

Special Issue Preface

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It is my honor to introduce this special issue of *Aquatic Mammals* that celebrates the life and career of Bernd Würsig with a Festschrift (a collection of writings published in honor of a scholar) of contributions from colleagues, friends, and former graduate students. I first met Bernd in the mid-1980s when he was at Moss Landing Marine Laboratories in California. As is always the case, his lab was full of enthusiastic graduate students working on a variety of marine mammal projects. It was not until I joined Texas A&M University in 1990 (a year after he did) that I really got to know him as a colleague and friend. We worked together on several large-scale marine mammal research projects in the Gulf of Mexico. The goal of these projects was to determine the distribution and abundance of cetaceans in the northern

Gulf—information that was essential as oil and gas production moved into deep water beyond the continental shelf. We have continued to collaborate as faculty members in guiding graduate students in the department's Marine Mammal Research Program, one of the largest in the country. I use this preface to briefly introduce the contributors to this special issue and their relationship to Bernd. I will follow the Table of Contents in presenting author details, with generally a bit more detail for senior than junior authors. Several authors include Bernd as a co-author because the topic is a present part of his studies. Bernd's introduction is part of his Historical Perspectives essay at the end of this issue. I served as science editor for this special issue, with Kathleen Dudzinski serving as managing editor.



Participants in the Festschrift symposium for Bernd Würsig on Saturday, 21 October 2017 (Photo credit: Bill Koski)

This volume sprang from a mini-symposium held on 21 October 2017, the day before the beginning of the 22nd Biennial Conference on the Biology of Marine Mammals for The Society for Marine Mammalogy in Halifax, Nova Scotia. Bernd Würsig is a founding member of this international society, a past-president, and he hosted the 10th biennial meetings (1993) in Galveston, Texas. The mini-symposium was a grand reunion of colleagues from long ago, even some who had travelled from overseas just to attend that day's event, with many former graduate students, post-docs, and present colleagues. Most of the presentations were turned into papers for this *Aquatic Mammals* special issue; several colleagues not able to participate in the day's events volunteered their written contributions.

About a dozen former graduate students of Bernd Würsig are represented in these pages, as well as more scientists who collaborated in other ways, but the work here is indeed "heavy on" Bernd's first love of dusky dolphin (*Lagenorhynchus obscurus*) research, largely in New Zealand. Still, aspects of other work in Texas, California, Hong Kong, and Far East Russia are also featured in these pages. While all entries were welcome, Bernd told us that he especially likes the paper by Hans Thewissen that deals with a topic about which Bernd has confessed almost total ignorance, and from which he learned much new.

This volume does not cover the many years Bernd and colleagues spent in Argentina with several dolphin and porpoise species, his work in central China with the now extinct Baiji (*Lipotes vexillifer*), nor his 22 seasons with bowhead (*Balaena mysticetus*) and white whale (*Delphinapterus leucas*) research in the Arctic. Such are the ways of Festschriften—they cannot (and probably should not) cover all aspects of the professional life of a person, but give a smattering—a hint—of science in that person's lifetime. We hope that you enjoy this hint as much as we, the editors, enjoyed interacting with the authors during the formation of this eclectic volume.

Brief Author Biographies

Randall "Randy" Davis is Regents Professor of Marine Biology at Texas A&M University. He conducted Doctoral and Postdoctoral research on the diving physiology of harbor seals (*Phoca vitulina*) and Weddell seals (*Leptonychotes weddellii*) at Scripps Institution of Oceanography, La Jolla, California, and in the Antarctic. He is a world-renowned leader in shaping research on diving physiology in marine mammals and other air-breathing marine vertebrates. Randy and Bernd worked together on several large-scale marine mammal research projects in the Gulf of Mexico

and have often been on committees of each others' students. Randy is the Science Editor of this Festschrift volume of *Aquatic Mammals*.

J. G. M. "Hans" Thewissen is Ingalls-Brown Professor of Anatomy at Northeast Ohio Medical University. As an anatomist, embryologist, and paleontologist, he has reshaped our thinking of whale, dolphin, and sirenian ancestors. He studies sensory systems to explore impacts of climate change on air-breathing marine vertebrates. He also wrote a popular book about whale origins: *The Walking Whales* (University of California Press, 2014). Hans and Bernd are co-editors of the three editions of *Encyclopedia of Marine Mammals* (Elsevier/Academic Press, 2002, 2009, 2018).

Jody Weir conducted her Master's degree work on New Zealand dusky dolphin mother and calf behavioral interactions, distribution, and calf development with Bernd. She then went on to Doctoral research on infant development in the two largest species of lemurs. Jody still works on marine vertebrates in Kaikoura, New Zealand, as the director of the Kaikoura Ocean Research Institute (KORI), and with lemurs in Madagascar as the director of the ZAZA Project. Her co-authors are Lorenzo Fiori, who completed a Master's degree in Italy investigating the occurrence of toxoplasmosis in Mediterranean Sea cetaceans and is currently completing his Doctoral degree focusing on the assessment of humpback whale (*Megaptera novaeangliae*) behavioral responses to swim-with tourism interactions in the Kingdom of Tonga, using Unmanned Aerial Vehicles (UAVs)—Fiori's work in the development of UAV methodology for cetacean behavioral studies brought him to work with Bernd on dusky dolphin nursery group and mating behavior; Dara Orbach and Sarah Piwetz, who recently completed their Doctoral research with Bernd on dusky and other dolphins and porpoises, including the most recent work with UAVs in Kaikoura; and Carys Protheroe, who earned her Bachelor's degree in Marine and Freshwater Biology and her Master's degree in Chemical Ecology from the University of Hull in England. She is now based in Kaikoura, New Zealand, working with KORİ.

Dara Orbach conducted her Master's research on bat flight and her Doctoral research with Bernd on social and sexual strategies of dusky dolphins, with an emphasis on female behavior during mating attempts and on vaginal morphology. Dara recently completed a visiting lecturer position at Mount Holyoke College and her postdoctoral fellowship at Dalhousie University. Dara's co-authors did graduate work with Bernd. Heidi Pearson conducted her Doctoral research on dusky dolphin habitat use and is now an associate professor at the University of Alaska; Amy Beier-Engelhaupt's Master's research

focused on bottlenose dolphin (*Tursiops truncatus*) movements along the Texas coast, and she is now engaged in marine mammal contract work in the Washington, DC area; Sierra Deutsch also conducted her Master's research on dusky dolphin mom/calf development and is now a Doctoral student in Sociology at the University of Oregon; Mridula Srinivasan worked in New Zealand and has engaged in sophisticated modeling studies of predator-prey interactions; Jody Weir's Master's research, as mentioned above, focused on mom/calf development; and Suzanne Yin conducted her Master's research with Bernd on the movements and sounds of dolphins off Kaikoura and now travels the world as a marine mammal and bird observer.

William "Bill" Keener is the former Executive Director of the California-based The Marine Mammal Center (TMMC) and co-founder of Golden Gate Cetacean Research. He described the return of harbor porpoises (*Phocoena phocoena*) to San Francisco Bay and has been instrumental in research on their social/sexual strategies. Keener's co-authors are pinniped specialist Marc Webber, co-author of *The Marine Mammals of the World* guide, who worked closely with Bernd on dusky dolphins for his Master's degree; Izzy Szczepaniak, who studied harbor porpoises in the Gulf of the Farallones; Tim Markowitz, who conducted his Doctoral research with Bernd on dusky dolphins and continues research on numerous cetacean and pinniped species; and Dara Orbach, who is collaborating on the harbor porpoise research work.

Stefan Bräger did his Master's degree with Bernd on bottlenose dolphin social strategies in Galveston Bay, Texas, and his Doctoral research on the behavioral ecology of Hector's dolphins (*Cephalorhynchus hectori*) in New Zealand with Bernd as external advisor. He is former Chair of ASCOBANS (an intergovernmental agreement on protecting northern European small cetaceans) and is presently a biologist for the German Oceanographic Museum (DMM). Stefan and Bernd have been working together on marine mammal conservation issues since the early 1990s. Co-author Zsuzsanna Bräger did her Master's research on bottlenose dolphin feeding behavior in the Gulf of Ambracia, Greece, and her Doctoral research on fish scale studies. She is involved in cetacean research in the Mediterranean Sea, North Atlantic Ocean, and in Western Australia. She is now a research associate at the DMM in Stralsund, Germany.

David "Dave" Weller did his Master's research on bottlenose dolphins along the southern California coast with R. H. DeFran and Doctoral research on bottlenose dolphin social ecology in Texas with Bernd. He is a marine mammal biologist in the Marine Mammal and Turtle Division of

the Southwest Fisheries Sciences Center, National Marine Fisheries Services, National Oceanic and Atmospheric Administration in La Jolla, California, and an adjunct professor at San Diego State University. Dave and Bernd started a long-term research project on western gray whales (*Eschrichtius robustus*) in Russia with leadership by Robert "Bob" Brownell, Jr. Dave's co-authors are Amanda Bradford, a veteran of the research program on Sakhalin Island and a guru of gray whale photo-identification, who was an undergraduate intern with Bernd and completed her Doctoral research on population characteristics of the critically endangered western gray whale at the University of Washington; Aimée Lang, part of the research team on Sakhalin Island that examined the gray whale stock structure, was an undergraduate intern with Bernd and completed her Doctoral research on population genetics of gray whales in the North Pacific at the University of California, San Diego; Alexander "Sasha" Burdin, a leading expert on marine mammals (e.g., gray and humpback whales, killer whales [*Orcinus orca*], sea otters [*Enhydra lutris*], and pinnipeds) in Russian waters, who was instrumental in developing the gray whale research program on Sakhalin Island in 1995 and has been leading the project ever since; and Bob Brownell, Jr., a preeminent authority on marine mammals, who has been tracking the status of gray whales in the western North Pacific since the 1960s. In collaboration with Bernd, Sasha, and Dave, Bob envisioned and facilitated creation of the ongoing (1995-2018) research program on gray whales off Sakhalin Island.

Mari Smultea did her Master's research with Bernd on habitat use patterns of marine mammals. She is Founder, CEO, and Chief Scientist of Smultea Sciences, a woman-owned wildlife and research consultancy specializing in marine mammal, sea turtle, and bird conservation work. Mari and Bernd have worked together on projects in Texas, the U.S. and Canadian Arctic, California, and the Indian Ocean. Mari's co-authors are Kate Lomac-MacNair, who was an intern with Bernd in Kaikoura, completed a Master's degree at Johns Hopkins University, is currently working on her doctorate at the University of Algarve in Faro, Portugal, and works with Mari at Smultea Sciences; Christopher S. Nations, who is a statistician with West Environmental and Statistical Consultants (West) specializing in a variety of techniques in ecological statistics; and Trent McDonald, who is a senior biometrician at West and has worked with Smultea Sciences and with Bernd for many years to provide expertise in biostatistics related to marine mammals, particularly relative to the effects of anthropogenic activities.

Lisa Ballance is director of the Marine Mammal and Turtle Division of the Southwest Fisheries Sciences Center and an adjunct professor at Scripps Institution of Oceanography, both in La Jolla, California. She earned her Master's degree with Bernd on the behavioral ecology of bottlenose dolphins in Mexico and her doctorate on marine ecology at the University of California, Los Angeles.

Sarah Piwetz recently finished her doctorate with Bernd on behavioral reactions of dolphins to anthropogenic disturbance in New Zealand, Hong Kong, and Texas. She is presently a marine mammal contractor for work in the U.S., Hong Kong, and Far East Russia. She has collaborated with Bernd for many years in New Zealand and Hong Kong. Her co-authors are Glenn Gailey, co-developer of the theodolite tracking program *Pythagoras* and scientist with Hong Kong-based Cetacean Ecosystem Research; Lisa Munger and Marc Lammers, who developed and use passive acoustic monitoring systems for cetacean and ocean environment research worldwide as part of Oceanwide Science Institute (OSI); and Thomas "Tom" Jefferson, who consults on marine mammal environmental issues under the name of Clymene Enterprises. Glenn and Tom were both Master's and Doctoral students with Bernd.

Paula Moreno did her Master's work at the University of Lisbon, Portugal, on the decomposition and drift of harbor porpoise carcasses in the North Sea, Europe, and her doctorate with Bernd on the foraging ecology of bottlenose dolphins in Texas. She is now a research scientist in the Division of Coastal Sciences at the University of Southern Mississippi. Her co-author, Michael Mathews, earned his Master's degree in Applied Mathematics at Texas A&M University and is an energy analyst and programmer. He has worked for many years with Paula on data analyses related to cetacean ecology.

Tom Jefferson is director of Clymene Enterprises and the conservation NGO Viva Vaquita, both based in San Diego, California. He obtained his Master's degree with Bernd (while at Moss Landing Marine Laboratories) on the biology of Dall's porpoises (*Phocoenoides dalli*) and his doctorate with Bernd (at Texas A&M) on the ecology of cetaceans in the deep waters of the Gulf of Mexico. Tom has published nine books, including one with Bernd, *The Marine Mammals of the Gulf of Mexico* (Texas A&M Press, 2000), and is senior author of the guide book *Marine Mammals of the World* (Elsevier/Academic Press, 2008, 2015). Tom and Bernd have collaborated on many research projects since 1990, most recently on Indo-Pacific humpback dolphin (*Sousa chinensis*) social ecology and conservation in Hong Kong.

Lisa Munger is Science Director at the OSI in Honolulu, Hawai'i. She also teaches at the

University of Hawai'i and the University of Oregon. She obtained her doctorate at Scripps Institution of Oceanography on habitat use by critically endangered North Pacific right whales (*Eubalaena japonica*) using long-term acoustic recorders. Lisa and Bernd have been working jointly on humpback dolphins of Hong Kong, especially on their sounds and the impacts of anthropogenic noises. Her co-authors are Sarah Piwetz, who has collaborated with Bernd and Lisa since 2012 monitoring Indo-Pacific humpback dolphins in Hong Kong, and Marc Lammers, who is the Research Coordinator for the NOAA Hawaiian Islands Humpback Whale National Marine Sanctuary and President of OSI.

Mridula Srinivasan did her doctorate with Bernd on the behavioral ecology of dusky dolphins under predation risk in New Zealand. She is currently Branch Chief of the Protected Species Science Program in the Office of Science and Technology, NMFS, in Maryland and Visiting Research Scientist at the Earth System Science Interdisciplinary Center (ESSIC), University of Maryland, College Park. Mridula and Bernd have co-authored papers on the behavior and ecology of delphinids.

It is my belief that this somewhat eclectic volume of topics and species well-represents some of Bernd's lifelong interests, and it is my hope that the reader will find pleasure and education in these pages. Although he retired from Texas A&M University, I am certain he will continue to provide insight into a great many marine mammal topics with books and articles, some of which may appear in *Aquatic Mammals*.

Acknowledgments

For valuable help with publication finances, the guest editor of this special volume as well as Bernd Würsig gratefully acknowledge the Texas A&M University System's Institute of Oceanography, Marine Biology Department of Texas A&M at Galveston, and the National Oceanic and Atmospheric Administration's Southwest Fisheries Sciences Center in La Jolla, California. Without these entities, this Special Issue would not have been possible. The Festschrift, including meeting in Halifax, Nova Scotia, Canada, in October 2017, was also made possible by funds from Würsig's George Mitchell Fisheries Biology Chair and Distinguished Professor Accounts. For help throughout, we are especially grateful to Kathleen Dudzinski, Sandy Larimer, and Shanee Sullivan of *Aquatic Mammals*; as well as to Stacie Arms, Sarah Piwetz, and Dara Orbach. We also thank all attendees in Halifax, as well as the many authors and co-authors who kindly contributed their expertise to this volume.