5th Student Affairs Workshop Program



Print by Barb Taylor

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Marine Mammal Commission

5th Student Affairs Workshop

Schedule:

6:30 – 7:00: Check-in and free pizza: In Elizabeth ABC

7:00 – 7:05: Welcome from Nick Kellar: SMM Student Member-at-Large

7:05 – 7:35: **Keynote Address by Dan Costa:** Grantsmanship and future directions in marine mammal science.

7:35 - 7:45: Break

7:45 – 9:30: Round table discussions with professionals in marine mammal science Located in Betsey AB

Nick Kellar

Student Member-at-Large

As well as being a researcher at NOAA Fisheries, Nick is a Ph.D. candidate in Marine Biology curricular group at the Scripps Institution of Oceanography. His research interests include assessing life history parameters of cetacean populations. He examines steroid hormones (progesterone, estrogens, and testosterone) found in the blubber of whales and dolphins to estimate how many juvenile animals and pregnant females are in a given population. This information helps to approximate production, demographic structure, and mortality, and the technique is used to determine reproductive activity and demographic structure of dolphins associated with the tuna fishery of the Eastern Tropical Pacific. Nick has also begun developing new and improving existing computer-based models to assess the utility of estimated demographic parameters (via hormone data) in calculating derived parameters such as net population growth rate.

Dan Costa Keynote Speaker

Dan Costa is a Professor of Ecology and Evolutionary Biology at the University of California at Santa Cruz. After completing his Ph.D. working with sea otters at UCSC in 1978, he went to the Scripps Institution of Oceanography where he completed postdoctoral research. He returned to UCSC in 1983. From 1991-94 he served as a scientific officer at the Office of Naval Research where he initiated ONRs program on marine mammal biology. His research focuses on the integration of physiology, behavior and ecology. He has traveled widely from the Arctic to the Antarctic and from Australia to the Galapagos working on almost every marine mammal group including dugongs, sea lions, fur seals, sea otters, seals, dolphins, and whales. He is currently a lead principal investigator of the Tagging of Pacific Pelagics program, a multidisciplinary program to tag and track 22 different species of apex pelagic predators in the North Pacific Ocean. He has supervised or co-supervised 21 students who completed masters degrees and 14 who completed doctoral degrees.

Lisa T. Ballance

Biological Oceanography

Lisa Ballance's research focuses on the ecology of marine vertebrates in open ocean systems. She is particularly interested in seabirds and cetaceans and has done most of her work in tropical oceans. She studies foraging ecology, habitat relationships as defined by oceanographic and biological parameters, species diversity patterns, and community structure. Most of her work addresses large spatial and temporal scale patterns, but it also includes investigation of variation on an interannual, and longer, time scale. She works primarily from sea-going research vessels but combines this with field-intensive studies on individual organisms from localized areas whenever possible.

Marine Ecologist, NOAA Fisheries, La Jolla, CA Adjunct Professor, Scripps Institution of Oceanography <u>Lisa.Ballance@noaa.gov</u> http://swfsc.nmfs.noaa.gov/PRD/PROGRAMS/ecology/default.htm

Arne Bjørge

Behavior and Habitat Use

Arne Bjørge has been working both within management (the Norwegian Ministry of Environment – Department of Nature Conservation) and research institutions (the Institute of Marine Research and the Norwegian Institute of Nature Research). His work includes development of management plans for marine ecosystems (e.g for the Barents Sea), for marine and Arctic protected areas, and for individual marine mammal species. Throughout his scientific career, he worked mainly within applied research related to marine mammals, e.g. projects that address research relevant to management. The two main fields of research are:

Behavior and habitat use, mainly of the harbor seal (Phoca vitulina): he used VHF transmitters in combination with sonic transmitters to record movements, identify foraging activity and foraging grounds, etc. This has been important research in the process of understanding interactions between seals and fisheries and identifying areas suitable for MPA and habitat protection.

Another recent activity is related to development of a system for monitoring bycatches of marine mammals in fisheries. The Norwegian fisheries are very large (fisheries and fish farming is the second largest industry in Norway, only second to the oil and gas industry). The main problem is associated with the very large fleet of small vessels (with a crew of 1-2 fishermen) operating in the extensive and complex coastal waters of Norway. These vessels are often too small to carry an independent observer, and Arne Bjørge is currently exploring other means to monitor bycatches. The small coastal gillnetters are supposed to have high bycatches of marine mammals, and this research is important for the development of fishery regulations aimed at minimizing the incidental takes of marine mammals.

A third interest is research contributing to capacity building in developing countries. He has been involved in research on the ecology of the Cape fur seal in Namibia, Africa.

Don Bowen Ecology

Dr. Bowen is a senior research scientist at the Bedford Institute of Oceanography and an Adjunct Professor of Biology at Dalhousie University, Halifax, Nova Scotia. For the past several decades, he has studied the ecology and population dynamics of four species (harp, hooded, grey and harbor) of North Atlantic phocid seals. Since the early 1990s, his work has focused on the reproductive and foraging ecology of grey and harbor seals at Sable Island, Nova Scotia. In addition to these studies he has broad-ranging interests in the evolution of mammalian life histories, diet estimation and predation, population energetics, the ecological interactions between marine mammals and fisheries, and pinniped conservation. He has served on many national and international science panels and has served as Editor of Marine Mammal Science for five years. Current research includes demographic and environmental factors influencing foraging tactics, seasonal and interannual variability in pinniped diets, and long-term studies of reproductive performance and survival in known-age grey seals.

Jennifer Burns Physiology

Jennifer Burns' research focuses on understanding how the age and physiological status of juvenile marine mammals influences their diving and foraging capacities and on how differences in rates of physiological development impact life history traits. She currently has an active research program focused on understanding whether the rate and extent of neonatal physiological development is closely correlated with the onset of independent foraging. For all marine mammals, the ability to remain submerged for long periods of time is largely dependent on two parameters: the amount of oxygen that can be carried to depth, and the

rate at which it is used. However, her research has suggested that juvenile behaviors are constrained as a result of higher oxygen use rates, smaller reserves, and reduced body size, and that these constraints likely impact growth and survival. In her research, she uses a wide variety of analytical tools including computerized dive recorders, satellite telemetry, and GIS techniques, as well as several more hands-on techniques such as measuring heart rate and respiration patterns, energy use, and animal condition and health status.

Phil Clapham Population Biology

Phil Clapham oversees large whale research at the National Marine Mammal Lab in Seattle, where his work focuses on population biology, behavioral ecology, and conservation management. He has more than twenty-five years of experience with cetaceans, and at one time or another has worked with most species of whales in various places worldwide. Prior to his current position, he worked at the Northeast Fisheries Science center in Woods Hole, Massachusetts. He remains associated with the Smithsonian Institution (National Museum of Natural History) in Washington DC, and for many years directed a long-term study of individually identified humpback whales at the Center for Coastal Studies in Massachusetts. He holds a Ph.D. in zoology from the University of Aberdeen (Scotland) and has advised several governments and other bodies on whale research and conservation. Phil currently serves on the Board of Governors of the Society for Marine Mammalogy, and he is a member of the U.S. delegation to the International Whaling Commission's Scientific Committee. He has published four books and about a hundred peer-reviewed papers on whales and other cetaceans.

Peter Corkeron Conservation Biology

Peter Corkeron is a conservation biologist. Most of his work has provided scientific support to inform policy decisions and day-to-day management of marine wildlife. He has worked mostly on cetaceans, but has also studied seals (primarily phocids in the northeastern North Atlantic and Arctic) and dugongs. His experience in applied ecology has focused on studies of behavior / behavioral ecology, and abundance estimation using photo-identification CMR, vessel-based distance sampling, and aerial strip-transect surveys. His experience includes studies using acoustics, biopsy for genetic and ecotoxicological studies, and telemetry work. He is pretty strong on issues of study design and analysis; he uses and recommends R, the open source dialect of the S programming language.

R.H. Defran Behavior

R.H. Defran is Professor Emeritus at San Diego State University where he is the Director of the Cetacean Behavior Laboratory (CBL). He obtained his Ph.D. in Experimental Psychology at Bowling Green State University in Bowling Green, Ohio in 1970 and has been a professor in the Psychology Department at San Diego State University since September 1970. Since 1984, Defran has carried out and directed the CBL's photo-identification, behavioral, and acoustical research activities along the Southern California and Baja California Norte coastline, as well as in the Central American country of Belize. Most recently, Defran has joined the dolphin photo-identification program of the Division of Marine Mammal Research and Conservation at Harbor Branch Oceanographic Institution in Ft. Pierce, FL as a Scientific Advisor, and he has joined the Marine Mammal & Protected Resources Program at the Center for Coastal Environmental Health and Biomolecular Research at Charleston, National Ocean Service, National Oceanic and Atmospheric Administration, Charleston, SC, also as a Scientific Advisor. Dr. Defran may be contacted by email at rdefran@sunstroke.sdsu.edu.

Douglas DeMaster Management

Dr. DeMaster became Science and Research Director of the Alaska Fisheries Science Center in October 2001. Previously he served as Director of the National Marine Mammal Laboratory (NMML), leader of the NMML Cetacean Assessment and Ecology Program, and head of the Marine Mammal Division at the Southwest Fisheries Science Center. Dr. DeMaster is recognized as one of the leading experts on marine mammal stock assessment and marine mammal–fishery interactions. He has published more than 58 peer-reviewed publications on marine mammals and an additional 38 reports related to the population ecology of marine mammals. In cooperation with other NOAA Fisheries scientists, Dr. DeMaster helped develop the system under which marine mammals are managed in the United States under the Marine Mammal Protection Act. Since receiving his Ph.D. from the University of Minnesota in 1978, he has been an active member of the academic community. He was an Adjunct Professor at the Scripps Institution of Oceanography, where he taught courses on marine mammal biology and population dynamics. Since 1994, Dr. DeMaster has been an Affiliate Professor at the University of Washington's School of Marine Affairs. He also served as President of the Society for Marine Mammalogy, was Vice-Chair of the Scientific Committee of the International Whaling Commission (IWC), and is currently Chairman of the IWC Scientific Committee.

Louella Dolar

Feeding Ecology and Conservation Education

Louella Dolar is interested in promoting conservation of marine mammals and their habitats in the tropical Pacific, particularly in Southeast Asia. She has done abundance surveys using the line transect method and the program DISTANCE, monitoring of marine mammal by-catch, cetacean feeding ecology, and grass-root level conservation education. Because research and conservation resources are limited in many Southeast Asian countries, she has, in her field surveys, modified the line transect method using a small boat to suit local resources and conditions.

Greg Donovan Management

Greg Donovan's primary research interests focus on scientific issues that relate to wise management-in particular, those related to abundance estimation, population dynamics, and evaluation of threats and development of management procedures. He attaches particular importance to conservation scientists (1) providing good quantitative scientific advice irrespective of whether they personally like the implications of that advice (e.g. with respect to by catch or whaling issues); (2) not falling into the trap of acting as 'moral' judges (for which their views are no better or worse than anyone else's); (3) ensuring that scientific uncertainty is explicitly taken into account when providing advice; (4) listening with respect to the views of people whose livelihoods may be affected by the advice they give; (5) recognizing that draconian solutions should usually be a last resort - such advice is often ignored with serious conservation consequences for the animals they are trying to help; and (5) once having reached a careful conclusion, standing by what they believe is the best advice irrespective of whether it makes them unpopular with politicians, industry, special interest groups, and other scientists.

Kathy Frost Natural History

Kathy Frost has studied the natural history and ecology of marine mammals in Alaska since 1975. Her work has included studies of the diet and trophic interactions of ice-associated seals and beluga whales; the natural

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history, distribution and abundance of ice seals, harbor seals and beluga whales; movements and diving behavior of harbor, spotted, and bearded seals; and the impacts of human activities (such as the Exxon Valdez oil spill) on marine mammals. Particular projects have included satellite tagging of belugas and harbor, spotted, and bearded seals; diet studies using stomach contents and, in collaboration with others, fatty acids analysis; aerial surveys of seals and belugas; and on-ice studies of the winter ecology of ringed seals. Kathy has also worked extensively with Alaska Native hunters to bring together information about western science and traditional knowledge, to implement cooperative research in which all parties are meaningfully involved, and to foster co-management of subsistence resources. Kathy worked for the Alaska Department of Fish and Game for 25 years during her professional career. She retired from ADF&G in 2000 and is currently conducting research in cooperation with other agencies and institutions. Kathy has adjunct faculty status at the University of Alaska Fairbanks.

Ewan Fordyce

Systematics and Anatomy

Ewan Fordyce's main interests are cetacean systematics and phylogenetics, especially anatomically-based; cetacean evolutionary ecology; and fossil record, especially the origins of modern (crown-group) Cetacea. His current research includes compiling an illustrated dictionary of the bones of the skull of bottlenosed dolphin Tursiops (with J.G. Mead, Smithsonian Institution), origins and adaptations of balaenopterids, and the history of the Platanista lineage.

Christine Gabriele

Life History and Vocal Behavior

Chris Gabriele is a wildlife biologist at Glacier Bay National Park, where she conducts an annual humpback whale population monitoring study that focuses on whale life history strategies and foraging behavior. She completed her masters degree on humpback whale migratory behavior and mating strategies in the Hawaiian Islands in 1991 and began working at Glacier Bay that same year. Since then, Chris has also participated in field research on the vocalizations of blue whales, fin whales, humpbacks, and bowheads, including studies of whales' reactions to underwater sound. Chris is currently leading the Park's underwater acoustic monitoring study, which aims to characterize natural and man-made sources of underwater sound and their potential influences on marine mammals.

Nick Gales

Veterinarian and Eco-physiology

Nick Gales, BVMS, PhD, has been involved in marine mammal research and management since 1980. He started his career as veterinarian/curator at a zoological marine park in Western Australia and after a few years moved into a research career, working initially on the eco-physiology of Antarctic phocids (particularly elephant seals and Weddell seals) at Heard Island and overwintering at Davis Station, Antarctica in 1986. After this, Nick did his doctoral research on the demography and reproductive physiology of Australian sea lions in Western and South Australia. During this time, Nick was also responsible for designing and conducting a major marine mammal release program from a defunct captive display facility. For the next four years Nick headed the New Zealand Department of Conservation's marine mammal program where he was responsible for researching and managing marine mammal populations in the face of threats from fishing and tourism around New Zealand and its sub-Antarctic islands, as well as issues associated with the International Whaling Commission (IWC). After a few years back in Western Australia working, among other things, with indigenous communities on dugong foraging ecology and management, Nick moved to the Australian Antarctic Division in 2001. There he heads up the Applied Marine Mammal Ecology group working on trophic relationships between marine predators and their prey as well as heading up the Australian Government's science related work for the IWC. Among other things, Nick is a Board member of

the international Society of Marine Mammalogy and the Australasian coordinator of the IUCN Cetacean Specialist Group. Nick has published widely in the scientific and popular literature (>70 refereed scientific papers). Nick's key interest is the conduct of applied marine mammal research and its delivery into management and policy.

Leah Gerber

Conservation Science and Policy

Leah Gerber's research integrates field and modeling approaches to address questions at the interface of marine conservation science and policy. Her approach is to use quantitative tools from conservation science to develop practical approaches for decisions associated with endangered species recovery and reserve design. As an academic scientist she spends her time teaching courses at the undergraduate and graduate level and conducting research (currently lab foci include sea lion behavior/demography and marine reserve design in the Gulf of California). In addition, she works with NMFS and FWS in applying tools from conservation biology to real-world conservation as part of a number of recovery teams. In all of these endeavors her approach includes empirical research and quantitative analyses of marine populations and theoretical studies that inform practical approaches.

Mike Hammill

Commercial Fishery Interactions

Mike Hammill is a research scientist with the Canadian Department of Fisheries and Oceans, which is the government department responsible for the management of marine mammals in Canada. Based in Mont-Joli, Quebec, Dr Hammill works on harp, grey, and hooded seals in the Gulf of St. Lawrence and on beluga whales in northern Quebec. In the past, he has studied ringed and bearded seals in the Canadian and Norwegian Arctic. His research is directed towards the study of interactions between marine mammals and commercial fisheries and harvest management. Dr Hammill is involved in research projects to examine diet composition of harp and grey seals, and abundance surveys of seals and beluga. His research also examines habitat use and movement patterns of seals and beluga using satellite telemetry and the development of the Precautionary Approach to the management of marine mammals within the context of commercial and subsistence harvests and conservation of endangered species.

Phil Hammond Population Ecology

Phil Hammond's research activities flow from a fundamental interest in population dynamics and ecology and how seals and cetaceans interact with mankind. His research focuses on three main areas: (a) studies of the habitat usage, foraging ecology, and diet of marine mammals; (b) the estimation of abundance, survival and reproductive rates, and the modeling of marine mammal population dynamics; and (c) studies of the management of whaling, cetacean bycatch in fisheries, seal-fishery interactions, and the conservation of vulnerable species.

Jim Harvey Fishery Interactions

Jim Harvey's primary research has involved the following broad areas: (1) Foraging ecology of pinnipeds and cetaceans using radio telemetry and TDRs to determine dive behavior, net sampling and hydroacoustics to determine prey resources, stomach contents and fecal sampling to determine prey species and sizes, and captive feeding experiments to assess biases; (2) population assessment using line and strip sampling, aerial

surveys of haul-out areas for pinnipeds, and telemetry to determine correction factors for surveys; and (3) interactions of fisheries and marine mammals, especially salmon-pinniped conflicts.

Gerald Kooyman Physiology

For more than 30 years, Scripps research physiologist Gerald Kooyman has studied the behavioral, physiological, and anatomical adaptations of Antarctic marine animals. His work, both at Scripps and in remote field locations, has broadened scientific understanding of the specialized adaptations of these aquatic mammals and birds and how they live and survive on the coldest, driest, and windiest continent. In recent years, Kooyman has focused on emperor penguins and how they may be affected by global climate change. The causes and effects of global change continue to be hotly debated by scientists. Kooyman, however, approaches it from a different perspective. "What really matters," he says, "is whether animal populations are increasing or declining. If they are declining, the question is why? What is the cause and are humans the responsible agents? If so, what can we do about it?"

Christina Lockyer Energetics

Dr Christina Lockyer (née Grzegorzewska) is British and was educated in England: B.Sc. (Hons), Biology - 1968 at the University of East Anglia, M.Phil., Zoology - 1972 at the University of London, and Sc.D., Zoology - 1989 at the University of East Anglia.

She had been employed as a senior scientist at the Department of Marine Ecology and Aquaculture at the Danish Institute for Fisheries Research between April 1996 and January 2003 when she launched her own firm, Age Dynamics, investigating age determination and life history research in mammals in Denmark.

Currently, in conjunction with Age Dynamics, she runs international practical courses on marine mammal life history in universities and research institutions and acts as consultant to the European Commission and various international organizations. In March 2005, Age Dynamics established a second operating base in collaboration with the Norwegian Polar Institute based at the Polar Environmental Centre in Tromsø, Norway.

Lori Marino

Cognition and Brain Evolution

Lori Marino's research is focused on the question of how and why cetaceans evolved such large brains and complex intelligence. Much of her work involves using magnetic resonance imaging to examine the neuroanatomy of modern cetaceans (from stranded individuals). She also uses histological staining methods to investigate the organization of the neocortex in several cetacean species. Another component of her research program involves using computed tomography to study fossil cetacean crania in order to elucidate the evolution of brain size (encephalization) and morphology in cetaceans. Moreover, she conducts comparative studies of cetacean brain size and behavioral ecology and life history in order to understand which factors are correlated with the largest encephalization levels in cetaceans. Finally, her work involves experimental studies of dolphin cognition, primarily in the area of self-awareness. All of these components of her research program are integrated towards addressing the question of how cetacean brains and intelligence evolved, what factors are important in this process, and how cetacean brains and intelligence compare with other taxa, such as primates.

Sue Moore Acoustics

Sue E. Moore, Ph.D., received her doctorate from Scripps Institution of Oceanography, with a dissertation entitled "Cetacean Habitats in the Alaskan Arctic" based upon a decade of sighting data from offshore aerial surveys. She has served as Director and as Cetacean Program Leader at the National Marine Mammal Laboratory (NMML) and is currently on detail to the Applied Physics Laboratory (APL) at the University of Washington to develop and support acoustic and Arctic-related research programs for the Alaska Fisheries Science Center. Sue serves on several Arctic-related scientific advisory committees including: the Barrow Arctic Science Consortium (BASC) Science Advisory Group (SAG); the Scientific Committee of the International Whaling Commission; and the International Shelf Basin Exchange (SBE) project. She has (co-) authored over 50 scientific papers, many as first-author and most focused on marine mammals offshore Alaska. One recent contribution was a chapter entitled "Long-term Environmental Change and Marine Mammals", prepared for the US Marine Mammal Commission Consultation on Future Directions in Marine Mammal Research.

Wayne Perryman Photogrammetry

Wayne Perryman is interested in the factors that impact reproduction in marine mammals. His focus is on how nutritive condition impacts reproductive output of baleen whales. He uses photogrammetric techniques to assess nutritive condition of large whales, and he does shore-based survey work to monitor reproduction in gray whales. In gray whales, he feels fairly confident in saying that the link between condition of adult females and their reproductive output is through control of existing pregnancies, rather than through ovulation rates. He also uses aerial photographic techniques to monitor pinniped populations and calibrate observer estimates of the number of animals in dolphin schools.

NMML: http://nmml.afsc.noaa.gov
APL: http://www.apl.washington.edu

Diana Reiss

Comparative Cognition and Communication

Dr. Diana Reiss is currently a Senior Research Scientist at the Osborn Laboratories of Marine Science at the New York Aquarium of the Wildlife Conservation Society and an adjunct faculty at Columbia University in the Center for Environmental Research and Conservation. Her research interests include the evolution of intelligence, comparative cognition, and communication. Her research focuses on the cognitive and communicative abilities of bottlenose dolphins (Tursiops truncates). Using a combination of experimental and observational methods, much of her work has investigated the role of learning the effects of social and environmental factors on vocal development of dolphins. Current research has demonstrated the ability for mirror self-recognition by bottlenose dolphins. This ability has been previously found only in great apes and humans. Research and applied work also includes developing science-based approaches to animal enrichment for zoos and aquariums. Important educational and professional steps in the development of Dr. Reiss's career include receiving her PhD after being fortunate enough to design a graduate program that was interdisciplinary, including courses in psychology, language development, bioacoustics, general systems theory, and biology (1983); founding and directing the marine mammal research program at Marine World Africa USA (until 1991); and serving on the faculty of San Francisco State, Yale, and Rutgers University and as a scientific advisor for several organizations, including the American Zoo and Aquarium Association's Animal Welfare Advisory Committee.

Jonathan Stern Ecology

Jonathan Stern studies habitat use patterns in a number of contexts. His current field of interest is the analysis

of search behavior in foraging animals. He is particularly interested in how animals sample the environment at a number of spatial and temporal scales. Minke whales are the primary study organism. Energetics models are coupled with search models to further explore aspects of strategic and tactical optimality.

Sergio Escorza-Trevino

Population Genetics

Research efforts of his group are focused on population genetics, molecular ecology, and evolution of marine mammals. Their scientific contributions are characterized by a combination of molecular, computational, and field approaches. They are particularly interested in developing a research program that follows an integrated approach to the study of marine mammals at the individual, social, population, and higher taxonomic levels, as well as the application of the results to the effective management of endangered stocks. Current and future research plans include: a) phylogeography and the origin of species, b) taxonomic status: does morphology predict taxonomy?, c) population structure: what are the management units?, d) sex-biased dispersal patterns: philopatry, dispersal, and the power to homogenize populations, and e) social structure, relatedness, and kinship.

Fernando Trujillo

Community Based Conservation

Fernando Trujillo is a marine biologist with a PhD in Zoology at the Aberdeen University (Scotland). He has experience with river dolphins, manatees, giant otters and other aquatic animals in South America. He is the Director of Foundation Omacha, and he has been working for almost 20 years in the Amazon, Orinoco and Caribbean region. He has experience with action plans for endanger species (He is part of the Cetacean Specialist Group of the IUCN), and his main subject of interest is abundance estimations using distance and mark recapture methods. He also has worked a lot on conservation plans involving local communities, in most cases indigenous people.

David Weller

Conservation Biology

David Weller's training and expertise are in the areas of behavioral ecology and conservation biology, with particular emphasis on marine mammals. He has spent the past 22 years studying whales and dolphins in a variety of habitats. He is currently in residence at the Southwest Fisheries Science Center as a Research Associate and is also an Adjunct Professor at San Diego State University. His primary research focus since 1997 has been centered on the biology, behavior, and conservation of the critically endangered western gray whale population off Sakhalin Island, Russia. They have now collected the most comprehensive and detailed photographic, genetic and behavioral databases that exist for this population and his team has produced over 30 manuscripts and reports regarding its biology, ecology, and conservation status. He is also actively involved with studies on the abundance and population structure of California bottlenose dolphins and north Pacific humpback whales.