

EXPEDICIÓN INTERNACIONAL

Nov 6

VAQUITA MARINA 2015



ESTIMATING ABUNDANCE OF MEXICO'S CRITICALLY ENDANGERED PORPOISE

The first week of November has been so windy that we have had only a few hours of effort and no vaquita sightings. Three journalists from Discovery Latin America joined the cruise and were able to see a few hours of our great leg 2 crew and do a nice interview with Dr. Lorenzo Rojas-Bracho.

We are also pleased to announce that both photographs and videos from leg 1 are now available on the web. Video of vaquitas as seen through the 'big eyes' (taken by Suzanne Yin with her iPhone and assembled by Ernesto Vázquez) and time lapse GoPro videos of searching for vaquitas with 'big eyes' (also by Ernesto) are available [here](#).

Meet the scientists of Expedición Vaquita 2015

It takes a very special team of scientists and equipment to search for the world's rarest marine mammal. Not only are vaquitas rare, they are the smallest marine porpoise or dolphin, they swim inconspicuously, and they stay away from boats. We learned in 1997 that few vaquitas were detected with 7-power binoculars because the animals moved away from the vessel before they could be seen. By contrast, many more vaquitas were sighted using the 25-power binoculars from the highest point on a large ship. It also takes great skill to tell the three species of small dolphins and porpoise apart in the area of the study: common and bottlenose dolphins (when they are in small groups) and vaquitas. When individuals are seen from the side and are relatively close, they can be easily identified. However, when they are far away and going towards or away from the ship, identification requires experts that know how the animals behave. Some cases require the ship to be stopped and the animals relocated to confirm species identification, which involves skills not only in searching but using the specialized computer software that allows real-time mapping of the sightings.

CHIEF SCIENTISTS:

LORENZO ROJAS-BRACHO

BARBARA TAYLOR

VISUAL SURVEY

COORDINATOR:

ANNETTE HENRY

SCIENTISTS (A-Z):

LISA BALLANCE

JAY BARLOW

ANDREA BENDLIN

DAWN BREESE

SUSANNAH CALDERAN

JEFF MOORE

CORNELIAN OEDEKOVEN

PAULA OLSON

ROBERT PITMAN

JUAN CARLOS SALINAS

ADAM Ü

SUZANNE YIN

HONORARY VAQUITA

OBSERVER:

SECRETARY RAFAEL

PACCHIANO ALAMÁN



R/V OCEAN STARR
STABBERT
MARITIME

For these reasons, all visual observers on Expedición Vaquita 2015 have direct experience with vaquita surveys, or experience with porpoise in areas where both porpoise and bottlenose dolphins occur together. For the two full-time recorders, experience with the specialized data-entry software WinCruz was required, together with the ability to calmly record data from two independent teams. Although vaquitas have small group sizes (where a group is defined as animals swimming within a few body lengths of one another), they are usually found in loose aggregations. When one group of vaquitas is seen, it is likely that other groups are in the area. With two independent teams of observers potentially calling in sightings at the same time, the recorders must have very special skills to gather data quickly and precisely. The final position in the scientific complement is called the ‘cruise leader.’ This person is responsible for choosing the transect line at the beginning of each day, coordinating ship and observer activities during the day, and reviewing the data at the end of the day. As such, this position requires an understanding of the survey design to ensure an even spatial and temporal coverage and an understanding of the initial quality screening of the data.

Collectively, the team working during November have 347 years of experience with marine mammal research, 275 years of experience participating in line transect surveys and 260 years using the ‘big eyes’. All have identified porpoises in areas where bottlenose dolphins are also found with a cumulative experience of 269 years among team members.

Chief Scientists

Dr. Lorenzo Rojas-Bracho was joint chief scientist on the 1997 and 2008 vaquita surveys with Dr. Tim Gerrodette and Dr. Barbara Taylor respectively. Again with Barb he is the current joint chief scientist for this year’s vaquita survey. Lorenzo started his studies with marine mammals in 1983 as an observer of cetaceans aboard the R/V El Puma from Mexico’s National University (UNAM). His first field studies with vaquita were in 1997. His first publication on this species was in 1993. Since then he has published a series of scientific articles on risk factors, population genetics, population status and conservation of the vaquita. He has also published articles for the general public and international technical reports on this species. Together with Dr. Armando Jaramillo he promoted the works and program of acoustic monitoring that Dr. Jaramillo now coordinates. He chairs the International Committee for the recovery of the Vaquita (CIRVA), established by the Government of Mexico to recommend measures for the recovery of the vaquita, based on the best available scientific evidence. The work of CIRVA has been recognized internationally. He is a member of the Steering Committee that designed the acoustic monitoring program. He has co-directed the organization of the expert panels on acoustics and the revision of the vaquita expedition 2015 survey plan. He was also part of the Advisory Commission of the Presidency of Mexico for the recovery of the Vaquita.



Lorenzo was Chairman of the Subcommittee for Environmental Concerns of the Scientific Committee and of the Conservation Committee of the International Whaling Commission (IWC). He is a member of the Cetacean Specialist Group and the Red List Authority of the International Union for Conservation of Nature (IUCN). He was a member of the Committee of Scientific Advisors and the Elections Committee of the Society for Marine Mammalogy (SMM) and is currently a member of its Board of Directors. He has participated in various working groups and committees for the conservation of cetaceans in danger of extinction in China, Taiwan, the Baltic Sea and the Black Sea, among others.

Lorenzo has been invited as plenary speaker at the Biennial Conferences on the Biology of Marine Mammals of the Society for Marine Mammalogy. He was recently recognized with the award of IUCN's SSC Chair's Citation of Excellence for his work on the conservation of vaquita.

Dr. Barbara Taylor worked on the 1997 vaquita surveys and was chief scientist together with Dr. Lorenzo Rojas-Bracho on the 2008 vaquita survey. She is co-chief scientist on Expedición Vaquita 2015 and visual observer on leg 1. Barbara has been doing field research with marine mammals since 1978 (37 years). Her first experience using the 'big eyes' doing line-transect surveys was on a harbor porpoise survey in 1984 (31 years ago). Her first field work with porpoises was in 1980 (35 years ago) with her first porpoise publication in the following year. She has designed and published surveys on harbor porpoises, vaquitas and finless porpoises. Her first vaquita publication was in 1991 (24 years ago) on the difficulty of monitoring vaquitas because of the low precision of visual surveys. After witnessing the extinction of the Chinese River dolphin, she returned with the resolve to come up with improved scientific methods to monitor vaquitas. She is a member of CIRVA, the Mexican Presidential Commission on Vaquita, the steering committees for the acoustic monitoring project and ongoing 2015 survey, co-chairs the expert panels to analyze the acoustic monitoring data and survey data. She works for the Southwest Fisheries Science Center, NOAA Fisheries as the Program Leader for marine mammal genetics. She also chairs the Conservation Committee for the Society of Marine Mammalogy and leads the assessment of cetacean listing for the IUCN.



Visual team observers

Robert Pitman works as a marine ecologist at Southwest Fisheries Science Center, La Jolla, California, and specializes in whale and dolphin research. Pitman has participated in over 150 marine mammal line transect surveys over the past 40 years, in all the oceans of the world; has published over 100 scientific papers on marine vertebrates, and co-authored a comprehensive field guide to marine mammals of the world (Marine Mammals of the World, 2nd edition. Academic Press, San Diego, CA, 610 pages). He participated in all the previous vaquita surveys: 1993 (partial survey), 1997, and 2008, and will work once again as a marine mammal observer on the 2015 Vaquita Expedition.



Juan Carlos Salinas graduated from the University of Baja California Sur, Mexico. He has been doing field work with marine mammals since 1989 (26 years ago). He has worked as research assistant biologist in the Marine Mammals Research Program (PRIMMA) from the same university, and with multiple institutions all related to the studies of marine mammals, as the CIAT (Interamericana Tuna Commission), CRIP-La Paz (Centro Regional de Investigaciones Pesqueras), Cousteau Society, SFS (School for Field Studies), ICEG (Island Conservation and Ecology Group), UCSC (University of California in Santa Cruz), UNAM/Columbia University, Scripps Institution of Oceanography - UCSD, Geo-Marine and South west, North west, South east and Pacific centers of NOAA-Fisheries (National Oceanographic Atmospheric Administration). His first experience using line transect methodology and “Big-eyes” was in 1996 (19 years ago) also participated on the Vaquita survey in 1997. He is happy to be collaborating and using all his experience in this very important 2015 Vaquita Expedition.



Adam Ü Adam has been working as a cetacean biologist since 1994, and has over a decade of line-transect survey experience from large vessels and small boats. He has worked with big eyes from land and sea since 1996. In 2009 he completed a Masters of Research at the University of Aberdeen in Scotland. The focus of his study was harbor porpoise and Dall’s porpoise distribution and abundance in Washington State, and he presented his findings at the 2011 Society of Marine Mammalogy Conference in Tampa, Florida. He has worked as a marine mammal observer for NOAA (SWFSC, PIFSC, NWFSC, and SEFSC) since 2006.



Paula Olson has over 25 years experience studying whale, dolphin, and porpoise populations in all of the world's oceans. With a research focus on population abundance and structure, she has worked on projects for the International Whaling Commission, the International Union for the Conservation of Nature, the U.S. National Marine Fisheries Service, and other international, national, and private research organizations. She has co-authored over 50 scientific papers. Ms. Olson first saw vaquita in 1993 during a cetacean survey in the Gulf of California (and eastern tropical Pacific) conducted by Southwest Fisheries Science Center. She was a visual observer during the 1997 vaquita survey and in 2008 was a member of the photo team that collected what is to date the best photographs of living vaquita. During the 2015 expedition she is a visual observer for the entire 64-day research cruise. Prior to vaquita surveys, she participated in two extensive surveys for harbor porpoise in the northwest Atlantic. Her 1996 thesis, Trends in Abundance of Gulf of Maine Harbor Porpoise, focused on a portion of this population. As a field biologist, she has participated in 59 sighting surveys for cetaceans including 38 line-transect surveys.



Dawn Breese is a Naturalist/Wildlife Biologist who works for NOAA. She is a Marine Mammal Observer on Vaquita Expedition 2015. Her first expedition to look for Vaquita was as an assistant to Greg Silber at the University of California, Santa Cruz (UCSC) in 1986 where she saw and photographed some of the first documented live Vaquita. Dawn's second expedition was as an observer on both legs of the 2008 Vaquita survey. She began working with marine mammals as an undergraduate at UCSC in the Canal de Ballenas, Bahia de los Angeles, BC in 1983. That project ran through 1989, and as an aside, the team never saw vaquita in spite of over 3000 hours of time in the field. She has continued to work on marine mammal and seabird projects since that time for a total of 32 years. Her first line-transect survey was in 1986 in the Eastern Tropical Pacific and she continues today in the California Current ecosystem (29 years). Her experience working on big eye binoculars has overlapped with work on line-transects for a total of 29 years. Since 1983 she has worked in areas where bottlenose dolphins occur with porpoises and has many 1000's of hours of experience telling Tursiops from other species (32 years). Her interests include a strong affinity for the entire Gulf of California ecosystem and she has been lucky enough to spend many years working in the area. Dr. Kenneth Norris was a family friend and mentor while in college and beyond. He first inspired Dawn to look for Vaquita, and she has taken every chance she could to continue this search. She has a deep concern for endangered species and contributed to an expedition in 1989 with Dr. Bernd Wursig to China to study the highly endangered Yangtze River dolphin, the Baiji (*Lipotes vexillifer*). She saw them on three occasions which may have been some of the last views of them alive. With the Baiji now considered extinct, Dawn is very concerned that this not happen to the Vaquita.



Susannah Calderan, from Scotland, UK, joins Expedición Vaquita 2015 as a member of the visual observer team. She has been working as a cetacean biologist for 15 years, specialising in harbour porpoise ecology. Susannah has a particular expertise in visual and acoustic line transect surveys. She has conducted vessel-based research in all ocean basins, for organisations such as the Sea Mammal Research Unit (University of St Andrews, UK), NOAA, and the Australian Antarctic Division (AAD). Much of her work has involved developing new visual and acoustic survey techniques for localising and tracking cetaceans at a range of spatial scales. Susannah's long-standing research commitment to harbour porpoise and the study of anthropogenic impacts has given her a strong impetus to participate in Expedición Vaquita 2015.



Dr. Jay Barlow is a senior research scientist at NOAA's Southwest Fisheries Science Center where he has worked on marine mammal surveys since 1981 (34 years). He is also an Adjunct Full Professor at Scripps Institution of Oceanography and is President Elect of the Society of Marine Mammalogy. He has a long history of research on vaquita. In 1986 he published his first report on vaquita, describing factors affecting the recovery of this species. He led an aerial survey for vaquita in 1991 and published a report on that survey in 1993. He published the first estimates of vaquita abundance from transect surveys in 1997. He has been leading ship-based and aerial line-transect surveys for harbor porpoise in California since 1984 (31 years). He has been Chief Scientists for 14 major research expeditions. He is a member of the International Recovery Team for Vaquita (CIRVA) and is a member of the steering committee for acoustic monitoring of vaquita abundance. He was a marine mammal observer on the 1997 and 2008 vaquita surveys and is again on the 2015 survey. He will be one of several researchers making independent abundance estimates from the 2015 survey data.



Dr. Jeff Moore is a population ecologist and leads the California Current Marine Mammal Assessment Program at the Southwest Fisheries Science Center, NOAA. He has studied marine mammal populations and marine wildlife-fisheries interactions since 2006. His primary expertise is in survey design and analysis of population survey data to estimate demographic parameters such as population abundance, trends, survival rates, and human impacts. He is a member of the Expert Statistical Panel to analyze vaquita survey data for CIRVA and was a visual observer and assistant cruise leader for the 2014 CalCurSEAS survey to estimate abundance marine mammals in waters off the U.S. West Coast. He is a visual observer on leg 2 of the 2015 vaquita survey.



Dr. Lisa Ballance began her mammal research career in Mexico's Gulf of California in 1984 (31 years ago), studying behavior and ecology of Bottlenose dolphins in the Midriff Island region. Since that time, she has worked on marine mammals around the world, including the tropical and temperate eastern Pacific, Bering Sea, Indian Ocean, Antarctica, and Mekong River in Cambodia. She has been a scientist aboard line-transect surveys since 1988 (27 years ago) in a variety of roles. She is now the Director of the Marine Mammal and Turtle Research Division



[<https://swfsc.noaa.gov/mmttd.aspx>] at the Southwest Fisheries Science Center of NOAA and is responsible for setting the research priorities in accordance with division mandates for seven science programs and some 70 individuals. Lisa has been with NOAA since 1988, was Chief Scientist of the Eastern Tropical Pacific Cetacean and Ecosystem Research Program in 1999, and Leader of the Ecosystem Studies Program in 2001. Lisa is also a Professor at the Scripps Institution of Oceanography, Research Adviser with the National Academies, and Affiliate Professor at the University of San Diego.

Dr. Karin Forney has conducted line-transect research on porpoises and other marine mammals since 1988, publishing her first harbor porpoise population trend study in 1991. She has 27 years of expertise designing and conducting aerial surveys for harbor porpoises and other cetaceans, and has conducted shipboard line-transect surveys using 'big-eye' binoculars since 1991 (24 years). Her previous vaquita field research includes two collaborative U.S.-Mexico shipboard surveys for vaquita, conducted during 1992-93 aboard a 24-m research (BIP 11) operated by the Instituto Nacional de la Pesca. She was also one of four observers who conducted a 1991 aerial survey of vaquita and co-authored a 1993 paper assessing the feasibility of using aircraft to estimate vaquita population size. Karin began her career as a Research Biologist with the Marine Mammal and Turtle Division at NOAA's Southwest Fisheries Science Center during 1987. Since then, she has conducted research on the abundance, distribution, ecology, fishery bycatch, and status of over 20 species of cetaceans and pinnipeds in the eastern and central North Pacific Ocean, with special emphasis on harbor porpoise and other small cetaceans. The results of her studies have been published in peer-reviewed scientific journals and technical reports and presented at international scientific conferences. Karin has also received multiple awards including NOAA's Bronze Medal, Silver Medal, and Employee of the Year Awards. Karin has enjoyed traveling throughout Baja California since the early 1990s and has a special fondness for the Gulf of California and the vaquita, in particular. She is pleased to contribute her expertise as an observer during the 2015 Vaquita Survey.



Dr. Cornelia Oedekoven worked on the 2008 vaquita surveys as the team leader of the observers. Cornelia has been doing field research with marine mammals since 1997 (18 years) in extensive parts of the Pacific and Indian Ocean, initially in parallel with strip transect surveys of seabirds. However, since 2002 she has spent most of her time in the field as a marine mammal observer using the ‘big eyes’ during dedicated line-transect surveys of cetaceans and has accumulated approximately 2000 days total at sea conducting research. In 2013, Cornelia obtained her PhD from the School of Mathematics and Statistics at the University of St Andrews, Scotland where she developed new statistical methods for analyzing distance sampling data. She co-authored the recently published book on distance sampling, which is part of the Springer series: *Methods in Statistical Ecology* (Buckland et al. 2015. *Distance Sampling: Methods and Applications*) describing the latest developments from field work to analyzing data from line transect surveys with double-observer platforms. She has co-authored seven journal publications involving distance sampling methods development data and/or data analysis.



Visual team recorders

This is **Suzanne Yin**'s first vaquita cruise but she has worked on 12 different research projects in areas where harbor and Dall's porpoise are found and 8 projects in areas where porpoise and bottlenose dolphins occur. She was part of a team theodolite tracking harbor porpoise for a pinger project in Maine. Suzanne started working on cetaceans in 1990 (25 years). Her first line-transect abundance estimate cruises with Big Eyes was in 1999 (16 years ago). She has over 2100 days at sea on board vessels using Big Eye or handheld binoculars, searching for cetaceans. Suzanne has worked in the field on over 45 different cetacean projects, in areas including the United States, Mexico, Canada Costa Rica, New Zealand, Sri Lanka, India, the Arctic and Antarctic, Caribbean, Guam and Saipan. Suzanne's role on the vaquita cruise is a data recorder using WinCruz, which she has been using since 1999 (16 years). She has a Masters degree in Wildlife and Fisheries Sciences.



Andrea Bendlin is a marine mammal biologist and will be serving as a data recorder on Expedición Vaquita 2015. Andrea has been doing field research with marine mammals since 2004 (11 years). Her first experience using “big eyes” doing line transect surveys was on a marine mammal survey in 2008 (7 years ago), and she has used Wincruz as a ship recording platform exclusively since 2008. She has 3 field seasons of experience working with porpoises. She has worked as an observer, data recorder, biopsier, small-boat driver and photographer from small boats and large vessels in multiple areas throughout the Pacific including Hawaii, the Mariana Islands, Palmyra Atoll, and areas off California, as well as in the Gulf of St. Lawrence (Quebec) and the Gulf of California.

