

Carol A. Keiper
Marine Ecologist
Oikonos Ecosystem Knowledge
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PROFESSIONAL PREPARATION

MS in Marine Science, Moss Landing Marine Laboratories, California State University,
San Jose, California 2001

BA in Education, Keane University, Union, New Jersey, 1965

APPOINTMENTS

2001: Founding Director (one of eight Directors) of Oikonos Ecosystem Knowledge
www.oikonos.org

2002 – 08: Chair and Research Seat for the Sanctuary Advisory Council for Cordell Bank
National Marine Sanctuary

1995 – 98: Field Associate for California Academy of Sciences

1995 – 1999: Marine Mammal Stranding Network Coordinator for Moss Landing Marine
Laboratories

Professional Awards

2005: National Oceanic Administration Environmental Hero Award

Memberships

American Women in Science
Society for Conservation GIS
Society for Conservation Biology
Society of Marine Mammalogy
Pacific Seabird Group
Pacific Cetacean Group

SELECTED PUBLICATIONS

Ford, R.G., D.G. Ainley, J.L. Casey, C.A. Keiper, S.B. Spear, L.T. Balance. 2004. The biogeographic patterns of seabirds in the central portion of the California Current. *Marine Ornithology* 32:77-96.

Hyrenbach, K.D., C.A.Keiper, S.G.Allen, D.G. Anderson, and D.G. Ainley. 2006. Use of marine sanctuaries by far-ranging predators: commuting flights to central California by breeding Hawaiian albatrosses. *Fisheries Oceanography* 15 (2):95-103.

Keiper, C.A. 2001. Marine mammals off central California relative to hydrography: 1986-1994, 1997-1999. MS Thesis, Moss Landing Marine Laboratories, San Jose State University, CA

Keiper, C.A., D.G. Ainley, S.G. Allen, J.T. Harvey. 2005. Marine Mammals and ocean climate off Central California, 1986-1994, 1997-1999. *Marine Ecology Progress Series* Vol.289:285-306.

Keiper, C.A., M.M. Hester, and K.D. Hyrenbach. 2005. Wonderous Ocean Wanderers in Our Own Front Yard. *Hydrosphere* 17: 1,10 -11.

Pyle, P., M.J. Schramm, C.A. Keiper. (1999). Predation on a white shark (*Carcharodon carcharias*) by a Killer whale (*Orcinus orca*) and a possible case of competitive displacement. *Marine Mammal Science*, 15(2): 563-568.

POSTER PRESENTATIONS:

Conference on the Biology of Marine Mammals

- November 1999: Marine Mammal Sightings in Association with Upwelling off Central California, 1986-1999
- November 2001: Marine Mammals off Central California Relative to Hydrography 1986-1994, 1997-1999

Pacific Seabird Group Conference presentations

- January 2005: Post-breeding Movements and habitats of the Black-footed Albatross. Hyrenbach D., C.Keiper, M.Hester, C.Baduini, J. Adams

Sanctuary Currents Symposium

- March 2005: Migratory seabirds measure Pan-Pacific connectivity among West Coast National Marine Sanctuaries. Adams, J., M. Hester, C. Baduini, C. Keiper, D. Hyrenbach, J.T. Harvey
- March 2005: Cordell Bank Ocean Monitoring Project (CBOMP). Pyle, P., B.Becker, C.Keiper, M.Carver, D. Howard.

Society for Conservation Biology

- June 2006: Keiper, C.A. Nevins, H. Hyrenbach, K.D., Hester, M.M., Baduini, C.I., Adams, J, Moore, C., Stock, J., and Webb, S. Tracking albatross and trash across borders: A tool for integrated ocean coastal, and watershed conservation

Pacific Seabird Group

- February 2007: Keiper, C.A. Nevins, H. Hyrenbach, K.D., Hester, M.M., Baduini, C.I., Adams, J, Moore, C., Stock, J., and Webb, S. Tracking albatross and trash across borders: A tool for integrated ocean coastal, and watershed conservation

Oral presentations (and papers in prep)

Pacific Seabird Group February 2006: Post- Breeding Movements and Fishery Overlap of Black-footed Albatross 2004 – 2005. K. David Hyrenbach, Cheryl Baduini, Michelle Hester, Carol Keiper, Hannah Nevins, and Josh Adams

Southern California Academy of Sciences, Malibu, CA: Hyrenbach, K.D., Keiper, C.A., Nevins, H.R., Hester, M.M., Moore, C., Harvey, J.T. Seabirds as indicators of plastic pollution in the North Pacific

AT-SEA RESEARCH

Participated in oceanographic research that investigates links between coastal upwelling, nutrient delivery, phytoplankton growth, and the distribution, abundance, and productivity of prey organisms and their predators in the following at-sea surveys

NMFS Rockfish cruises on board the NOAA ship David Starr Jordan – 1997 – present

California Cooperative Fisheries Investigations (CalCOFI) – off southern California 2003-2004

Marine mammal and seabird observer on the “Wind to Whales” CIMT research surveys in Monterey Bay on board the R/V John Martin 1994 – 2004

Cordell Bank Ocean Monitoring Program: assisted with the development and implementation of an ocean monitoring program within Cordell Bank National Marine Sanctuary 2004 – present

Gulf of the Farallones/Cordell Bank: Krill and krill predators: Ecosystem-based management in the Gulf of the Farallones and Cordell Bank 2004-present. I participate as a marine bird and mammal observer and field assistant in oceanographic sampling.

GEOGRAPHIC INFORMATION SYSTEMS (GIS)

1997-2000: As a graduate student at Moss Landing Marine Laboratories, I used ArcView GIS 3.2 in data analysis of more than 10 years of data for my M.S. thesis entitled "Marine mammals off central California relative to hydrography: 1986-1994, 1997-1999."

2001-present: I use ArcGIS 9.x to perform spatial and temporal analyses of satellite telemetry data associated with a study on the Black-footed albatross.

2001-present: I have taken both live-training classes and on-line classes offered by ESRI to keep current with the latest versions of ArcGIS.

TEACHING and PUBLIC EDUCATION

1986 – Present: At-sea naturalist and trip leader for natural history trips off central California, Bahamas, Belize, Baja California, and Alaska. These trips are typically 6-8 hr and I locate and identify animals and teach about the ecology of sited species

2005: (1) National Marine Educators Association, Hawaii. Created curriculum package and presented teacher workshop "Fishing for a Living" in collaboration with Cordell Bank National Marine Sanctuary (www.cordellbank.noaa.gov/education/teacherresources.html). This project-specific Black-footed Albatross education outreach teacher extension activities were developed to link albatrosses and plastic pollution prevention

2006: With funds received from California Coastal Commission, public lectures and teacher workshops were developed that link research on the Black-footed albatross with the Coastal Clean up and Adopt-a-Beach programs in California (<http://www.oikonos.org/projects/oceanstewardship.htm>).

2006: Teacher workshops: Albatross and Ocean Pollution Curriculum Training, Bay Model, Sausalito, and Shorebird Nature Center, Berkeley, CA.

2006: Classroom activities were created that supplement "Waves, Wetlands, and Watersheds" curriculum developed by the California Coastal Commission: "You are what you eat – Albatross and Plastic" (www.oikonos.org/oceanstewardship.htm and www.coastal.ca.gov/publiced/waves/waves1.html). These activities are recommended to teachers on the BRIDGE: a website that provides content-correct and content-current marine information and data for teachers (www.vims.edu/bridge/birds.html)

2006 – 08: Created Plastic Pollution Prevention activities (based on above curriculum) for the City of Benicia, CA Water Education Program for Benicia Middle School and Benicia High School Oceanography classes

2007 – 08: Science Advisor for a BWET watershed program with the Alvarado School, Union City, CA.

2007 – 09: Collaborator with NOAA-sponsored Signals of Spring — "ACES" [Animals in Curriculum-based Ecosystem Studies] <http://www.signalsofspring.net/aces/about.cfm>. The goal of this program is to improve environmental and ocean literacy and to capture the interest of middle and high school students, grade 7 and higher. Oikonos' satellite telemetry study on the Black-footed albatross is one of the featured marine animals. Students learn science within the context of the ocean, with high-quality curriculum-based activities, and the use of NOAA remote sensing data to develop authentic inquiry skills.

1995 – 2000: Assisted in development and implementation of "Classroom on the Water" school programs for 4th Grade – college students on San Francisco Bay, California

1987 – 1994: Marine Science curriculum developer and instructor – Berkeley, CA

1986 – 87: GATE teacher for City of Benicia – taught marine biology to Gifted and Talented Students in after-school program