

Sarah Piwetz

Marine Mammal Behavioral Ecology Group
Department of Marine Biology, Texas A&M University at Galveston
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Research Interests

Marine mammal behavioral ecology; human-wildlife overlap; conservation biology

Education

Ph.D. Marine Biology, Texas A&M University at Galveston <i>Advisor:</i> Dr. Bernd Würsig <i>Dissertation Topic:</i> Effects of human-generated disturbance on delphinid behavior and fine-scale movement patterns	Expected 2017
B.Sc. Marine Biology, Texas A&M University at Galveston	2007
B.Sc. Sport Management, University of Texas at Austin	1999

Teaching

Marine Biology Field Course: Research & Conservation in the Gulf of Corinth, Greece <i>Teaching Assistant, Field Techniques</i>	2014, 2016
Behavioral Ecology of Marine Mammals and Seabirds of New Zealand <i>Teaching Assistant, Field Techniques</i>	2011, 2012, 2014, 2015
Biology of Marine Mammals, Texas A&M University at Galveston <i>Teaching Assistant, Laboratory and Field Techniques</i>	2010-2014
Cetacean Behavior & Ecology, Texas A&M University at Galveston <i>Teaching Assistant, Discussion-based Laboratory</i>	2010-2015
Sea Camp, Texas A&M University at Galveston <i>Education Biologist</i>	2010
Longhorn Volleyball Camp, University of Texas at Austin <i>Camp Counselor and Drill Coordinator</i>	1995-1997, 1999

Mentorship

Texas A&M University at Galveston:	Honors Thesis Students	2012-2015
	Undergraduate Field Research Assistants	2011-2014
	Undergraduate Laboratory Assistants	2010-2016

Research

Texas A&M University at Galveston	2010-present
Long-term Bottlenose Dolphin Photo-Identification Research, Galveston, TX, USA <i>Co-Investigator (7 years)</i>	
– Conduct boat-based surveys to contribute to long-term, low level photo-identification of common bottlenose dolphins to distinguish individuals, assess site fidelity, and contribute to long-term photographic database	
– Guide students in creating and maintaining centralized photo-identification catalog including image selection, digitizing, software processing, cropping, and matching images from 25 years of data	

- Member of the Texas Dolphin Research Collaborative to streamline current methodologies for improved cross-comparison in different regions

Ove Arup & Partners Hong Kong Ltd

2013-2014, 2015-2016

Kowloon, Hong Kong

Research Sub-consultant (2 years)

- Established shore-based tracking sites
- Trained local research team in theodolite tracking of Indo-Pacific humpback dolphins and software application
- Analyzed and interpreted tracking data for technical reports

Fluor Daniel Eurasia, Inc.

2015

Gray Whale Surveillance, Sakhalin, Russia

Whale Behavior Specialist (4 months)

- Lead for 1 of 5 gray whale behavior monitoring teams
- Conducted theodolite tracking sessions to monitor behavior and movement patterns of western gray whales before, during, and after industrial 4-D seismic surveys
- Supervised systematic scan sampling sessions and focal-animal follows to monitor gray whale relative abundance, distribution, behavior and respiration

National Marine Fisheries Service/Texas Marine Mammal Stranding Network

2014, 2015

Galveston Bay Photo-identification Mark-Recapture Study, Galveston, TX, USA

Photographer/Boat Operator (2 months)

- Conducted boat-based line-transect surveys to locate common bottlenose dolphins in the Galveston Bay area
- Photographed individual dolphins for capture-recapture abundance estimates

Mott MacDonald Hong Kong Ltd

2014-2015

Kowloon, Hong Kong

Research Sub-consultant (1 year)

- Established shore-based tracking sites
- Trained local research team in theodolite tracking of Indo-Pacific humpback dolphins and software application
- Analyzed and interpreted tracking data for technical reports

Texas A&M University at Galveston

2013

Bottlenose Dolphin Research, Galveston Ship Channel, TX, USA

Principal Investigator (3 months)

- Conducted shore-based theodolite tracking to assess movement patterns and behavioral states of common bottlenose dolphins relative to vessel traffic in the Galveston Ship Channel
- Conducted shore-based photo-identification of common bottlenose dolphins
- Trained volunteers in all aspects of field work including theodolite tracking, Pythagoras software, photography, land-based photo-identification, and equipment maintenance

Texas A&M University at Galveston

2011-2012

Dusky Dolphin Research, Admiralty Bay, New Zealand

Principal Investigator (6 months)

- Conducted shore-based theodolite tracking to assess movement patterns of dusky dolphins in a habitat with a high concentration of shellfish aquaculture
- Conducted boat-based focal-group follows of common bottlenose, short beaked common, and dusky dolphins using photo-identification and to distinguish individuals

- Trained volunteers in all aspects of field work including theodolite tracking, Pythagoras software, boat launching, docking, and handling, photography, photo-identification analysis, and equipment maintenance

Hong Kong Dolphin Conservation Society

2011-2012

Indo-Pacific Humpback Dolphin Research, Lantau Island, Hong Kong

Research Consultant (2 years)

- Established shore-based tracking sites and trained local research team in theodolite and software application to track Indo-Pacific humpback dolphins
- Analyzed and interpreted tracking data for publication

LGL Ecological Research Associates Ltd

2010

Gray Whale Monitoring Program, Sakhalin, Russia

Research Assistant (2 months)

- Executed timed scan sampling sessions to monitor relative abundance and distribution of endangered western gray whales during industrial 4-D seismic exploration
- Conducted focal-animal follows by continuously monitoring individual gray whales and recording behavior and respiration data into Pythagoras software

Texas A&M University at Galveston

2009

Dusky Dolphin Research, Golfo San José, Argentina

Research Assistant (2 months)

- Collected boat-based observational data on large seabird aggregations and dusky dolphin behavior and abundance
- Created and analyzed dusky dolphin photo-identification catalogue and trained volunteers in fin matching techniques

Otago University

2008

Dusky Dolphin Research, Kaikoura, New Zealand

Research Assistant (6 months)

- Facilitated shore-based data collection of dusky dolphin movement using a digital theodolite and Pythagoras computer software
- Collected boat-based photo-identification and observational data on dusky dolphin behavioral state, mode inter-individual distance, movement patterns, and swimming formation

Professional

Texas A&M University at Galveston, Galveston, TX, USA

2015-present

Research Assistantship: The Encyclopedia of Marine Mammals, Ed. 3, Elsevier/Academic Press

Assistant to the Editors

- Day to day support relative to communications with over 250 authors, field questions from the Press, assist managing editors to accommodate individual needs

Texas Marine Mammal Stranding Network, Galveston, TX, USA

2003-present

Assistant Stranding Coordinator, 2014-2015

- Assisted with live marine mammal rescue and rehabilitation, water quality testing and maintenance, deceased marine mammal recovery and necropsy (including independent necropsy of late code carcasses), equipment sterilization, in-field volunteer training, 24-hr near-real-time report submission to NOAA, Chain of Custody sub-sample documentation during federal Natural Resource Damage Assessments, and stranding samples database maintenance

Assistant to the State Coordinator, 2005-2006

- Assisted State Coordinator in daily operations including presenting educational lectures, training volunteers, organizing public outreach events, promoting fundraisers, maintaining membership database and renewals (paid position concluded when grant funds expired)

Volunteer, 2003-present

- Critical Care Team: first response for live animal rescue, transport, and preliminary stabilization; assist with out of habitat relocation of wild marine mammals
- Live Animal Care: objectively record behavior, assist with animal restraint during medical procedures, and provide enrichment to animals
- Feeder: carry out established nutrition plan including sanitary food preparation, tube-feedings, and medication distribution
- Necropsy: recover deceased marine mammals, record morphometrics, collect photographic documentation, prepare tissue fixatives, collect samples using aseptic techniques, record narrative, and prepare carcasses for rendering
- Education: regional public outreach including informal booths and formal presentations, and assist with new volunteer training sessions
- Volunteer Coordination Team: 2004-2009, 2015: ensured live animal shifts were filled and organized volunteer appreciation events
- Species: Common bottlenose dolphin (*Tursiops truncatus*), rough-toothed dolphin (*Steno bredanensis*), Clymene dolphin (*Stenella clymene*), pygmy and dwarf sperm whales (*Kogia breviceps* and *K. sima*), melon-headed whale (*Peponocephala electra*), West Indian manatee (*Trichechus manatus*)

Peer-Reviewed Publications

- Würsig, B., Parsons, C., L., **Piwetz, S.**, and Porter, L. 2016. Behavioral ecology of humpback dolphins in Hong Kong. In: T. Jefferson and B. Curry (eds.), *Conservation of the Humpback Dolphins* (Sousa spp.). Elsevier Advances in Marine Biology Series.
- Piwetz, S.**, Lundquist, D., and Würsig, B. 2015. Humpback dolphin (genus *Sousa*) behavioural responses to human activities. In: T. Jefferson and B. Curry (eds.), *Conservation of the Humpback Dolphins* (Sousa spp.). Elsevier Advances in Marine Biology Series.
- Orbach, D.N., Packard, J.M., **Piwetz, S.**, and Würsig, B. 2014. Sex-specific variation in conspecific-acquired marking prevalence among dusky dolphins (*Lagenorhynchus obscurus*). *Canadian Journal of Zoology* 93:383-390. DOI 10.1139/cjz-2014-0302
- Piwetz, S.**, Hung, S., Wang, J., Lundquist, D., and Würsig, B. 2012. Indo-Pacific humpback dolphin (*Sousa chinensis*) movements off Lantau Island, Hong Kong: Influences of vessel traffic. *Aquatic Mammals* 38(3):325-331. DOI 10.1578/AM.38.3.2012.325
- Piwetz, S.**, Whitehead, H.R., Godlove, L., and Cowan, D.F. 2011. An underwater recording stethoscope based on a directional hydrophone for use in dolphin rehabilitation and diagnosis. *Aquatic Mammals* 37(2):202-204. DOI 10.1578/AM.37.2.2011.202

Online Publication

- Piwetz, S.** 2011. Case story oceania02: Shellfish aquaculture in a marine mammal habitat. Seminar in Cross-Cultural Communication: Communities and Conservation. Biodiversity Stewardship Lab. Wildlife & Fisheries Sciences. Texas A&M University. http://people.tamu.edu/~jpackard/cases/OCEANIA02_shellfish_Piwetz.pdf

Presentations/Conference Proceedings

- Martin, A., **Piwetz, S.**, and Würsig, B. 2016. Skin coloration anomaly on common bottlenose dolphins (*Tursiops truncatus*) in the Galveston Ship Channel. Poster presentation at the Texas A&M University at Galveston Research Symposium, Galveston, TX, USA.
- Piwetz, S.**, and Würsig, B. 2015. Short-term effects of boats on dolphins in a narrow busy waterway. Poster presentation at the Society for Marine Mammalogy 21st Biennial Conference, San Francisco, CA, USA.

- Orbach, D.N., Packard, J.M., **Piwetz, S.**, and Würsig, B. 2015. Differences in dorsal fin marking patterns between male and female dusky dolphins (*Lagenorhynchus obscurus*). Oral presentation. 21st Biennial Conference on the Biology of Marine Mammals, Rethinking Lagenorhynchus Workshop, San Francisco, California (December 2015).
- Santostasi N.L., Bearzi G., Bonizzoni S., Bosquez J., Da Silveira M.F., Marcum E., **Piwetz S.**, Würsig B. 2015. Building a historic Texas bottlenose dolphin photo-identification catalog. Southeast and Mid-Atlantic Marine Mammal Symposium (SEAMAMMS), Virginia Beach, VA, March 27-29, 2015.
- Piwetz, S.**, and Würsig, B. 2015. Dolphins Modify Behaviors Due to Human Activity in an Important Foraging Habitat. Oral presentation at the Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, TX, USA.
- Piwetz, S.**, Pearson, H.C., Vaughn-Hirshorn, R.L., Srinivasan, M., Honkus, K.A., and Würsig, B. 2015. Decline in regional habitat use of dusky dolphins, *Lagenorhynchus obscurus*, in Admiralty Bay, New Zealand. Poster presentation at the Texas A&M University Graduate Program in Marine Biology Science Symposium, College Station, TX, USA.
- Mattson, E., Orbach, D.N., **Piwetz, S.**, Würsig, B., Highfield, W., and Marshall, C. 2015. Potential oil spill effects on behavior and group size of common bottlenose dolphins (*Tursiops truncatus*) in the Galveston Ship Channel. Poster presentation at the Gulf of Mexico Oil Spill and Ecosystem Science Conference, Houston, TX, USA.
- Mattson, E., Orbach, D.N., **Piwetz, S.**, Würsig, B., Highfield, W., and Marshall, C. 2015. Potential oil spill effects on behavior and group size of common bottlenose dolphins (*Tursiops truncatus*) in the Galveston Ship Channel. Poster presentation at the Texas A&M University Graduate Program in Marine Biology Science Symposium, College Station, TX, USA.
- Rodriguez, A., **Piwetz, S.**, Würsig, B. 2015. Dusky dolphin occurrence and site fidelity in Admiralty Bay, New Zealand. Poster presentation at the Texas A&M University Science Symposium, Galveston, TX, USA.
- Piwetz, S.**, and Würsig, B. 2014. Dolphins modify behaviors due to vessels in the Galveston Ship Channel. Oral presentation at the Southeast Region Marine Mammal Stranding Meeting, Orlando, TX, USA.
- Piwetz, S.**, and Würsig, B. 2014. Dolphins modify behaviors due to vessels in the Galveston Ship Channel. Poster presentation at the Texas A&M University at Galveston Research Symposium, Galveston, TX, USA.
- Piwetz, S.**, and Würsig, B. 2014. Behaviour modification of common bottlenose dolphins relative to vessels in a busy narrow waterway. Short talk at the 28th Annual European Cetacean Society Conference, Liège, Belgium.
- Da Silveira, M., Bearzi, G., Bonizzoni, S., **Piwetz, S.**, and Würsig, B. 2014. Integration of Texas coastal bottlenose dolphin (*Tursiops truncatus*) photo-identifications spanning 24 years. Poster presentation at the Southeast and Mid-Atlantic Marine Mammal Symposium (SEAMAMMS), Wilmington, NC, USA.
- Piwetz, S.**, Pearson, H.C., Vaughn-Hirshorn, R.L., Srinivasan, M., Honkus, K.A., and Würsig, B. 2013. Decline in regional habitat use of dusky dolphins, *Lagenorhynchus obscurus*, in Admiralty Bay, New Zealand. Poster presentation at the Society for Marine Mammalogy 20th Biennial Conference, Dunedin, New Zealand.
- Hung, S., **Piwetz, S.**, Sims, P., and Würsig, B. 2013. Impacts of high speed ferry traffic on Indo-Pacific humpback dolphins (*Sousa chinensis*) in Hong Kong. Oral presentation at the Society for Marine Mammalogy 20th Biennial Conference, Dunedin, New Zealand.
- Schotten, M., Würsig, B., Orbach, D., Sexton, K., and **Piwetz, S.** 2013. Broadband acoustic/video recordings and localisations of dusky dolphins (*Lagenorhynchus obscurus*) and short-beaked common dolphins (*Delphinus delphis*) in New Zealand. Oral presentation at the 27th Conference of the European Cetacean Society, Setúbal, Portugal.
- Piwetz, S.** 2011. Behavioral response of Indo-Pacific humpback dolphins to anthropogenic disturbances off Lantau Island, Hong Kong. Oral presentation at the Texas A&M University Graduate Program in Marine Biology Science Symposium, Galveston, TX, USA.
- Piwetz, S.**, Hung, S., Wang, J., Lundquist, D., and Würsig, B. 2011. Vessel traffic and movement patterns of Indo-Pacific humpback dolphins (*Sousa chinensis*) off Lantau Island, Hong Kong. Poster presentation at the Society for Marine Mammalogy 19th Biennial Conference, Tampa, FL, USA.

- Piwetz, S.** 2010. Dusky dolphin (*Lagenorhynchus obscurus*) movement and foraging limitations in relation to shellfish aquaculture. Oral presentation at the Texas A&M University Graduate Program in Marine Biology Science Symposium, Galveston, TX, USA.
- Piwetz, S.** 2010. Dusky dolphin (*Lagenorhynchus obscurus*) habitat use in Admiralty Bay, New Zealand. Oral presentation at the Society for Marine Mammalogy-Gulf Coast Student Research Symposium, Galveston, TX, USA.
- Piwetz, S.,** Vaughn, R., Hughes, N., and Würsig, B. 2009. Dusky dolphin, *Lagenorhynchus obscurus*, habitat use off Argentina. Poster presentation at the Society for Marine Mammalogy 18th Biennial Conference, Québec City, QC, Canada.
- Hughes, N., **Piwetz, S.,** Vaughn, R., and Würsig, B. 2009. Predator-prey dynamics in Golfo San Jose, Argentina: Present day and 1970s data compared. Poster presentation at the Society for Marine Mammalogy 18th Biennial Conference, Québec City, QC, Canada.
- Watts, H.R., **Piwetz, S.,** Godlove, L., and Rosel, P. 2006. Bottlenose dolphins (*Tursiops truncatus*) displaced by Hurricane Rita in western Louisiana – their rescue and release. Poster presentation at the International Association for Aquatic Animal Medicine, Nassau, Bahamas.
- Watts, H.R., Godlove, L., **Piwetz, S.,** and Cowan, D.F. 2006. An underwater stethoscope based on a directional hydrophone, for use in dolphin rehabilitation and diagnosis. Poster presentation at the International Association for Aquatic Animal Medicine, Nassau, Bahamas.

Referee for Scientific Journals

PLOS ONE, 2014

Computer Proficiency

Adobe Lightroom (photography software), ArcGIS 10.2 (spatial analysis software), Endnote (Thomson Corporation ISI research software), Finscan (specialty program for semi-automatic photo-recognition), Microsoft Excel, Microsoft PowerPoint, Microsoft Word, Pythagoras (theodolite tracking software), R Statistical Software, Raven Pro (acoustic analysis software)

Community Service/Committees

Texas Academy of Science, Galveston Chapter, Galveston, TX: <i>Invited Speaker</i>	2015
GISD TSTEM Academy, Galveston, TX: <i>Guest Speaker</i>	2014
TAMUG Substantive Change Committee Review, Galveston, TX: <i>Student Representative</i>	2014
TriBeta Biological Honors Society Seminar, Galveston, TX: <i>Invited Panel Speaker</i>	2013
TAMUG Sea Camp, Galveston, TX: <i>Invited Speaker</i>	2013
TAMUG Discrimination Appeals Panel, Galveston, TX: <i>Graduate Student Representative</i>	2012-2013
Pathways Student Research Symposium (10 th Annual), Galveston, TX: <i>Undergraduate Judge</i>	2012
TAMUG 8 th Annual Student Research Symposium, Galveston, TX: <i>Undergraduate Judge</i>	2012
Austin Magnet School Science Fair, Galveston, TX: <i>Science Fair Judge</i>	2012
TAMUG Field Techniques Course MARB 300, Galveston, TX: <i>Guest Lecturer</i>	2012, 2014
TAMUG Library Committee, Galveston, TX: <i>Graduate Student Representative</i>	2011-2012
National Ocean Sciences Bowl Regional Competition, College Station, TX: <i>Orals Judge</i>	2011
Early University Campus - Weis Middle School, Galveston, TX: <i>Science Fair Judge</i>	2011
Ball High School, Galveston, TX: <i>Guest Speaker</i>	2010
Galveston Graduate Student Association, Galveston, TX: <i>Beach clean-up volunteer</i>	2010
Cloverleaf Elementary School Science Fair, Pearland, TX: <i>Science Fair Judge</i>	2009, 2013
Clifton Middle School Career Fair, Houston, TX: <i>Marine Biology Representative</i>	2007

Professional Affiliations

Member of Dolphin Biology and Conservation
 Member of the Society for Marine Mammalogy
 Member of the Texas Dolphin Research Collaborative

Certifications

OSHA Hazardous Waste Operations and Emergency Response 24-hr Certification	2014-2016
Adult CPR/AED/First Aid Certification	2010-2014
OSHA Hazardous Waste Operations and Emergency Response Standard Certification	2010
TAMUG Vessel Operator Training and Certification (written and practical)	2010
Texas Parks and Wildlife Boater Education Certification	2009
Manatee Stranding Training Workshop and Necropsy, USFWS & FFWCC	2009
United States Coast Guard National Incident Command System Training	2006

Honors/Awards

TAMUG Student Research Symposium, Marine Biology 2 nd Place	2014
TAMUG Student Research Symposium, Graduate Overall 3 rd Place	2014
Member of The National Scholars Honor Society	inducted 2006
Member of the Tri Beta Biological Honor Society	inducted 2005
United States Volleyball Adult Club National Champions	2002
Lena Nornhausser Stein Endowed Presidential Scholarship Award (IAW)	1997
Big 12 Volleyball Conference Champion as Member of NCAA Division I Team	1997
NCAA Division I National Volleyball Championship Finalist (2 nd Place)	1995
The University of Texas at Austin Varsity Letter Winner (NCAA Division I)	1994-1996

Grant Awards

Southern Association of Marine Laboratories Student Support (\$200)	2015
Texas Institute of Oceanography Graduate Research Fellowship (\$7,300)	2013, 2014
National Geographic Society Research Award, Co-PI with Bernd Würsig (\$22,000)	2011-2012
Galveston Graduate Student Association Micro Grant (\$100)	2011
SeaSpace Inc. Scholarship (\$2,000)	2011
Erma Lee and Luke Mooney Travel Award (\$2,550)	2010, 2012, 2013, 2015
Galveston Graduate Student Association Mini Grant (\$1,000)	2010, 2012
MARB Mini Travel Grant Award (\$1,500)	2009, 2011, 2013
Society for Marine Mammalogy Student Travel Grant (\$1,700)	2009, 2011, 2015
The University of Texas at Austin Full Athletic Grant in Aid	1994-1997

Relevant Skills

Digital SLR camera use, wide and telephoto lenses, extenders	2007-present
Small boat operations (300+ hours), handling around dolphins, whales, pinnipeds	2008-present
– 17 ft Boston Whaler, 130 hp 4 stroke outboard	
– 19 ft rigid-hulled, semi-inflatable Yamaha, 80 hp 4 stroke outboard and 20 hp 2-stroke tiller	
– 22 ft Jones Brothers Bateau, 90 hp 4 stroke outboard	
– 23 ft Carolina Skiff, 150 hp 4 stroke outboard	
Trailing small boats, including attachment, launching, docking and landing	2010-present