedamke, J., Leu, M., McKenna, M., Racca, R., **Simmons, S.E.**, and Suydam, R. 2016. Current Status of Development of Methods to Assess Effects of Cumulative or Aggregated Underwater Sounds on Marine Mammals. In: *The Effects of Noise on Aquatic Life II*, edited by Arthur N. Popper and Anthony Hawkins, 303–11. *Advances in Experimental Medicine and Biology* 875. Springer New York. [http://link.springer.com/chapter/10.1007/978-1-4939-2981-8\\_36](http://link.springer.com/chapter/10.1007/978-1-4939-2981-8_36)
- McHuron, E.A., Robinson, P.W., **Simmons, S.E.**, Kuhn, C.E., Fowler, M., and D.P. Costa (2016) Foraging strategies of a generalist marine predator inhabiting a dynamic environment. *Oecologia* 182(4):995-1005.
- 2015
- Miloslavich, P., W. Appeltans, N. Bax, A. Fischer, J. Gunn, Francis Marsac, and **S. Simmons**. 2015. "GOOS : A Platform to Observe Essential Ecological and Biological Variables." *Interciencia* 40 (8): 509.
- 2014
- Mareš, J.L., **Simmons, S.E.**, Crocker, D.E., McDonald, B.I., Williams, T.M. and Costa D.P. 2014. Free-swimming northern elephant seals have low field metabolic rates that are sensitive to an increased cost of transport. *Journal of Experimental Biology*. 217: 1485-1495 doi:10.1242/jeb.094201
- Moustahfid, H., M. Weise, **S.E. Simmons**, B. Block, K. Holland, J. Ault, J. Kocik, et al. 2014. Meeting our Nation's Needs for Biological and Environmental Monitoring: Strategic Plan and Recommendations for a National Animal Telemetry Network (ATN) Through US IOOS.
- New, L.F., Clark, J.S., Costa, D.P., Fleishman, E., Hindell, M.A., Klanjšček, T., Lusseau, D., Kraus, S., McMahon, C.R., Robinson, P.W., Schick, R.S., Schwarz, L.K., **Simmons, S.E.**, Thomas, L., Tyack, P. and Harwood, J. 2014. Using Short-term Measures of Behaviour to Estimate Long-term Fitness of Southern Elephant Seals. *Marine Ecology Progress Series*. 496: 99–108 doi: 10.3354/meps10547
- 2013
- New, L.F., Moretti, D.J., Hooker, S.K., Costa, D.P. and **Simmons, S.E.** 2013. Using energetic models to investigate the survival and reproduction of beaked whales (family Ziphiidae). *PLoS ONE* 8(7): e68725. doi:10.1371/journal.pone.0068725
- Schick, R.S., New, L.F., Thomas, L., Costa, D.P., Hindell, M.A., McMahon, C.R., Robinson, P.W., **Simmons, S.E.**, Thums, M., Harwood, J., and Clark, J.S. 2013. Estimating resource acquisition and at-sea body composition of a marine predator. *Journal of Animal Ecology*. 82: 1300–1315 doi: 10.1111/1365-2656.12102
- 2012
- Block, B., K. Holland, D. Costa, J. Kocik, D. Fox, B. Mate, C. Grimes, A. Seitz, H. Moustahfid, M. Behzad, C. Holbrook, S. Lindley, C. Alexander, **S. Simmons**, J. Payne, M. Weise and R. Kochevar. Toward a US Animal Telemetry Observing Network (US ATN) for our Oceans, Coasts and Great Lakes, US IOOS Summit Community White Paper, July 2012.
- Fornwall, M., R. Gisiner, **S. Simmons**, H. Moustahfid, G. Canonico, P. Halpin, P. Goldstein, R. Fitch, M. Weise, N. Cyr, D. Palka, J. Price, D. Collins. Expanding Biological Data Standards Development Processes for US IOOS: Visual Line Transect Observing Community for Mammal, Bird, and Turtle Data, US IOOS Summit Community White Paper, July 2012.
- Gulland, F.M.D., **Simmons, S.E.**, Rowles, T.K., Moore, S.E., Sleeman, J.M. and Weise, M.J. Marine Animal Health as an Ecosystem Sentinel, US IOOS Summit Community White Paper, July 2012.
- Hooker, S.K., A. Fahlman, M.J. Moore, N. Aguilar de Soto, Y. Bernaldo de Quirós, A.O. Brubakk, D.P. Costa, A.M. Costidis, S. Dennison, K.J. Falke, A. Fernandez, M. Ferrigno, J.R. Fitz-Clarke, M.M. Garner, D.S. Houser, P.D. Jepson, D.R. Ketten, P.H. Kvadsheim, P.T. Madsen, N.W. Pollock, D.S. Rotstein, T.K. Rowles, **S.E. Simmons**, W. Van Bonn, P.K. Weathersby, M.J. Weise, T.M. Williams, and P.L. Tyack. 2012. Deadly diving? Physiological and behavioural management of decompression stress in diving mammals. *Proceedings of the Royal Society, London - Biological Sciences* 279: 1041-1050. doi: 10.1098/rspb.2011.2088

Robinson PW, Costa DP, Crocker DE, Gallo-Reynoso JP, Champagne CD, Fowler MA, Goetsch C, Goetz KT, Hassrick JL, Huckstadt LA, Kuhn CE, Maresh JL, Maxwell SM, McDonald BI, Peterson SH, **Simmons SE**, Teutschel NM, Villegas-Amtmann S, and Yoda K. 2012. Foraging Behavior and Success of a Mesopelagic Predator in the Northeast Pacific Ocean: Insights from a Data-Rich Species, the Northern Elephant Seal. PLoS ONE 7(5): e36728. doi:10.1371/journal.pone.0036728

#### 2011

Hayes, S.E., Teutschel, N.M, Michel, C.J., Champagne, C., Robinson, P.W., Fowler, M., Yack, T., Mellinger, D., **Simmons, S.E.**, Costa, D.P. and MacFarlane, R.B. (2011) Mobile receivers: releasing the mooring to 'see' where fish go. Environmental Biology of Fishes. DOI: 10.1007/s10641-011-9940-x

Maxwell, S.M., Frank, J.J., Breed, G.A., Robinson, P.W., **Simmons, S.E.**, Crocker, D.E., Gallo-Reynoso, J-P. and Costa, D.P. (2011 *online*). "Benthic foraging on seamounts: a specialized foraging behavior in a deep diving pinniped". Marine Mammal Science. DOI: 10.1111/j.1748-7692.2011.00527.x

Villegas-Amtmann, S., **Simmons, S.E.**, Kuhn, C.E., Huckstadt, L.A. and Costa, D.P. (2011). Latitudinal Range Influences the Seasonal Variation in the Foraging Behavior of Marine Top Predators. PLoS ONE, 6(8):e23166.

#### 2010

Costa, D.P., Robinson, P.W., Arnould, J. P.Y., Harrison, A-L., **Simmons, S.E.**, Hassrick, J.L. Hoskins, A., Kirkman, S., Oosthuizen, H., Villegas-Amtmann, S. and Crocker, D.E. (2010) "Accuracy of ARGOS locations of pinnipeds at-sea estimated using Fastloc GPS" PLoS One, 5(1):1-9.

Hassrick, J.L., Crocker, D.E., Teutschel, N.M., McDonald, B.I., Robinson, P.W., **Simmons, S.E.** and Costa, D.P. (2010) Condition and mass impact oxygen stores and dive duration in adult female northern elephant seals. Journal of Experimental Biology, 213:585-592.

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

#### 2007

Robinson, P.W., Tremblay, Y., Antolos, M., Crocker, D.E. Kuhn, C.E., Shaffer, S.A, **Simmons, S.E.**, Costa, D.P. (2007) "A comparison of indirect measures of foraging behavior based on ARGOS tracking data." Deep Sea Research II 54(3-4):356-368.

### **SELECT ORAL PRESENTATIONS**

- 2017 22<sup>nd</sup> Biennial marine mammal conference, Halifax, Nova Scotia. "Marine Mammals Identified as an Essential Ocean Variable in the Global Ocean Observing System: Who, Why, How, and What Next for Implementation?"
- 2017 Sixth International Biologging Conference, Konstanz, Germany. "How Biologging can Contribute to Measurements of Essential Ocean Variables as part of a Global Ocean Observing System."
- 2015 Blue Planet Symposium. "Informing Priorities for Biological and Ecosystem Observations, supporting evolution of the U.S. Integrated Ocean Observing System (IOOS)."
- 2014 Invited speaker Capitol Hill Oceans Week "The Ocean and Human Health" session.
- 2011 11<sup>th</sup> National conference on science, policy and the environment. "Animal Borne Sensors and Data Applications in Marine Spatial Planning."
- 2009 18<sup>th</sup> Biennial marine mammal conference, Quebec City, Canada. "Location, location, location: the fact and fiction behind foraging success and habitat heterogeneity at multiple scales in a capital breeder."
- 2008 Third International Biologging Conference, Asilomar, Pacific Grove, CA, USA. "Area-restricted searching in an apex predator: Foraging success in relation to subsurface thermal structure of high intensity search areas of northern elephant seals."
- 2007 17<sup>th</sup> Biennial marine mammal conference, Cape Town, South Africa. "Evidence for individual foraging strategies in an apex marine predator."
- 2006 Ocean Sciences meeting, Honolulu, HI. "The potential for light level sensors carried by diving marine animals to provide subsurface profiles of chlorophyll a: lab calibrations and field validations."

- 2003 15<sup>th</sup> Biennial marine mammal conference, Greensboro, NC. "Remotely sensed satellite data used to quantify the foraging behavior of northern elephant seals (*Mirounga angustirostris*): Oceanography vs. Bathymetry."

#### **SELECT POSTER PRESENTATIONS**

- 2007 Annual conference of the Society of Integrative and Comparative Biology, Phoenix, AZ. "Sampling Ocean Temperature Using Elephant Seals as Platforms: Behavior and Sampling Frequency Effects on Data Quality".
- 2006 American Geophysical Union conference, San Francisco, CA. "Elephant Seals and Temperature Data: Calibrations and Limitations".
- 2005 16<sup>th</sup> Biennial marine mammal conference, San Diego, CA. "From light to green: the potential for light level sensors carried by diving marine animals to provide subsurface profiles of chlorophyll a."
- 2005 Second Biologging Conference, St. Andrews, Scotland. "Time and space, the final frontiers? Foraging behavior of northern elephant seals (*Mirounga angustirostris*) related to oceanographic features at different spatial and temporal scales."
- 2005 Annual conference of the Society of Integrative and Comparative Biology, San Diego, CA. "Foraging strategies differ in sexually dimorphic northern elephant seals (*Mirounga angustirostris*)."

#### **PREVIOUS FUNDING**

- Costa DP, Block BA, Simmons SE & Robinson PW - Office of Naval Research (\$445,000).
- Hayes SA, MacFarlane RB, Costa DP & Simmons SE - West Coast and Polar Regions Undersea Research Center (\$174,000)
- Flag M, Gray T, Costa DP, Simmons SE & Robinson PW - SeaTag-RC: A Remote Releasable Instrument Carrier for Marine Mammal Tagging (\$150,000)
- Simmons SE - President's Dissertation Year Fellowship, UCSC (\$21,000)
- Simmons SE - Sooy Fellowship, inaugural recipient (\$6,300).
- Simmons SE - Friends of Long Marine Lab grant award recipient (\$1000).
- Simmons SE - Myers Trust grant award recipient, twice (\$1500 & \$1000).

#### **STUDENT ADVISEES**

##### **GRADUATE:**

- October 2017-June 2018 Theresa Keates – Masters: Chlorophyll Measured by Autonomous Pinniped Oceanographers: Calibration and Validation of In-Situ Data Collected by Northern Elephant Seals.
- August 2011-2012 Leslie New – Postdoc: The Population Consequences of Acoustic Disturbance: Beaked Whales.
- August 2011 - 2012 Megan McKenna – Postdoc: A Comprehensive and Integrated Analysis of the Impacts of Commercial Shipping on Baleen Whales.

##### **UNDERGRADUATE:**

- 2008 Lorraine Myers – Senior thesis: renal specialization of marine mammals, a comparative study of the medulla to cortex ratios in pinnipeds.
- 2006 Nicole Teutschel - Senior thesis isotopic signatures in whiskers of juvenile elephant seals.
- 2006 Ann Allen - Senior thesis: age related effects on weaning success in northern elephant seals.
- 2005 Erin Seghesio – Senior thesis: use of photogrammetry to assess mass of northern elephant seals.
- 2005 Mele Coleman – Senior thesis: diving behavior of northern elephant seals in relation to lunar cycles.
- 2005 Nahoko Udea – Independent study project: diving behavior of northern elephant seals in relation to storms.

#### **TEACHING EXPERIENCE**

- 2017 Guest lecturer Marine Mammals Undergraduate Class, American University.
- 2005 Teaching assistant (TA) for COSMOS (summer, high school teaching program run through the UC system): teaching part of the two marine mammal modules.

- 2004-08 Training of 6 graduate students and 17 undergraduate volunteers in field methods, working with pinnipeds.
- 2004 Teaching assistant for COSMOS
- 2004 TA for Biology of Aids (Bio 80J) and Plant and animal physiology (Bio 20B) UC Santa Cruz
- 2003 TA for biology of marine mammals, class and laboratory section (Bio 139, 139L). UC Santa Cruz  
The class covered taxonomy, physiology, ecology, evolution, behavior and conservation of marine mammals.
- 2002 TA for biology of marine mammals (Bio 139, 139L) UC Santa Cruz

#### **RESEARCH ACTIVITIES AND FIELDWORK**

- 2008-09 Post Doctoral Research: energetics of northern elephant seals, drag manipulations on juveniles and adult females, elucidate transfer functions of the PCAD model.
- 2003-08 PhD. Research: foraging and diving behavior of northern elephant seals in relation to oceanographic features and processes, Ano Nuevo State Reserve CA.
- 2003-08 Field team leader, foraging ecology of female California sea lions, San Nicolas Island.
- 2007 Field assistant: Winter foraging ecology of Crabeater seals, Palmer Station, Antarctica.
- 2007 Field assistant: Thermoregulation and dive duration of California sea lions, Isla Granito, Gulf of California.
- 2005 Safety and boat operator as well as field assistant for Stella Villegas, Thermoregulation and dive duration of California sea lions, Isla Granito, Gulf of California.
- 2004-08 Graduate student researcher at UC Santa Cruz. Working for the Center for Integrated Marine Technologies (CIMT) on marine mammal derived oceanographic data.
- 2004-06 Field assistant for Dr. James Harvey, Moss Landing Marine Laboratories. Radio tracking of harbor seals of central and northern California.
- 2002 Field assistant for Shannon Fowler, development of diving behavior and physiology of Australian sea lions, Kangaroo Island, Australia.
- 2002-08 Field assistant for Mike Weise, foraging ecology, diving behavior and physiology of adult male California Sea lions, Monterey CA.
- 2002-08 Marine mammal observer on the Bay Bridge retrofit, employed by SRS Technologies.
- 2002 Field assistant for Dr. Cathy Debier PCB levels in weanling northern elephant seals, Ano Nuevo, CA.
- 2001 Graduate student researcher at UC Santa Cruz. Assisting with construction of a database on marine mammal diving behavior for the Office of Naval Research.

#### **OUTREACH**

- 2013-2014 Proposal reviewer for Navy Living Marine Resources Research Program
- 2010 Proposal reviewer for North Pacific Research Board
- 2007-current Reviewer for Marine Ecology Progress Series, Marine Biology, and EcoHealth
- 2007 Contributor to NOAA ACES signals of spring project. Bringing satellite tracking data into ecosystem based curriculum learning.
- 2005 Founding member of the UCSC Graduate Committee for Diversity Enhancement
- 2005 Liaison for Ano Nuevo State Park, visitor center re-design by Academy Studios, Novato.
- 2004-2009 Volunteer sponsor for 17 undergraduate students at UCSC training and supervision of field assistants.
- 2004 Guest lecture: "Oceanography and marine mammals: Influences on distribution and survival." Biology of marine mammals, UCSC undergraduate summer session course.

#### **OTHER SKILLS AND AWARDS**

- Matlab programmer
- EH&S Laboratory Safety Rep, Costa Lab June 2008 - 2009
- Graduate student representative for the Biology department UCSC (2005 – 2006)
- First aid, CPR and AED certified (1987 – current).
- Certified small boat operator for Ano Nuevo Island, UCSC (01/05 - 2009).
- Certified small boat operator for field work in the Gulf of California, Isla Granito (8/05).
- Forklift truck driver.

- Award for outstanding biology student, Harrogate Grammar School, Harrogate, England. (High School, Senior year).
- Youth member of the British Red Cross 1987 – 1995. First aid, CPR, nursing, child care and communications qualifications. Assisting with annual collection days, monthly coffee mornings and voluntary first aid cover for community events.