Aquatic Mammals, Volume 44, Number 2, 2018

ISSN 0167-5427

Special Issue on Animal Welfare

Contents


L. van der Meer, I. Kasdan, and J. Galvin: The Importance of Evidence, Animal-Based Measures, and the Rule of Law to Ensure Good Animal Welfare ........................................ 142


I. L. K. Clegg, and F. Delfour: Can We Assess Marine Mammal Welfare in Captivity and in the Wild? Considering the Example of Bottlenose Dolphins ............................................. 181


L. von Fersen, D. Encke, T. Hüttner, and K. Baumgartner: Establishment and Implementation of an Animal Welfare Decision Tree to Evaluate the Welfare of Zoo Animals ................................................................. 211


Cover Photos

Upper left: Rehabilitated seal being released on a Rhode Island beach, 2005
Center top: Polar bears at Kolmårdens Djurpark in 2004
Upper right: Harbor seals resting on seaweed covered rock in Monterey, California, 2000
Middle right: Indo-Pacific bottlenose dolphin around Mikura Island, Japan, with plastic trash draped over dorsal fin, 2005
Lower right: Mom and calf bottlenose dolphins at Dolphin Encounters, Nassau, The Bahamas, 2007
Lower left: Spinner dolphins near Ogasawara, Japan, 2005
Middle left: California sea otter in Elkhorn Slough, California, 2000

All images courtesy John Anderson, Terramar Productions

Aquatic Mammals

Aquatic Mammals publishes hard copies on-demand, CDs, and online peer-reviewed scientific articles related to marine mammals (whales, dolphins, seals, fur seals, sea lions, walruses, dugongs, manatees, sea otters, and polar bears). Topics of publication on both captive animals and wild marine mammals include aspects of husbandry; behavior; conservation; veterinary medicine; anatomy; physiology; training; population trends; and the effects of pollution, climate change, and noise. In addition, Aquatic Mammals has the Historical Perspectives feature, which includes essays and high definition DVDs of interviews with prominent marine mammal scientists. The journal also publishes Book Reviews.
Established by the EAAM in 1974

Aquatic Mammals

The European Association for Aquatic Mammals (EAAM), the Alliance of Marine Mammal Parks and Aquariums (AMMPA), and the International Marine Animal Trainers’ Association (IMATA) jointly sponsor Aquatic Mammals (ISSN 0167-5427), published six times per year.

Managing Editor and Copyright
Kathleen M. Dudzinski, Ph.D.
Mailing Address: PO Box 7485, Port St. Lucie, Florida 34985, USA; Tel: +1 (860) 514-4704
E-mail: aquaticmammals@gmail.com or business@aquaticmammalsjournal.org

Business Manager
Gina Colley, Macomb, Illinois; E-mail: business@aquaticmammalsjournal.org

Co-Editors
Shane B. Kanatous, Ph.D., Department of Biology, Colorado State University, Fort Collins, Colorado
E-mail: Shane.Kanatous@ColoState.edu
David A. S. Rosen, Ph.D., Marine Mammal Research Unit, University of British Columbia, Vancouver, British Columbia
E-mail: rosen@zoology.ubc.ca
Elizabeth Henderson, Ph.D., Navy Marine Mammal Program, SPAWAR, San Diego, California
E-mail: eehenders@gmail.com
Kristy L. Biolsi, Ph.D., Department of Psychology, St. Francis College, Brooklyn, New York
E-mail: kbiolsi@sfc.edu
Eric M. Keen, Ph.D., Marine Ecology and Telemetry Research, Seabeck, Washington
E-mail: eric.k@marecotel.org
K. Douglas Krause, Ph.D., NOAA Fisheries, Antarctic Ecosystem Research Division, La Jolla, California
E-mail: douglas.krause@noaa.gov

Book Review Editor
MaryEllen Mateleska, Mystic Aquarium, Mystic, Connecticut
E-mail: mmateleska@searesearch.org

Copy Editing and Layout Design Services
Sandra K. Larimer and Shanee J. Sullivan, Macomb, Illinois
E-mail: eric.k@marecotel.org

Editors Emeriti
Willem H. Dudok van Heel, Victor J. A. Manton, Paul E. Nachtigall, Jeanette A. Thomas

Editorial Board
Arne Bjørge, Institute of Marine Research, Oslo, Norway
Manuel E. dos Santos, MARE, ISPA - Instituto Universitário, Lisbon, Portugal
Manuel Garcia Hartmann, MarLab, France
Heidi Harley, Division of Social Sciences, New College of Florida, Sarasota, Florida, USA
A. Rus Hoelzel, School of Biological and Biomedical Sciences, University of Durham, Durham, UK
Christina Lockyer, Age Dynamics, Kongens Lyngby, Denmark
Lee A. Miller, Institute of Biology, University of Southern Denmark, Odense, Denmark
Paul E. Nachtigall, Hawai‘i Institute of Marine Biology, Kailua, Hawaii, USA
Dan Odell, Hubbs-SeaWorld Research Institute, Orlando, Florida, USA
Grey Stafford, Scottsdale, Arizona, USA

Aquatic Mammals

Board of the European Association for Aquatic Mammals (EAAM)
www.eaam.org
President: Brad Andrews, Sea World Parks & Entertainment, president@eaam.org
President-Elect: Javier Almunia, Loro Parque Fundación, president_elect@eaam.org
Past President: Arlette Sogorb, Lisbon Zoo, past_president@eaam.org
Secretary/Treasurer: Camino Herreros Puris, Mundomar, camino.eaam@mundomar.es
Information Committee: Ann-Louise Jensen and Javier Almunia, information@eaam.org

Alliance of Marine Mammal Parks and Aquariums (AMMPA)
www.ammpa.org
Executive Director: Kathleen Dezio
E-mail: kdezio@ammpa.org

Board of Directors
President: Stewart Clark, Discovery Cove, stewart.clark@discoverycove.com
Past President: Rita Irwin, Dolphin Research Center, Rita@dolphins.org
Vice President: Travis Burke, Dolphin Discovery, tburke@dolphindiscovery.com
Treasurer: Patrick Berry, Gulfarium Marine Adventure Park, patrick.berry@gulfarium.org
Secretary: Kurt Allen, Marineland Dolphin Adventure, kalllen@georgiaaquarium.org
Director-at-Large: William Ziegler, CZS Brookfield Zoo, Bill.Ziegler@CZS.org
Director-at-Large: Michelle Campbell, Dolphin Quest, mcampbell@dolphinquest.com

International Marine Animal Trainers’ Association (IMATA)
www.imata.org
Executive Director: William Hurley
E-mail: executivedirector@imata.org

Board of Directors
President: Grey Stafford, Grand Canyon University, president@imata.org
President-Elect: Kelly Flaherty-Clark, Discovery Cove, president_elect@imata.org
Past President: Grey Stafford, Grand Canyon University, past_president@imata.org
Secretary: Erin Wise, The Mirage, secretary@imata.org
Treasurer: Sarah Bignac, Dolphin Research Center, treasurer@imata.org
First Vice President: Peter Giljam, Kolmården, firstvp@imata.org
Second Vice President: Will Elgar, Georgia Aquarium, secondvp@imata.org
Third Vice President: Heath Keenan, Zoo Miami, thirdvp@imata.org

For subscriptions, instructions to authors, abstracts of previous issues, publication fees, hard copies, back issues, CDs, and Historical Perspectives DVDs, see the Aquatic Mammals website:
www.aquaticmammalsjournal.org

For details about the online versions of Aquatic Mammals, see the following websites:
Aquatic Mammals: www.aquaticmammalsjournal.org
ProQuest: www.proquest.com (specific to library subscribers)

Printed by Minuteman Press, 595 West Main Street, Norwich, Connecticut 06360, USA