

Chicago Zoological Society Education Plan/Learning Strategy

Informed by Learning Sciences and Conservation Psychology research, CZS recognized the need for moving from the traditional strategy based on “education messages” to a more modern, holistic strategy based on providing “educational experiences.” In 2006, the Chicago Zoological Society developed a Learning Strategy, which is our main approach to develop outcome-based education experiences connecting our activities with our mission. Our Learning Strategy is (1) a framework to put our mission into practice; (2) a core reference to create master plan experiences, programs, and events; (3) a means to make program and exhibit outcomes measurable; (4) a process that empowers people to become important agents for environmental change; and (5) a tool that develops abilities for many kinds of conservation leaders.

Through our internal Conservation Psychology and Audience Research Department, we developed assessment tools based on three fundamental outcome domains to measure the impact of our exhibits and programs in fostering conservation leadership and meeting our mission.

These three outcomes are:

- Cognitive: Understanding connections between you, your life, and your environment
- Affective: Empathy for living things
- Behavioral: Taking action that leads to a sustainable relationship with nature

To achieve these outcomes, the Learning Strategy strives to incorporate nine key principles into the design and interpretation of every exhibit and program. These principles are:

1. First-Hand Experience: Providing opportunities for direct exploration with real animals.
2. Learner Centered: Empowering the learner as an active participant.
3. Relevant: Ensuring relevance to people of all cultures and backgrounds.
4. Fun and Engaging: Providing messages in a fun, engaging way.
5. Creative: Providing opportunities for guests’ creative expression about animals and nature.
6. Aesthetic Connections: Connecting to people’s sense of wonder and beauty in our programs, park experiences and facilities.
7. Scientific Excellence: Ensuring scientific excellence and exploration as a foundation for our programs and exhibits.
8. Builds Competence: Builds confidence in the ability to make a difference.
9. Conservation Literacy and Action: Empowers people and communities with knowledge, awareness and skills that encourage taking action on behalf of the environment.

NATURE START

NatureStart is a comprehensive education and training initiative that provides resources, skills, and training in to help build caring relationships between children and the natural world for a lifetime of conservation involvement. The suite of *NatureStart* programs are designed to engage and empower parents, grandparents, families and educators of children from birth to age 8 and include:

- *Daily NatureStart Programs* facilitated by members of the Family Play Program team whenever the Brookfield Zoo is open to the public, including select after-hour events. These programs are available at the Hamill Family Play Zoo as well as other areas of the zoo and include child and family centered nature play that change on a daily basis. Over 300,000 zoo visitors per year participate in these programs.
- *NatureStart Family Classes* specifically tailored to jointly engage children and their caregivers. Conducted daily, these classes are based in nature play experiences and sensory exploration that can be repeated by parents and caregivers at home, with additional resources provided through parent education sheets.
- *NatureStart Teacher Training* workshops and classes are designed to help early childhood educators develop an appreciation of how nature play can be used to meet early standards in math, science, and literacy. Teachers also learn how indoor and outdoor early childhood environments can be enriched through incorporating natural material and opportunities for nature play. All Teacher training workshops incorporate goals and benchmarks in math, science, and language development of Illinois Early Learning Standards.
- *NatureStart Internships* experiences are available through select university partnerships. The goal of these programs is to expose early career and pre-service childhood educators to the important role of nature in the lives of young children and to explore how this understanding may be incorporated into their future professional practices.
- *NatureStart Professional Development* programs provide workshops and classes for informal educators in zoos, aquariums, nature centers, and museums.

ADVENTURES IN LEARNING

Adventures in Learning includes all subscription programs, classes, and workshops offered through the CZS *Gateways* magazine and on the CZS website. The primary goal of these programs is to provide a range of in depth experiences that achieve the society's mission by fostering an appreciation of nature through experiences that directly connect guests with the subject matter in an intimate way.

The goals of these programs are:

- Increase knowledge of the natural world
- Increase awareness of conservation and CZS's role in advancing conservation efforts
- Demonstrate CZS's role as a community resource
- Foster participants' emotional bond with animals and plants at Brookfield Zoo
- Encourage action on behalf of the natural world

These programs include:

- Zoo Tours: These staff led zoo tours for adults and families with children serve approximately 500 people each year.
- Wild Encounters: Personalized and exclusive animal encounter programs highlighting the daily care and training of select animals at Brookfield Zoo.
- Zoo World Patch: A program for Scout groups and other youth groups that encourages appreciation for animals and raises awareness of the conservation efforts of a modern zoo.
- Zoo Camp: Week-long day camp experiences attract more than 700 children from preschool through middle school each summer. The ZooCamp program is certified by the American Camping Association and focuses on developing social-emotional competencies, collaborative learning skills, and creative problem solving abilities through team building experiences and an inquiry based approach to science and conservation.

OUTREACH PROGRAMS

Outreach Programs focus on improving STEM education for youth and increasing diversity of conservation leaders. The results of this program demonstrate that its sequential design engages diverse local youth, providing a realistic prospect of a professional career linked to science and conservation. The program builds on our strong relationships with the communities we serve to increase science literacy and develop enduring interest in nature and conservation among young people. To increase the diversity of our workforce in the future, we offer paid and unpaid internships, provide need-based support for economically disadvantaged participants, and target diverse communities for recruitment into the program. Youth from all backgrounds who are interested in environmental sciences have the opportunity to pursue their interests despite having potentially limited resources. Our approach provides a progression of opportunities that inspire youth to develop leadership skills, increase confidence in their abilities, and expand professional horizons through direct experiences and scientific exploration. Students gain crucial life skills that transcend cultural barriers and reach beyond traditional academic subjects, such as public speaking skills, professional interviews, public presentations, basic scientific research, all aspects of zoo operations, and how to make a difference in their communities. By leveraging our long-term relationships with some of Chicago's underserved communities, we are able to bring the program to racially and economically diverse audiences.

The goals of these programs are to:

- offer environmental education opportunities for underserved youth and families that complement school curricula
- expose youth from diverse backgrounds to environmental careers and provide training in a variety of scientific and professional disciplines
- promote the development of both communication and job-related skills
- help participants find connections between their skills and serving the environment
- inspire the next generation of conservationists and conservation-minded citizens

Outreach Programs consists of six sequential steps in a career pipeline designed to take advantage of the personal strengths of the participants and offer rewarding opportunities for scientific exploration. The program design encourages continued scientific interest from early childhood through adulthood by offering engaging programs for each stage of academic development. The program begins with a community-based family outreach program for children and their families in disadvantaged communities. The program, called Zoo Adventure Passport (ZAP!), introduces children to basic science and conservation through fun, family-based activities. In the second step, we invite them to join our community-based Conservation Science Explorers, an after-school program for middle school students that develops key science skills. High school youth can then progress to the third step, our competitive Kings Conservation Scholars Program creates conservation minded college and career ready teens. Fourth, we offer paid positions in a real-world conservation setting at Brookfield Zoo for high school and college students. Fifth, we provide merit-based scholarship support for college education in conservation and science. Sixth, we offer both paid and unpaid internships in animal programs, education, and administration.

INTERPRETIVE PROGRAMS

Interpretive programs include formal and informal oral interpretation in addition to written exhibit interpretation. The primary goal is for all interpretation to foster the Zoo's mission of building conservation leaders by connecting people with animals and nature, as well as be educational, enjoyable and encompass the elements of our learning strategy. Oral interpretive experiences include formal and informal experiences facilitated by paid and unpaid staff. Paid interpretive staff conducts formal live animal interpretations such as dolphin shows which focus on animal training, care, natural history and/or conservation issues. Informal interpretive experiences conducted by paid interpretive staff promote empathy for animals by highlighting connections between animals and people in addition to dispelling many myths. Paid animal care staff conducts interpretive experiences that promote animal care and well being. Unpaid interpretive staff (volunteers and docents) highlights connections between animals and people and help promote empathy for nature through informal interpretive experiences such as exploration stations; interpretive stations stocked with artifacts for guests to see and touch. All oral interpretive staff goes through interpretive training provided by zoo staff members who are certified interpretive trainers through the National Association for Interpretation. The interpretive trainers also provide coaching, mentoring and modeling of these interpretive practices

Written interpretation follows all AZA guidelines in addition to being thematic, easy to read and understand, promote empathy, show relevance, discuss conflict and where available reveal achievable conservation steps.. Written interpretation is discussed, developed and evaluated by the interpretive trainers, design department, animal programs department and the education department to assure accuracy of content, sound implementation of interpretive techniques and reflection of the learning strategy.

SCHOOL, GROUP, AND TEACHER PROGRAMS

The School, Group, and Teacher Programs provide educational opportunities for a wide audience – from preschool children through a Masters Degree for teachers of all grade levels, informal science educations, and an increasing number of individuals seeking to become agents of change in their communities. Classes are focused on science as a process, creating experiences in which content is relevant and useful. Teachers learn how to use the scientific inquiry, promoting “hands-on and minds-on learning.” School, Group, and Teacher Programs reflect the principles of conservation and the Learning Strategy established by The Chicago Zoological Society in 2006.

The School, Group, and Teacher Programs are divided into the following major service delivery areas:

- **School Programs** offers classes for students from preschool through high school. The Connections series of classes explores a wide series of topics, including animal survival, critter coverings, wetland wonders, animal behaviors, ecosystems, and primate populations. Classes are age-appropriate, participatory, and inquiry-based, offering meaningful

experiences to students of all learning styles. Brookfield Zoo is used as a living classroom to offer engage students in animals and conservation. Several classes are designed with inclusion students specifically in mind: Every Student is a Scientist series, Good Works, and Bridges are offered to special citizens to have volunteer and work opportunities at the Zoo.

- **Teacher Programs** offers unique learning experiences that enrich educators' classroom curricula. Workshops, classes, exhibit previews, and Zoo experiences all provide professional development opportunities for teachers. As an approved Illinois State Board of Education provider, continuing education credits are offered. Additionally, graduate and undergraduate credits are offered through an academic partnership with Aurora University, National Louis University, and Triton College.
- **Institute of Science Teaching Excellence** is an inclusive learning process to meet teachers' self-identified need to improve their competency and confidence in teaching science. The overarching goal of this program is to motivate teachers to become conservation leaders through an improved understanding of scientific principles and participatory pedagogy, inspiring students to become conservation leaders as well. Specific goals are (1) to offer a variety of professional development opportunities to teachers that will promote competency and confidence in teaching science; (2) to offer curriculum units to enhance students' science learning; (3) to support teacher professional development principles through a collaborative process; and (4) to assess program effectiveness and disseminate the results to the informal learning community.
- **Advanced Inquiry Program (AIP)** is a Master's degree program implemented in collaboration with the Miami University in Ohio. This groundbreaking graduate degree focuses on inquiry-driven learning and social change. AIP students nationwide join web-based learning communities from Miami University while building collaborative projects and strong local networks through face-to-face interactions at the Brookfield Zoo. AIP Master's candidates use inquiry not only as a tool for integrated learning, but as a powerful agent for student achievement, public engagement in science, and ecological stewardship. The AIP curriculum provides real-world experiences that also advance district, state, and national educational standards through research-based practices for student achievement in core content areas. AIP Master's candidates may also choose to integrate professional development experiences abroad by choosing from Earth Expeditions field courses in Africa, Asia, and the Americas (7 credits from Earth Expeditions courses can count toward the AIP Master's degree). Leveraging resources and relationships developed during more than a decade of collaborations, CZS has developed and implemented Guyana: Local Wisdom and Conservation, with the active participation of Makushi young leaders, former members of the Wildlife Clubs. The AIP is based on the principle that education should extend beyond the classroom, and that students should make a difference--not just after graduation, but now, as a basic function of education itself. AIP Master's students practice the skills of investigation, critical reflection, leadership, and collaboration required to effectively address the vital issues of our time.

INTERNATIONAL CONSERVATION CAPACITY

- **Global Species Conservation Toolkit**

Our Global Species Conservation Toolkit program includes the design, development, and maintenance of advanced digital tools for conservation risk assessment and population management that help secure the future of wildlife species in a changing world. We provide for the continued innovation of the science of computer modeling and digital tools to help clarify conservation priorities and options, integrate risk assessments, assess threats, and identify measures of success in wildlife conservation. Further, to ensure access to these tools are used by the conservation community, we provide adequate training and support.

Dr. Lacy, Senior Conservation Scientist for CZS and CSAW program leader for population biology, is the developer of the most widely used “population viability analysis” software (VORTEX) used to test the genetic and demographic consequences of various conservation management systems for captive or wild populations. To meet the increasing needs to develop species conservation plans that take into consideration various levels of complexity, CZS worked with an international team of collaborators to develop MetaModel Manager, a powerful modeling tool that integrates species viability with various kinds of risk analysis to test the combined impacts of a variety of interacting events and processes (disease, climate change, invasive species, habitat fragmentation, and multi-species interactions) on species survival. MetaModel Manager is being used by USDA and USFWS to examine the impacts of invasive species in Puerto Rico, the Australian government to examine the consequences of climate change on species vulnerability, the South African National Parks to test the effective of bovine tuberculosis on lion populations, and other conservation and management authorities. Dr. Lacy also co-developed the PMx software for pedigree analysis and management. He’s called upon to provide advice on emerging issues also to the leadership of AZA, EAZA, ZAA, JAZA, WAZA, USFWS species recovery teams, USDA, and other organizations.

- **Punta San Juan Field Research Program**

Since 2007, CZS researchers have been involved in the study of Humboldt penguins, seabirds, fur seals, sea lions, and marine invertebrates at the Punta San Juan marine protected area in Peru. Our research focuses on understanding baseline population health, infectious disease risks, and environmental contamination/toxicant exposure, and supports our collaborators working on satellite tracking of animals to better understand ocean use and feeding ecology. The Punta San Juan project provides professional training and field experience to international veterinarians, biologists and graduate students. In addition to veterinary research, Punta San Juan staff has received training on NatureStart, as part of our collaborations in Latin America. We developed a ground-breaking early childhood program in the nearby community of San Juan de Marcona and coordinate a number of community outreach initiatives, including educational guided tours, training local youth to become naturalist guides, and hosting community information sessions and children’s activities.

A ZOO FOR ALL

A Zoo For All provides innovative engagement opportunities for people with physical and mental disabilities to build an inclusive conservation movement and cultivate a holistic approach to programming. We serve more than 460,000 guests with some level of disability and strive to provide opportunities that bring meaningful change to the lives of all people. We have four programs in partnerships with Autism Speaks, Misericordia, Best Buddies of Illinois, the LaGrange Area Department of Special Needs, the Special Education Department at Riverside-Brookfield High School, the Special Recreation Associations that serve Brookfield and nearby communities and Southside Occupational Academy.

- **Life and Work Skills** trains young adults for employment and volunteer opportunities.
- **Inclusion in CZS Programs and Customized Programming** are provided within current programs whenever possible. For example Zoo Camp provides extra training in attention deficit and autism learning needs for all camp counselors.
- **Brookfield Zoo Guest Experiences** provides, upon request, noise cancelling headphones, visual schedules, social stories, self-identifying badges, as well as ADA compliant family restrooms, some outfitted with adult changing tables.
- **Community Outreach Events** are attended by our staff and animal ambassadors so people with disabilities can participate in activities and interact with animals and animal care staff.



**United States
Department of
Agriculture**

**Marketing and
Regulatory
Programs**

**Animal and
Plant Health
Inspection
Service**

Animal Care

EXPIRATION DATE: JUNE 16, 2019

This is to certify that

CHICAGO ZOOLOGICAL SOCIETY

is a licensed
under the

Animal Welfare Act

CLASS C EXHIBITOR

(7 U.S.C. 2131 et seq.)

Certificate No.

33-C-0003

Customer No.

2567


Deputy Administrator

Information



First Aid/Police •
For emergencies and lost-and-found service, go to the police office near the South Gate.



Zoo Accessibility •
For information on accessibility at Brookfield Zoo, please go to CZS.org/Accessibility or stop by Guest Relations at the North Gate or South Gate.



Automatic Teller Machine (ATM)
Available at Wildlife Trading Post and Discovery Center.



Smoking Policy • For the health and safety of our guests and animals, smoking and electronic cigarette use are restricted to four designated areas. (See the map on the reverse side for smoking area locations.)



Stroller, Wheelchair, Wagon, and Electronic Convenience Vehicle Rentals • Available near the North and South Gates. The Chicago Zoological Society is not responsible for lost, stolen, or damaged items. If you wish to secure your stroller, locks are available at these rental locations for a refundable \$10 deposit.



Changing Tables • All restrooms have infant changing tables. Diapers are sold in Wildlife Trading Post, Stuffed Animal Kingdom, and Coast Gifts. Adult changing tables are in the South Gate police office, Habitat Africa! restrooms, and Animal Ambassador Pavilion.



Nursing • A private room is available at the BZ Red Hots restrooms. A Hamill Family Play Zoo nursing room is available with outlets for pumping. There is no admission fee to Hamill Family Play Zoo for nursing mothers. Outlets for pumping are also at Habitat Africa! restrooms.

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Family Restrooms • Available at BZ Red Hots, Great Bear Wilderness plaza, the Main Parking Lot (north of the tunnel), Habitat Africa! restrooms, and Animal Ambassador Pavilion.

Year-Round Attractions

Penguin Encounters Inside The Living Coast

Effective March 24, 2018

Daily 11:00 a.m., 2:00 p.m.

Effective September 17, 2018

Weekdays 2:00 p.m.

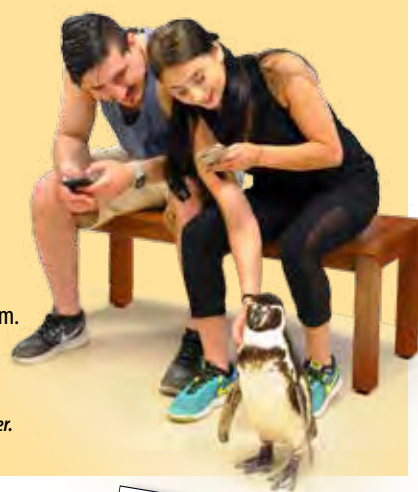
Weekends 11:00 a.m., 2:00 p.m.

Effective December 1, 2018

Non Holiday Magic Days 2:00 p.m.

Holiday Magic Days 2:00 p.m., 6:00 p.m.

Check CZS.org for additional dates.
Subject to change without notice.
Ticket sales close 15 minutes prior to encounter.



Visit our new 3D theater in the Discovery Center to enjoy an incredible immersive nature experience.

You could find yourself taking a journey across the plains and deserts of Africa, or traveling back in time to walk with the dinosaurs!

Two 20-minute 3D films will alternate throughout the day, with a showing starting every half hour. See ticket booth for details.



Dolphins in Action

Be amazed by *Dolphins in Action*, featuring some of our most popular animals. Check the sign in front of Seven Seas for a schedule.

Sponsored by **AMITA HEALTH**



Hamill Family Wild Encounters

Get up close to a myriad of animals, some of which you can touch and interact with, including goats, and visit America's largest parakeet aviary. Plus, encounter surprise animal ambassadors as you explore Hamill Family Wild Encounters.



Hamill Family Play Zoo

Hamill Family Play Zoo strives to provide a fun and meaningful experience for all our guests—children can participate in hands-on activities, and guests of all abilities can visit our brand new sensory friendly family room and inclusion resource center.

Seasonal Attractions

Feed the Giraffes!

Giraffe Feedings are \$10 per feeding and are offered from 10:30 a.m. to noon and 1:00 to 2:30 p.m. (weather permitting)

on the following days in 2018:

May 12-13 and 19-20

May 26 to September 30

Saturdays and Sundays in October and Columbus Day



Discover the marvels of eight-legged critters and explore human-arachnid cultural connections, before weaving your way through a gigantic safari maze that features the stories of 16 endangered species at Brookfield Zoo.

AMAZING arachnids
May 26 to September 3, 2018



Motor Safari

Relax and ride all day on our tram. One ticket lets you hop on and off at any of four stops. *Weather permitting.*

Presented by **energySMART**
A Nicor Gas program



The Carousel

Pick from 72 animal figures when you ride one of the largest handcarved wooden carousels in North America. *Weather permitting.*



Butterflies!

May 26 to September 3
Walk among a variety of butterflies spreading their wings. A colorful assortment from across North America populates this exhibit. *Weather permitting.*

2018 Special Events

Find additional events at CZS.org!



June 23 and 24



Enjoy bears and beers, lions and lagers, anteaters and ales—a unique craft beer-tasting event paired with live music. (For guests 21 and over.)



Fridays and Saturdays, July 6 to August 18, Open until 9:00 p.m.

Presented by **meijer**



Enjoy live bands, roaming entertainment, and delicious food and drinks, plus a new laser light show!



September 9

Presented by **AQUAFINA**
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To save endangered species, run or walk the 5k race on a course all inside the zoo. Also featuring a 1-mile KIDS' RUN. Bring your friends and family to cheer you on for FREE.



October 13-14, 20-21, 27-28

Presented by **Ferrara**
candy company



Ghosts and goblins of all ages are sure to have a howlin' good time during our not-so-scary and fun-filled event. Among the highlights are professional pumpkin carving, a costume parade, and a costume contest.



November 17 and 18



Have your community group or company decorate a holiday tree that will help dress up our annual Holiday Magic festival! Advance registration is required and can be booked at CZS.org/TreeTrim.



December 1-2, 8-9, 15-16, 22-23 plus December 26 to 31, Open until 9:00 p.m.

Presented by **ComEd meijer**



Our largest event of the year transforms the zoo into a winter wonderland. Take your friends and family and stroll by over 1,000,000 twinkling L.E.D. lights. Discover lights, music, entertainment, and animals throughout the zoo.

Dining

Over a dozen quick-serve locations offer something for every taste.

Burgers

Grass-Fed Bison and Beef •

Bison Prairie Grill (G4)

Angus Beef • BZ Red Hots (F13),

Café del Sol (H5), Castaway Grill (F12)

Scoops (H8)

Turkey • BZ Red Hots (F13)

Veggie • Café del Sol (H5), Scoops (H8)

Black Bean • Castaway Grill (F12)

Chicago-Style Hot Dogs

Bison Prairie Grill (G4), BZ Red Hots (F13),

Café del Sol (H5), Scoops (H8)

Pizza (Cheese and Sausage)

BZ Red Hots (F13), Café del Sol (H5)

Quesadillas, Burritos, and Taco Salad • Café del Sol (H5)

BBQ • Café del Sol (H5)

Specialty Sandwiches

Bison Prairie Grill (G4),

Castaway Grill (F12), Scoops (H8)

Specialty Coffee Drinks

North Gate Coffee and Snacks (B8),

South Gate Coffee and Snacks (H10)



Vegetarian Options

Bison Prairie Grill (G4), Café del Sol (H5),

Castaway Grill (F12), Scoops (H8)

Funnel Cakes, Shakes, and Sundaes

Scoops (H8)

Craft and Specialty Beers

Various locations throughout the zoo

We are proud to support local farmers.

Serving produce from local farmers

in Illinois and nearby states saves on

energy and helps local economies.



Healthy meal options endorsed by Healthy Fare for Kids are available at Bison Prairie Grill, BZ Red Hots, and Café del Sol.



Host your event at the zoo!

Find out more at CZS.org or call (708) 688-8355.

From 20 to 10,000 guests, our venues can meet your needs. Company and family picnics, weddings, corporate events, holiday parties, meetings, birthday parties, reunions, formal affairs, quinceañeras, anniversaries, showers, and more.



Hours Open Every Day!

Beginning March 24, 2018

Weekdays 10:00 a.m. to 5:00 p.m.

Weekends 10:00 a.m. to 6:00 p.m.

Beginning May 26, 2018

Daily 9:30 a.m. to 6:00 p.m.

Beginning September 4, 2018

Weekdays 10:00 a.m. to 5:00 p.m.

Weekends 10:00 a.m. to 6:00 p.m.

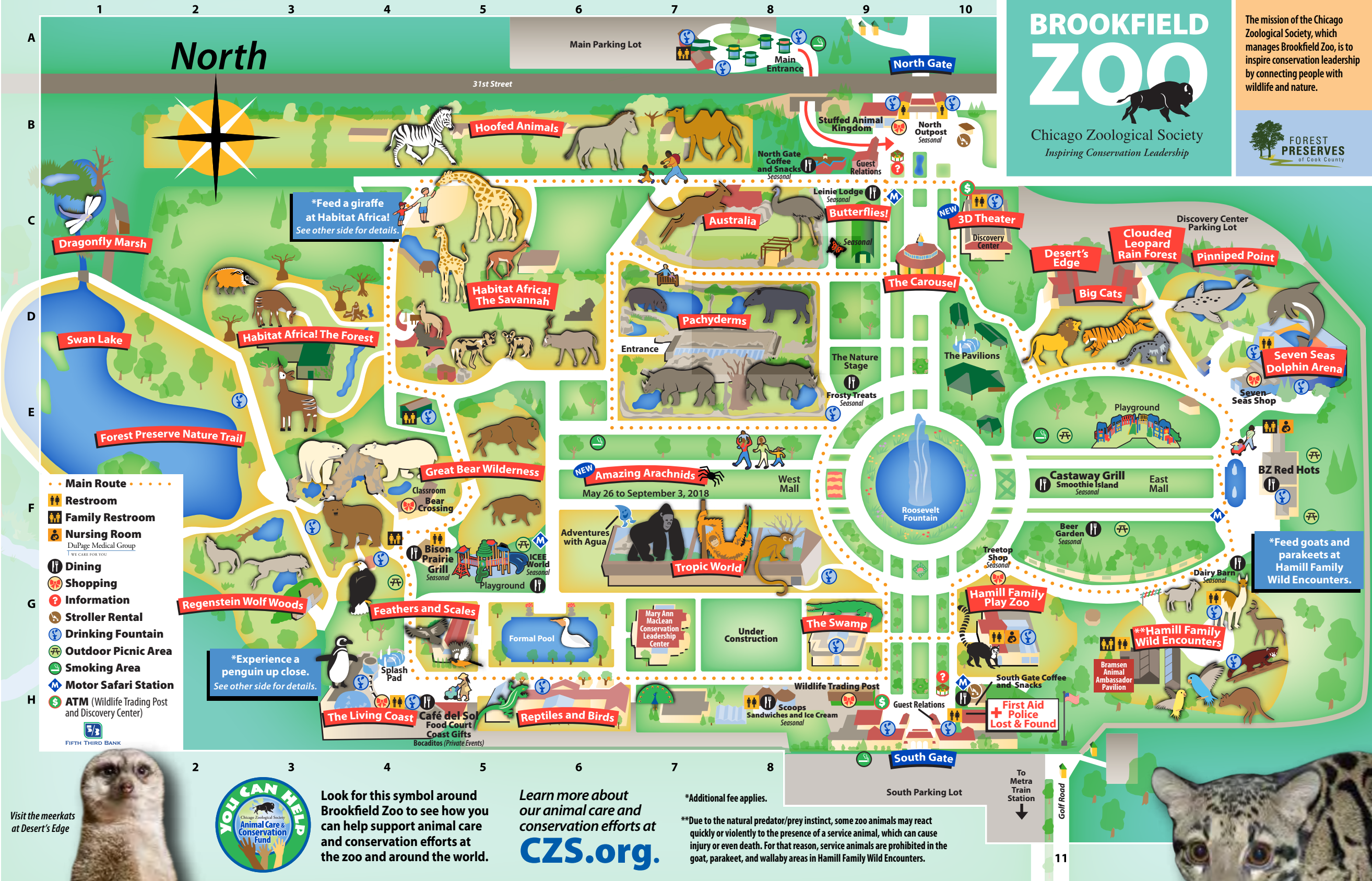
Beginning October 29, 2018

Daily 10:00 a.m. to 5:00 p.m.

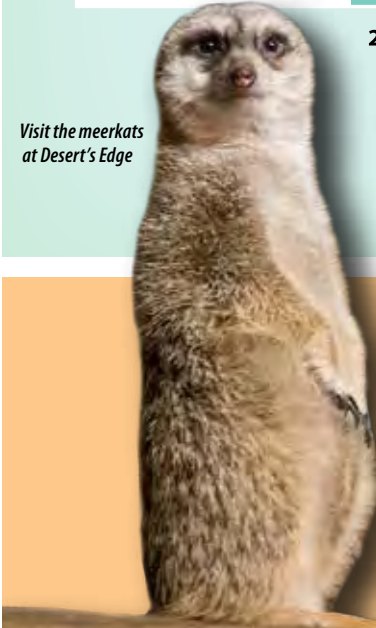
Animal buildings close 30 minutes before general zoo closing, except for Tropic World, which closes 45 minutes before general zoo closing. Dates, times, and prices are subject to change.

Animals A to Z

- Addax** • Habitat Africa! The Savannah (D5)
Bats • Australia (C7)
Bears • Big Cats (D12), Great Bear Wilderness (E4)
Birds • Australia (C7), Feathers and Scales (G5), Great Bear Wilderness (E4), Habitat Africa! The Forest (D4), Habitat Africa! The Savannah (C5), Hamill Family Play Zoo (G11), Hamill Family Wild Encounters (G12), Reptiles and Birds (H6), Swan Lake (D1), The Living Coast (H4), The Swamp (G9), Tropic World (F8)
Bison • Great Bear Wilderness (E4)
Camels • Hoofed Animals (B8)
Condors • Feathers and Scales (G4)
Crocodiles • Habitat Africa! The Forest (D4), The Swamp (G9)
Dolphins • Seven Seas (D13)
Domestic animals • Hamill Family Play Zoo (G11), Hamill Family Wild Encounters (G12)
Eagles • Great Bear Wilderness (E4)
Frogs • Australia (C7), Clouded Leopard Rain Forest (D12), Feathers and Scales (G5), Hamill Family Play Zoo (G11), Reptiles and Birds (H6), The Living Coast (H4), The Swamp (G9)
Giraffes • Habitat Africa! The Savannah (C5)
Gorillas • Tropic World (F8)
Hoofed animals • Hamill Family Wild Encounters (G12), Hoofed Animals (B4)
Kangaroos • Australia (C7)
Lemurs • Hamill Family Play Zoo (G11)
Leopards • Big Cats (D12)
Lions • Big Cats (D12)
Meerkats • Desert's Edge (C11)
Monkeys • Tropic World (F8)
Orangutans • Tropic World (F8)
Pangolins • Habitat Africa! The Forest (D4)
Parakeets • Hamill Family Wild Encounters (G12)
Penguins • The Living Coast (H4)
Pygmy hippos • Pachyderms (D8)
Red pandas • Hamill Family Wild Encounters (G12)
Rhinoceroses • Pachyderms (D8)
Sea lions • Pinniped Point (D13)
Sharks • The Living Coast (H4)
Snakes • Australia (C7), Clouded Leopard Rain Forest (D12), Feathers and Scales (G5), Habitat Africa! The Forest (D4), Hamill Family Play Zoo (G11), Reptiles and Birds (H6), The Living Coast (H4), The Swamp (G9)
Tigers • Big Cats (D12)
Turtles/Tortoises • Clouded Leopard Rain Forest (D12), Feathers and Scales (G5), Habitat Africa! The Savannah (C5), Hamill Family Play Zoo (G11), Reptiles and Birds (H6), The Swamp (G9)
Wolves • Regenstein Wolf Woods (G3)
Zebras • Hoofed Animals (B3)



Visit the meerkats at Desert's Edge



Look for this symbol around Brookfield Zoo to see how you can help support animal care and conservation efforts at the zoo and around the world.

Learn more about our animal care and conservation efforts at CZS.org.

*Additional fee applies.
**Due to the natural predator/prey instinct, some zoo animals may react quickly or violently to the presence of a service animal, which can cause injury or even death. For that reason, service animals are prohibited in the goat, parakeet, and wallaby areas in Hamill Family Wild Encounters.



Visit the clouded leopard at Clouded Leopard Rain Forest

CARE FOR ALL LIVING THINGS
Show your concern for all living things by not feeding or chasing animals, by not tapping on glass, and by not damaging plants. For the well-being of animals and guests, standard wheelchairs are allowed inside the zoo but other wheeled vehicles (including bicycles, scooters, skateboards, and skates) are not. Also for others' well-being, smoking and electronic cigarette use are restricted to four areas throughout the zoo. (See zoo map.)

WHILE YOU ARE HERE
Please stay behind safety barriers and on paths and do not climb trees, rocks, and sculptures. Due to fire codes, strollers are not allowed in some buildings. Locks are available (with deposit) at stroller rental locations. Please secure your belongings or take them with you. Guests are not allowed to bring alcohol into the park, and Illinois state law prohibits concealed firearms and weapons on these premises. Pursuant to 430 ILCS 66/65.

PHOTO/VIDEO IMAGE USE POLICY
By entering the zoo, you acknowledge that you may be and you agree to be filmed, videotaped, and/or photographed by a Chicago Zoological Society (the "Society") representative and give the Society permission to use your name, image, voice, and likeness (collectively, your "Image") in all media, now known or hereafter developed, worldwide and in perpetuity, and you waive any and all claims regarding use of your Image. You acknowledge and agree that the Society shall own all rights, title, and interest in all photographs and materials created incorporating your Image. Commercial use photographs, video, and film you take on zoo premises are prohibited without written consent from the Society.

Chicago Zoological Society/
Brookfield Zoo is accredited by the
ASSOCIATION OF ZOOS & AQUARIUMS
HUMANE CERTIFIED
American Airlines
Proud Sponsor of the Chicago Zoological Society

Our website, CZS.org, provides information on exhibits, animals, dining, shopping, show times, fees, and more. Or call (708) 688-8000.

Mapas en Español
están disponibles en las casetas de entrada localizadas en el norte y sur del zoológico.



BROOKFIELD ZOO

Chicago Zoological Society
Inspiring Conservation Leadership

The mission of the Chicago Zoological Society, which manages Brookfield Zoo, is to inspire conservation leadership by connecting people with wildlife and nature.



Coral World Educational Summary

Research and Educational Coordinator

Logan Williams MS

At Coral World we believe that all organisms on the planet are connected to the ocean. The ocean covers approximately 70% of our globe and is the reason why life on Earth is possible. The ocean controls the Earth's climate and weather, is a major driver of the water cycle, provides most of the earth's oxygen, absorbs solar radiation and provides ecological, economic and cultural goods and services to humans and other organisms throughout the world. The ocean affects us and we affect the ocean.

At Coral World, we understand that not all people realize how interconnected they are to the ocean. This is especially true for people who live hundreds to thousands of miles away from any coastline. At Coral World, guests are given the opportunity to explore this incredible world through educational presentations, animal demonstrations, interactions and encounters with various marine organisms. Our exhibits are diverse and include a wide variety of marine and terrestrial animals, plants, communities and ecosystems including but not limited to coral reefs, mangroves, tortoises and birds, sea cucumbers, sea urchins, sea stars, reef fish, sharks and rays, sea turtles, sea lions and in the future dolphins. All of these animals are connected to one another and each serves a fundamental role in the marine environment. We hope that guests leave our facility with an increased appreciation for the ocean and a greater understanding of how connected we are to this amazing world.

To achieve these educational goals Coral World recognizes the diversity of our audience and their learning styles. Coral World is open to the public and hosts education presentations with birds, sea lions, sharks, and stingrays as well as an open water talk about Caribbean fish and invertebrates, our education message is ecosystem based and we focus on the ocean literacy concepts of one world ocean, and that man is inextricably connected to that ocean. Coral World hosts 2700-3500 pre-12 school children annually at no charge. Additionally, Coral World has an in-depth internship program focusing on marine science and marine mammals. Coral World also works with Master's degree students at the University of the Virgin Islands especially those seeking degrees in the Masters of Marine Science.



**United States
Department of
Agriculture**

**Marketing and
Regulatory
Programs**

**Animal and
Plant Health
Inspection
Service**

Animal Care

EXPIRATION DATE: JULY 27, 2019

This is to certify that

CORAL WORLD INC

is a licensed
under the

CLASS C EXHIBITOR

Animal Welfare Act

(7 U.S.C. 2131 et seq.)

Certificate No.

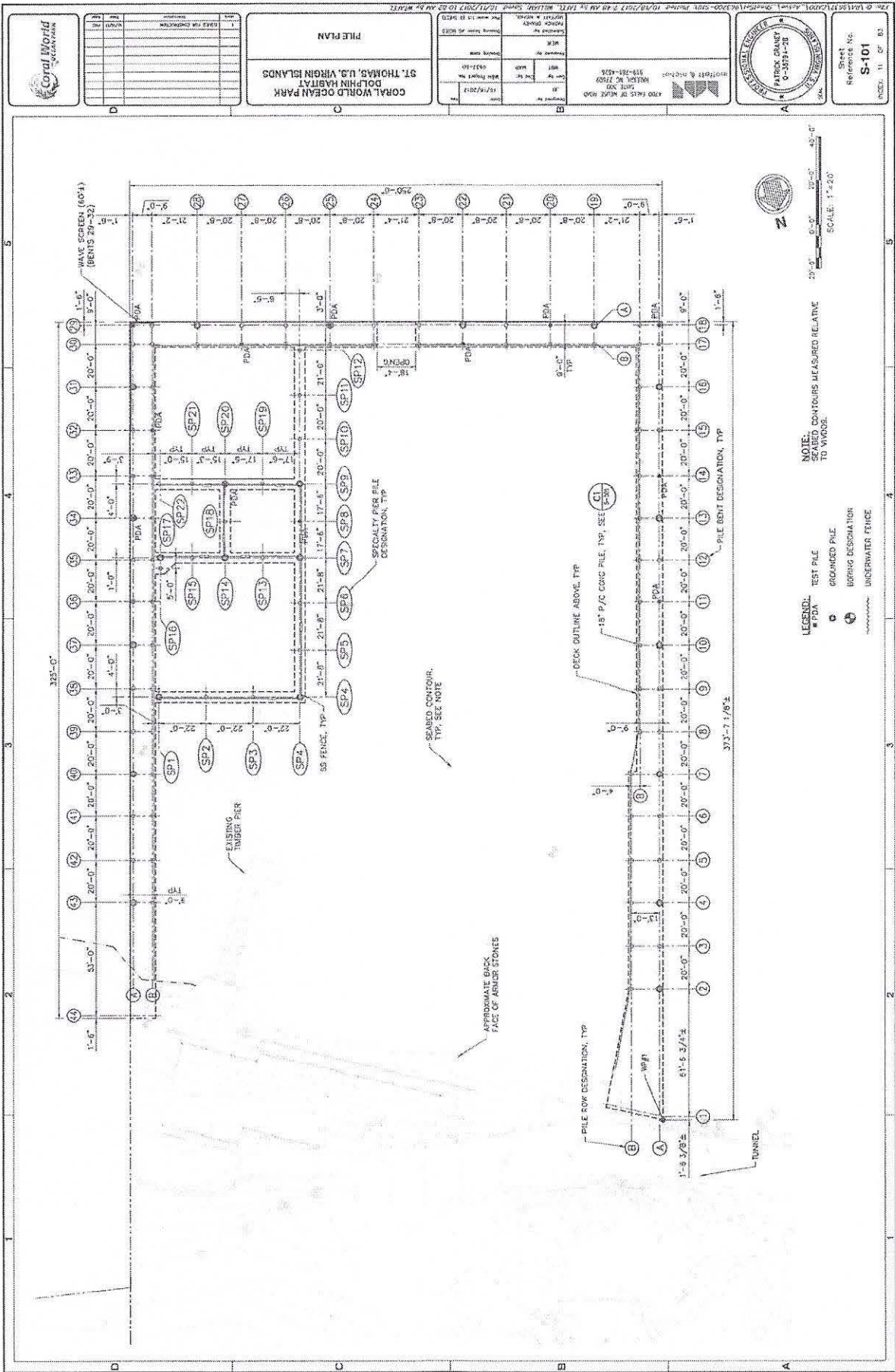
98-C-0001

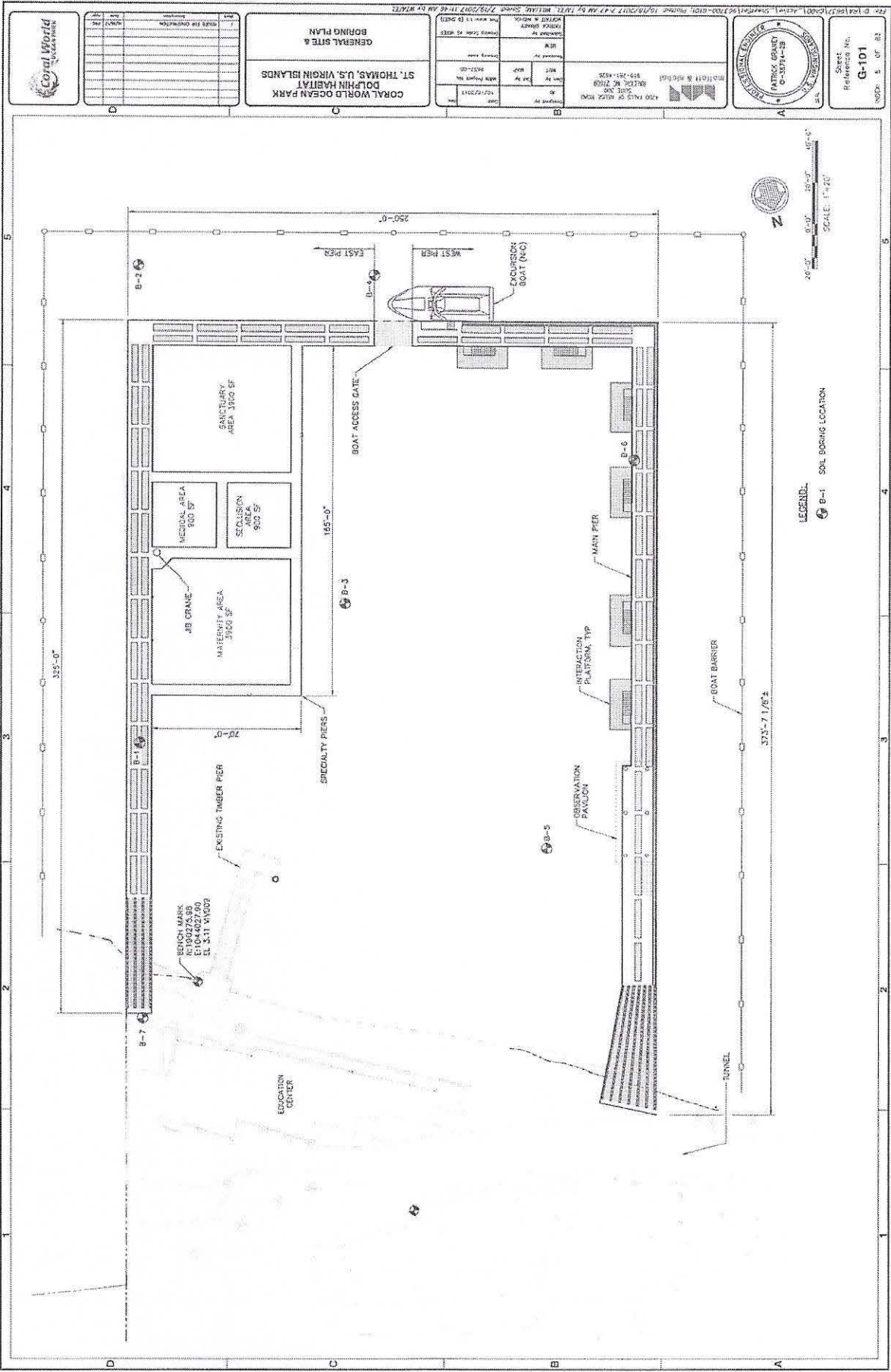
Customer No.

37054

Deputy Administrator

A handwritten signature in black ink, appearing to be "B. J. [unclear]", written over a horizontal line.





Coral World Ocean Park
DOLPHIN HABITAT
ST. THOMAS, U.S. VIRGIN ISLANDS

GENERAL SITE & BORING PLAN

PROJ. NO. 17-001
DATE: 7/25/2017
BY: [Signature]

PROJ. NO. 17-001
DATE: 7/25/2017
BY: [Signature]

PROJ. NO. 17-001
DATE: 7/25/2017
BY: [Signature]

PROJ. NO. 17-001
DATE: 7/25/2017
BY: [Signature]

Coral World Ocean Park

PROJ. NO. 17-001

DATE: 7/25/2017

BY: [Signature]

PROJ. NO. 17-001

DATE: 7/25/2017



Inspection Report

Coral World Inc
6450 State Smith Bay
Saint Thomas, VI 00802

Customer ID: **37054**
Certificate: **98-C-0001**
Site: 001
CORAL WORLD INC

Type: ROUTINE INSPECTION
Date: 14-FEB-2019

No non-compliant items identified during this inspection.
This inspection and exit interview were conducted with the facility representative.

Prepared By: Luis A. Navarro, DVM
NAVARRO LUIS, D V M USDA, APHIS, Animal Care

Title: VETERINARY MEDICAL OFFICER 6025

Date:
14-FEB-2019

Received By: _____
LEE KELLAR

Title: SENT BY E MAIL

Date:
14-FEB-2019



Species Inspected

Cust No	Cert No	Site	Site Name	Inspection
37054	98-C-0001	001	CORAL WORLD INC	14-FEB-19

Count	Scientific Name	Common Name
000005	<i>Otaria byronia</i>	SOUTH AMERICAN SEA LION
000005	Total	

Get Up Close And Personal

The highlight of your trip.

At Coral World Ocean Park,
take a journey you will never forget.

Experience the beauty and
the magic of life under the sea.

Get up close and personal your way.

HOURS

Coral World is open daily from 9 am to 4 pm.
The ticket booth closes at 3 pm. Please call to confirm
off-season May - October, hours may vary so please call.

ADMISSION

Admission is good for the entire day and includes
all exhibits. Additional fees apply for sea lion and other
animal encounters, water sports, and boat tours.
Visit adjacent Coki Beach and re-enter Coral World as
many times as you wish throughout the day.
Showers and locker rentals are available for our guests.

FEEDING SCHEDULE

There are interactive talks and feedings throughout
the day. Don't miss the chance to pet a shark, feed a
stingray, or ask our staff questions!

RESERVATIONS

No reservations needed to visit Coral World.
We do recommend advance reservations for animal
encounter programs, Sea Trek®, Snuba®, M/V Nautilus,
and parasailing as space is limited.

PRIVATE FUNCTIONS

Coral World is a unique setting with breathtaking views
for wedding, birthdays, sleepovers and other special
occasions. Multiple venue options available and outside
caterers welcome. Please contact us for details.

GETTING HERE

Coral World is located on Coki Point, off route 38,
a 25-minute scenic drive or taxi ride from downtown
Charlotte Amalie and the cruise ship piers, 10 minutes
from the east end Red Hook ferry dock.



copyright © 2010 Coral World (VI), Inc.



St. Thomas, U.S. Virgin Islands

MARINE MAMMAL DATA SHEET

NOAA Animal ID: NOA0006620

Form Approved by OMB No. 0648-0084

Expires 12-31-2019

Page: 1 of 2

I. Animal-Specific:

NOAA Identification No.: NOA0006620

Common Name: Bottlenose Dolphin

Scientific Name: Tursiops truncatus

Sex: FEMALE

Date of birth: 04-01-2010

Birth Date Certainty: ACTUAL

Captive Origin: BIRTH

Date of original captivity: 04-01-2010

Permit No.:

Collector:

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

II. Owner/Facility-Specific:

Owner (Person or other Entity With Custody of the Marine Mammal): Dolphin Quest, Inc.

Facility (if different from Owner): Dolphin Quest - Bermuda

Date assumed custody: 04-01-2010

Date arrived at Facility: 04-01-2010

City/State/Zip of Facility (include Country for foreign facilities): Mangrove Bay, MA BX, BM

Animal Identification No. (assigned by facility):

Animal Name (assigned by facility):

Purpose(s): Public Display

III. Disposition:

Death Date:

Death Cause:

Death Cause Comment:

Release Date:

Permit No.:

OR ☐

Unauthorized release/escape (reintroduction)

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

Tag number or description of other identifying markings:

IV. Animal Historical Transfer/Transports:

Marine Mammal Data Sheet (MMDS)

NOTES:

The Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1361 et seq.) requires that persons holding marine mammals submit certain information to the National Marine Fisheries Service (NMFS). The MMPA requires that NMFS maintain an inventory of all marine mammals held for public display purposes and scientific research/enhancement (i.e., all marine mammals held captive except for those in captivity before December 21, 1972). In addition, the MMPA requires that NMFS be given advance notice 15 days prior to the transfer/transport of any marine mammal. To ensure compliance with these and related MMPA requirements, NMFS recommends that persons holding marine mammals in captivity use this Marine Mammal Data Sheet (MMDS) to submit inventory information regarding their captive marine mammals to NMFS. Use of this form will ensure that the MMPA required information is submitted in a consistent manner and that the NMFS marine mammal inventory is accurate and up-to-date.

Marine Mammal Data Sheets should be used when submitting information to NMFS in compliance with MMPA requirements applicable to persons holding marine mammals, including notifications of any additions/changes to your marine mammal inventory due to:

- o Birth, Death, Transfer/Transport
- o Retention or Transfer of Rehabilitated Beached and Stranded Marine Mammals (Authorization or Permit)
- o Wild Capture, Import, Reintroduction to the Wild, including release or escape (Permit)
- o Other (Corrections, etc.)

The animal-specific information in Section II will not change, whereas data in Sections I, III and/or IV will change with transfers/transportations (changes of custody and/or facility/location). In accordance with MMPA requirements, NMFS requests notification of any change in custody or facility/location, including captive births and deaths. A copy of the Marine Mammal Inventory Report Summary (MMIRS) may be provided periodically and may be requested at any time by contacting the Permits, Conservation and Education Division at the address listed below.

All permit documentation including reports and inventory information required herein, is subject to the Freedom of Information Act (FOIA) with personal or sensitive information that is subject to the Privacy Act redacted when released under FOIA.

Marine Mammal Transfer/Transport Notifications

NMFS recommends that:

- 1 1. Owners notify NMFS of proposed transfers/transportations by completing a Marine Mammal Transfer/Transport Notification (MMTTN) form, forwarding it to the Receiver for signature and submitting it to NMFS. It is not necessary to submit the MMDS for the animals proposed to be transferred/transported, but sufficient information must be included on the MMTTN to identify the animal(s).
- 2 2. The MMTTN must be received by NMFS at least 15 days prior to the actual transfer/transport date. Should you need to transfer/transport an animal before the required 15 day notification, please contact NMFS regarding an emergency waiver.
- 3 3. NMFS will reply with an acknowledgement letter and MMDS(s) to be updated upon receipt of the animal(s). The transfer/transport should occur within 60 days after initial submission of the MMTTN. If an extension is necessary, please contact NMFS.
- 4 4. At any time within 30 days of the transfer/transport, the Owner should forward to NMFS the updated MMDS for each animal actually transferred/transported (i.e. Section I and, as necessary, Section III to verify receipt of the animal(s)).

Beached and Stranded Marine Mammals - Retention or Transport

The retention or transport/retention of rehabilitated beached and stranded marine mammals requires a permit or written authorization under the MMPA. A permit is required to obtain such marine mammals for purposes of scientific research or enhancing the survival or recovery of species or stocks, or to retain or obtain such marine mammals for public display purposes where such animals have been determined releasable. Where such marine mammals have been determined non-releasable, NMFS authorization is required to retain or obtain them for public display purposes. Please contact the Permits, Conservation and Education Division at the number or address below for information on submitting such a permit application or authorization request.

QUESTIONS? If you need assistance completing this form please contact the Permits Division at (301-427-8401) or write to us at:

Permits, Conservation and Education Division -F/PR1 Office of Protected Resources Or by facsimile National Marine Fisheries Service at (301) 713-0376 1315 East West Highway, Room 13705 Silver Spring, MD 20910

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including the time for reviewing instructions, search existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information to complete this form. Send comments regarding this burden estimate or any other aspect of this collection of information including suggestions for reducing this burden, to the Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless the collection of information displays a currently valid Office of Management and Budget (OMB) Control Number.

MARINE MAMMAL DATA SHEET

NOAA Animal ID: NOA0010155

Form Approved by OMB No. 0648-0084

Expires 12-31-2019

Page: 1 of 2

I. Animal-Specific:

NOAA Identification No.: NOA0010155

Common Name: Bottlenose Dolphin

Scientific Name: *Tursiops truncatus*

Sex: FEMALE

Date of birth: 03-31-2014

Birth Date Certainty: ACTUAL

Captive Origin: BIRTH

Date of original captivity: 03-31-2014

Permit No.:

Collector:

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

II. Owner/Facility-Specific:

Owner (Person or other Entity With Custody of the Marine Mammal): Chicago Zoological Society

Facility (if different from Owner): Dolphin Quest - Bermuda

Date assumed custody: 03-31-2014

Date arrived at Facility: 03-31-2014

City/State/Zip of Facility (include Country for foreign facilities): Mangrove Bay, MA BX, BM

Animal Identification No. (assigned by facility):

Animal Name (assigned by facility):

Purpose(s): Public Display

III. Disposition:

Death Date:

Death Cause:

Death Cause Comment:

Release Date:

Permit No.:

OR ☐

Unauthorized release/escape (reintroduction)

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

Tag number or description of other identifying markings:

IV. Animal Historical Transfer/Transports:

Marine Mammal Data Sheet (MMDS)

NOTES:

The Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1361 et seq.) requires that persons holding marine mammals submit certain information to the National Marine Fisheries Service (NMFS). The MMPA requires that NMFS maintain an inventory of all marine mammals held for public display purposes and scientific research/enhancement (i.e., all marine mammals held captive except for those in captivity before December 21, 1972). In addition, the MMPA requires that NMFS be given advance notice 15 days prior to the transfer/transport of any marine mammal. To ensure compliance with these and related MMPA requirements, NMFS recommends that persons holding marine mammals in captivity use this Marine Mammal Data Sheet (MMDS) to submit inventory information regarding their captive marine mammals to NMFS. Use of this form will ensure that the MMPA required information is submitted in a consistent manner and that the NMFS marine mammal inventory is accurate and up-to-date.

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- 3 3. NMFS will reply with an acknowledgement letter and MMDS(s) to be updated upon receipt of the animal(s). The transfer/transport should occur within 60 days after initial submission of the MMTTN. If an extension is necessary, please contact NMFS.
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MARINE MAMMAL DATA SHEET

NOAA Animal ID: NOA0010213

Form Approved by OMB No. 0648-0084

Expires 12-31-2019

Page: 1 of 2

I. Animal-Specific:

NOAA Identification No.: NOA0010213

Common Name: Bottlenose Dolphin

Scientific Name: *Tursiops truncatus*

Sex: FEMALE

Date of birth: 03-30-2015

Birth Date Certainty: ACTUAL

Captive Origin: BIRTH

Date of original captivity: 03-30-2015

Permit No.:

Collector:

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

II. Owner/Facility-Specific:

Owner (Person or other Entity With Custody of the Marine Mammal): Chicago Zoological Society

Facility (if different from Owner): Dolphin Quest - Bermuda

Date assumed custody: 03-30-2015

Date arrived at Facility: 03-30-2015

City/State/Zip of Facility (include Country for foreign facilities): Mangrove Bay, MA BX, BM

Animal Identification No. (assigned by facility):

Animal Name (assigned by facility):

Purpose(s): Public Display

III. Disposition:

Death Date:

Death Cause:

Death Cause Comment:

Release Date:

Permit No.:

OR ☐

Unauthorized release/escape (reintroduction)

Geographic Location: Lat: ' ' ' / Lon: ' ' '

Geographic Name:

Tag number or description of other identifying markings:

IV. Animal Historical Transfer/Transports:

Marine Mammal Data Sheet (MMDS)

NOTES:

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GOVERNMENT OF BERMUDA

Ministry of Home Affairs

Department of Environment and Natural Resources

16 October, 2018

Re: Dolphin Quest Bermuda

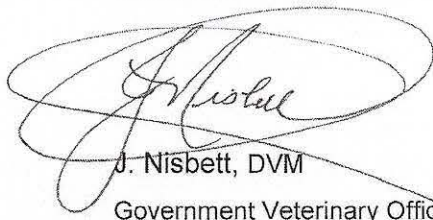
To Whom It May Concern:

The animals in the possession of Dolphin Quest Bermuda are protected under the Care and Protection of Animals Act 1975. However, this Act does not contain specific objective standards for the care of any species, and so we refer to Title 9 Code of Federal Regulations (9CFR) of the United States for guidance.

Dolphin Quest Bermuda is subjected to recurrent inspections by the Veterinary Officer of the Department of Environment and Natural Resources, Government of Bermuda. Dolphin Quest Bermuda continues to be found to be in compliance with the provisions of the Care and Protection of Animals Act 1975 and Title 9 CFR of the United States Department of Agriculture. The most recent inspections (in 2017 and this month) revealed no deficiencies or concerns.

Dolphin Quest Bermuda is a member of the Alliance of Marine Mammal Parks and Aquariums, and continues to follow the standards of that organization. The animals' health and wellbeing are monitored and recorded daily. The animals and records reflect good health, a high standard of care and good contingency planning in the event of an emergency.

Sincerely,



J. Nisbett, DVM
Government Veterinary Officer

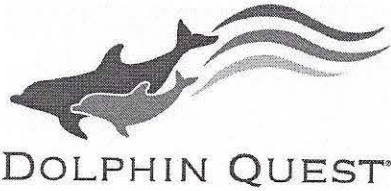
C:\Users\jwnisbett\Documents\I\ETOFFCR\Delphines\Letter of support 2018.docx



Botanical Gardens, 169 South Road, Paget, Bermuda DV-04

P.O. Box HM-834, Hamilton, Bermuda HM-CX

Phone: (441) 236-4201 Fax: (441) 232-0046 Email: animals@gov.bm Website: www.gov.bm



Dolphin Quest Bermuda

Certifying statement:

Dolphin Quest Bermuda has a breeding program for common bottlenose dolphins. The breeding program, undertaken in large part through an educational breeding loan with the Chicago Zoological Society – Brookfield Zoo, is highly successful. Dolphin Quest Bermuda's propagation strategy for population sustainability is managed through onsite breeding to honor genetic diversity within the collective groups. Population growth at the Dolphin Quest Bermuda location is acquired through this breeding program. As such, the requested import (File No. 22686) will not likely result in the taking of marine mammals beyond those proposed. Specifically, there are no plans to collect animals from the wild as a replacement for animals exported from Bermuda, due to the success of the breeding program.

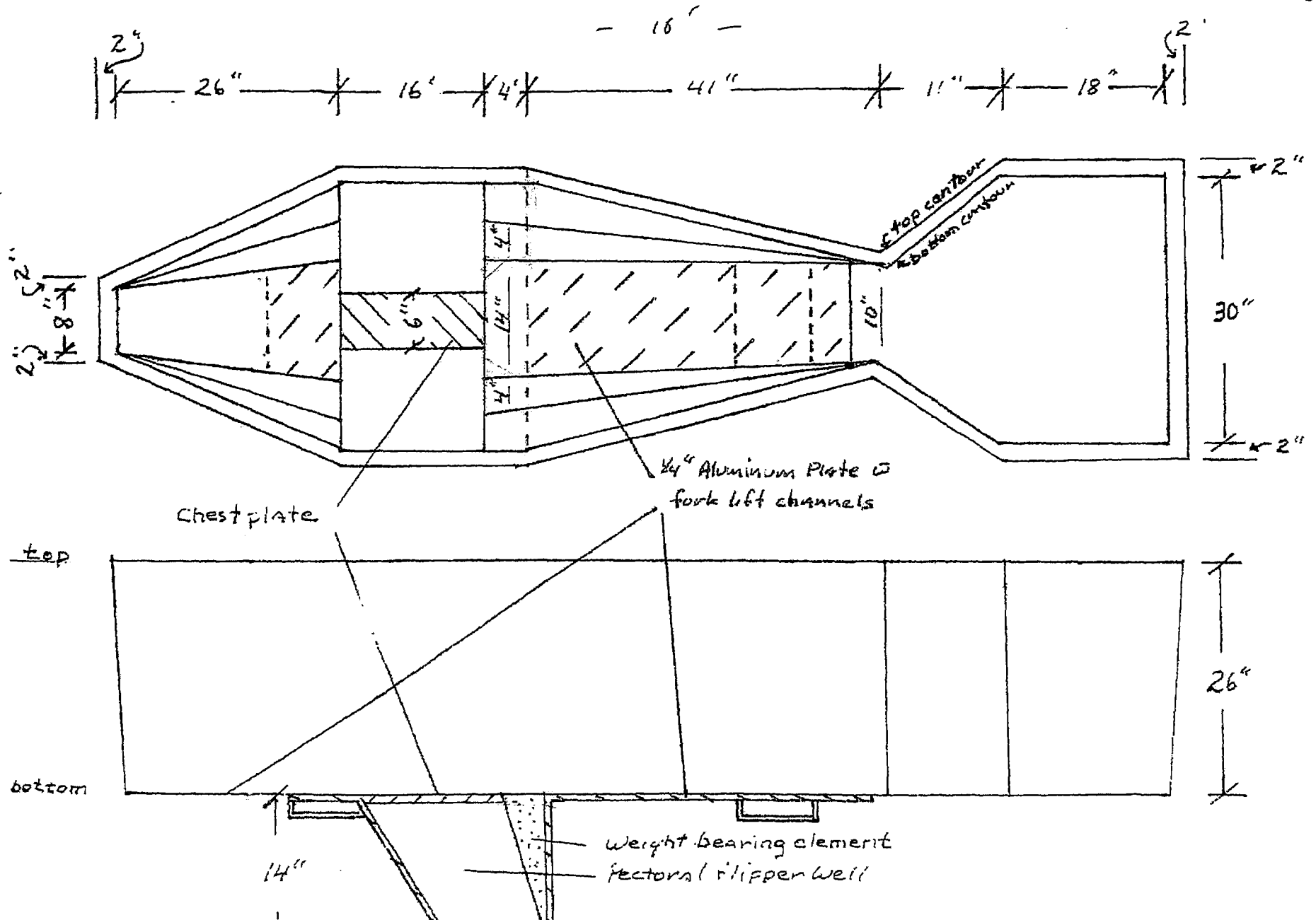
Veterinarian/Owner signature/date

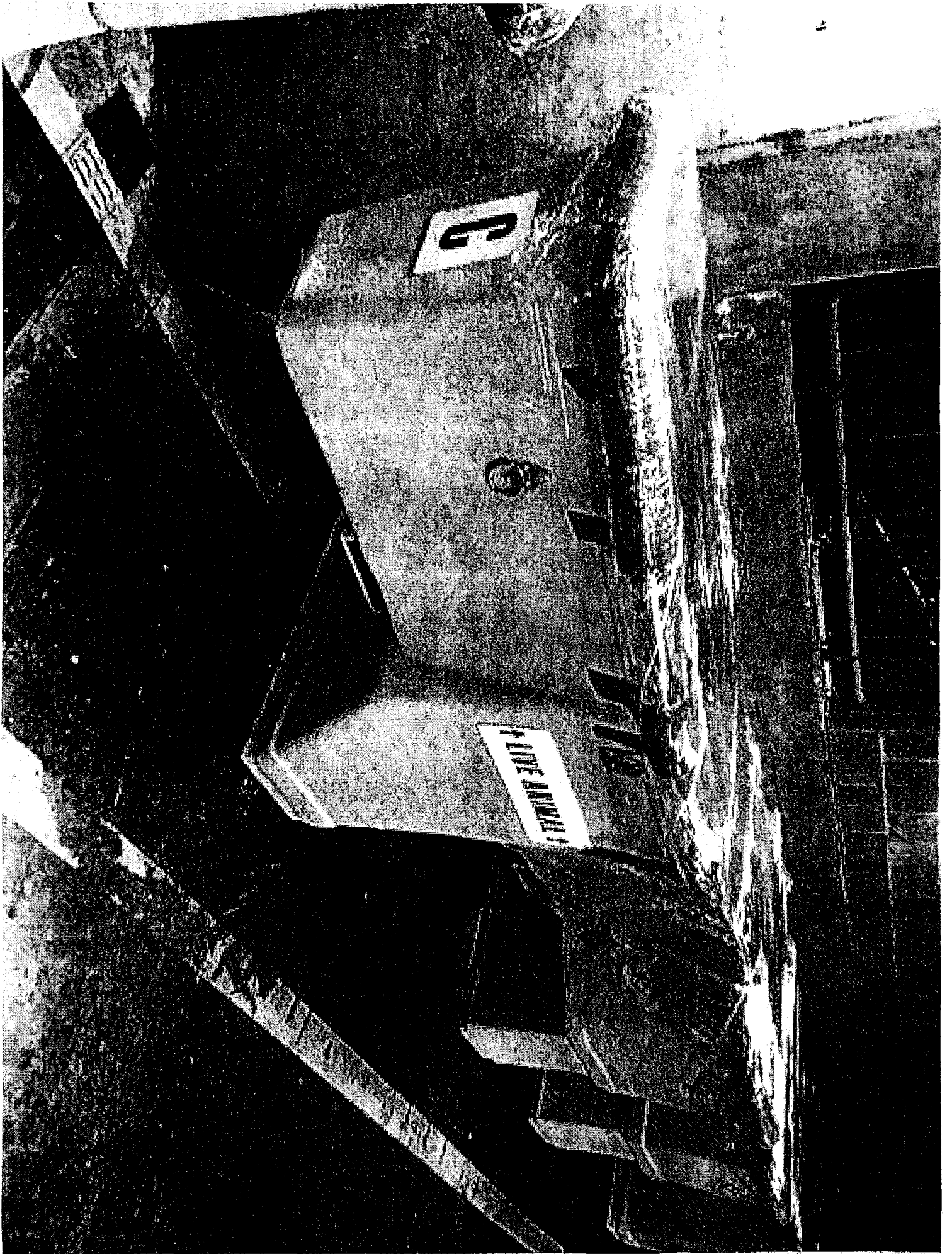
11-23-18

Jay Sweeney, V.M.D.

Scale 2cm = 1 ft. (12")

10' x 3' x
80x12







Department of Commerce
National Oceanic and Atmospheric Administration National Marine Fisheries Service
Permits, Conservation and Education Division, F/PR1 Office of Protected Resources
1315 East-West Highway, Room 13705
Silver Spring, Maryland 20910-3226

November 25th, 2018

To Whom It May Concern:

This letter is to serve as a written certification from the attending veterinary staff responsible for Chicago Zoological Society's (0.3) bottlenose dolphins, *Tursiops truncatus* (NOA0010155 (DOB 31 Mar 2014), NOA0010213 (DOB 30 MAR 2015) and NOA0006620 (DOB 1 April 2010)) being imported from Bermuda to St. Thomas, United States Virgin Islands that the methods of import, transport and post import care will meet all health requirements to ensure the best practice and maintain health and wellbeing of these animals.

Coral World's Management and Veterinary staff have a cumulative 38 years of experience providing training, progressive medicine and maintaining the health of bottlenose dolphins. The Veterinary and Management staff have coordinated and overseen numerous moves transporting *Tursiops* species, including military transports that lasted over 40 hours in duration.

Extensive planning, preparation and best practices will be incorporated for all dolphin transports to ensure the well-being of the animals. Coral World's current Preventative Medicine Program and Standard Operational Protocols which include regularly scheduled physical exams, hematological and serum biochemical and organ profile analysis, biological sample analysis such as gastric, respiratory, fecal and urine samples, full body ultrasound, animal weights and nutritional diet analysis, monitoring water quality and husbandry training will be extended to the dolphins coming under our care.

If there are any questions, concerns or more information is required, please don't hesitate to contact me.

Sincerely,

Natalie E. Noll DVM
Consulting Director Veterinarian Coral World Ocean Park
nollnatalie@yahoo.com
Ph-561-628-3756
Coral World VI Inc.,
6450 Coki Point,
St. Thomas VI 00802



September 26, 2018

Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Permits, Conservation and Education Division, F/PR1
Office of Protected Resources
1315 East-West Highway, Room 13705
Silver Spring, Maryland 20910-3226

To Whom It May Concern:

This letter is to serve as a written certification from the attending veterinary staff responsible for Chicago Zoological Society's (0.3) bottlenose dolphins, *Tursiops truncatus* [NOA0010155, CZS ID 5559 (DOB 31 Mar 2014)], [NOA0010213, CZS ID 6739 (DOB 30 MAR 2015)] and [NOA0006620, CZS ID 8554, DC ID 410F1 (DOB 1 April 2010)] being imported from Bermuda to Chicago, Illinois, USA, that the methods of import and post import care will meet all requirements to ensure the wellbeing of these animals.

Chicago Zoological Society has many years of experience providing cutting edge husbandry and veterinary care to bottlenose dolphins. The Veterinary staff has over 20 years of collective experience providing ground breaking medical care to species and has coordinated and overseen numerous moves transporting *Tursiops* species.

Extensive preplanning preparation is incorporated for all transports to ensure the well-being of our animals. Once at Brookfield Zoo, animals are incorporated into our Preventative Medicine Program which includes regular physical examinations, hematological and serum biochemical analysis, fecal analysis, weight evaluation, ultrasound, nutritional diet analysis, monitoring water quality and husbandry training. Should you have any questions, please feel free to contact me via phone or email.

Sincerely,

Jennifer N. Langan, DVM, Dipl. ACZM, Dipl. ECZM
Chicago Zoological Society – Brookfield Zoo
Senior Staff Veterinarian

Enclosures

CC: Dr. Adkesson, R. Stacey

Brookfield, Illinois 60513-0719 708.688.8400 www.CZS.org

Brookfield Zoo is owned by the Forest Preserve District of Cook County and managed by the Chicago Zoological Society.
Equal Opportunity/Affirmative Action Employer M/F/D/V

RITA STACEY VONDRA

Curriculum Vitae

Chicago Zoological Society
Brookfield Zoo
3300 Golf Rd. Brookfield, IL 60513
(708) 688-8442
Rita.stacey@czs.org

SUMMARY

A dedicated, responsible professional with more than 27 years of progressive experience in a world-class conservation center. Major strengths in operant conditioning, high quality animal care and welfare, animal transport, communication, team building, and time management. Additional skills in staff development, problem solving, budget management, and strategic planning. A flexible, team player that achieves goals by building and developing the team and communicating effectively while focusing on achieving institutional goals.

PROFESSIONAL EXPERIENCE

Chicago Zoological Society - Brookfield Zoo, Brookfield, Illinois

1990-Present

Curator of Marine Mammals

2009-Present

Responsibilities: Oversee and manage staff, animal welfare, animal transports and building operations in the marine mammal department. Overseen departmental portions of Association of Zoos & Aquariums' Accreditation, American Humane certification, and Alliance of Marine Mammal Parks and Aquariums Accreditation. Institutional representative for the Bottlenose Dolphin Breeding Consortium, AZA's Marine Mammal TAG, and Alliance of Marine Mammal Parks and Aquariums.

- Oversaw the renovation of the dolphinarium, relocation of staff, and the transport and care of the resident dolphin collection offsite
- Development of an on-going research program for the marine mammal department
- Chair of the Dive Safety Board until 2013; member of the Dive Safety Board to present
- Participated in Chicago Zoological Society's PRIDE 2 day workshop
- Member of the Steering Committee of AZA's Marine Mammal TAG 2009
- Appointed AZA's Marine Mammal TAG Secretary 2012; reelected in 2016
- Appointed Vice-Coordinator of the Bottlenose Dolphin Breeding Consortium Feb 2013-Sept 2014; Communication Liaison of the new Dolphin Consortium 2015
- Oversaw the hand-rearing of a newborn bottlenose dolphin calf in 2014
- Alliance of Marine Mammal Parks & Aquariums (AMMPA) Accreditation Inspector 2015 to present
- Facilitated the process for the creation of Welfaretrak for Dolphins (a Bottlenose Dolphin Welfare Tool) through collaboration with internal staff and outside cetacean experts
- On-going development of an optimum welfare program for marine mammal species using an integrated and holistic approach
- AZA Accreditation Inspector 2016 – in training
- Appointed Bottlenose Dolphin Consortium Studbook Keeper 2018

Associate Curator of Seven Seas and Living Coast

2006-2009

Responsibilities: Oversee and manage staff, animal welfare, and building operations in 2 aquatic departments within Brookfield Zoo. Act as decision maker and daily conduit for communication between the animal care staff, senior management, veterinary and nutrition services, and park operations.

Acting Assistant Curator of Birds and Swamp (Temporary)

Seven Seas Lead Keeper

1999-2006

Responsibilities: Supervise 8 full-time and 5 seasonal keepers while performing experienced husbandry, training, and presentation skills for the Seven Seas' marine mammal and bird collections.

Senior Keeper / Keeper / Seasonal Keeper / Attendant

1990-1999

Provided daily care and training for the Seven Seas animal collection and educated visitors through formal public presentations and demonstrations.

ADDITIONAL EXPERIENCE

Live Animal Transport Experience

1999 – present

Professional Coordinator/Attendant

- Primary logistics coordinator for 40 marine mammal transports (16 cetacean and 24 pinniped). One cetacean transport was international.
- Participated in 10 cetacean transports (6 on board aircraft & 4 via ground) as the marine mammal attendant/specialist under the direction of the attending veterinarian
- Participated in 6 pinniped transports (2 on board aircraft & 4 via ground) as the marine mammal attendant/specialist under the direction of the attending veterinarian

OTHER PROFESSIONAL EXPERIENCE

ADJUNCT INSTRUCTOR, Western Illinois University

2014-present

Graduate Course in Zoo & Aquarium Management

Graduate Course in Animal Training

Graduate Course in Biological Studies in Zoos & Aquariums

INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION (IMATA)

Board member and treasurer

2014-2017

ASSOCIATION ZOOS AND AQUARIUMS (AZA)

Red SSP Grey Seal Studbook Keeper and Population Management Planner

2007-present

Marine Mammal TAG Steering Committee Member

2009-present

Marine Mammal TAG Secretary

2012-present

SARASOTA DOLPHIN RESEARCH PROGRAM, Sarasota, Florida

1991, 2009, 2012

Field Assistant

A COMPREHENSIVE HEALTH ASSESSMENT OF THE SOUTH AMERICAN FUR SEAL (*Arctocephalus australis*) POPULATION AT

2010

PUNTA SAN JUAN, Punta San Juan, Peru
Field Assistant

IMATA'S SOUNDINGS MAGAZINE, Chicago, Illinois
Midwest Regional Reporter

1995-2004

JOHN G. SHEDD AQUARIUM, Chicago, Illinois
Volunteer – Fish and Marine Mammal Departments

1989-1990

EDUCATION

Master of Science Degree in Biology
Western Illinois University

Fall 2006

“Airborne and Underwater Vocalizations of the Antarctic Ross Seal (*Ommatophoca rossii*)”

Bachelor of Science Degree in Biology with an Environmental Emphasis
Northeastern Illinois University

Fall 1997

PROFESSIONAL TRAINING

Association of Zoos and Aquariums Animal Welfare: Evidence based Management 2017

Apr 2017

VORTEX 10 Population Modeling Course

May 2014

VORTEX Population Modeling Course

Jan 2013

Association of Zoos and Aquariums Population Management II

Nov 2011

Association of Zoos and Aquariums Population Management I

Nov 2009

Association of Zoos and Aquariums Management School

Feb 2000

PRESENTATIONS & POSTERS AT PROFESSIONAL MEETINGS

“A Collaborative Effort: Breeding the Pacific Walrus (*Odobenus rosmarus divergens*)” Lisa Triggs, Amanda Shaffer, Sheiriden Stangohr*, Dave DeNardo, Chris Bellows, **Rita Stacey Vondra**, and Karen Goodrowe Beck. IMATA Annual Conference 2017

“An Analysis of Nursing Behaviors to Improve Dolphin (*Tursiops truncatus*) Calf Management” Johanna F. Sholar*, Lance J. Miller, **Rita Stacey**, and Brian D. Peer. IMATA Annual Conference 2017

“Advancing the Use of Morphometric Data for Estimating Bottlenose Dolphin (*Tursiops truncatus*) Weights” L.K. Lauderdale, C. Messinger, D. Messinger, **R. Stacey***, and L.J. Miller. Poster IMATA Annual Conference 2017

“Small Tags Have Big Potential for Monitoring Welfare of Cetaceans in Professionally-Managed Care” Melinda Conners*, Alex Shorter, Ding Zhang, Joaquin Gabaldon, **Rita Stacey**, and Lance Miller. Poster presentation at Zoo Animal Welfare Symposium 2017

“Challenges in Training a Dolphin Social Group to Wear Digital Data Tags” E. Miller*, **R. Stacey**, M. Gonka, J. McGee. IMATA Annual Conference 2016

“Antemortem diagnosis of hydrocephalus and hearing loss associated with chronic Brucella infection in a stranded rehabilitated bottlenose dolphin (*Tursiops truncatus*).” JN Langan*, M Ivančić, MJ Adkesson, SK Chinnadurai, D Houser, **R Stacey**, H Whitehead, C Chu, M Morell, and KM Colegrove. Proceedings: International Association of Aquatic Animal Medicine Conference. 2016

“Comparing Dietary Components of Bottlenose Dolphins’ (*Tursiops truncatus*) Native and Non-native Diets. *Consumption of iron & tannins and its possible effects on iron absorption* “. Melissa Zabochnik* and **Rita Stacey***. Poster IMATA Annual Conference 2015

“Neonatal Critical Care and Hand- rearing of a Bottlenose Dolphin Calf (*Tursiops truncatus*)” Jennifer E Flower, DVM*, **Rita Stacey, MS***, Jennifer N. Langan, DVM, Dipl ACZM, Sathya Chinnadurai, DVM, MS, Dipl ACZM, Dipl ACVAA, Benjamin N. Nevitt, DVM and Michael J. Adkesson, DVM, Dipl ACVM. IAAAM Annual Conference 2015

“Successful Pregnancy and Parturition in a Bottlenose Dolphin (*Tursiops truncatus*) with Subnormal Progesterone Levels” Vera C. Kazaniwsky, DVM*, Jennifer N. Langan, DVM, Dipl ACZM, Dipl ECZM (Zoo Health Management), **Rita Stacey, MS**, Sathya K. Chinnadurai, DVM, MS, Dipl ACZM, Dipl ACVAA, Benjamin N. Nevitt, DVM, and Michael J. Adkesson, DVM, Dipl ACZM. Poster IAAAM Annual Conference 2015

“Magic’s Story: Neonatal Critical Care and Hand-Rearing of a Bottlenose Dolphin Calf (*Tursiops truncatus*)”. **Rita Stacey***, Jennifer McGee, and Mark Gonka, IMATA Annual Conference 2014

“TAG – YOU’RE IT! The Marine Mammal TAG Doesn’t Have To Do with Me, Or Does It?” **Rita Stacey***, IMATA Annual Conference 2013 and IMATA Midwest Regional Workshop 2014

“Comparing Dietary Consumption of Iron in Wild Versus Captive Bottlenose Dolphins” Melissa Zabochnik* and **Rita Stacey***, IMATA Annual Conference 2013

“Comparing Dietary Consumption of Iron in Wild versus Captive Dolphins” Melissa Zabochnik* and **Rita Stacey***, Poster Chicago Zoological Society’s 2nd International Symposium on Zoo Animal Welfare: Innovations & Future Directions 2013

“Collaboration and Critical Care: Harley’s Story” Shelley Ballmann* and **Rita Stacey***, IMATA Annual Conference 2011

“A Preliminary Review of Iron Overload in Common Bottlenose Dolphins” Melissa Zabojnik* and **Rita Stacey***, Poster IMATA 2011

“Can Dolphins Be Seen Where There Is No Sea? A History of Brookfield Zoo’s Seven Seas Panorama” **Rita Stacey***, IMATA Annual Conference 2010

“Gestational Monitoring and Calving Preparations for Pacific Walrus.” McGee J, DiCosola G, Dye G*, Ferris A, Gonka M, Komar W, Nicoll L, **Stacey R**, Sustman J and Weiner J. 1999. IMATA Annual Conference 1999

“Passive Restraint Training in *Tursiops truncatus*” **Rita Stacey*** IMATA Annual Conference 1997

“Inca Tern Training” **Rita Stacey*** Informal Presentation IAATE Conference 1996

“Monitoring Bottlenose Dolphin Calves Born at Brookfield Zoo” **Rita Stacey*** IMATA Annual Conference 1994

PROFESSIONAL PUBLICATIONS

Lauderdale, L.K., Messinger, C., Wells, R.S., Mitchell, K.A., Messinger, D., **Stacey, R.**, and Miller, L.J. “Advancing the Use of Morphometric Data for Estimating and Managing Bottlenose Dolphin (*Tursiops truncatus*) Weights” Marine Mammal Science – *In Review*

Jennifer E. Flower, Jennifer N. Langan, Benjamin N. Nevitt, Sathya K. Chinnadurai, **Rita Stacey**, Marina Ivancic, and Michael J. Adkesson. “Neonatal Critical Care and Hand-rearing of a Bottlenose Dolphin Calf (*Tursiops truncatus*)” – Aquatic Mammals 44(5): 482-490

Lance J. Miller and **Rita Stacey**. (2018). Marine Parks, Zoos, and Aquariums. In “Encyclopedia of Marine Mammals”. (Bernd Würsig, J.G.M. Thewissen, and Kit M. Kovacs, eds.), 3rd ed, pp. 566 – 569, Academic Press/Elsevier, San Diego, CA, USA.

Stacey, R. “Population Analysis & Breeding and Transfer Plans - Gray Seals *Halichoerus grypus* – 2nd Edition”. 2017.

Stacey, R. “North American Regional Studbook Gray Seals *Halichoerus grypus* – 3rd Edition”. 2016.

Lance J. Miller, Randall S. Wells, **Rita Stacey**, F. William Zeigler, Jessica C. Whitham & Michael Adkesson. 2015 “Animal Welfare Management of Bottlenose Dolphins at the Chicago Zoological Society’s Brookfield Zoo”. WAZA Magazine Vol.16.

Stacey, R. “North American Regional Studbook Gray Seals *Halichoerus grypus* – 2nd Edition”. 2013.

Therrien, S.; Thomas, J.A.; Therrien, R.; **Stacey, R.** 2012. Time of Day and Social Change Affect Underwater Sound Production by Bottlenose Dolphins (*Tursiops truncatus*) at the Brookfield Zoo. *Aquatic Mammals* 38(1): 65-75.

Stacey, R. "Population Analysis & Breeding and Transfer Plans - Gray Seals *Halichoerus grypus*". 2012.

McGee, J.; Gonka, M.; and **Stacey, R.** 2012. Hand-rearing Orphaned California Sea Lion Neonates. *Soundings* 37(1): 32-34.

Stacey, R. "North American Regional Studbook Gray Seals *Halichoerus grypus*". 2010.

Dye, G.; Messinger, D.; DiCosola, G.; Ferris, A.; Komar, W.; McGee, J.; Peek, S.; **Stacey, R.**; Sustman, J.; and Weiner, J. 2000. A Walrus Management Program. *Soundings* 25(2): 18-21.

Stacey, R.; Messinger, D.; Dye, G.; Komar, W.; McGee, J.; Mika, C.; Peek, S.; Sustman, J.; Sullivan, T.; and Weiner, J. 1999. Passive Restraint Training in *Tursiops truncatus*. *Soundings* 24(1): 20-22.

MEMBERSHIPS IN PROFESSIONAL ORGANIZATIONS

Association of Zoos and Aquariums Professional Member since 1995

International Marine Animal Trainers Association Professional Member since 1989

CERTIFICATION

PADI Open Water SCUBA certified

HONORS AND AWARDS

2017 IMATA Annual Conference 1st Place Poster. "Advancing the Use of Morphometric Data for Estimating Bottlenose Dolphin (*Tursiops truncatus*) Weights"

2016 IMATA Service Award for Treasurer 2014 - 2016

2014 Chicago Zoological Society's PRIDE Award, Seven Seas Department in recognition of hand-rearing a dolphin calf

2013 Chicago Zoological Society's PRIDE Award, Seven Seas Department recognition of CZS' Institutional Values

2006 President's Award, Chicago Zoological Society Marine Mammal and Veterinary staff for Kaylee dolphin care team

2006 President's Award Honorable Mention, Chicago Zoological Society Reptile Decommissioning Team

2005 President's Award, Chicago Zoological Society Strategic Planning Secretariat Phase 1&2

RESEARCH GRANTS

IMATA Research Grant Jan 1, 2017
"Comparison of fecal adrenal hormone levels between wild and professionally-managed bottlenose dolphins"

Texas State Aquarium's Wildlife Care, Conservation, and Research Fund Grant June 2016
"Chicago Zoological Society – Brookfield Zoo's Bottlenose Dolphin Welfare Research Initiatives."

Chicago Board Of Trade Endangered Species Fund Grant May 29, 2014
"Addition of Native Fish to the Diet of Captive Bottlenose Dolphins to Study the Effect of Decreasing Iron Absorption"

IMATA Research Grant Jan 1, 2014
"Dietary Consumption of Tannins in Common Bottlenose Dolphins' (*Tursiops truncatus*) Native and Non-Native Diets and its Possible Effects on Iron Absorption"

Chicago Board Of Trade Endangered Species Fund Grant Jan 1, 2013
"Assessing the effect of health assessments on maternal care in South American fur seals at Punta San Juan Marine Protected Area, Punta San Juan, Peru"

IMATA Research Grant Jan 1, 2012
"Comparing Dietary Consumption of Iron in Wild versus Captive Dolphins."

**Michael J. Adkesson,
DVM, Dipl. ACZM, Dipl. ECZM (ZHM)**

CURRICULUM VITAE

Work Address:

Chicago Zoological Society / Brookfield Zoo
3300 Golf Rd. Brookfield, IL 60513
(708) 688-8503
michael.adkesson@czs.org

EDUCATION

University of Illinois, College of Veterinary Medicine, 2000-2004
Doctor of Veterinary Medicine - Highest Honors
Bachelor of Science in Veterinary Medicine

University of Illinois, 1997-2000
Biology Major - Highest Honors

BOARD CERTIFICATION

Diplomate of the American College of Zoological Medicine
Diplomate of the European College of Zoological Medicine (Zoo Health Management)

EMPLOYMENT

Vice President, Clinical Medicine	
Chicago Zoological Society / Brookfield Zoo	Brookfield, IL
2012 – present	

Associate Veterinarian	
Chicago Zoological Society / Brookfield Zoo	Brookfield, IL
2008 – 2012	

Residency in Zoological Medicine	
Saint Louis Zoo & University of Missouri	St. Louis, MO
2005 – 2008	

Internship in Small Animal Medicine and Surgery	
University of Illinois	Urbana, IL
2004 – 2005	

Zookeeper	
Scovill Zoo	Decatur, IL
1995 – 2001	

PROFESSIONAL AFFILIATIONS

Adjunct Clinical Assistant Professor
University of Illinois, College of Veterinary Medicine
2008 – present

Urbana, IL

Associate Senior Researcher
Cayetano Heredia University, Center for Environmental Sustainability
Universidad Peruana Cayetano Heredia, Centro para la Sostenibilidad Ambiental
2011 – present

Lima, Peru

PROFESSIONAL ACTIVITIES

American Association of Zoo Veterinarians

- President (2017-present)
- President-elect (2016-2017), Vice President (2015-2016), Secretary (2014-2015)
- Audit committee (2014-2016)
- Education committee: Chair (2013-2015), vice-chair (2011-12), member (2004-present),
- Student and post-graduate manuscript competitions coordinator (2010-2015)
- Scientific program committee: Chair (2014), vice-chair (2013), conference program chair (2012), member (2010-2015)
- Conference session chair: Advanced topics lectures (2013), Future of our profession (2012), Pharmacology and diagnostic techniques (2011), Herptile conservation medicine (2010)
- Roundtable / panel discussion participant: New approaches to quarantine (2017)

Association of Zoos and Aquariums

- Veterinary advisor: Humboldt penguin SSP (2009-present)
- Veterinary advisor: Penguin TAG (2009-present)
- Accreditation inspector (2010-present)

European Association of Zoo and Wildlife Veterinarians

- Conference session chair: Diagnostics (2017)

International Association of Aquatic Animal Medicine

- Conference session chair: Clinical pathology and pharmacology (2012)

Species 360

Research committee member (3 year appointment, 2017-2020)

Peer Reviewer

- Journal of Zoo and Wildlife Medicine (2008-2010, 2014, 2015, 2017)
- Journal of Wildlife Diseases (2015)
- Journal of Parasitology (2007)
- Zoo Biology (2009-2011)
- Clinician's Brief Journal (2013)

Professional Memberships:

- American Association of Zoo Veterinarians (2001-present)
- American College of Zoological Medicine (2009-present)
- Association of Exotic Mammal Veterinarians (2008-2014)
- Association of Reptile and Amphibian Veterinarians (2008-present)
- American Veterinary Medical Association (2001-present)
- Association of Zoos and Aquariums, Professional Fellow (2008-present)
- European Association of Zoo and Wildlife Veterinarians (2008-present)
- Illinois State Veterinary Medical Association (2004-present)
- International Association of Aquatic Animal Medicine (2008-present)
- Wildlife Disease Association (2008-present)

AWARDS AND HONORS RECEIVED

Chicago Zoological Society

- PRIDE award (highest organization honor) – Pangolin conservation team (2017)
 - *Awarded for serving as a shining example of the organization's values*
- PRIDE award (highest organization honor) – Veterinary Department (2015)
- PRIDE award (highest organization honor) – Veterinary Department (2014)
- PRIDE award honorable mention – Veterinary Department (2013)

American Association of Zoo Veterinarians

- Presidential Service Award (2014)
 - *Awarded for extraordinary effort in the advancement of the scientific program*
- Presidential Service Award (2013)
 - *Awarded for establishing a standard of excellence for the AAZV's scientific program committee*
- Wildlife Pharmaceuticals Veterinary Student Manuscript Competition – First place (2003)
- Wildlife Pharmaceuticals Veterinary Student Manuscript Competition – First place (2002)

Decatur Public Schools Foundation

- Outstanding Young Alumni Award (2006)

University of Illinois

- College of Veterinary Medicine Class of 2004 Commencement Address (2004)
- College of Veterinary Medicine White Coat Ceremony Address (2003)
- Dean's List (2001 and 2003)
- Dr. Erwin Small Scholarship (2002 and 2003)
- Dr. H. Preston Hoskins Scholarship (2003)
- Class of 1983 Endowment Scholarship (2003)
- Association of Avian Veterinarians Scholarship (2003)
- Illinois Reptile and Amphibian Medicine Award (2003)
- Auxiliary to the Illinois State VMA - 50th Anniversary Scholarship (2002)
- James Scholar Honors Program (1997-2000)
- Dean's List (1997-2000)
- Golden Key Honor Society
- Phi Kappa Phi Honor Society
- Alpha Lambda Delta Honor Society
- Phi Eta Sigma Honor Society
- National Association of Collegiate Scholars

PUBLICATIONS

Book Chapters:

1. **Adkesson MJ** and M Ivančić. Use of CT and MRI in Zoological Medicine. In: RE Miller, P Calle, and N Lamberski. *Fowler's Zoo and Wild Animal Medicine 9th Ed. In press.*
2. K Terio and **Adkesson MJ**. 2017. Systemic Isosporosis in Passerine Birds. 2017. Use of CT and MRI in Zoological Medicine. In: RE Miller, P Calle, and N Lamberski. *Fowler's Zoo and Wild Animal Medicine 9th Ed. In press.*
3. **Adkesson MJ** and D Rubin. 2011. Degenerative Skeletal Diseases of Primates. In: ME Fowler and RE Miller. *Zoo and Wild Animal Medicine 7th ed.*

Refereed Journal Publications:

1. **Adkesson MJ**. Computed tomography-guided percarapacial ovocentesis in an eastern box turtle (*Terrapene carolina*). *J Zoo Wildlife Med. In review.*
2. **Adkesson MJ**, J Levensgood, D Schaffer, JN Langan, J Scott, B Panno, S Yi, and S Cárdenas-Alayza. Analysis of toxic and essential elements in the blood and feathers of Humboldt penguins (*Spheniscus humboldti*) at Punta San Juan, Peru. *J Wildlife Dis. In review.*
3. Bailey RS, JD Sheldon, MC Allender, **MJ Adkesson**, and SK Chinnadurai. Analgesic efficacy of tramadol compared to meloxicam in ducks (*Cairina moschata domestica*) evaluated by ground reactive forces. *J Avian Med Surg. In review.*
4. Chiu Werner A, FR Ceia, S Cárdenas Alayza, **MJ Adkesson**, and J Xavier. Inter-annual changes in the Humboldt Current System suggest cumulative effects in Humboldt penguins: A stable isotope approach. *Ecology. In review.*
5. Cortes-Hinojosa G, **MJ Adkesson**, S Cárdenas-Alayza, M Seguel, H Pavés, and JFX Wellehan. Effect of an El Niño event on adenoviral diversity in a South American fur seal colony – evidence of host jumps. *EcoHealth. In review.*
6. Flower JE, JN Langan, RS Wells, C Cray, K Arheart, SK Chinnadurai, and **MJ Adkesson**. Serum acute phase proteins in bottlenose dolphins (*Tursiops truncatus*) and correlation with commonly utilized inflammatory indices. *Mar Mam Sci. In review.*
7. Flower JE, JN Langan, BN Nevitt, SK Chinnadurai, R Stacey, M Ivančić, and **MJ Adkesson**. Neonatal critical care and hand-rearing of a bottlenose dolphin calf (*Tursiops truncatus*). *Aquatic Mam. Accepted.*
8. Huckins G, SK Chinnadurai, M Ivančić, J Bergmann, C Aitken-Palmer, J Balko, **MJ Adkesson**, J Langan, and J Cook. Osteochondral autograft repair of stifle osteochondritis dissecans in two related snow leopards (*Panthera uncia*). *J Zoo Wildl Med. In press.*
9. Ignacio MM, JN Langan, C Aitken-Palmer, **MJ Adkesson**, RS Bailey, KN Tang, SK Chinnadurai. Repeated anesthesia in a black rhinoceros (*Diceros bicornis*) to manage upper respiratory obstruction. *J Zoo Wild Med. In review.*
10. Pye GW, **MJ Adkesson**, A Guthrie, LA Clayton, and DL Janssen. Risk analysis: changing the quarantine paradigm? *J Zoo Wild Med. In review.*
11. Sheldon JD, **MJ Adkesson**, MC Allender, G Jankowski, and S Cárdenas-Alayza. Measurement of intraocular pressures using rebound tonometry in Peruvian fur seals (*Arctocephalus australis*) and South American sea lions (*Otaria byronia*) from Punta San Juan, Peru. *J Zoo Wild Med. In review.*
12. Stoneburg SK, JN Langan, **MJ Adkesson**, SK Chinnadurai, R Drees, D Woodburn, and KM Colegrove. Pituitary dependent hyperadrenocorticism in a golden lion tamarin (*Leontopithecus rosalia*). *J Zoo Wild Med. In review.*

13. Seguel M, K Calderon, K Colegrove, **MJ Adkesson**, and E Paredes. Helminth and Respiratory Mite Lesions in Pinnipeds from Punta San Juan, Peru. *Acta Parasitol. In review.*
14. Watson MK, JN Langan, MC Allender, M Cardena, S Cárdenas-Alayza, **MJ Adkesson**. 2017. Health assessment of the guanay cormorant (*Phalacrocorax bougainvilli*) and Peruvian pelican (*Pelicanus thagus*) populations at the Punta San Juan marine protected area, Peru. *J Zoo Wildl Med. In review.*
15. **Adkesson MJ**, J Levensgood, D Schaffer, JN Langan, J Scott, B Panno, S Yi, S Cárdenas-Alayza, S de la Puente, and P Majluf. 2018. Assessment of polychlorinated biphenyls, organochlorine pesticides, and polybrominated diphenyl ethers in the blood of Humboldt penguins (*Spheniscus humboldti*) from the Punta San Juan marine protected area, Peru. *J Wildlife Dis. In Press.*
16. Nevitt, BN, **MJ Adkesson**, G Jankowski, P West, and JN Langan. 2018. Lumbar hemilaminectomy due to discospondylitis associated intervertebral disc herniation in an aardvark (*Orycteropus afer*). *J Am Vet Med Assoc.* 252(4): 464-472.
17. Chinnadurai SK, M Kinsel, **MJ Adkesson**, and K Terio. 2017. Canine distemper in a vaccinated snow leopard (*Panthera uncia*). *J Zoo Wild Med.* 48(4): 1200-1203.
18. Fire S, **MJ Adkesson**, Z Wang, G Jankowski, S Cárdenas-Alayza, and M Broadwater. 2017. Peruvian fur seals (*Arctocephalus australis* ssp.) and South American sea lions (*Otaria byronia*) in Peru are exposed to the harmful algal toxins domoic acid and okadaic acid. *Marine Mammal Science* 33: 630-644.
19. Kane LP, JN Langan, **MJ Adkesson**, SK Chinnadurai, BN Nevitt, and R Drees. 2017. Successful treatment of mandibular osteomyelitis of two red-necked wallabies (*Macropus rufogriseus*) using long-term intensive pharmaceutical therapy and serial monitoring by computed tomography imaging. *J Am Vet Med Assoc.* 251(9): 1070-1077.
20. Sheldon JD, **MJ Adkesson**, MC Allender, G Jankowski, JN Langan, M Cardeña, and S Cárdenas-Alayza. 2017. Determination of tear production and intraocular pressure using rebound tonometry in wild Humboldt penguins (*Spheniscus humboldti*). *J Avian Med Surg* 31(1):16-23.
21. Weeks JM, JN Langan, H Gelb, BN Nevitt, S Corner, and **MJ Adkesson**. 2017. Syringomyelia in the thoracolumbar spinal cord of an African wild dog (*Lycaon pictus*). *Biomed J Sci & Tech Res* 1(5).
22. Nevitt BN, SK Chinnadurai, MK Watson, JN Langan, and **MJ Adkesson**. 2016. Prothrombin time and activated partial thromboplastin time using a point-of-care analyzer (Abaxis VSPRO®) in Bennett's wallabies (*Macropus rufogriseus*). *Aust Vet J.* 94(10): 384-386.
23. Robertson J, SK Chinnadurai, DB Woodburn, **MJ Adkesson**, and JA Landolfi. 2016. Disseminated *Ophidiomyces (Chrysosporium) ophiodiicola* infection in a captive eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*). *J Zoo Wildlife Med.* 47 (1): 337-340.
24. Jankowski G, **MJ Adkesson**, JT Saliki, S Cardenas-Alayza, and P Majluf. 2015. Survey for infectious disease in the South American fur seal (*Arctocephalus australis*) population at Punta San Juan, Peru. *J Zoo Wildlife Med* 46 (2): 246-254.
25. Rivas AE, JN Langan, KM Colegrove, K Terio, and **MJ Adkesson**. 2015. Systemic herpesvirus and calicivirus infection following vaccination in a black-footed cat (*Felis nigripes*) family group. *J Zoo Wildlife Med* 46 (1): 141-145.
26. Emerson JA, **MJ Adkesson**, KM Colegrove, SK Burdick, and JN Langan. 2014. Ménétrier's disease-like hypertrophic gastritis in two red-capped mangabeys (*Cercocebus torquatus*). *Vet Quart* 34 (1): 29-36.
27. Levin II, **MJ Adkesson**, M Evans, C Rettke, and PG Parker. 2014. No evidence for Galapagos *Plasmodium* lineage arriving via Humboldt Current seabirds. *Pac Cons Biol* 20: 37-40.

28. Nevitt BN, JN Langan, **MJ Adkesson**, JA Landolfi, and R Wilson. 2014. Diagnosis and treatment of chronic lymphocytic leukemia in a bat-eared fox (*Otocyon megalotis*). *J Am Vet Med Assoc* 245: 1391-1395.
29. Nevitt BN, JN Langan, **MJ Adkesson**, MA Mitchell, M Henzler, and R Drees. 2014. Comparison of air sac volume, lung volume, and lung densities determined by use of computed tomography in conscious and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency. *Am J Vet Res* 75: 739-745.
30. Nevitt BN, JN Langan, **MJ Adkesson**, MA Delaney, DA Rubin, MC Muhlbauer, and KM Colegrove. 2013. Multifocal *Cryptococcus neoformans* var. *neoforms*: infection, treatment, and monitoring by serial computed tomography in a Schmidt's red-tailed guenon (*Cercopithecus ascanius schmidtii*). *J Zoo Wildlife Med* 44 (3): 728-736.
31. Watson MK, JN Langan, and **MJ Adkesson**. 2013. Contracted forelimbs in a neonate addax (*Addax nasomaculatus*) calf. *J Zoo Wildlife Med* 44 (3): 790-793.
32. Jankowski GR, **MJ Adkesson**, JN Langan, S Haskins, and J Landolfi. 2012. Cystic endometrial hyperplasia and pyometra in three captive African hunting dogs (*Lycaon pictus*). *J Zoo Wildlife Med* 43 (1): 95-100.
33. Jankowski GR, J Langan, **MJ Adkesson**, K Terio, N Mylniczenko, T Meehan, and D Schmitt. 2012. Dilated ureters, renal dysplasia, and chronic renal failure in an African elephant (*Loxodonta africana*). *J Zoo Wildlife Med* 43 (1): 153-158.
34. **Adkesson MJ**, RE Junge, MC Allender, and T Martin-Jiménez. 2012. Pharmacokinetics of a long-acting ceftiofur crystalline free acid formulation in the Asian elephant (*Elaphus maximus*). *Am J Vet Res* 73: 1512-1518.
35. **Adkesson MJ**, E Fernandez-Varon, S Cox, and T Martin-Jiménez. 2011. Pharmacokinetics of long-acting ceftiofur crystalline free acid in the ball python (*Python regius*). *J Zoo Wildlife Med* 42 (3): 444-450.
36. Wojick KB, JN Langan, **MJ Adkesson**, SK Cox, and KC Gamble. 2011. Pharmacokinetics of long-acting ceftiofur crystalline free acid in helmeted guineafowl (*Numida meleagris*) after a single intramuscular injection. *Am J Vet Res* 72 (11): 1514-1518.
37. **Adkesson MJ**, SB Citino, PM Dennis, CV Fiorello, M Lafortune, and RA Bennett. 2009. Medical and surgical management of otitis in captive bongo (*Tragelaphus eurycerus*). *J Zoo Wildlife Med* 40 (2): 332-343.
38. Travis EK, M Duncan, MA Weber, **MJ Adkesson**, and RE Junge. 2007. Ileoceocolic strictures in two captive cheetahs (*Acinonyx jubatus jubatus*). *J Zoo Wildlife Med* 38 (4): 574-578.
39. **Adkesson MJ**, EK Travis, MA Weber, JP Kirby, and RE Junge. 2007. Vacuum-assisted closure for the treatment of a deep shell abscess in an Aldabra tortoise. *J Am Vet Med Assoc* 231 (8): 1249-1254.
40. **Adkesson MJ**, E Gorman, V Hsaio, JK Whittington, and JN Langan. 2007. *Toxoplasma gondii* inclusions in the peripheral leukocytes of a red-necked wallaby (*Macropus rufogriseus*). *Vet Clin Path* 36 (1): 97-100.
41. **Adkesson MJ**, JN Langan, and AJ Paul. 2007. Evaluation of control and treatment of *Gongylonema* spp. infections in callitrichids. *J Zoo Wildlife Med* 38 (1): 27-31.
42. **Adkesson MJ** and JN Langan. 2007. Metabolic bone disease in juvenile Humboldt penguins (*Spheniscus humboldti*): Investigation of ionized calcium, parathyroid hormone, and vitamin D₃ as diagnostic parameters. *J Zoo Wildlife Med* 38 (1): 85-92.
43. **Adkesson MJ**, JM Zdziarski, and SE Little. 2005. Atxoplasmosis in tanager species. *J Zoo Wildlife Med* 36 (2): 265-272.

Non-Refereed Publications

1. Miller LJ, RW Wells, R Stacey, FW Zeigler, JC Whitham, and **MJ Adkesson**. 2015. Animal Welfare Management of Bottlenose Dolphins at the Chicago Zoological Society's Brookfield Zoo. World Association of Zoos and Aquariums Magazine 16: 14-17.

CURRENT RESEARCH PROJECTS

1. Atxoplasmosis in passerine birds
Righton A, **MJ Adkesson**, T Snyder, A Paul, M Mitchell, and K Terio. *Atxoplasma*-associated myocarditis and myositis in passerine birds. Manuscript near submission.

JA Landolfi, **MJ Adkesson**, T Snyder, and KA Terio. Development of a qPCR for Atxoplasma diagnosis in passerine birds. Assay developed, awaiting clinical trials.
2. Use of a pressure sensitive walkway to evaluate lameness in penguins and domestic waterfowl: Applications for evaluation of analgesic efficacy.
Bailey RS, JD Sheldon, MC Allender, **MJ Adkesson**, and SK Chinnadurai. Pharmacokinetics of oral tramadol in ducks (*Cairina moschata domestica*). Lab analysis in process.

Sheldon J, RS Bailey, SK Chinnadurai, MC Allender, JN Langan, **MJ Adkesson**. Characterization of normal gait in Humboldt penguins (*Spheniscus humboldti*) using a pressure sensitive walkway system. Manuscript in preparation.

Sheldon J, RS Bailey, SK Chinnadurai, MC Allender, JN Langan, **MJ Adkesson**. Characterization of normal gait in ducks (*Cairina moschata domestica*) using a pressure sensitive walkway system. Manuscript in preparation.

Sheldon J, RS Bailey, SK Chinnadurai, MC Allender, JN Langan, **MJ Adkesson**. Comparison of blinded observer evaluation and a pressure-sensitive walkway for diagnosing lameness in ducks (*Cairina moschata domestica*). Data collection complete.
3. Ecosystem health evaluation of marine wildlife in Peru
Adkesson MJ, JN Langan, MC Allender, M Cardeña, and S Cárdenas Alayza. Hematologic and plasma biochemistry reference values for Humboldt penguin (*Spheniscus humboldti*) at Punta San Juan, Peru: Temporal trends over 10 years (2007-2017). Data under analysis.

Adkesson MJ, JN Langan, MC Allender, M Cardeña, and S Cárdenas Alayza. Serologic evaluation of the Humboldt penguin (*Spheniscus humboldti*) population at the Punta San Juan, Peru: A decade of perspective. Manuscript in preparation.

Adkesson MJ, MC Allender, A Fascetti, E Dierenfeld, and S Cárdenas Alayza. Evaluation of vitamin, mineral, fatty acid, and amino acid levels in free-ranging Peruvian pelicans (*Pelecanus thagus*) and Guanay cormorants (*Phalacrocorax bougainvillii*). Data collection complete.

Adkesson MJ, MC Allender, GR Jankowski, JM Meegan, KM Colegrove, and S Cárdenas Alayza. Evaluation of infectious disease in the Peruvian fur seal (*Arctocephalus australis*) and South American sea lion (*Otaria byronia*) populations at Punta San Juan, Peru. Data collection complete.

Colchao P, S Deem, MC Allender, A Fascetti, E Dierenfeld, S Cárdenas Alayza, and **Adkesson MJ**. Evaluation of vitamin, mineral, fatty acid, and amino acid levels in free-ranging Humboldt penguins (*Spheniscus humboldti*), Peruvian pelicans (*Pelecanus thagus*), and Guanay cormorants (*Phalacrocorax bougainvillii*) at Punta San Juan, Peru. Manuscript near submission.

Dubach JM and **MJ Adkesson**. Genetic assessment of the Humboldt penguin population at Punta San Juan, Peru over a 17 year period. Data collection complete.

Jankowski G, MC Allender, **MJ Adkesson**, M Cardeña, F Garcia, and P Guerrero. Comparative hemolymph gas analysis in sympatric black sea urchins (*Tetrapygus niger*), green sea urchins (*Loxechinus albus*), and spider rock crabs (*Grapsus grapsus*) in Peru using an iSTAT point of care analyzer. Manuscript near submission.

Jankowski GR, **MJ Adkesson**, MC Allender, JM Meegan, M Cardeña, and S Cárdenas Alayza. Hematologic and plasma biochemistry ranges for the Peruvian fur seal (*Arctocephalus australis*) and South American sea lion (*Otaria byronia*) population at Punta San Juan, Peru. Manuscript in preparation.

4. Pinniped anesthesia

Adkesson MJ, GR Jankowski, JM Meegan, MC Allender, and S Cardenas-Alayza. Reversible immobilization of Peruvian fur seals (*Arctocephalus australis*) and South American sea lions (*Otaria byronia*) using medetomidine, butorphanol, and midazolam. Manuscript in preparation.

Balko JA, **MJ Adkesson**, SK Chinnadurai. Use of near-infrared spectroscopy (NiRS) to assess regional cerebral perfusion in the South American fur seal (*Arctocephalus australis*) and South American sea lion (*Otaria byronia*). Manuscript near submission.

PRESENTATIONS & PUBLISHED ABSTRACTS

1. Colchao P, S Deem, S Cárdenas-Alayza, A Tieber, **MJ Adkesson**. 2018. Collaboration for threats assessment and implementing conservation priorities at Punta San Juan, Peru. Proceedings: Zoos & Aquariums Committing to Conservation Conference.
2. **Adkesson MJ**, J Balko, and SK Chinnadurai. 2017. The “caregiver placebo effect” on zoo animal welfare: Application of a pressure sensitive walkway system for objective evaluation of lameness in non-domestic animals. Proceedings: International Symposium on Zoo Animal Welfare.
3. **Adkesson MJ**, J Balko, and SK Chinnadurai. 2017. The “caregiver placebo effect” on zoo animal welfare: application of a pressure-sensitive walkway system for objective evaluation of lameness in a zoo setting. Proceedings: American Association of Zoo Veterinarians, p 146-147.
4. Aitken-Palmer C, GL Sturgeon GL, Bergmann J, Knightly F, JG Johnson, M Ivančić, deMaar TW, Carboni DA, and **MJ Adkesson**. 2017. Enhancing conservation through veterinary care of the white-bellied tree pangolin (*Manis tricuspis*). Proceedings: American Association of Zoo Veterinarians, p 150.
5. Balko JB, **MJ Adkesson**, and SK Chinnadurai. 2017. Evaluation of a pressure-sensitive walkway system for characterization of gait in Humboldt penguins (*Spheniscus humboldti*). Proceedings: Zoo and Wildlife Health Conference, Berlin.

6. Balko JB, **MJ Adkesson**, and SK Chinnadurai. 2017. Use of near-infrared spectroscopy (NiRS) to assess regional cerebral perfusion in the South American fur seal (*Arctocephalus australis*) and South American sea lion (*Otaria flavescens*). Proceedings: International Association of Aquatic Animal Medicine Conference, Cancun.
7. Balko JB, **MJ Adkesson**, and SK Chinnadurai. 2017. Evaluation of a pressure-sensitive walkway system for characterization of gait in Humboldt penguins (*Spheniscus humboldti*). Proceedings: International Association of Aquatic Animal Medicine Conference, Cancun.
8. Edwards M, **MJ Adkesson**, S Cárdenas-Alayza, and A Hirons. 2017. Peruvian pinnipeds as archivist of ENSO effects off the coast of Peru. Proceedings: Society for Marine Mammalogy Conference, Nova Scotia.
9. Sheldon JD, **MJ Adkesson**, MC Allender, GR Jankowski, and S Cárdenas. 2017. Measurement of Intraocular Pressures using Rebound Tonometry in South American Fur Seals (*Arctocephalus australis*) and South American Sea Lions (*Otaria flavescens*) from Punta San Juan, Peru. Proceedings: International Association of Aquatic Animal Medicine Conference, Cancun.
10. Tang K, **MJ Adkesson**, J Adamovicz, G Cortes-Hinojosa, S Cárdenas-Alayza, and MC Allender. 2017. Detection of herpesvirus in wild populations of South American sea lions (*Otaria byronia*) and Peruvian fur seals (*Arctocephalus australis*) in Peru. Proceedings: American Association of Zoo Veterinarians, p 62-63.
11. Cortes-Hinojosa G, **MJ Adkesson**, S Cárdenas-Alayza, M Seguel, H Pavés, and JFX Wellehan. 2016. Effect of environmental stress of an El Niño event on adenoviral diversity in marine animal rookeries. Proceedings: American Association of Zoo Veterinarians & European Association of Zoo and Wildlife Veterinarians
12. Landolfi JA, **MJ Adkesson**, T Snyder, and KA Terio. 2016. Development of a qPCR for *Atoxoplasma* diagnosis in passerine birds. Proceedings: American Association of Zoo Veterinarians & European Association of Zoo and Wildlife Veterinarians.
13. Flower JE, JN Langan, RS Wells, C Cray, K Arheart, SK Chinnadurai, and **MJ Adkesson**. 2016. Serum acute phase proteins in bottlenose dolphins (*Tursiops truncatus*) and correlation with commonly utilized inflammatory indices. Proceedings: International Association of Aquatic Animal Medicine Conference.
14. Ivančić M, CR Smith, JM Meegan, FM. Emory-Gomez, MS Renner, **MJ Adkesson**, JN Langan, ND Mylniczenko, EC Nolan, and ED Jensen. 2016. Comparative interpretation of thoracic radiography, ultrasound, and CT: A multimodal approach to bottlenose dolphin lung imaging. Proceedings: International Association of Aquatic Animal Medicine Conference.
15. Langan JN, M Ivančić, **MJ Adkesson**, SK Chinnadurai, D Houser, R Stacey, H Whitehead, C Chu, M Morell, and KM Colegrove. 2016. Antemortem diagnosis of hydrocephalus and hearing loss associated with chronic *Brucella* infection in a stranded rehabilitated bottlenose dolphin (*Tursiops truncatus*). Proceedings: International Association of Aquatic Animal Medicine Conference.
16. Stoneburg SK, JN Langan, **MJ Adkesson**, SK Chinnadurai, R Drees, D Woodburn, and KM Colegrove. 2015. Pituitary dependent hyperadrenocorticism in a golden lion tamarin (*Leontopithecus rosalia*). Proceedings: American Association of Zoo Veterinarians Conference.
17. Kazaniwskyj VC, JN Langan, RM Stacey, SK Chinnadurai, BN Nevitt, and **MJ Adkesson**. 2015. Successful pregnancy and parturition in a bottlenose dolphin (*Tursiops truncatus*) with subnormal progesterone levels. Proceedings: International Association of Aquatic Animal Medicine Conference.
18. Flower JE, JN Langan, RM Stacey, SK Chinnadurai, BN Nevitt, and **MJ Adkesson**. 2015. Neonatal critical care and hand-rearing of a bottlenose dolphin calf (*Tursiops truncatus*). Proceedings: International Association of Aquatic Animal Medicine Conference.

19. Nevitt BN, S Johnson, **MJ Adkesson**, L Naples, W Van Bonn. 2015. Evaluation of alfaxalone-midazolam for sedation and anesthetic induction in California sea lions (*Zalophus californianus*) in a rehabilitation center. Proceedings: International Association of Aquatic Animal Medicine Conference.
20. Kane L, JN Langan, **MJ Adkesson**, SK Chinnadurai, BN Nevitt, and R Drees. 2014. Successful treatment of mandibular osteomyelitis in two red-necked wallabies (*Macropus rufogriseus*) using long-term pharmaceutical therapy and serial monitoring by computed tomography imaging. Proceedings: American Association of Zoo Veterinarians Conference.
21. Nevitt BN, SP Johnson, **MJ Adkesson**, LM Naples, and WG Van Bonn. 2014. Evaluation of alfaxalone-midazolam for sedation and anesthetic induction in California sea lions (*Zalophus californianus*) in a rehabilitation center. Proceedings: American Association of Zoo Veterinarians Conference.
22. Flower JE, JN Langan, SK Chinnadurai, BN Nevitt, R Stacey, and **MJ Adkesson**. 2014. Neonatal critical care and hand-rearing of a bottlenose dolphin calf (*Tursiops truncatus*). Proceedings: American Association of Zoo Veterinarians Conference.
23. **Adkesson MJ**. 2014. A new way of looking: Three dimensional CT as a diagnostic imaging tool in zoo and wildlife species. Proceedings: North American Veterinary Conference
24. **Adkesson MJ**. 2014. Evaluating health on the coast of Peru. Proceedings: North American Veterinary Conference
25. **Adkesson MJ**. 2014. Antropocene – “Lack of food” borne disease influences in a marine ecosystem. Proceedings: North American Veterinary Conference
26. **Adkesson MJ**. 2013. Successful immobilization of captive and free-ranging pinnipeds: Practical tips to improve success. Proceedings: American Association of Zoo Veterinarians Conference
27. **Adkesson MJ**. 2013. Pinniped anesthesia. Proceedings: Congresso Veterinario de Leon.
28. **Adkesson MJ**. 2013. Medical care of geriatric primates. Proceedings: Congresso Veterinario de Leon.
29. **Adkesson MJ**. 2013. Benefits of CT use in zoo medicine. Proceedings: Congresso Veterinario de Leon.
30. **Adkesson MJ**. 2013. Remote drug delivery systems. Proceedings: Congresso Veterinario de Leon
31. **Adkesson MJ**, JM Meegan, G Jankowski, S Cárdenas-Alayza, and JE Bailey. 2013. Evaluation of Alfaxalone (Alfaxan®) for sedation of South American fur seals (*Arctocephalus australis*). Proceedings: International Association of Aquatic Animal Medicine Conference
32. Cortes-Hinojosa G, **MJ Adkesson**, S Cárdenas-Alayza, M Seguel, TB Waltzek, and JFX Wellehan Jr. 2013. Adenoviral diversity and possible host jumps in a colony of South American fur seals (*Arctocephalus australis*) and Humboldt penguins (*Spheniscus humboldti*). Proceedings: American Association of Zoo Veterinarians Conference
33. Langan JN, **MJ Adkesson**, and M Cardeña. 2013. Understanding risks to Humboldt penguins: A health assessment of the guanay cormorant (*Phalacrocorax bougainvillii*) and peruvian pelican (*Pelecanus thagus*) populations in the Punta San Juan ecosystem. Proceedings: International Association of Aquatic Animal Medicine Conference
34. Nevitt BN, JN Langan, **MJ Adkesson**, MA Mitchell, and R Drees. 2013. Comparison of air sac and lung volume in awake and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency using computed tomography. Proceedings: American Association of Zoo Veterinarians Conference

35. Pauley J, **MJ Adkesson**, and GR Jankowski. 2013. Comparison of the iSTAT portable chemistry analyzer with the Vetscan for field use in South American fur seals (*Arctocephalus australis*) at Punta San Juan, Peru. Proceedings: Association of Zoo Veterinary Technicians Conference
36. Righton AL, KA Terio, **MJ Adkesson**, and T Snyder. 2013. Atxoplasma-associated myocarditis and myositis in passerine birds. Proceedings: American College of Veterinary Pathology Conference
37. **Adkesson MJ**, G Jankowski, and S Cardenas-Alayza. 2012. Reversible immobilization of South American fur seals (*Arctocephalus australis*) and South American sea lions (*Otaria flavescens*) using medetomidine, butorphanol, and midazolam. Proceedings: International Association of Aquatic Animal Medicine Conference
38. Jankowski G, **MJ Adkesson**, J Saliki, S Cardenas-Alayza, and P Majluf. 2012. A serologic survey for infectious diseases in the South American fur seal (*Arctocephalus australis*) population at Punta San Juan, Peru. Proceedings: International Association of Aquatic Animal Medicine Conference
39. Anderson E, **MJ Adkesson**, MA Delaney, and JN Langan. 2012. Immune mediated hemolytic anemia secondary to disseminated B-cell lymphoma in a California sea lion (*Zalophus californianus*). Proceedings: American Association of Zoo Veterinarians Conference
40. Nevitt B, **MJ Adkesson**, CR Sanchez, JN Langan, G Jankowski, and P West. 2012. Treatment of diskospondylitis associated intervertebral disk herniation in an aardvark (*Orycteropus afer*): lessons on ICU care and rehabilitation following a lumbar hemilaminectomy. Proceedings: American Association of Zoo Veterinarians Conference
41. Rizzo B and **MJ Adkesson**. 2012. Use of computed tomography as an imaging guide for castration in the crested porcupine (*Hystrix africaeaustralis*). Proceedings: American Association of Zoo Veterinarians Conference
42. **Adkesson MJ**. 2012. Incorporation of computed tomography (CT) technology in routine zoological medicine: How in-house equipment can enhance quality of care. Proceedings: American Association of Zoo Veterinarians Conference
43. Shlosberg A, A Lehner, **MJ Adkesson**, K Stuart, M Johnson, and WK Rumbelha. 2012. The use of iron quantitation in dried blood spots as a means of estimating the whole blood hematocrit of wild birds. Proceedings: American Association of Veterinary Laboratory Diagnosticians Conference
44. **Adkesson MJ**, P Majluf, M Cardeña, S Cardenas, JN Langan, G Jankowski, S Puente, MC Allender, A Watanabe, and M Macek. 2011. From penguins to fur seals: Marine ecosystem conservation projects at Punta San Juan, Peru. Proceedings: International Association of Aquatic Animal Medicine Conference
45. **Adkesson MJ**, R Stacey, G Jankowski, S Cardenas, and P Majluf. 2011. South American fur seal conservation at Punta San Juan, Peru. Proceedings: Association of Zoos and Aquariums Conference
46. Jankowski GR, **MJ Adkesson**, MA Mitchell, and C Cray. 2011. Comparison of *Aspergillus* antibody and galactomannan values in wild and captive Humboldt penguins (*Spheniscus humboldti*). Proceedings: American Association of Zoo Veterinarians Conference
47. Jankowski GR, MC Allender, **MJ Adkesson**, M Cardeña, F Garcia, P Guerrero, and P Majluf. 2011. Hemolymph gas analysis in the black sea urchin (*Tetrapygus niger*) and the red sea urchin (*Loxechinus albus*) using an iSTAT point of care analyzer. Proceedings: International Association of Aquatic Animal Medicine Conference
48. Langan JN, **MJ Adkesson**, CR Sanchez, R Dallwig, MA Delaney, DA Rubin, MC Muhlbauer, and KM Colegrove. 2011. Disseminated *Cryptococcus neoformans* var. *neoformans*: Infection and

- treatment in a Schmidt's red-tailed guenon (*Cercopithecus ascanius schmidtii*). Proceedings: American Association Zoo Veterinarians Conference
49. **Adkesson MJ**. 2009. A long term health assessment project of the Humboldt penguin and other avifauna at Punta San Juan, Peru. Part I: Project overview, ecosystem threats, and conservation medicine. Proceedings: Indiana Veterinary Medical Association Conference
 50. **Adkesson MJ**. 2009. A long term health assessment project of the Humboldt penguin and other avifauna at Punta San Juan, Peru. Part II: Fieldwork in a guano reserve. Proceedings: Indiana Veterinary Medical Association Conference
 51. **Adkesson MJ**. 2006. The role of gabapentin as an analgesic: Potential applications in zoological medicine. Proceedings: American Association of Zoo Veterinarians Conference
 52. **Adkesson MJ**, M Weber, M Duncan, M Salgado, EK Travis, and RE Junge. 2006. Myeloproliferative disease in a golden-headed lion tamarin (*Leontopithecus chrysomelas*). Proceedings: American Association of Zoo Veterinarians Conference
 53. **Adkesson MJ** and JN Langan. 2004. Metabolic bone disease in captive Humboldt penguins (*Spheniscus humboldti*) and normal ionized calcium, parathyroid, and vitamin D₃ values. Proceedings: Joint meeting of the American Association of Zoo Veterinarians, American Association of Wildlife Veterinarians, and the Wildlife Disease Association Conference
 54. **Adkesson MJ**, JN Langan, and A Paul. 2003. Control and treatment of *Gongylonema* spp. infections in callitrichids. Proceedings: Joint meeting of the American Association of Zoo Veterinarians and Association of Reptile and Amphibian Veterinarians Conference
 55. **Adkesson MJ**, JM Zdziarski, and SE Little. 2002. Atxoplasmosis in tanager species. Proceedings: American Association of Zoo Veterinarians Conference

GRANTS AWARDED

1. Aitken-Palmer C, **MJ Adkesson**, and J Johnson. Developing diagnostic tools to characterize African tree pangolin growth and development, implications for species conservation and health assessments. American Association of Zoo Veterinarians - Wild Animal Health Fund. \$7,835
2. **Adkesson MJ**. 2017. Assessment of Peruvian Fur Seal and South American Sea Lion Health and Disease in Punta San Juan, Peru. Waitt Foundation - Rapid Ocean Conservation grant. \$15,000.
3. **Adkesson MJ**, et al. 2017. Punta San Juan Conservation Program. Paul M. Angell Family Foundation. \$15,000.
4. **Adkesson MJ** and B Banfield. 2017. Veterinary research programs. McGraw Foundation. \$2,500.
5. **Adkesson MJ** and S Cárdenas-Alayza. 2017. Expansion of population health and marine biologging programs at Punta San Juan. Chicago Board of Trade Endangered Species Fund. \$10,000.
6. Aitken-Palmer C, **Adkesson MJ**, Ivančić M. 2017. First Steps In Saving a Species: Indicators of successful pregnancy in the African tree pangolin. Chicago Board of Trade Endangered Species Fund. \$10,000.
7. Colchao P, Deem S, Macek M, **Adkesson MJ**, et al. 2016. Field Veterinarian Capacity Building for Punta San Juan, Peru. Saint Louis Zoo Field Conservation Program. \$9,998.
8. **MJ Adkesson**, et al. 2016. Punta San Juan Conservation Program. Paul M. Angell Family Foundation. \$15,000.

9. **Adkesson MJ** and S Cárdenas-Alayza. 2016. Punta San Juan project: Facility repairs. Aquarium and Zoo Facilities Association Clark Waldram Fund. \$1,500.
10. **Adkesson MJ**. 2015. Continued development of Punta San Juan as model to assess Peru's Marine Protected Area network. Chicago Board of Trade Endangered Species Fund. \$15,000
11. **Adkesson MJ**. 2015. Top predator marine resource use at Punta San Juan: expansion of marine biologging programs. Chicago Board of Trade Endangered Species Fund. \$12,000
12. **Adkesson MJ**, et al. 2015. Punta San Juan Conservation Program. Paul M. Angell Family Foundation. \$15,000.
13. Cárdenas-Alayza S and **Adkesson MJ**. 2015. Building Bridges: Punta San Juan. Disney Worldwide Conservation Fund. \$25,000 renewal for 2016.
14. Cárdenas-Alayza S and **Adkesson MJ**. 2015. Punta San Juan conservation program: generator replacement and tools. Aquarium and Zoo Facilities Association Clark Waldram Fund. \$1,500.
15. Chiu A, Cárdenas-Alayza S, Cadeña M, **Adkesson MJ**, and Tremblay Y. 2015. Defining patterns in the spatial dynamics of breeding Humboldt Penguins at Punta San Juan (Peru) and the inferences for their conservation. Saint Louis Zoo Field Research for Conservation Program. \$9,940.
16. Breen S, Zeigler W, **MJ Adkesson**, L Miller, et al. 2015. Advancement of the Center for the Science of Animal Welfare and Care. Grainger Foundation. \$3,000,000 total grant. \$1,046,473 allocated towards veterinary projects (anesthesia/analgesia and radiology).
17. **Adkesson MJ**. 2014. Punta San Juan: A tool to assess the upper trophic level ecological efficacy of Peru's marine protected area network. Chicago Board of Trade Endangered Species Fund. \$10,000
18. **Adkesson MJ**. 2014. Punta San Juan project: installation of a weather station and equipment. Aquarium and Zoo Facilities Association Clark Waldram Fund. \$1,500.
19. **Adkesson MJ**, et al. 2014. Punta San Juan Conservation Program. Paul M. Angell Family Foundation. \$15,000.
20. Cárdenas-Alayza S and **MJ Adkesson**. 2014. Building Bridges: Punta San Juan. Disney Worldwide Conservation Fund. \$25,000 renewal for 2015.
21. **Adkesson MJ** and Cárdenas-Alayza S. 2013. Advancement of pinniped conservation programs at the Punta San Juan Marine Protected Area, Peru. Chicago Board of Trade Endangered Species Fund. \$14,000.
22. Cárdenas-Alayza S and **Adkesson MJ**. 2013. Building Bridges: Punta San Juan. Disney Worldwide Conservation Fund. \$25,000.
23. **Adkesson MJ** and Cárdenas-Alayza S. 2012. Strategic growth of conservation programs at the Punta San Juan Marine Protected Area, Peru. Chicago Board of Trade Endangered Species Fund. \$13,000.
24. **Adkesson MJ** et al. 2012. Development of a mortality monitoring program for conservation of Peruvian pinnipeds. Chicago Board of Trade Endangered Species Fund. \$7,000.
25. **Adkesson MJ** et al. 2012. Improved Atoxoplasma Diagnostics for Conservation of Passerine Birds. Chicago Board of Trade Endangered Species Fund. 2012. \$2,925.
26. Chiu A, Cadeña M, Cárdenas-Alayza S, **Adkesson MJ**, and Tremblay Y. 2012. Variation in the spatial dynamics of Humboldt penguins at Punta San Juan (Peru) during the breeding period and the implications for their conservation. Saint Louis Zoo Field Research for Conservation Program. \$9,936.

27. **Adkesson MJ** et al. 2011. Continued development of pinniped population health monitoring programs at Punta San Juan, Peru. Chicago Board of Trade Endangered Species Fund. \$20,000.
28. Pauley J, **Adkesson MJ**, and Jankowski GR. 2011. Validation of the iSTAT portable chemistry analyzer for field use in South American Fur Seals (*Arctocephalus australis*) at Punta San Juan, Peru. Association of Zoo Veterinary Technicians. \$4,321.
29. Watanabe-Farro, A, **Adkesson MJ**, Stanoss R, and Majluf P. 2011. Building bridges: Reconnecting children with nature at Punta San Juan. Saint Louis Zoo Field Conservation Program. \$9,955.
30. **Adkesson MJ** and Jankowski GR. 2010. A Health Assessment of the Southern Fur Seal Population (*Arctocephalus australis*) at Punta San Juan, Peru. Chicago Board of Trade Endangered Species Fund. \$10,000.
31. **Adkesson MJ** et al. 2010. Nature Play at Punta San Juan: Development of an early childhood education program. Chicago Board of Trade Endangered Species Fund. \$4,000.
32. **Adkesson MJ** et al. 2009. An assessment of the Humboldt penguin population at Punta San Juan, Peru for toxicant exposures from natural sources and anthropogenic environmental contamination. Saint Louis Zoo Field Research for Conservation Program. \$10,000.
33. **Adkesson MJ** et al. 2009. An assessment of toxicant exposure in the Humboldt penguin population at Punta San Juan. Chicago Board of Trade Endangered Species Fund. \$4,630.
34. **Adkesson MJ** and Dubach JM. 2009. Genetic assessment of the Humboldt penguin population at Punta San Juan, Peru over a 17 year period. Saint Louis Zoo Field Research for Conservation Program. \$9,360.
35. **Adkesson MJ** and Langan JN. 2008. Understanding risks to the Humboldt penguin: A health assessment of Guanay cormorant and Peruvian pelican populations. Chicago Board of Trade Endangered Species Fund. \$5,000.
36. Macek M and **Adkesson MJ**. 2008. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Alertis Fund for Bear and Nature Conservation. \$5,049.
37. Roca M, M Cardena, M Macek, and **MJ Adkesson**. 2008. The life of the Humboldt penguin...discover. An education program for students ages 11-12 in two representative national schools, Marcona City. Saint Louis Zoo Field Conservation Program. \$900.
38. **Adkesson MJ** and JN Langan. 2007. Continued health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Chicago Board of Trade Endangered Species Fund. \$5,000.
39. **Adkesson MJ**. 2007. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Saint Louis Zoo Field Research for Conservation Program. \$10,000.
40. **Adkesson MJ**. 2007. A preliminary health assessment of the avifauna in the Punta San Juan ecosystem: Understanding potential disease threats to the Humboldt penguin (*Spheniscus humboldti*) population. Saint Louis Zoo Field Research for Conservation Program. \$9,860.
41. **Adkesson MJ**. 2007. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Sea World and Busch Gardens Conservation Fund. \$5,940.
42. **Adkesson MJ** and JN Langan. 2007. A population health assessment of the Humboldt penguin (*Spheniscus humboldti*) at Punta San Juan, Peru. Chicago Board of Trade Endangered Species Fund. \$5,000.

43. **Adkesson MJ.** 2006. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Saint Louis Zoo Field Research for Conservation Program. \$10,000.
44. **Adkesson MJ.** 2006. Determination of the pharmacokinetics of a long-acting ceftiofur product in the ball python (*Python regius*). University of Missouri College of Veterinary Medicine Committee on Research Awards. \$2,975.
45. **Adkesson MJ.** 2004. Assessment of blood gas parameters and blood pH in wild and captive bottlenose dolphins (*Tursiops truncatus*). Geraldine R. Dodge Foundation Frontiers in Veterinary Medicine. \$5,585.

TEACHING EXPERIENCE

University of Illinois

- CB/VB 540: Conservation and ecosystem health. "From penguins to pinnipeds: marine ecosystem conservation projects at PSJ, Peru" (2010-present).
- VCM 500: Difficult case conference. "Management of concurrent inflammatory bowel disease and pituitary dependent hyperadrenocorticism in a geriatric dog" (2005).
- VCM 592/593: Advanced Topics in Zoological Medicine. Various topics and participation (2009-present).
- VCM 599: Zoological Medicine Seminar - various topics. Various topics and participation (2009-present).
- VCM 621: Clinical Rotation in Zoological Medicine. Clinical instruction annually (2009-present).
- VCM 625: Basic Zoological Medicine. "Primate medicine" (2009 - 2011).
- Grand rounds. "Toxoplasmosis in a red-necked wallaby (*Macropus rufogriseus*)" (2005).

University of Missouri

- VMS 699A: Zoological medicine. "Primate medicine" (2005, 2006).

University of Tennessee.

- VM887: Aquatic animal health. "Penguin health, husbandry, and conservation" (2007).

Residents Trained

Dr. Lisa Naples, 2008-2009
 Dr. Trevor Zachariah, 2008-2010
 Dr. Kim Wojick, 2008-2011
 Dr. Gwen Jankowski, 2009-2012
 Dr. Rebecca Dallwig, 2010
 Dr. Benjamin Nevitt, 2011-2014
 Dr. Jennifer Flower, 2012-2015
 Dr. Jimmy Johnson, 2013-2016
 Dr. Megan Watson, 2014-2017
 Dr. Dana Lindemann, 2015-present
 Dr. Karisa Tang, 2016-present
 Dr. Julie Sheldon, 2017-present

Fellows Trained

Dr. Julie Balko, 2016-2017

Graduate Students Trained

Dr. Gwen Jankowski, 2009-2014, MS degree, committee member, University of Illinois

Wendy Flores, 2009-unfinished, committee member, Autonomous University of Barcelona
Mick Edwards, 2016-present, MS degree, committee member, Nova Southeastern University
Dr. Karisa Tang, 2017-present, MS degree, committee member, University of Illinois
Dr. Julie Sheldon, 2017-present, MS degree, committee member, University of Illinois

PROFESSIONAL DEVELOPMENT

Continuing Education / Conferences:

- American Association of Wildlife Veterinarians (2004)
- American Association of Zoo Veterinarians (2002 - 2004, 2006, 2007, 2009 - 2017)
- Association of Reptile and Amphibian Veterinarians (2003, 2010)
- European Association of Zoo and Wildlife Veterinarians (2017)
- International Association for Aquatic Animal Medicine (2010 - 2012, 2015, 2017)
- North American Veterinary Conference (2012, 2014)
- Student American Veterinary Medical Association Symposium (2001 - 2004)
- Western Veterinary Conference (2013)
- Wildlife Disease Association (2004)

Courses and Specialized Training:

- American College of Zoological Medicine Board Review Course (2006, 2007)
- Exotic Animal Endoscopy Course, University of Georgia College of Veterinary Medicine (2005)
- Zoo Medicine Short Course, University of Tennessee College of Veterinary Medicine (2001)

PRESS & MEDIA EXPERIENCE --- *Partial List*

1. WGN-TV (rebroadcast to 40+ states, CNN, Inside Edition, USAtoday, MSN, foreign outlets). Veterinarians take first ever CT scan of live rhino as part of lifesaving treatment. 4/23/18. 5 minute feature story on WGN.
2. 60 Minutes. Population management in zoos. Interview. Spring release, date TBD.
3. Journal of the American Veterinary Medical Association – “Zoo veterinarians, behind the scenes and in the field”, “Role of zoos in conservation”, and “Brookfield Zoo invests in imaging with full-time radiologist. 7/15/17 issue – Featured profile interview for one article, interviewed for two other two articles.
4. Chicago Tribune (57 AP wire pick-ups nationally). Brookfield Zoo radiologist’s patients are feathered, finned, and fanged. 8/15/17. Feature story.
5. WGN Evening news. “Surgery fit for a human, helps a gorilla feel more in his prime”. 6/29/17 - 4 minute feature segment.
6. WTTW (PBS) Chicago Tonight. “Lion sized toothache – behind the scenes at Brookfield Zoo’s animal hospital. 11/21/16. 5 minute television segment.
7. AZA Connect. “Innovation: Veterinary Care at the Chicago Zoological Society – Brookfield Zoo”. October 2016 – feature article.
8. Chicago Tribune, Chicago Sun Times, 10+ television affiliates - Brookfield Zoo installs new CT scanner to provide advanced care for animals. 7/1/16.
9. Chicago Tribune. “Medical advances in care of aging zoo animals lead to difficult questions”. Interviewed for story on geriatric animal care and welfare.” 3/6/15.

10. WTTW (PBS) Chicago Tonight. 12 minute interview on Punta San Juan conservation program. 3/24/2016.
11. Chicago Tribune. "Zoo's far-off crusade: How Brookfield's experts help endangered wildlife and a Peruvian mining town to coexist". Front page and a three page feature story, plus substantial on-line video content. Reporter and photographer accompanied me for a week of fieldwork to produce this story. 12/27/2015.
12. Chicago Tribune. "River otter is back in Cook County and scientists are tracking him". Featured in story on CZS involvement in local wildlife conservation. 11/13/2015.
13. Chicago Zoological Society website and social media channels - "Dr. Mike's video blog" and other print blogs featuring an average of one story/video per month since 2015.
14. BBC productions. Operation Wild. Featured in segment on tiger CT scan. 2015.
15. Journal of AHIMA. "EHR Lessons from the Zoo". Featured interview for an article and online package on medical records maintenance in zoos. 8/28/2015.
16. Multiple Chicago print, social, and television media channels. "Misericordia visit, adults with developmental disabilities get an up close look at a lion under anesthesia at the zoo". Featured spokesperson for zoo. 2015.
17. Zoology for Kids: Understanding and working with animals. Book by Josh Hestermann. Featured in section on zoological medicine. 2015.
18. WLS 7 ABC Chicago, 2 minute segment on 6 and 10PM nightly news on porcupine dental case at Brookfield Zoo. Featured spokesperson. 5/13/2014.
19. Chicago Reader "This week's Chicagoan: Michael Adkesson, veterinarian, Brookfield Zoo", 10/18/2012.
20. Chicago Tribune, "Office Space: Animal magnetism rules this roost". Feature story on zoo veterinarian job. 10/3/2011.

LICENSURES

State veterinary licensure: Illinois, Missouri (inactive status)

USDA APHIS accredited veterinarian (category I and II)

DEA controlled substance registration (drug schedules II-V, carfentanil endorsement)

Jennifer N. Langan, DVM, Dipl. ACZM

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University of Illinois
College of Veterinary Medicine
Department of Veterinary Clinical Medicine
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jelangan@illinois.edu

Senior Staff Veterinarian
Chicago Zoological Society
Brookfield Zoo
3300 Golf Road
Brookfield, IL 60513
Office 708.688.8504
Wk Cell 630.865.6338
Jennifer.Langan@CZS.org

Education

1989-1992	University of Illinois, College of Agriculture, Animal Science Major
1992-1996	Doctor of Veterinary Medicine with honors, University of Illinois
1993	Bachelor of Science in Veterinary Medicine, University of Illinois
1996-1997	Internship in Small Animal Medicine and Surgery, Angell Memorial Animal Hospital, Boston, MA
1997-1999	Residency in Zoological Medicine, University of Tennessee
1999-2001	Fellowship in Zoological Medicine, Conservation Medicine Center of Chicago (Chicago Zoological Society's Brookfield Zoo – University of Illinois – Loyola University)

Specialty Certification 2001 Diplomate American College of Zoological Medicine
2014 Diplomate European College of Zoological Medicine (Zoo Health Management)

State Veterinary Licensure Illinois - USDA Accredited, USDA Accreditation for Cervid Tuberculosis Testing

Honors

Undergraduate

R & H Sweet Scholarship
Provides Award
Jonathan Baldwin Turner Scholarship
American Society of Animal Sciences Scholarship Award
Dean's List - College of Agriculture
Edwin and Katherine Ehler Off-campus Scholarship
Mortar Board Honorary
Gamma Sigma Delta Honor Society
Alpha Lambda Delta Honor Society
Golden Key Honor Society

Graduate

Erwin Small Scholarship 1994, 1995
Phi Zeta Manuscript Award 1999
Dean's List - College of Veterinary Medicine

Professional

- 2002 Chicago Zoological Society's Director's Award. Black Rhino Nutrition Study
- 2003 1st place Wildlife Pharmaceuticals Veterinary Student Competition. Adkesson M, Langan J, Paul A. Control and treatment of *Gongylonema* spp. infections in callitrichids. Awarded at: *American Association of Zoo Veterinarians Conference*
- 2005 Chicago Zoological Society's President's Award. Panther Chameleon Reproduction and Health at Brookfield Zoo
- 2006 Brookfield Zoo Director's Award. Clinical Excellence in Treating Kaylee Dolphin with Pulmonary Abscessation through Extraordinary Measures
- 2007 CVM Service Award – for 5 years of outstanding service for contributing to the tradition of excellence at the University of Illinois, College of Veterinary Medicine
- 2007 2nd Place Wildlife Pharmaceuticals Veterinary Student Competition. Marrow J, Langan J. Presumptive Hypertension and Related Ocular Disease in Slender Loris (*Loris tardigadus*). Awarded at: *American Association of Zoo Veterinarians Conference*
- 2008 Association of Zoos & Aquariums - Edward H. Bean Award - Chicago Zoological Society and staff involved with outstanding long-term work and success in management of Callimico monkeys (*Callimico goeldii*). Exceptional recognition for work in the role of Callimico Species Survival Plan Veterinary Advisor and collaborative work with husbandry and animal care staff.
- 2009 Ranked in Excellent Teachers, University of Illinois, College of Veterinary Medicine
- 2009 President's Award, Chicago Zoological Society, Excellence in Veterinary Medical Services
- 2012 Presidential Award for exemplary service to the American College of Zoological Medicine (ACZM), a decade of service to the College and ACZM Examination Committee.
- 2012 Certificate of Completion – Executive Veterinary Program in Small Animal Ultrasound from the University of Illinois, College of Medicine (2/2011-11/2012)
- 2013 4th Place - Morris Animal Foundation post-graduate manuscript competition. Nevitt, B.N., Langan J*, Drees R, Mitchell M, Adkesson M. Comparison of air sac and lung volume in awake and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency using computed tomography. Awarded at: *American Association of Zoo Veterinarians Conference*
- 2013 PRIDE Award, Chicago Zoological Society. Recognition for advancing the standard of medical care through expertise with advanced imaging and success in the areas of innovation and results.
- 2014 Chicago Zoological Society – PRIDE Award to the Veterinary Services and Marine Mammal Departments for their extraordinary efforts and success with bottlenose dolphin prenatal and neonate intensive care.
- 2014 2nd place – AAZV Veterinary Student Competition. Kane L, Langan J*, Adkesson M, Chinnadurai S, Nevitt B, Drees R. Successful treatment of mandibular osteomyelitis in two red-necked wallabies (*Macropus rufogriseus*) using long-term pharmaceutical therapy and serial monitoring by computed tomography imaging. Awarded at: *American Association of Zoo Veterinarians Conference*
- 2014 1st Place - Morris Animal Foundation post-graduate manuscript competition, Cannizzo S, Langan J*, Warneke M, Allender M. Evaluation of in-house urine dipstick, reference laboratory urinalysis, and urine protein:creatinine ratio from a colony of Goeldi's monkeys (*Callimico goeldii*). Awarded at: *American Association of Zoo Veterinarians Conference*
- 2014 1st Place – Poster Competition. Johnson J, Chinnadurai S, Landolfi J, Langan J. Hypercalcemia and Metastatic Mineralization Associated With Renal Disease in Rock Hyraxes (*Procavia capensis*). Awarded at: *American Association of Zoo Veterinarians Conference*
- 2014 Notable Accolade – Image from our manuscript, Comparison of air sac volume, lung volume, and lung densities determined by use of computed tomography in conscious and

- anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency was featured on the cover of the American Journal of Veterinary Research.
- 2015 Chicago Zoological Society – PRIDE Award. Veterinary Services Department, in recognition of your shining example of the Chicago Zoological Society's institutional values.
- 2016 2nd Place – Morris Animal Foundation Post-Graduate Veterinarian Competition for presentation. Johnson JG, Langan JN et al, Transcutaneous ultrasound evaluation of kidney and adrenal glands in healthy callimico and comparison with measurements using computed tomography. Awarded at: *American Association of Zoo Veterinarians Conference*
- 2017 Chicago Zoological Society – PRIDE Awards.
Pangolin Conservation and Care Initiative
Honorable Mention – Contributions to the Hamill Family Play Zoo Team

Work Experience

2004-present

University of Illinois College of Veterinary Medicine

Clinical Assistant Professor 2004-2010
Clinical Associate Professor 2010-2016
Clinical Professor 2016-present

Chicago Zoological Society's Brookfield Zoo

Associate Veterinarian 2001-2014
Senior Staff Veterinarian 2015-present

- Shared position between the College of Veterinary Medicine and the Brookfield Zoo.
- Director for Chicago Zoological & Aquatic Animal Residency (CZAAR) Program
 - Manage selection process, orientation, mentoring, review and oversight of research projects of residents.
 - Develop, teach and manage didactic graduate level education.
- Veterinary Education Program Administrator
 - Coordinate & teach Zoological Medicine Rotation while providing veterinary care to the animals at the Brookfield Zoo, including preventive medicine, surgery, anesthesia on mammals, birds, reptiles, amphibians and fish.
 - Oversee Veterinary Education Programs at the zoo for graduate, veterinary, and undergraduate students during clinical rotations at Brookfield Zoo.
- Participate in College professional academic responsibilities and support the UIUC veterinary education program by teaching didactic lectures and students while on clinical duty. Perform and foster clinical research in the field of Zoological Medicine.

Fall 2001

University of Illinois College of Veterinary Medicine – Chicago Zoological Society

Visiting Clinical Assistant Professor – Associate Veterinarian

Shared position between the College of Veterinary Medicine and the Brookfield Zoo. Teach veterinary students during clinical rotations, give didactic lectures, provide veterinary care to the animals at the Brookfield Zoo, including

- preventive medicine, surgery, anesthesia on mammals, birds, reptiles, amphibians and fish.
- Spring 1999 White Oak Conservation Center – Yulee, Florida
Residency externship: participated in immobilization, medical management and collecting diagnostic samples with emphasis on hoofstock species. Performed physical examinations, preventative medicine and necropsy procedures.
- Fall 1998 Columbus Zoo – Columbus, Ohio
Relief Veterinarian
- Spring 1996 Woodland Park Zoo – Seattle, Washington
Veterinary Externship in Zoological Medicine
Assisted with medical management, diagnostics, and treatment of animals. Completed paper and project related to risks involving canine distemper virus transmission from raccoons to large cats in Woodland Park Zoo's collection. Information was presented at the 1996 American Association of Zoo Veterinarian's Conference.
- Fall 1995 Brookfield Zoo – Chicago Zoological Society
Veterinary Preceptorship Program in Zoological Medicine
Assisted with clinical and preventative medicine, restraint, physical examination, surgery, anesthesia, evaluation of laboratory data, and necropsies.
- Spring 94 - Spring 96 University of Illinois, at Urbana-Champaign
College of Veterinary Medicine
Clinical Pathology Laboratory Emergency Technician
Performed diagnostic tests including; hematology, serology, cytology and clotting profiles.
- Fall 93 - Spring 95 University of Illinois, at Urbana-Champaign
College of Veterinary Medicine
Wildlife Medical Clinic Manager
Coordinated clinic activities, supervised case care, performed surgeries, and oversaw post release studies.
- Summer 1993 Justus-Liebig University in Giessen, Germany
Participated in classes at the College of Veterinary Medicine and worked as an intern in the Obstetrics and Gynecology Department.
- Fall 1992 University of Illinois, at Urbana-Champaign
College of Veterinary Medicine Teaching Hospital
Wildlife Ward Member/Volunteer
Admitted, diagnosed, and rehabilitated Illinois wildlife.
- Summer 1992 International Work-Study Program
Conducted large animal reproduction research at a government veterinary station in Osaka, Japan. Performed superovulation, in vitro fertilization, and embryo transfer experiments.
- Spring 1992 University of Illinois, at Urbana-Champaign

	College of Veterinary Medicine Teaching Hospital Supervised the Admissions Department in the Small Animal Clinic.
Summer 1991	Park Wise Animal Hospital, Streamwood, Illinois Assisted in surgical and clinical treatment of animals. Conducted tests, vaccinated, and administered medication.
Spring 1991	University of Illinois, at Urbana-Champaign Department of Animal Sciences Explored thermodynamics of Holstein cattle in relation to their milk production as a Research Committee Member.
Summer 1990	Work Abroad Program - Hamburg, Germany Volunteered at "Praxis der Kleintiere," a small animal veterinary clinic. Assisted with veterinary technician duties.
Fall 1990	University of Illinois, at Urbana-Champaign Department of Ruminant Nutrition Conducted experiments and collected research data in a nutrition laboratory.
Spring 1988	Wise Road Animal Hospital, Schaumburg, Illinois Volunteered as a technician. Subsequently hired.

Professional Membership

1995-present	American Association of Zoo Veterinarians (AAZV)
1997-present	European Association of Zoo and Wildlife Veterinarians (EAZWV)
1995-present	Association of Avian Veterinarians (AAV)
1996-present	American Veterinary Medical Association (AVMA)
1999-present	International Association for Aquatic Animal Medicine (IAAAM)
1996-present	Association of Reptile and Amphibian Veterinarians (ARAV)
2003-present	American Zoo & Aquarium Association (AZA)
1997-present	Wildlife Disease Association (WDA)
2001-present	American College of Zoological Medicine (ACZM)
2003-present	Illinois State Veterinary Medical Association (ISVMA)
2014-present	European College of Zoological Medicine (ECZM)

Professional Activities

Brookfield Zoological Society

Biological Resources Steering Committee – (2004-2008), Chair (2005)
 Institutional Animal Care & Use Committee (IACUC) (2005-2007)
 Species Survival Plan (SSP) – *Callimico goeldii* species veterinary advisor (2004-current)
 Contraception Advisory Group (2004-2010)
 Strategic Planning – Animal Collection Committee Member (2003-2004)
 Keeper Education Committee – Member (2001-2004)
 Search Committees – Associate Veterinarian 2003, 2005, 2008, 2010, Medical Technologist 2005, Hospital Manager 2007
 AZA Reaccreditation Team (2006-2007)
 Dolphin Consortium Institutional Representative (2006-2014)

Quarantine, Preshipment, Animal Transfer Administrator (2006-2008)
Enrichment and Training Committee (Large Carnivores) (2010-2013)
Dolphin Consortium Chair (2014-2015)

University of Illinois College of Veterinary Medicine

CIC Exotics/Wildlife/Conservation Medicine Committee (2003-2004)
Faculty Search Committee
- Wildlife, Exotic, Zoo Veterinarian, College of Veterinary Medicine (2005-2006 Mitchell)
- Avian, Exotics Veterinarian, College of Veterinary (2015 Welle)
- Department Head, Veterinary Clinical Medicine (2015-2016), (2016-2017)
- Zoological Pathology Clinical Instructor (2017)
Colloquium Committee (2012-current)
Resident & Intern Committee (2012-current)
Admissions Advisory Committee (2012- 2014)
College Strategic Planning Committee – Engagement, Service, Outreach Subcommittee (2015)
Promotion and Tenure Committee (2016-present)

American College of Zoological Medicine (ACZM)

Chair, Examination Committee (2009-2012)
Chair, General Zoo Section (1 of 5 subsections) (2006-2009)
Examination Committee Member (2002-2006)
Public Relations Committee Member (2003-2008)
Executive Committee – Secretary (2015-2017)
Vice President (2018-present)

European College of Zoological Medicine (ECZM)

Examination Committee Member (2014-present)

American Association of Zoo Veterinarians (AAZV)

Ethics Committee Member (2010-2013)

Morris Animal Foundation's Veterinary Clinical Advisory Board

Named to board, (2016-present)

Presentations

International

1. Tyzzer's disease in a red panda (*Ailurus fulgens fulgens*), European Association of Zoo and Wildlife Veterinarians Conference, Chester, England, 1998
2. Seabird Necropsy Technique and Sample Collection, Punta San Juan, Peru, 2008
3. A Zoo Veterinarian's Role in Public Health, Ross University St. Kitts, 2012
4. Introduction to Marine Mammal Medicine, Ross University St. Kitts, 2012
5. What is Zoological Medicine, Ross University St. Kitts, 2012
6. Retrospective review of the global prevalence of myelolipomas in Goeldi's monkeys (*Callimico goeldii*) and implications for future study, International Conference on Diseases of Zoo and Wild Animals, Warsaw, Poland, 2014

National

1. Cardiopulmonary and Anesthetic Effects of Medetomidine-Ketamine-Butorphanol and Antagonism with Atipamezole in Servals (*Felis serval*), AAZV Telinject Manuscript Competition. American Association of Zoo Veterinarians Conference, Omaha, NE, 1998
2. Oncology in Non-Domestic Species, American College of Veterinary Internal Medicine Annual Conference, Charlotte, NC, 2003
3. Zoonotic Diseases in Exotic Patients, American Veterinary Medical Association Annual Conference, Denver, CO, 2003
4. Marine Mammal Medicine & Disease, American College of Zoological Medicine Review Course, Madison, WI, 2003
5. Marine Mammal Health, American College of Zoological Medicine Review Course, Madison, WI, 2005
6. Viral Diseases of Marine Mammals, American College of Zoological Medicine Review Course, Madison, WI, 2005
7. Bacterial Diseases of Marine Mammals, American College of Zoological Medicine Review Course, Madison, WI, 2005
8. West Nile Virus Review & Update in Zoological Species, 4th Annual Exotics Symposium, University of Tennessee, College of Veterinary Medicine 2006
9. Exotic Animal Anesthesia, 4th Annual Exotics Symposium, University of Tennessee, College of Veterinary Medicine, 2006
10. Anatomical Considerations for Remote Injection, Pneu-Dart Immobilization Webinar Series, 2007
11. Drugs & Immobilization Dosages for Non-Domestic Carnivores, Pneu-Dart Immobilization Webinar Series, 2007
12. Drugs Used for Remote Injection for Medicating Exotic Animals, Pneu-Dart Immobilization Webinar Series, 2007
13. Handling Immobilized Exotic Animals, Pneu-Dart Immobilization Webinar Series, 2007
14. Human Safety Considerations for Remote Injection and Ultra-potent Narcotic Use, Pneu-Dart Immobilization Webinar Series, 2007
15. Tracking Fish – Radiotransmitters and Conservation in Cook County Forest Preserves, ESPN Radio, 2008
16. Marine Mammal Medicine – Taxonomy, Biology, & Disease, American College of Zoological Medicine Review Course, Madison, WI, 2009
17. Introduction to Exotic Animal Radiology. Exotic Animal Medicine Conference for the Practitioner, American Association of Zoo Veterinarians Conference, South Padre, TX, October, 2010
18. Case Studies in Exotic Animal Radiology, Exotic Animal Medicine Conference for the Practitioner, American Association of Zoo Veterinarians Conference, South Padre, TX, October, 2010
19. Understanding risks to Humboldt penguins: A health assessment of the Guanay cormorant (*Phalacrocorax bougainvillii*) and Peruvian pelican (*Pelecanus thagus*) populations in the Punta San Juan ecosystem, International Association of Aquatic Animal Veterinarians (IAAAM), Sausalito, CA, April 2013
20. Anesthesia and Analgesia in Reptiles, American Veterinary Medical Association (AVMA), Chicago, IL, July 2013
21. Anesthesia and Analgesia in Amphibians, American Veterinary Medical Association (AVMA), Chicago, IL, July 2013
22. Exotic Animal Anesthesia, Exotic Animal Medicine Conference for Practitioners (EAMCP), Salt Lake City, UT, September 2013

23. Radiographic Positioning and Interpretation in Exotic Animals, Exotic Animal Medicine Conference for Practitioners (EAMCP), Salt Lake City, UT, September 2013
24. Fungal rhinitis in a ring-tailed lemur, CL Davis Zoo Pathology Workshop, American Association of Zoo Veterinarians Conference (AAZV), Portland, OR, September 2015.
25. Antemortem diagnosis of hydrocephalus and hearing loss associated with chronic *Brucella* infection in a stranded rehabilitated bottlenose dolphin (*Tursiops truncatus*). International Association of Aquatic Animal Medicine Conference, Virginia Beach, VA, May 2016.

State

1. Introduction to Reptile Medicine, Virginia-Maryland Region College of Veterinary Medicine Clinical Applications in Companion Avian & Exotics Course, 2001
2. Physical Examination & Handling of Exotic Pets (Lecture), Physical Examination and Handling of Exotic Pets (Lab), Virginia-Maryland Region College of Veterinary Medicine, Clinical Applications in Companion Avian & Exotics Course, 2001
3. Careers in Zoological Medicine, Comparative Medicine Department, University of Illinois at Chicago, 2002
4. Where the Wild Things Are, Zoological Medicine, Chicago Anti-Cruelty Society Lecture Series, 2004
5. Caring for Zoo Animals, Bellwood Retirement Home, Bellwood, IL, 2005
6. Rhino with Glue-On Shoes, La Grange Library Lecture Series, La Grange, IL, 2008
7. A View to a Zoo: A Vet's View of Brookfield Zoo, Lombard Library Lecture Series, Lombard, IL, 2009
8. Monitoring the Health of Dolphins in Sarasota Bay – Four decades of research and conservation. Invited speaker, Chicago Branch of the American Association of Laboratory Animal Science (CBAALAS), Loyola University, Maywood, IL, March 2015.
9. Obesity and Associated Disease in Animals in Zoological Parks. Invited Speaker, Obesity in Humans and Animals Session, One Health Conference Midwestern University, Downers Grove, IL, September 2015.
10. Anesthesia & Analgesia in Reptile, University of Illinois, Fall Conference, Urbana, IL, September 2015.
11. Monitoring the Health of Dolphins in Sarasota Bay – Four decades of research and conservation. University of Illinois, Fall Conference, Urbana, IL, September 2015.

University of Illinois

1. Preparation for a Career in Zoological Development, Student Evening Presentation, 2001
2. Preventive Medicine in a Zoological Setting, Student Lecture, 2001
3. Grand Rounds: Marsupial Medicine & Toxoplasmosis (Fall 2005), Polar Bear Hernia Repair (Spring 2005)
4. Introduction to Remote Drug Delivery & Immobilization Workshop (Lecture & Lab), 2002, 2003, 2005, 2008
5. Fluid Therapy, Wildlife Medical Clinic Rounds, 2003
6. Anesthesia in Non-Domestic Species, Wildlife Medical Clinic Rounds, 2005
7. Anesthesia in Non-Domestic Species, Fall Conference 2006
8. Introduction to Zoological Medicine, Anti-Cruelty Society, Chicago, IL, 2013-present
9. Importance of Zoological Medicine in Zoos & Aquaria, Western Illinois University, Biology 583, 2014-present

Chicago Zoological Society

1. Emerging Infectious Diseases of Elephants, Brookfield Zoo Keeper Continuing Education, 2001
2. West Nile Virus, Chicago Zoological Society, Brown Bag Lecture Series, 2001
3. Zoonoses Training, Continuing Education Committee Brookfield Zoo, 2002

4. Avian Medicine – Brookfield Zoo Keeper Continuing Education, 2003
5. Where the Wild Things Are – Zoological Medicine, Chicago Anti-Cruelty Society 2004
6. Building the Next Generation of Zoo Vets, Animal Programs Division, 2004
7. ACZM & Post Graduate Training Program in Zoological Medicine – Brookfield Zoo Staff, Administration & Development, 2005
8. Conservation & Education an Institutional Insight, CZS Women's Board, 2006
9. Education Programs at Brookfield Zoo, Chicago Zoological Society's Board of Trustees, Education & Conservation Committee, 2006
10. Ultra-potent Narcotic Use & Safety, Veterinary Technician Continuing Education Lecture, 2008, 2009
11. Health Assessment of the Humboldt Penguin at Punta San Juan, Continuing Education Conference for Teachers, Brookfield Zoo, 2009
12. Field Research and Conservation in Punta San Juan, Peru, Chicago Zoological Society's Board of Trustees (Conservation and Education Committee), 2009
13. Veterinary collaboration in support of Cook County Forest Preserve Programs, Forest Preserve District of Cook County Science and Research Symposium, 2012
14. Monitoring Health of Dolphins in Sarasota Bay, Aurora University, OEDC5120, Ocean Explorers Masters Course, 2014
15. Quality of Life, Euthanasia and End of Life Care, Chicago Zoological Society Welfare Forum, 2016.
16. Veterinary Education Programs Accomplishments and Post-Graduate Opportunities, Research & Conservation Program, 2016.

Teaching

The University of Tennessee, College of Veterinary Medicine

- 1997-1999 VM 867: Multispecies Medicine, Ferret Biology, Medicine and Surgery
VM 867-89017: Seminars in Zoological Animal Medicine, Nutrition Series, Amphibian Nutritional Concerns
VM 846: Multispecies Medicine Laboratory, Reptile Medicine, Poultry Medicine
 Physical Exam & Diagnostic Sampling in Birds, Reptiles, Small Mammals, Veterinary Continuing Education Conference
 The Use of External Fixation for Orthopedic Repair in Wildlife, Avian, Exotic & Wildlife Club
 Faculty Rounds: Adrenal Disease in Ferrets, Patent Urachus in a Southern White Rhino Calf
 Journal Club
- Camelid Biology and Medicine
 - Elephant and Rhinoceros Medicine
 - Zoo and Wildlife Toxicology
 - Protozoal and Parasitic Diseases of Birds
 - Avian & Reptile Hematology and Cytology
 - Great Ape Reproduction

University of Illinois, College of Veterinary Medicine

- | | | |
|------|--------|--|
| 2001 | Fall | <u>VP 340: Conservation Medicine</u> , Conservation Medicine Center of Chicago (BFZ, Loyola, UIUC), Emerging Diseases of Proboscidae |
| 2002 | Spring | <u>VCM 321: Senior Zoological Medicine Rotation</u> (Brookfield Zoo), |

		Course coordinator <u>VCM 394: Your Veterinary Future</u> , Zoological Medicine Faculty Participant
	Fall	<u>VCM 321: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 333: Veterinary Parasitology</u> , Zoo Medicine Student Project Coordinator <u>VP 340: Conservation Medicine</u> , Conservation Medicine Center of Chicago (BFZ, Loyola, UIUC), West Nile Virus – An Emerging Disease in North America
2003	Spring	<u>VCM 321: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 394: Your Veterinary Future</u> , Zoological Medicine Faculty Participant
	Fall	<u>VCM 321: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 325/625: Exotic Animal Medicine</u> , Co-Course Coordinator, <ul style="list-style-type: none"> ▪ Chinchilla Biology & Medicine (1 hour) ▪ Rabbit Biology & Medicine (1 hour) ▪ Reptile Biology & Medicine (2 hours) ▪ Amphibian Biology & Medicine (2 hours) ▪ Emergency Medicine / Diagnostic Testing (2 hours) ▪ Introduction to Zoological Medicine (2 hours) <u>VCM 676: Veterinary Anesthesiology</u> , Exotic Animal Anesthesia <u>VCM 333: Veterinary Parasitology</u> , Zoo Medicine Student Project Coordinator <u>VP 360: Biology of Emerging Infectious Diseases</u> , Zoonotic Diseases in Birds, Reptiles and Exotic Hoof stock <u>VP 340: Conservation Medicine</u> , Conservation Medicine Center of Chicago (BFZ, Loyola, UIUC), West Nile Virus – An Emerging Disease in North America <u>Zoological Medicine Resident Seminar Series</u> , Course Coordinator (BFZ, Shedd, LPZ)
2004	Spring	<u>VCM 321: Senior Zoological Medicine Rotation</u> , Course Coordinator
	Fall	<u>VCM 621: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 676: Veterinary Anesthesiology</u> , Exotic Animal Anesthesia
2005	Spring	<u>VCM 621: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 501: Zoological Medicine Seminar</u> : Course Coordinator for Chicago Zoological and Aquatic Animal Residents, reviews significant literature and relevant topics
	Fall	<u>VCM 621: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 333: Veterinary Parasitology</u> , Zoo Medicine Student Project Coordinator <u>VCM 676: Veterinary Anesthesiology</u> , Exotic Animal Anesthesia <u>VP 340: Conservation Medicine</u> , Conservation Medicine Center of Chicago (BFZ, Loyola, UIUC), West Nile Virus – An Emerging Disease in North America

2006	Spring	<u>VCM 676: Veterinary Anesthesiology, Exotic Animal Anesthesia, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
	Fall	<u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u> <u>VCM 333: Veterinary Parasitology, Zoo Medicine Student Project Coordinator, Research Assistant</u> <u>VCM 676: Veterinary Anesthesiology, Exotic Animal Anesthesia</u> <u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
2007	Spring	<u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
	Fall	<u>VCM 676: Veterinary Anesthesiology, Exotic Animal Anesthesia</u> <u>VP 340: Conservation Medicine: Health Assessment of the Humboldt Penguin at Punta San Juan, Peru</u> <u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
2008	Spring	<u>VCM 501: Zoological Medicine Seminar, Course coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
	Fall	<u>VCM 676: Veterinary Anesthesiology, Exotic Animal Anesthesia</u> <u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u>
2009	Spring	<u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u> <u>VCM 625: Zoological Medicine, Clinical Radiology of Zoological Species</u> <u>Path 640: Conservation Medicine & Ecosystem Health: A Comprehensive Health Assessment of the Humboldt Penguin (<i>Spheniscus humboldti</i>) Population at Punta San Juan, Peru</u> <u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 598: Non-Thesis Research Supervision for 3 residents</u> <u>VCM 592: Advanced Topics in Zoological Medicine, Course Coordinator for Seminar lecture series. Ultra potent Narcotic Drugs and Safety</u>
	Fall	<u>VCM 621, 501, 598, 592</u>
2010	Spring	<u>VCM 621: Senior Zoological Medicine Rotation, Course Coordinator</u> <u>VCM 625: Zoological Medicine, Clinical Radiology of Zoological Species, Introduction to Zoological Medicine</u> <u>Path 640: Conservation Medicine & Ecosystem Health: A Comprehensive Health Assessment of the Humboldt Penguin (<i>Spheniscus humboldti</i>) Population at Punta San Juan, Peru</u> <u>VCM 501: Zoological Medicine Seminar, Course Coordinator</u> <u>VCM 598: Non-Thesis Research Supervision for 2 residents</u> <u>VCM 592: Advanced Topics in Zoological Medicine, Course Coordinator for Seminar lecture series, Introduction to Marine</u>

Mammal Medicine

	Fall	<u>VCM 601: First Year Colloquium</u> , Introduction to Careers in Zoo and Wildlife Medicine <u>VCM 621, 501, 598, 592</u>
2011	Spring	<u>VCM 621: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 625: Zoological Medicine: Exotic Felid Medicine, Careers in Zoological Medicine</u> <u>VCM 501: Zoological Medicine Seminar</u> , Course Coordinator <u>VCM 598: Non-Thesis Research</u> Supervision for 2 residents <u>VCM 592: Advanced Topics in Zoological Medicine</u> , Course Coordinator for Seminar lecture series. Narcotic Safety & Exposure in Zoological Medicine
	Fall	<u>VCM 601: First Year Colloquium</u> , Careers in Zoo and Wildlife Medicine <u>VCM 621, 501, 598, 592</u>
2012-present	Spring	<u>VCM 621: Senior Zoological Medicine Rotation</u> , Course Coordinator <u>VCM 501: Zoological Medicine Seminar</u> , Course Coordinator <u>VCM 598: Non-Thesis Research</u> Supervision for 1-3 residents <u>VCM 592: Advanced Topics in Zoological Medicine</u> , Course Coordinator for Seminar lecture series.
	Fall	<u>VCM 601: First Year Colloquium</u> , Careers in Zoo and Wildlife Medicine <u>VCM 621, 501, 598, 592</u>
2014	Fall	<u>VCM 609: Clinical Correlation Cases</u> , Reptile Medicine <u>VCM 682: Wildlife Medicine</u> , Anesthesia and Analgesia in Reptiles
2015	Spring	<u>VP 540: Ecosystem Health</u> , Evaluating Wildlife Health on the Coast of Peru, Conservation Medicine Programs at Punta San Juan (2015, 2016) <u>VCM 678: Reptile Medicine and Surgery</u> , Reptile Parasitology (2015, 2016)
	Fall	Miami University through CZS, <u>Biology 662: Animal Behavior & Conservation Advanced Inquiry Program</u> , Carnivore Health & Medicine (2015, 2016) Aurora University through CZS, <u>Ocean Explorers Discovery Course (OEDC) 5120</u> , Monitoring Health of Dolphins in Sarasota Bay <u>VCM 686: Zoological Medicine</u> , What's Your Diagnosis – Marine Mammal Respiratory Disease (2015, 2017)

2017 Spring Western Illinois University through CZS, Biology 583: Zoo & Aquarium Management, Importance of Zoological Medicine in Zoos & Aquaria

Illinois Zoological and Aquatic Animal Residency Program

Established and direct the residency program, coordinating training and the Program amongst University of Illinois College of Veterinary Medicine, Chicago Zoological Society's Brookfield Zoo, & John G. Shedd Aquarium. Accredited by the American College of Zoological Medicine the Program was established in 2004 with first resident beginning the program in 2005. Reaccreditation received in 2017. Supervise and train residents in a clinical setting and oversee graduate student research.

2005-2008	Dr. Michelle Davis, Dipl. ACZM, Senior Veterinarian Atlanta Aquarium, GA
2006-2009	Dr. Lisa Naples, Dipl. ACZM, Head Veterinarian Los Angeles Zoo, CA
2007-2010	Dr. Trevor Zachariah, Dipl. ACZM, Head Veterinarian, Brevard Zoo, Melbourne, FL
2008-2010	Dr. Kimberlee Wojick, Associate Veterinarian Roger Williams Zoo, Providence, RI
2009-2012	Dr. Gwen Jankowski, Dipl. ACZM, Resident & Masters Student, Associate Veterinarian Denver Zoological Garden
2010-2011	Dr. Rebecca Dallwig, Resident, Private practice, WI
2011-2013	Dr. Charlie Deutsch (Masters Student)
2011-2014	Dr. Benjamin Nevitt, Dipl. ACZM, Associate Veterinarian San Diego Zoo
2012-2015	Dr. Jennifer Flower, Dipl. ACZM, Resident & Masters Student, Head Veterinarian Mystic Aquarium, CT
2013-2016	Dr. Jimmy Johnson, Dipl. ACZM, Resident & Masters Student, Miami Zoo, Senior Veterinarian
2014-2017	Dr. Megan Watson, Resident, New England Zoo, Associate Veterinarian, MA
2014-2016	Lauren Kane, Masters Student
2015-2018	Dr. Dana Lindemann, Resident and Masters Student
2016-present	Dr. Karisa Tang, Resident and Masters Student
2017-present	Dr. Julie Sheldon, Resident and Masters Student

Faculty Mentoring

2016-present	Dr. Matt Allender, Asst. Prof. Dr. Santiago Gutiérrez Nibeyro, Clin. Assoc. Prof. Dr. Jason Pieper, Clin Asst. Prof. Dr. Ken Welle, Clin. Asst. Prof.
2017-2017	Dr. Julia Whittington, Clin. Assoc. to Clin Prof. 2017.

Publications

Chapters in Books

1. **Langan J**, Zdziarski J. Health and Medical Management of Callimico, *Callimico goeldii*. In: *Callimico Species Survival Plan Husbandry Manual*, ed. V. Sodaro, Chicago Zoological Society Press 2004, p. 65-75.
2. **Langan J**. Aardvark Anesthesia, In: *Zoo Animal & Wildlife Immobilization and Anesthesia*, (eds. West G, Heard D, Caulkett N), Blackwell Publishing, 2007, Chp. 29, p. 355-358.
3. **Langan J**. Polar Bear Stat. In: *The Rhino with Glue on Shoes*, (eds., Spelman L, Mashima T) Publisher: Bantam/Dell Publishing Company, Random House Book (A collection of true stories of zoo vets and their patients), 2009, p. 261-284.

4. **Langan J.** Integrated Pest Management Integrated Pest Management. In: *Zoo & Wild Animal Medicine* (7th Edition) (eds. Fowler, M and Miller E), Elsevier Saunders Inc., 2011, Chapter 8, p. 51-59.
5. **Langan J.** Tubulidentata and Pholidota. In: *Zoo Animal and Wildlife Immobilization* (2nd Ed.), (eds. West G, Heard D, Caulkett N.). Hoboken, NJ: Wiley-Blackwell. 2014, Chp. 35, p. 539-42.
6. ***Langan JN**, Jankowski G. Overview of African Wild Dog (*Lycaon pictus*) Medicine. Miller, R.E., Lamberski N., Calle, P., eds. *Fowler's Zoo and Wild Animal Medicine: Current Therapy*, Vol. 9. Elsevier. Chapter 93, pp. 22-24. Accepted, expected in print 2018.

Peer Reviewed Articles in Journals

1. **Langan J***, Schumacher J, Pollock C, Orosz S, Jones M, Harvey R. Cardiopulmonary and anesthetic effects of medetomidine-ketamine-butorphanol and antagonism with atipamezole in servals (*Felis serval*). *J Zoo Wildlife Med.* 31(3):329-334, 2000.
2. **Langan J***, Bemis D, Harbo S, Pollock C, Schumacher J. Tyzzer's disease in a red panda (*Ailurus fulgens fulgens*). *J Zoo Wildlife Med.* 31(4):558-562, 2000.
3. **Langan J***, Ramsay E, Schumacher J. Cardiopulmonary effects of intramuscular medetomidine-ketamine and intravenous propofol in ostriches (*Struthio camelus*). *J Avian Medicine and Surgery* 14(1):2-7, 2000.
4. **Langan J***, Ramsay E, Schumacher J, Chism T, Adair S. Diagnosis and management of a patent urachus in a white rhinoceros calf (*Ceratotherium simium simium*). *J Zoo Wildlife Med.* 32(2):118-122, 2001.
5. **Langan J***, Adams W, Patton S, Lindermann K, Schumacher J. Radiation and intralesional chemotherapy for a fibrosarcoma in a boa constrictor (*Boa constrictor ortonii*). *J Herp Med Surg* 11(1):4-8, 2001.
6. Adkesson M, **Langan J***. Metabolic bone disease in juvenile Humboldt penguins (*Sphenicus humboldti*): Investigation of ionized calcium, parathyroid hormone, and vitamin D3 as diagnostic parameters. *J Zoo Wildl Med.* 38(1):85-92, 2007.
7. Adkesson M, **Langan J***. Evaluation of control and treatment of *Gongylonema* spp. infections in callitrichids. *J Zoo Wildl Med.* 38(1):27-31, 2007.
8. Adkesson M, Gorman M, Whittington J, **Langan J.** *Toxoplasma gondii* inclusions in peripheral blood leukocytes of a red-necked wallaby (*Macropus rufogriseus*). *Vet Clin Path* 36(1):97-100, 2007.
9. Allender M, **Langan J***, Citino S. Investigation of aural bacterial and fungal flora following otitis in captive okapi (*Okapia johnstoni*). *Vet Dermatol.* 19(2):95-100, 2008.
10. Davis M, Kinsel M, Wasson K, Boonstra J, Warneke M, **Langan J.** Fatal disseminated encephalitozoonosis in a captive, adult Goeldi's monkey (*Callimico goeldii*) and subsequent serosurvey of the exposed conspecifics. *J Zoo Wildl Med.* 39(2):221-7, 2008.
11. Davis M, **Langan J***, Johnson Y, Ritchie B, Van Bonn W. West Nile virus seroconversion in penguins after vaccination with a killed virus vaccine or DNA vaccine. *J Zoo Wildl Med.* 39(4):582-9, 2008.
12. Davis M, **Langan J***, Mylniczenko N, Benson K, Lamberski N, Ramer J. Colonic obstruction in three captive reticulated giraffe (*Giraffa camelopardalis reticulate*). *J Zoo Wildl Med.* 40(1):181-8, 2009.
13. Kagan R, Gloor K, Mylniczenko N, **Langan J**, Kinsel M, Terio K. Morphologic evidence of hypertension in Western Grey Kangaroos (*Macropus fuliginosus*). *Vet Path.* 45(4):977-84, 2009.
14. Swinger R, **Langan J***, Hamor R. Ocular bacterial flora, tear production and intraocular pressure in a captive flock of Humboldt penguins (*Sphenicus humboldti*). *J Zoo Wildl Med.* 40(3):430-6, 2009.
15. Velguth K, Rochat M, **Langan J**, Backus K. Acquired umbilical hernias in four captive polar bears (*Ursus maritimus*). *J Zoo Wildl Med.* 40(4):767-72, 2009.

16. Landolfi J, Terio K, Kinsel M, **Langan J**, Childress A, Wellehan J. Orthoreovirus infection in rough green snakes (*Opheodrys aestivus*): Pathology and identification of a novel orthoreovirus strain via PCR and sequencing. *J Vet Diagn Invest.* 22(1):37-43, 2010.
17. Naples N, Lacasse C, Landolfi J, **Langan J**, Steiner J, Suchodolski J, Gamble K. Acute pancreatitis in slender-tailed meerkats (*Suricata suricatta*). *J Zoo Wildl Med.* 41(2):275-86, 2010.
18. Naples L, **Langan J***, Mylniczenko N, Colegrove K. Islet cell tumor in a savannah monitor (*Varanus exanthematicus*). *J Herp Med Surg.* 19(4):97-105, 2009.
19. Naples N, Kearns K, **Langan J**. Comparison of the anesthetic effects of oral versus injectable medetomidine in combination with tiletamine-zolazepam for immobilization of chimpanzees (*Pan Troglodytes*). *J Zoo Wildl Med.* 41(1):50-62, 2010.
20. Labelle A, Breau C, Hamor R, Zachariah T, **Langan J**. Ophthalmic examination and ERG evaluation in Western gray kangaroos (*Macropus fuliginosus*). *J Zoo Wildl Med.* 41(3):461-7, 2010.
21. Wojick K, **Langan J***, Adkesson MJ, Cox SK, Gamble KC. Pharmacokinetics of long-acting ceftiofur crystalline-free acid in helmeted guineafowl (*Numida meleagris*) after a single intramuscular injection. *Am J Vet Res.* 72(11):1514-8, 2011.
22. Dallwig RK, **Langan J***, Hatch DA, Terio KA, Demitros C. Bilateral hydronephrosis secondary to endometriosis managed by endoscopic ureteral stent placement in a captive Guinea baboon (*Papio papio*). *J Zoo Wildl Med.* 42(4):747-50, 2011.
23. Wojick K, **Langan J***, Mitchell M. Evaluation of MS-222 (tricaine methanesulfonate) and propofol as anesthetic agents in Sonoran desert toads (*Bufo alvarius*). *J Herp Med Surg.* 20(2-3):79-83, 2011.
24. Jankowski G, Adkesson M, **Langan J**, Haskins S, Landolfi J. Cystic endometrial hyperplasia and pyometra in three captive African hunting dogs (*Lycaon pictus*). *J Zoo Wildl Med.* 43(1):95-100, 2012.
25. Jankowski G, **Langan J***, Adkesson M, Terio K, Mylniczenko N, Meehan T, Schmitt D. Dilated ureters, renal dysplasia, and chronic renal failure in an African elephant (*Loxodonta africana*). *J Zoo Wildl Med.* 43(1):153-8, 2012.
26. Watson M, **Langan J***, Adkesson M. Bilateral carpal contracture in a neonatal addax (*Addax nasomaculatus*). *J Zoo Wildl Med.* 44(3):790-3, 2013.
27. Nevitt B, **Langan J***, Adkesson M, Delaney M, Rubin D, Muhlbauer M, Colegrove K. Multifocal *Cryptococcus neoformans* var. *neoforms*: Infection, Treatment, and Monitoring by Serial Computed Tomography in a Schmidt's Red-tailed Guenon (*Cercopithecus ascanius schmidtii*). *J Zoo Wildl Med.* 44(3):728-36, 2013.
28. Emerson J, Adkesson M, Colegrove K, Burdick S, **Langan J**. Menetrier's disease-like hypertrophic gastropathy in two red-capped mangabeys (*Cercocebus torquatus*). *Vet Q.* 34(1):29-36, 2014.
29. Landolfi J, Miller M, Maddox C, Zuckermann F, **Langan J**, Terio K. Differences in immune cell function between tuberculosis positive and negative Asian elephants. *Tuberculosis.* 94(4):374-82, 2014.
30. Nevitt B, **Langan J***, Adkesson M, Drees R. Comparison of air sac volume, lung volume, and air sac density in awake and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency using computed tomography. *Am J Vet Res.* 75(8):739-45, 2014.
31. Wells R, Smith C, Sweeney J, Townsend F, Fauquier D, Stone R, **Langan J**, Stamper M, Rowles T. Pregnancy detection for bottlenose dolphins (*Tursiops truncatus*) in Sarasota Bay, Florida. *Aquatic Mammals.* 40(3):252-9, 2014.
32. Nevitt B, **Langan J***, Adkesson M. Diagnosis, treatment and monitoring chronic lymphocytic leukemia in a bat-eared fox (*Otocyon megalotis*). *J Am Vet Med Assoc.* 245(12):1391-5, 2014.

33. Rivas A, **Langan J***, Colegrove K, Terio K, Adkesson M. Systemic herpesvirus and calicivirus infection in a black-footed cat (*Felis nigripes*) family group following vaccination. J Zoo Wildl Med. 46(1):141-5, 2015.
34. Kleinschmidt L, **Langan J***, Warneke M, Kinsel M, Allender M. Retrospective review of the prevalence of myelolipoma in Goeldi's monkeys (*Callimico goeldii*). J Zoo Wildlife Med. 46(2):273-8, 2015.
35. Johnson J, Chinnadurai S, **Langan J**, Landolfi J. Hypercalcemia and metastatic mineralization involving footpads in rock hyrax (*Procapra capensis*). J Zoo Wild Med. 46(3):565-74, 2015.
36. Nevitt BN, Chinnadurai SK, Watson MK, **Langan JN**, Adkesson MJ. Prothrombin time and activated partial thromboplastin time using a point-of-care analyzer (Abaxis VSpro®) in Bennett's wallabies (*Macropus rufogriseus*). Aust Vet J. 94(10):384-6, 2016.
37. Johnson JG, **Langan JN***, Gilor C. Treatment of diabetes mellitus in a golden lion tamarin (*Leontopithecus rosalia*) using the glucagon-like peptide-1 mimetic exenatide. J Zoo Wildl Med. 47(3):903-906, 2016.
38. Cannizzo SA, **Langan JN***, Warneke M, Allender M. Evaluation of in-house urine dipstick, reference laboratory urinalysis, and urine protein:creatinine ratio from a colony of callimicos (*Callimico goeldii*). J Zoo Wildl Med. 47(4):977-983, 2016.
39. Kane L, **Langan JN***, Adkesson M, Chinnadurai S, Nevitt B, Drees R. Successful treatment of mandibular osteomyelitis in two red-necked wallabies (*Macropus rufogriseus*) using long-term pharmaceutical therapy and serial monitoring by computed tomography imaging. J Am Vet Med Assoc. 251(9):1070-1077, 2017.
40. Sheldon J, Adkesson M, Allender M, Jankowski G, **Langan J**, Cardeña M, Cárdenas-Alayza S. Determination of tear production and intraocular pressure using rebound tonometry in wild Humboldt penguins (*Spheniscus humboldti*). J Avian Med Surg. 31(1):16-23, 2017.
41. Chinnadurai SK, Johnson JG III, **Langan JN**. Comparison of three methods for preventing perianesthetic hypothermia in Callimicos (*Callimico goeldii*). J Am Assoc Lab Anim Sci. 56(3):318-321, 2017.
42. Adkesson MJ, Levengood JM, Scott JW, Schaeffer DJ, Langan JN, Cárdenas-Alayza S, de la Puente S, Majluf P, Yi S. Assessment of Polychlorinated Biphenyls, Organochlorine Pesticides, and Polybrominated Diphenyl Ethers in the Blood of Humboldt Penguins (*Spheniscus humboldti*) from the Punta San Juan Marine Protected Area, Peru. J Wild Dis. 2018 Jan 5. Doi: 10.7589/2016-12-270 [epub ahead of print]
43. Weeks JM, **Langan JN***, Gelb H, Nevitt BN, Corner SM, Adkesson MJ. Syringomyelia in the thoracolumbar spinal cord of an African wild dog (*Lycaon pictus*). Biomed J Sci & Tech Res. Doi: 10.26717/BJSTR.2017.01.000425. Nov. 2017.
44. Nevitt B, Adkesson M, **Langan J**, West P. Lumbar hemilaminectomy due to discospondylitis associated intervertebral disc herniation in an armadillo (*Oryzomys ather*). J Am Vet Med Assoc. 252(4):464-472, 2018.

Non-Peer Reviewed Articles in Journals

1. Folland D, Horton S, **Langan J**, Murray M, Riggs G, Schwartz G, Souza M. Technology and the 21st century exotic animal veterinarian: positives and negatives. J Avian Med Surg. 25(4):295-9, 2011.

Conference Proceedings

1. **Langan J**. Marine Mammal Medicine. American College of Zoological Medicine Review Course Proceedings. University of Wisconsin, Madison, 2003.

2. McNamara B, **Langan J**, McGill P. Morbidity and Mortality Study: Review of National Data (1985-2002) for Micronesian Kingfishers (*Halcyon cinnamomina cinnamomina*). Guam Kingfisher SSP Joint Meeting, Lincoln Park Zoo, Chicago, IL. October 2003.
3. Zdziarski J, **Langan J**, Ramer J. Workshop - Primate Taxonomy, Medicine, Anesthesia, Common Diseases & Diagnostic Testing. Proceedings American Association of Zoo Veterinarians Conference, Minneapolis, MN, October 2003.
4. **Langan J**. Marine Mammal Medicine. American College of Zoological Medicine Review Course. University of Wisconsin, Madison, 2005.
5. **Langan J**. West Nile Virus Review & Update in Zoological Species, 4th Annual Exotics Symposium, University of Tennessee, College of Veterinary Medicine, 2006.
6. **Langan J**. Exotic Animal Anesthesia, 4th Annual Exotics Symposium, University of Tennessee, College of Veterinary Medicine, 2006.
7. **Langan J**. Introduction to Anesthesia in Non-Domestic Species, University of Illinois Fall Conference, 2006.
8. **Langan J**, Davidowski L. Avian and Reptilian Radiology, University of Illinois Fall Conference, 2007.
9. Son J, **Langan J**. Infectious Disease Survey of Free-ranging House mice (*Mus musculus domesticus*) and White-footed Mice (*Peromyscus leucopus*) at Brookfield Zoo. Center for Zoonosis Research Summer Program Proceedings, paper and poster, 2008.
10. Carpenter R, Shipley C, **Langan J**. Immobilization of Exotic Species, University of Illinois Fall Conference Proceedings, 2008.
11. **Langan J**. Exotic Animal Radiology & Case Series Review. Exotic Animal Medicine Conference for Clinical Practitioners. Proceedings American Association of Zoo Veterinarians Conference. South Padre, TX. October, 2010.
12. **Langan J**. Anesthesia and Analgesia in Reptiles. American Veterinary Medical Association Conference, Chicago, IL, July 2013. (4 pages)
13. **Langan, J**. Anesthesia and Analgesia in Amphibians. American Veterinary Medical Association Conference, Chicago, IL, July 2013. (4.5 pages)
14. **Langan, J**. Exotic Animal Anesthesia. American Association of Zoo Veterinarians - Exotic Animal Medicine Conference for Practitioners, Salt Lake City, UT, October 2013. (4.5 pages)
15. **Langan, J**. Radiographic Positioning and Interpretation in Exotic Animals. Animal Anesthesia. American Association of Zoo Veterinarians - Exotic Animal Medicine Conference for Practitioners, Salt Lake City, UT, October 2013. (4 pages)
16. Woodburn, D, Terio, K, Kinsel, M, Landolfi, J, **Langan, J**. Non-regenerative anemia in a Goeldi's monkey (*Callimico goeldii*). Zoological Pathology Workshop, American Association of Zoo Veterinarians Conference, Orlando, Florida. October 2014. (3 pages)
17. Terio K, Chinnadurai S, Woodburn D, Kinsel M, **Langan J**. Aspergillus sinus fungal ball in a ring-tailed lemur (*Lemur catta*). Proceedings American Association of Zoo Veterinarians Zoo Pathology Workshop Proceedings, Portland, OR, September 27, 2015. (3 pages)
18. **Langan J**. Anesthesia and Analgesia in Reptiles. University of Illinois College of Veterinary Medicine Fall Conference Proceedings, Urbana, IL, September 14, 2016. (4 pages)

Abstracts

1. **Langan J**, Dahill E. Oncology in Non-Domestic Species. Proceedings of the 21st Annual American College of Internal Medicine Forum, Charlotte, NC, 2003.
2. **Langan J**. Review of Zoonotic Diseases in Exotic Patients: Carnivores, Marsupials, Birds, Reptiles, Primates, Hoofstock. Proceedings of the 140th Annual Convention of the American Veterinary Medical Association, Denver, CO, 2003. ISSN#1524-7333.

3. **Langan J**, Lyman J, Lemberger K, Pessier A. Unexpected Hypothermia Induced Deaths in Guinea Baboons (*Papio hamadryas papio*). Proceedings American Association of Zoo Veterinarians Conference, Minneapolis, MN, p. 75, October 2003.
4. **Langan J**. Managing Dental Disease in Aardvarks (*Orycteropus afer*). Proceedings American Association of Zoo Veterinarians Conference, Minneapolis, MN, p. 93-5, October 2003.
5. Adkesson M, **Langan J**, Paul A. Control and Treatment of *Gongylonema* sp. infections in Callitrichids, Proceedings American Association of Zoo Veterinarians, Conference, Minneapolis, MN, p. 60-1, October 2003.
6. Adkesson M, **Langan J**. Metabolic Bone Disease in Captive Humboldt Penguins (*Spheniscus humboldti*) and Normal Ionized Calcium, Parathyroid, and Vitamin D₃ Values. Proceedings American Association of Zoo Veterinarians Conference, San Diego, CA, p. 271-2, September 2004.
7. Swinger R, **Langan J**, Hamor R. Intraocular Pressure, Tear Production, and Conjunctival Bacteriologic Culture Results from a Captive Flock of Humboldt Penguins. Annual Conference of the American College of Veterinary Ophthalmologists, Washington DC, October 2004.
8. Linztenich B, **Langan J**, Meehan T. Complications associated with diet manipulation in Callimico (*Callimico goeldii*). Proceedings American Association of Zoo Veterinarians Conference, Omaha, NE, p. 8, October 2005.
9. Kagan R, Gloor K, Mylniczenko N, **Langan J**, Kinsel M, Terio K. Morphologic evidence of hypertension in Western Grey Kangaroos (*Macropus fuliginosus*). Proceedings American Association of Zoo Veterinarians Conference, Knoxville, TN, p. 15, October 2007.
10. Marrow J, **Langan J**. Presumptive Hypertension and Related Blindness (Ocular Disease) in Slender Loris (*Loris tardigadus*). Proceedings American Association of Zoo Veterinarians Conference, Knoxville, TN, p. 193, October 2007.
11. Davis M, **Langan J**, Van Bonn W, Johnson Y. Comparison of West Nile Virus titer in four species of penguins. Proceedings American Association of Zoo Veterinarians Conference, Knoxville, TN, p. 158-9, October 2007.
12. Davis M, Johnson Y, Van Bonn W, **Langan J**. Application of Survival Analysis for the Comparison of Time to Seroconversion and Duration of Seropositive Status for WNV Titers in Four Species of Penguins, Conference for Research Workers in Animal Diseases, Chicago, IL, December 2007.
13. Zachariah T, Mylniczenko N, **Langan J**, Stapp E, Terio K. Cauda Equina Neuritis in a Baird's Tapir (*Tapirus bairdii*). Proceedings American Association of Zoo Veterinarian Conference, Los Angeles, CA, p. 61, October 2008.
14. **Langan J**, Mylniczenko N, Van Bonn W. Management of pulmonary abscess in a bottlenose dolphin (*Tursiops truncatus*). International Association of Aquatic Animal Medicine Conference, San Antonio, TX, April 2009.
15. Zachariah T, **Langan J**, Mylniczenko N, Carpenter R, Labelle A. Effects of ketamine, medetomidine and isoflurane on blood pressure in Western gray kangaroos (*Macropus fuliginosus*). American Association of Zoo Veterinarian Conference, Tulsa, OK, 2009.
16. Naples L, Kearns K, **Langan J**. Comparison of the anesthetic effects of oral versus injectable medetomidine in combination with tiletamine-zolazepam for immobilization of chimpanzees (*Pan Troglodytes*), American Association of Zoo Veterinarian Conference, Tulsa, OK, p. 160, 2009.
17. Naples L, Kanzia J, Warneke M, **Langan J**. The effect of artificial light supplementation on vitamin D serum concentrations in callimico (*Callimico goeldii*), American Association of Zoo Veterinarian Conference, Tulsa, OK, p. 156-7. 2009.
18. **Langan J**. Exotic Animal Radiology & Exotic Animal Radiology Case Review. Exotic Animal Medicine Conference for Clinical Practitioners. Proceedings American Association of Zoo Veterinarians Conference. South Padre, TX, 2010.
19. Jankowski G, **Langan J**, Adkesson M, Terio K, Mylniczenko N, Meehan T, Schmitt D. Dilated ureters, renal hypoplasia and chronic renal failure in an African elephant (*Loxodonta africana*).

- Proceedings American Association of Zoo Veterinarians Conference. South Padre, TX, p. 178. 2010.
20. Padurkis N, **Langan J**, Terio K, Mylniczenko N. Multipathogen Infections with Concurrent Feline Leukemia Virus in a Black Footed Cat (*Felis nigripes*). Proceedings American Association of Zoo Veterinarians Conference. South Padre, TX, p. 256. 2010.
 21. Zachariah T, **Langan J**, Kinsel M. Presumed hypovitaminosis A secondary to chronic bile duct obstruction in a Herman's tortoise (*Testudo hermanni*). Proceedings Association of Reptilian and Amphibian Veterinarians Conference. South Padre, TX, p. 117. 2010.
 22. Zachariah T, Mitchell M, **Langan J**, Aceierno M. Hemolymph osmolality of the Chilean rose spider (*Grammostola rosea*). Proceedings Association of Reptilian and Amphibian Veterinarians Conference. South Padre, TX, p. 86. 2010.
 23. Beagley J, Lowder M, **Langan J**, Citino S. Dental conditions of captive black rhinoceros (*Diceros bicornis*). Proceedings American Association of Zoo Veterinarians Conference. South Padre, TX, p. 138. 2010.
 24. **Langan J**, Adkesson M, Sanchez C, Dallwig R, Delaney M, Rubin D, Muhlbauer M, Colegrove K. Disseminated *Cryptococcus neoformans* var. *neoforms*: Infection and treatment in a Schmidt's red-tailed guenon (*Cercopithecus ascanius schmidtii*). Proceedings American Association Zoo Veterinarians Conference, Kansas City, MO, p. 122. 2011.
 25. Smith C, Johnson S, Solano M, Wells R, Schwacke L, Cendejas V, **Langan J**, Sakhaee K, Rowles T, Venn-Watson S, Jensen E. Renal ultrasound survey of wild and managed wild bottlenose dolphins (*Tursiops truncatus*) for evidence of nephrolithiasis. International Association of Aquatic Animal Medicine Conference Proceedings, Atlanta, GA, April 2012.
 26. Adkesson M, Mujluf P, Cardeña M, Cardenas S, **Langan J**, Jankowski G, De la Puente S, Allender M, Watanabe A, Macek M. From penguins to fur seals: Marine ecosystem conservation projects at Punta San Juan, Peru. International Association of Aquatic Animal Medicine Conference Proceedings, 2012.
 27. **Langan J**, Pauley J, Meehan T. Veterinary collaboration in support of Cook County Forest Preserve Programs. Forest Preserve District of Cook County Science and Research Symposium, April 2012.
 28. Nevitt B, Adkesson M, Sanchez C, **Langan J**, Jankowski G, West P. Treatment of discospondylitis associated intervertebral disk herniation in an aardvark (*Orycteropus afer*): Lessons on ICU Care and Rehabilitation following lumbar hemilaminectomy. American Association of Zoo Veterinarians Conference Proceedings, Oakland, CA, p. 80, October 2012.
 29. Anderson E, Adkesson M, Delaney M, **Langan J**, Sanchez C. Immune mediated hemolytic anemia secondary to disseminated B-cell lymphoma in a California sea lion (*Zalophus californianus*), American Association of Zoo Veterinarians Conference Proceedings, Oakland, CA, p. 218, October 2012.
 30. **Langan J**, Adkesson M, Cardeña M. Understanding risks to Humboldt penguins: A health assessment of the Guanay cormorant (*Phalacrocorax bougainvillii*) and Peruvian pelican (*Pelecanus thagus*) populations in the Punta San Juan ecosystem. International Association of Aquatic Animal Medicine Conference, Sausalito, CA, April 2013, p.368-369.
 31. Nevitt B, **Langan J**, Drees R, Adkesson M. Comparison of air sac volumes and lung density in awake and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency using computed tomography. University of Illinois, College of Veterinary Medicine Research Day, Urbana, IL, April 2013.
 32. Nevitt, B, **Langan J**, Drees R, Mitchell M, Adkesson M. Comparison of air sac and lung volume in awake and anesthetized Humboldt penguins (*Spheniscus humboldti*) positioned in ventral, dorsal, and right lateral recumbency using computed tomography. American Association of Zoo Veterinarians Conference Proceedings, Salt Lake City, UT, p 111, October 2013. Placed 4th in the Morris Animal Foundation post-graduate competition.

33. Kleinschmidt L, **Langan J**, Warneke M, Allender, M. Retrospective review of the prevalence of myelolipomas in Goeldi's monkey's (*Callimico goeldii*) and implications for future study. American Association of Zoo Veterinarians Conference Proceedings, Salt Lake City, UT, October 2013, p.181-182 Abstract & poster.
34. **Langan J**, Kleinschmidt L, Warneke M, Allender M. Retrospective review of the global prevalence of myelolipomas in Goeldii's monkeys (*Callimico goeldii*) and implications for future study. International Conference on Diseases of Zoo and Wild Animals Proceedings, Warsaw, Poland, May 2014.
35. Flower J, **Langan J**, Chinnadurai S, Nevitt B, Stacey R, Adkesson, M. Neonatal critical care and hand-rearing of a bottlenose dolphin calf (*Tursiops truncatus*). American Association of Zoo Veterinarians Conference, Orlando, FL; October 2014.
36. Johnson, J, Chinnadurai, S, Landolfi, J, **Langan, J**. Hypercalcemia and metastatic mineralization associated with renal disease in rock hyraxes (*Procavia capensis*). American Association of Zoo Veterinarians Conference, Orlando, FL, October 2014.
37. Kane L, **Langan J**, Adkesson M, Chinnadurai S, Nevitt B, Drees R. Successful treatment of mandibular osteomyelitis in two red-necked wallabies (*Macropus rufogriseus*) using long-term pharmaceutical therapy and serial monitoring by computed tomography imaging. American Association of Zoo Veterinarians Conference, Orlando, FL; October 2014.
38. Cannizzo S, **Langan J**, Warneke M, Allender M. Evaluation of in-house urine dipstick, reference laboratory urinalysis, and urine protein:creatinine ratio from a colony of Goeldi's monkeys (*Callimico goeldii*). American Association of Zoo Veterinarians Conference, Orlando, FL; October 2014.
39. Kazaniwskyj V, **Langan J***, Stacey R, Chinnadurai S, Nevitt B, Adkesson M. Successful pregnancy and parturition in a bottlenose dolphin (*Tursiops truncatus*) with subnormal progesterone levels. Poster & abstract in the Proceeding of the International Association of Aquatic Animal Medicine Conference, Chicago, IL, April 2015.
40. Flower J, **Langan J***, Stacey R, Chinnadurai S, Nevitt B, Adkesson M. Neonatal critical care and hand-rearing of a bottlenose dolphin calf (*Tursiops truncatus*). Proceedings of the International Association of Aquatic Animal Medicine Conference, Chicago, IL, April 2015.
41. Stoneburg S, **Langan J***, Adkesson M, Chinnadurai S, Drees R. Pituitary dependent hyperadrenocorticism in a golden lion tamarin (*Leontopithecus rosalia*). Poster & abstract in the Proceedings of the American Association of Zoo Veterinarians Conference, Portland, OR, September 2015.
42. **Langan JN***, Ivančić M, Adkesson MJ, Chinnadurai CK, Houser D, Stacey R, Whitehead H, Chu C, Morell M, Colegrove K. Antemortem diagnosis of hydrocephalus and hearing loss associated with chronic Brucella infection in a stranded rehabilitated bottlenose dolphin (*Tursiops truncatus*). May 21-26, 2016 International Association of Aquatic Animal Medicine Conference, Virginia Beach, VA, USA.
43. Woodburn D, Allender M, Maddox C, Hoyer L, Miller A, Haman K, **Langan J**, Poll C, Bergh S, Reavill D, Terio KA. Nannizziopsiaceae spp. Infection in aquatic chelonians. American College of Veterinary Pathologists (ACVP) and American Society for Veterinary Clinical Pathology (ASVCP) Conference December 3-7, 2016. New Orleans, LA, USA.
44. Colegrove K, **Langan JN** et al. Tursiops Chronic Brucella Mystery Case Pathology Workshop. American College of Veterinary Pathologists (ACVP) and American Society for Veterinary Clinical Pathology (ASVCP) Conference December 3-7, 2016. New Orleans, LA, USA.
45. Ivančić M, Smith MR, Meegan JM, Emory-Gomez FM, Renner MS, Adkesson MJ, **Langan JN**, Mylniczenko ND, Nolan EC, Jensen ED. Comparative interpretation of thoracic radiography, ultrasound, and CT: a multimodal approach to bottlenose dolphin lung imaging. May 21-26, 2016 International Association of Aquatic Animal Medicine Conference, Virginia Beach, VA, USA.
46. Flower JE, **Langan JN***, Wells RS, Cray C, Arheart K, Chinnadurai SK, Adkesson MJ. Serum acute phase proteins in bottlenose dolphins (*Tursiops truncatus*) and correlation with commonly

- utilized inflammatory indices. May 21-26, 2016 International Association of Aquatic Animal Medicine Conference, Virginia Beach, VA, USA.
47. Johnson JG, **Langan JN***, Chinnadurai SK, Drees R, Warneke M, Allender MC. Transcutaneous ultrasound evaluation of kidney and adrenal gland size in healthy callimico (*Callimico goeldii*) and comparison with measurements using computed tomography. 2016 Joint AAZV/EAZWV/IZW Conference. July 16-22, Atlanta, GA, USA.
 48. Watson M, Chinnadurai SK, **Langan J**. Evaluation of noninvasive oscillometric blood pressure monitoring in anesthetized Bennett's wallabies (*Macropus rufogriseus*). 2016 Joint AAZV/EAZWV/IZW Conference. July 16-22, Atlanta, GA, USA.
 49. Chinnadurai SK, Johnson JG, **Langan JN**. Comparison of three methods of preventing peri-anesthetic hypothermia in callimico (*Callimico goeldii*). 2016 Joint AAZV/EAZWV/IZW Conference. July 16-22, Atlanta, GA, USA.

Public Media

1. University of Illinois – Brookfield Zoo Web blog during the 2008 field season, Humboldt Penguin Conservation in Punta San Juan, Peru
2. Smithsonian Institution, Smithsonian Channel – television programs developed and filmed across collaborating residency institutions. 1.) Zoo Vets: Claws, Paws, and Fins, 2.) Zoo Vets: Fangs, Flippers and Tusks. <http://www.smithsonianchannel.com/site/sn/search.do?q=zoo+vet>
3. Chicago Zoological Society's / Brookfield Zoo's Veterinary Department Programs were highlighted in a feature article on "Innovation in Veterinary Care", in the October issue of the AZA (Association of Zoos and Aquariums) Connect Magazine.
4. Brookfield Zoo Veterinary Department participated in filming by WTTW (public television) for an upcoming broadcast on Advances in Veterinary and Animal Care at Chicago Zoological Society.
5. Brookfield Zoo's veterinary team was prominently featured in a three part story in the July 15, 2017 Journal of the American Veterinary Medical Association on zoo and wildlife veterinarians.

Book Reviews

1. **Erdtmann (Langan) J**. Book review - Manual of Avian Practice, A. E. Rupley, 556 pgs, W.B. Saunders Publishing, J Avian Med and Surgery 12(3) p. 222, 1998.
2. **Langan J**. Zoo and Wildlife Medicine, 5th ed., (eds. Fowler M. & Miller E.) 782 pgs, Saunders, Elsevier Science Publishing, JAVMA, Vol. 224(6), p. 857, 2003.
3. **Langan J**. Veterinary Nursing of Exotic Pets. S. Girling, 314 pgs, Blackwell Publishing J Zoo Wildl Med. 34(4): 420-422, 2003.
4. **Langan J**. Biology, Medicine and Surgery of Elephants. (eds. M. Fowler & S. Mikota) 565 pgs, Blackwell Publishing, JAVMA, Vol. 231(6), p. 884, 2007.

Grants

1. Swinger R, **Langan J**, Hamor R. Intraocular Pressure, Tear Production, and Conjunctival Bacteriologic Culture Results from a Captive Flock of Humboldt Penguins. Judi Fleish, Individual Donor, Gift for student projects at Brookfield Zoo 2003. \$4370
2. Vuolo S, **Langan J**, McGill P. Evaluation of West Nile Virus in the North American Humboldt Penguin (*Spheniscus humboldti*) Population, Summer Program in Conservation, Wildlife Population Medicine and Ecosystem Health, University of Illinois 2004, \$5000

3. Adkesson M, **Langan J**, Wells, R. Assessment of Blood Gas Parameters in Wild and Captive Bottlenose dolphins (*Tursiops truncatus*) and validation of the i-STAT Portable Chemical Analyzer. Geraldine R. Dodge Foundation 2004, \$5585
4. Lux K, **Langan J**. Chicago Zoological & Aquatic Animal Medicine Residency Program. Max McGraw Foundation Grant 2006, \$7500
5. Davis M, **Langan J**, Van Bonn W. Comparison of West Nile Virus Titers in Four Species of Penguins. Chicago Board of Trade Conservation Grants 2006, \$4,500
6. Davis M, **Langan J**, Van Bonn W. Comparison of West Nile Virus Titers in Three Species of Penguins: Killed Whole Virus Vaccine vs. DNA Plasmid Vaccine, Penguin Taxon Advisory Group 2006, \$3,560
7. **Langan J**, Adkesson M. A Population Health Assessment of the Humboldt Penguin (*Spheniscus humboldti*) at Punta San Juan, Peru. Endorsed by the AZA Humboldt Penguin SSP, Chicago Zoological Society's Chicago Board of Trade Endangered Species Fund 2006, \$4800
8. Adkesson M, **Langan J**. A Comprehensive Health Assessment of the Humboldt Penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Saint Louis Zoological Park, Field Research Conservation Program Grant, 2006, \$10,000
9. Dierenfield E, Adkesson M, **Langan J**. Evaluation of Amino Acids and Micro Minerals in Free-Ranging Humboldt Penguins. Saint Louis Zoological Park Nutrition Services WildCare Center Grant 2006, \$4,600
10. **Langan J**, Smith K. Leading Conservation and Management of Endangered Humboldt Penguins. Chicago Zoological Society's Women's Board Conservation Grant 2007, \$5,000
11. Adkesson M, **Langan J**. A Comprehensive Health Assessment of the Humboldt Penguins (*Spheniscus humboldti*) population at Punta San Juan, Peru. Sea World Busch Gardens Conservation Grant 2007, \$5,940
12. **Langan J**, Adkesson M, A Population Health Assessment of the Humboldt Penguin (*Spheniscus humboldti*) at Punta San Juan, Peru, endorsed by the AZA Humboldt Penguin SSP, Chicago Zoological Society's Chicago Board of Trade Endangered Species Fund 2007, \$5,000
13. Adkesson M, **Langan J**. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Saint Louis Zoo Field Research for Conservation Program Grant 2007, \$10,000
14. Adkesson M, **Langan J**. A preliminary health assessment of the avifauna in the Punta San Juan ecosystem: Understanding potential disease threats to the Humboldt penguin (*Spheniscus humboldti*) population, Saint Louis Zoo Field Research for Conservation Program Grant 2007, \$9,885
15. **Langan J**, Adkesson M. Continued health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru, Chicago Zoological Society's Chicago Board of Trade Endangered Species Fund Grant 2007, \$5,000
16. Lux K, **Langan J**, Strahl S. Chicago Zoological & Aquatic Animal Medicine Residency Program. Max McGraw Foundation Grant 2007, \$10,000
17. Adkesson M, **Langan J**. A comprehensive health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru, Field Research in Conservation, WildCare Institute, Saint Louis Zoo Field Research Conservation Grant, Spring 2008, \$10,000
18. **Langan J**, Adkesson M. Understanding risks to the Humboldt penguin: A health assessment of Guanay cormorant and Peruvian pelican populations. Chicago Zoological Society, Chicago Board of Trade Endangered Species Fund Grant, Spring 2008, \$5,000
19. Adkesson M, **Langan J**. A preliminary health assessment of the avifauna in the Punta San Juan ecosystem: Understanding potential disease threats to the Humboldt penguin (*Spheniscus humboldti*) population, Field Research in Conservation, WildCare Institute, Saint Louis Zoo Grant Spring 2008, \$9,885

20. **Langan J**, Adkesson M. Continued health assessment of the Humboldt penguin (*Spheniscus humboldti*) population at Punta San Juan, Peru. Chicago Zoological Society, Chicago Board of Trade Endangered Species Fund Grant, Winter 2008, \$5,000
21. Naples L, **Langan J**. The effect of UV light supplementation on vitamin D levels in callimico monkeys (*Callimico goeldii*), Chicago Board of Trade Endangered Species Fund, Fall 2008, \$4,850
22. **Langan J**, Smith K. Leading Conservation and management of Endangered Humboldt Penguins, Chicago Zoological Society's Women's Board Conservation Grant 2008, \$5,000
23. Son J, **Langan J**. Infectious Disease Survey of Free-ranging House mice (*Mus musculus domesticus*) and White-footed Mice (*Peromyscus leucopus*) at Brookfield Zoo. University of Illinois, Center for Zoonosis Research Summer Program 2008, \$4300
24. Adkesson M, **Langan J**, Beasley V, Levengood J, Yi S. An assessment of toxicant exposure in the Humboldt penguin population at Punta San Juan, Chicago Zoological Society, Chicago Board of Trade Endangered Species Fund, 2009, \$4,630
25. Adkesson M, **Langan J**, Macek M. A Comprehensive Health Assessment of the Humboldt Penguin (*Spheniscus humboldti*) Population at Punta San Juan, Peru. Alertis Fund for Bear and Nature Conservation 2009, € 3,245 (Euros)
26. Adkesson M, Dubach J, **Langan J**. Genetic Assessment of the Humboldt Penguin Population at Punta San Juan over a 17 year period. Saint Louis Zoo Field Research for Conservation Program Grant received in 2009, \$9,630
27. Adkesson M, Levengood J, Yi S, **Langan J**, Beasley V. An assessment of toxicant exposure in the Humboldt penguin at Punta San Juan. Chicago Board of Trade Endangered Species Grant received in 2009, \$4,630
28. Adkesson M, **Langan J**, Leading Conservation and management of Endangered Humboldt Penguins, \$5,000 Chicago Zoological Society's Women's Board Grant – 2010
29. Wojick K, **Langan J**, Gamble K, Adkesson M. Pharmacokinetics of the long-acting intramuscular antibiotic, Excede™, in helmeted guineafowl (*Numida meleagris*) as a model for endangered and threatened avifauna in captive collections, Chicago Board of Trade Endangered Species Grant, \$5,000, Project completed Spring 2010
30. Deutsch C, **Langan J**, Anchor C, Maddox C, Mitchell M, Meehan T. Investigation of Antibiotic Resistance in Turtles and Fish from Salt Creek and Busse Woods with Varying Exposure to Outflow from a Wastewater Treatment Plant, Center for One Health Illinois, Capstone Grants 2011, \$15,828
31. Landolfi J, Terio K, **Langan J**. The role of cellular immunity in Asian elephant susceptibility to *Mycobacterium* spp. Chicago Board of Trade Endangered Species Grants. April-Sept. 2011. \$3,339

Continuing Education

- | | |
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| 1995 | Joint Conference of the American Association of Zoo Veterinarians (AAZV) & American Association of Wildlife Veterinarians (AAWV), East Lansing, MI
- AAZV Workshop – 2nd Annual Zoo & Wildlife Pathology Workshop
- AAWV Workshops – Tuberculosis in Wildlife, Game Ranching and Zoos, How to Get the Most from your Carcass |
| 1997 | Joint Conference of AAZV & American Association of Reptile and Amphibian Veterinarians (ARAV), Houston, TX
- AAZV Workshops – Marine Mammal Medicine, Reptile Medicine Clinical Conference
- ARAV Workshop – Reptile Medicine and Surgery |

- 1997, 98 The University of Tennessee, College of Veterinary Medicine, Veterinary Continuing Education Conference, Topics in Exotic Animal Medicine
- 1998 European Association of Zoo and Wildlife Veterinarians, Chester, England
- 1998 Joint Conference of AAZV & AAWV, Omaha, NE
 - Workshop – Fish Medicine and Surgery
- 1998 The University of Tennessee, College of Veterinary Medicine
 - Fish Medicine VM 864-89152
 - Multispecies Medicine VM 864
 - Zoology for Veterinarians
 - Seminars in Zoological Animal Medicine
 - Nutrition Series VM 864-89017
 - Raptor Management VM 846-89020
- 1999 North American Veterinary Conference, Orlando, FL
- 1999 University of Illinois College of Veterinary Medicine, 5th Annual Emerging Infectious Disease Conference
- 1999 Joint Conference of AAZV & ARAV – Columbus, OH
 - Master Class – Fish Medicine
- 2000 American College of Zoo Medicine (ACZM) Review Course, NC
- 2000 Joint Conference of AAZV & International Association for Aquatic Animal Medicine (IAAAM), New Orleans, LA
 - AAZV Workshop – Marine Mammal Medicine
 - IAAAM Workshop – Fish Parasitology
- Board Review Short Course - American College of Zoological Medicine Certification
- 2001 ACZM Board Review Course, NC
- 2002 AAZV Conference – Milwaukee, WI
 - Workshops – Rhino Fertility, Laser Surgery, Emerging Wildlife Diseases
- 2003 American College of Veterinary Internal Medicine Conference, Charlotte, NC
- 2003 Joint Conference of AAZV & ARAV – Minneapolis, MN
- 2005 Joint Conference of AAZV & AAWV – Omaha, NE
 - Workshop – Shark Medicine
- 2006 University of Illinois College of Veterinary Medicine, 16th Annual Fall Conference for Veterinarians
- 2007 Joint Conference of AAZV & AAWV – Knoxville, TN
- 2008 AAZV Conference – Los Angeles, CA
 - Session Chair – Primate Session
- 2009 IAAAM Main Conference – San Antonio, TX
 - Workshop – Marine Mammal Ophthalmology
- 2010 Joint Conference of AAZV & ARAV – South Padre, TX
- 2011 Executive Veterinary Program, University of Illinois - Small Animal Ultrasound
- University of Illinois College of Veterinary Medicine, 21st Annual Fall Conference for Veterinarians
- Joint Conference of AAZV & ARAV – Kansas City, MO
- 2013 IAAAM Main Conference – Sausalito, CA
- 2013 AAZV Conference – Salt Lake City, UT
- 2014 European Zoo and Wildlife Veterinarian Conference, Warsaw, Poland
 - Workshop – Anesthesia
- AAZV Conference – Orlando, FL
 - Workshop – Elephant Medicine, Hoof Trimming
- 2015 AAZV Conference – Portland, Oregon
 - Session Chair – Megavertebrate & Ungulates
- 2016 ECZM Annual General Meeting & Examination Committee Meeting, Belgium

AAZV Conference – Atlanta, GA (1 day attendance)
- Poster Session Chair

R. LEE KELLAR
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PROFESSIONAL EXPERIENCE:

General Curator Coral World St. Thomas USVI (2008-Present)

- Developed and led a \$10 million dolphin interaction facility from concept through permitting including animal acquisition.
- Operate Coral World Ocean Park a for profit marine facility for sustainability and profitability
- Lead a high performing team of animal care experts, veterinarians, and trainers
- Lead a team of attorneys, planners, designers, architects, and consultants to acquire a major Land and Water use Coastal Zone Management permit for future development
- Organize and develop applications and presentations for Coastal Zone Management permits, Army Corps of Engineers, and other regulatory agencies
- Testified at public hearings in Coral World's behalf
- Doubled revenue from animal interactive programs
- Developed the Aquarium's Institutional Animal Care and Use Committee
- Operate and certify reverse osmosis drinking water plant- insure plant and distribution system meets all US and territorial standards
- Develop and enforce all policies for Coral World Park employees
- Through staff and contractors operate and manage onsite sewage treatment plant
- Manage and plan for all land acquisition negotiate leases
- Cultivate relationships with territorial, University, and federal agencies for mutual benefit
- Negotiate contracts with stateside and territorial contractors
- Manage relations with Territorial emergency planning team (VITEMA)
- Create and certify Spill Prevention, Control, and Countermeasure Plan (SPCC)
- Lead the facility against radical animal activist groups in person and in media
- Formed emergency and safety committee and organized safety meetings
- Hold two USDA PPQ permits Containment Director for Butterfly Garden St Thomas

Husbandry Director/Facilities Manager, Alaska SeaLife Center, Seward, AK (1999-2009)

- Responsible for a staff of 45, as the Center's lead on animal husbandry information technology and facilities matters
- Provide strategic leadership regarding animal and facility operations issues
- Ensure that the Alaska SeaLife Center complies with OSHA, EPA, USDA-APHIS and other applicable regulations.
- Lead the Center's Institutional Animal Care and Use Committee
- Operate the infrastructure including information services, trades, utilities, project management, and insurance of the facility through subordinate supervisors
- Manage a budget of \$3.5 Million
- Develop and manage grants for Salmon Restoration (Alaska SSSF) and US Department of Commerce Stranding grants \$1.5-\$2 million/year
- Member of master planning team
- Member of strategic planning team
- Manage real estate purchase and leases
- Develop working relationships with Alaska Native Subsistence groups Alaska Beluga Commission, Ice Seal Commission, Alaska Native Harbor Seal Commission, and Alaska Steller Sea Lion and Sea Otter Commission, Bristol Bay Marine Mammal Committee
- Develop all security procedures and through a Chief of Security ensured that staff of security officers performed 24/7 duties

- Lead a high performing team (internationally recognized International Marine Animal Trainers Association)
- Present complex issues in layman's terms to a diverse audience
- Lobbied for friend raising and fundraising
- Develop relationships with Congressmen, Senators, former governors, and staff.
- Develop and practiced emergency evacuation and response training and drills
- Manage team to develop, fund, and host Alaska Statewide Stranding Conference (2006, 2007, 2008, 2009)
- Through subordinate supervisors managed FEMA claims for flood damage (2006) and electrical damage due to avalanche
- Signing authority for funds transfer, payroll, and accounts payable
- Manage Spill Prevention Control and Countermeasure Plan (SPCC)

Aquarium Curator, Dallas Zoo and Aquarium, Dallas, TX (1997-1999)

- City of Dallas management employee grade 55
- Manage AZA accredited Aquarium facility including all animal care and facility infrastructure
- Oversight of commissioning of improved AC Chiller unit
- Manage and developed research and management plans for neotenic salamanders and Mexican pupfish. Including endangered species permits from USFWS
- Develop and implemented desert pupfish conservation initiatives in collaboration with USFWS, Texas Parks and Wildlife, and private landowners.
- Supervise a husbandry staff and managed a collection of fish and sea turtles.
- Ensure that all city policies were followed
- Administer City of Dallas employee grievance program for all aquarium employees and as a member of a zoo wide grievance team
- Oversight of all operations at Dallas Zoo a major metropolitan facility as rotational duty officer (staff of 200)
- Member of firearms training team
- Member of emergency planning team

Curator/General Manager, Marine Life Aquarium, Rapid City, SD (1988-1997)

- Oversaw the day to day operations of the aquarium. Responsible for a staff of over 35 employees.
- Manage political relations with offices of Senators and Congressmen

Member, Marine Mammal Coalition (1989-1996)

- Work as an advocate on a broad range of marine mammal issues including standards for captive care, display programs, and appropriate response to marine mammal strandings.
- Kept public aquaria, regulatory officials, legislators, and other policy makers informed concerning important marine mammal issues.
- Work with lobbyist to develop favorable legislation
- Directly lobbied US Congress for favorable changes to the Marine Mammal Protection Act (1994)

Animal Trainer, Florida's Gulfarium, Fort Walton Beach, FL (1978-1988)

- Coordinated all stranding response for Northwest Florida and Southern Alabama.
- Managed all permitting and licensing with NMFS, USDA and State of Florida agencies.
- Trainer of dolphins sea lions and seals

ADDITIONAL ACTIVITIES:

Professional Memberships: AZA, IMATA, IAAAM, Society for Conservation Biology, American Institute for Biological Sciences, International Association of Amusement Parks and Attractions, American Association of Zoo Keepers

Safe Seas Oil Spill Training and Drill, San Francisco (2006)

Whale Disentanglement Training, by Ed Lyman (2006)

Oiled Wildlife Care, by Oiled Wildlife Care Network (2005)

Wilderness First Aid (2007)

Alaska Regional Stranding Conference (2006, 2007, 2008, 2009)

Ice Seal Commission and Beluga Commission annual meetings (2006)

Conferences: AZA, IAAAM, IMATA, Regional Aquatics Workshops

Teach seminar on ethics in using animals for research use (IACUC), and philanthropy

Volunteer grant writer for Smith Bay Community Action Foundation

MICHELLE ELIZABETH CAMPBELL

PO Box 1068, Middleburg, VA 20118, PH: (540) 687-5958
mcampbell@dolphinquest.com

EDUCATION

California Coast University, Santa Ana, CA 2008
Master of Science in Psychology

University of California at Santa Barbara, Santa Barbara, CA 1991
Bachelor of Arts in Biology

PROFESSIONAL EXPERIENCE

Dolphin Quest/Quest Global Management, San Diego, CA Oct 2013 – Present
Vice President of Animals

- Oversee global animal management practices, crew development and Veterinary goals
- Oversee dolphin population sustainability and growth through breeding, animal loans and transports
- Serve on Board of Directors for company direction and growth
- Ensure compliance with Alliance of Marine Mammal Parks and Aquariums, American Humane and USDA standards.
- Direct all animal exhibit care, maintenance and capital improvements.
- Oversee Scientific Research Committee including project proposal selection and financial support

Dolphin Quest/Quest Global Management, Waikoloa, HI Jan 2005 – Sep 2013
Global Director of Marine Animals

- Managed animal health and well-being and trainer development for all three DQ locations.
- Managed dolphin encounter program development and criteria maintenance.
- Served as liaison with owners to keep them informed of daily ops, animal care and facilities.
- Created and implemented operational schedule on a biannual basis.
- Oversaw the hiring, training and continued growth of all trainer employees.
- Advanced the Dolphin Quest mission and values within the animal services staff and company.

Dolphin Quest Bermuda, Sandys, Bermuda Feb 1996 – Dec 2004
Director of Animal Management

- Managed trainers, aquarists and interns including staff training and performance evaluations.
- Managed animal health, husbandry and training while developing behavior management plans.
- Ensured AMMPA and USDA standards are met and implement safety protocols and procedures.
- Facilitated capital improvements, facility maintenance and long-term facility goals.
- Developed and implemented new programs along with long term animal development goals.
- Recruited new hires, maximized retention and created a positive working environment for all.

Dolphin Quest Hawaii, Waikoloa, HI Nov 1992 – Jan 1996
Trainer

- Conducted innovative dolphin interaction programs and shows for guests of all ages.

- Trained and troubleshoot behavior throughout workday with team of bottlenose dolphins.
- Conducted diet preparation while maintaining a clean and safe working environment.

Oceana Cedar Point, Sandusky, OH

Feb 1992 – Oct 1992

Marine Mammal Handler

- Performed daily shows with Atlantic bottlenose dolphins and California sea lions.
- Assisted with maintenance and upkeep of aquarium facility and marine mammal habitats.

Goleta Pet Hospital, Goleta, CA

Jan 1991 – Feb 1992

Veterinary Technician

- Supported veterinarian in daily operations of small animal clinic with variety of animal species.
- Assisted with maintenance, laboratory work, animal handling and surgeries.

ADDITIONAL EXPERIENCE

Live Animal Transport Experience

Oct 1996 - Present

Professional Coordinator/Attendant

- Primary logistics coordinator for 15 common bottlenose dolphin transports including International travel
- Participated in six transports as a marine mammal attendant/specialist on board the aircraft under the direction of the attending veterinarian
- Participated in three transports as a marine mammal attendant/specialist as ground transport under the direction of the attending veterinarian

Well Trained, Inc.

Feb 2016 – Present

Owner

- Developed professional animal training consulting services company
- Oversee training, client base, financials, marketing and sales

Alliance of Marine Mammal Parks and Aquariums

Apr 2006 – Present

Board Member

- Positions held include Director at Large, Treasurer and Vice Chair
- Review all matters relating to organization as presented by Executive Director

Government Affairs Committee

- Review of all regulatory topics for marine mammals under the AWA
- Reviewed and responded to 'Swim With' Regulations for marine mammals

Conference Chair

- Responsible for annual conference planning in conjunction with Executive Director.
- Coordinated volunteer support group and acted as hotel liaison.

Accreditation Inspector

- Assist with inspecting facilities based upon industry criteria for membership accreditation.
- Summarize and create inspection reports to provide recommendation for accreditation.

International Marine Animal Trainers' Association

Nov 2002 – Jul 2004

Conference Committee Chair

- Mentored acting Vice Presidents in various conference planning duties.
- Attend leadership meetings to help guide the organization and accomplish strategic goals.

International Marine Animal Trainers' Association

Jul 1999 – Nov 2002

Vice President

- Organized and conducted annual conference for 1,000 members.
- Provided input as a part of the board of directors to help guide the organization.

Indianapolis Zoo, Indianapolis, IN

Aug 1990 – Oct 1990

Intern

- Assisted zookeepers with care and training of California sea lions and harbor seals.
- Conducted public educational demonstrations with animals.

ORGANIZATIONS AND CERTIFICATIONS

- International Marine Animal Trainers' Association member since 1992
- Open water SCUBA certification (Scuba Schools International)
- American Red Cross CPR and First Aid certified
- Certified Interpretive Guide through National Association of Interpreters
- Certified Marine Engine Operator
- Alliance of Marine Mammal Parks and Aquariums (Accreditation Inspector/International Committee/Conference Committee Chair)
- Behavior+ Works Certificate of Excellence; Living and Learning with Animals; The Science and Technology of Behavior Change. November 2014

PUBLICATIONS

- Hammond, M. 1997. A New Generation: The Training and Relationship Progress of Three Atlantic Bottlenose Dolphins in Their First Year. Soundings (International Marine Animal Trainers' Association.) 22(3): 26 – 34.
- Campbell, M, Hayward, R. 2003 The Medical and Behavioral Management of a Three Year Old Atlantic Bottlenose (Tursiops Truncatus) Dolphin with Fractures of the Maxilla and Mandible. Soundings (International Marine Animal Trainers' Association).
- Biedenbach, G, Campbell, M, Lenzi, R, Scullion, A. 2004 Transport Desensitization of an 18-month-old Tursiops Calf (and Mother) A case study by Dolphin Quest Hawaii and Sea Life Park by Dolphin Discovery.
- Biedenbach, G, Campbell, M, Davis, C, Hurley, W, Stafford, G 2005 Training Appropriate DRI Behaviors in Group Settings at Interactive Facilities. Soundings (International Marine Animal Trainers' Association).
- West, K, Oftedal, O, Carpenter, J, Campbell, M, Sweeney, J. 2006 Effect of lactation stage and concurrent pregnancy on milk composition in the bottlenose dolphin (Tursiops truncatus): a costly reproductive strategy. Journal of Zoology.
- Campbell, M, Chang, R, Clough, P, Levine, G, Renner, M, Schmitt, T, Shannon-Rodriguez, J, Sklansky, M, Stone, R. 2010 Fetal Echocardiographic Evaluation of the Bottlenose Dolphin (Tursiops Truncatus). Journal of Zoo and Wildlife Medicine 41(1): 35–43.

- Sweeney, J, Campbell, M, McBain, J, St. Leger, J, Xitco, M, Jensen, E, Ridgway, S. Comparative Survivability of Tursiops Neonates from Three US Institutions for the Decades 1990-1999 and 2000-2009. *Aquatic Mammals* 2010, 36(3), 248-261, DOI 10.1578/AM.36.3.2010.248
- Bergfelt, D. R., Steinetz, B. G., Lasano, S., West, K. L., Campbell, M., & Adams, G. P. (2011). Relaxin and progesterone during pregnancy and the post-partum period in association with live and stillborn calves in bottlenose dolphins (*Tursiops truncatus*). *General and Comparative Endocrinology*, 170:650-656.
- Blanchard, M, Campbell, M, Stone, R, Stott, J, Sweeney, J. 2001 Dolphin Transport and Associated Immunologic Impacts. IAAAM proceedings.
- Bergfelt, Don R., Thompson, Donald L., Brown, Janine L., Presley, Nicole A, West, Kristi L., Campbell, Michelle E., Adams, Gregg P. Investigation of a chorionic gonadotropin-like substance in the placenta, serum, and urine of pregnant bottlenose dolphins (*Tursiops truncatus*). *Aquatic Mammals*, 2012.
- Rice, Katie, Trainor, Chris, Hayward, Roma, Campbell, Michelle. 2008. Preventative Measures for Behavioral Management and Training of a Visually Impaired Atlantic Bottlenose Dolphin (*Tursiops truncatus*) in an Interactive Environment. *Soundings* (International Marine Animal Trainers' Association).
- Prutow, Lauren, Campbell, Michelle. 2012. Care and Handling of Neonate Bottlenose Dolphins. *Soundings* (International Marine Animal Trainers' Association).
- K. L. West, O. T. Oftedal, J. R. Carpenter, B. J. Krames, M. Campbell & J. C. Sweeney. 2013. Effect of Lactation Stage and Concurrent Pregnancy on Milk Composition in the Bottlenose Dolphin. *Journal of Zoology*. Print ISSN 0952-8369.
- Schiff, Danielle, Campbell, Michelle, Rice, Katie, Sweeney, Jay, Stone, Rae. 2015. Reproductive Ultrasound: Establishing Short- and Long-Term Animal Management Practices Through the Practical Application of Ultrasound Technology by Trainers. *Soundings* (International Marine Animal Trainers' Association).
- Bergfelt DR, Brown JL, Presley NA, Campbell M, and West KL. 2015. Urine concentrations of cortisol and progesterone in association with live births, stillbirths and abortions in bottlenose dolphins (*Tursiops truncatus*) 21st Biennial meeting of the Society for Marine Mammalogy, San Francisco, California, December 13 to 18, 2014.
- Bryan, Colleen, Campbell, Michelle, Schock, Tracey. Personalized and Baseline Environmental Health of Bottlenose Dolphins in Human Care through Metabolic Profiling. *Metabolomics Society Conference*, San Francisco, California, June 29 to July 2, 2015.
- Morey JS, Neely MG, Lunardi D, Anderson PE et al. RNA-Seq analysis of seasonal and individual variation in blood transcriptomes of healthy managed bottlenose dolphins. *BMC Genomics* 2016 Sep 8;17:720.
- Julia L. Smith, Brenda A. Jensen, Michelle Campbell, and Colleen E. Bryan. 2017. The Influence of Life History and Diet on Mercury Bioaccumulation and Biomagnification in Blood of Bottlenose Dolphins, *Tursiops truncatus*, Under Human Care. *The International Conference on Mercury as a Global Pollutant (ICMGP)*.
- Kathy Burek Huntington, Michelle Campbell, Tonya Clauss, Caroline Goertz, Roderick Hobbs, Denise Lunardi, Amanda Moors, Marion Neely, Lori Schwacke, Frances Van Dolah. Title: De novo transcriptome assembly and RNA-Seq expression analysis in blood from beluga whales of Bristol Bay, AK. *Marine Genomics*. 2017

CURRICULUM VITAE

Natalie E. Noll DVM
#43 Eastern Rd.
Nassau, New Providence
Bahamas
Cell phone: 242-424-9654
nollnatalie@yahoo.com

EDUCATION

1993-1997: Auburn University, Doctor of Veterinary Medicine.
College of Veterinary Medicine

1989-1993: Auburn University B.S. in Zoology,
Minor in Marine Biology

PROFESSIONAL EXPERIENCE

Marine Animal Veterinarian

Atlantis Dolphin Cay 11/11-present
Paradise Island, Bahamas

Staff Veterinarian responsible for the health of the animal collection at a five star megaresort which includes dolphins, sea lions, birds, sharks, fish, and rays.

Small Animal and Exotic Veterinarian

All Pets Animal Hospital
Encinitas, CA 92024 3/10-10/11

Serve as general practice veterinarian for small animals and exotics at a high quality general practice.

Marine Animal Consultant Veterinarian

Coral World Ocean Park, Inc.
St. Thomas, US Virgin Islands 9/09-present

Serve as consultant veterinarian for the aquarium's animal collection which includes sea lions, sea turtles, stingrays, birds, fish and sharks, as well as sick and injured local wildlife. Developing a Program of Veterinary Care and a Preventative Health Program.

Emergency and Critical Care Veterinarian

California Veterinary Specialists, Angel Care Cancer Center
Carlsbad, CA 10/06-2/10

Serve as a daytime emergency and critical care veterinarian in a cancer and specialty clinic. Responsible for all hospitalized patients and incoming referrals of small animal and exotics. Primary focus and consults with internal medical specialists, oncologists, cardiologists, radiologists and surgeons on cases. Lead and assist in procedures involving large equipment such as CT Scan, chemotherapeutic administration, radiation, fluoroscopes, bronchoscopes, endoscopes, ultrasound and nuclear medicine.

Marine Mammal Veterinarian/Consultant**The Mirage Dolphin Habitat and Secret Garden
Las Vegas, NV**

1/06-7/07

Served as staff veterinarian in order to build a new Program of Veterinary Care. Developed a full time veterinary program including protocols and SOPs, a veterinary manual, and preventative health care program. Purchased new equipment and set up veterinary medical inventory and a pharmacy. Networked with many marine mammal veterinarians. Assisted in the planning of building a new veterinary laboratory.

Contract Marine Mammal Veterinarian**Science Applications International Corporation****The Navy Marine Mammal Program, Department of Defense, US Government
Kingdom of Bahrain and San Diego, CA**

6/05- 6/09

Served as Attending Veterinarian to oversee the health and welfare of dolphins participating in naval force protection in the port of Bahrain and the prt of San Diego.. Responsible for medical care, water quality, diets and medical inventory, as well as transport of dolphins back to the United States. Assist in research, medical procedures and obtaining medical inventory, as well as assisting in offsite procedures with dolphins in human hospitals, such as PET scans, CT scan and gamma scans at SPAWAR on San Diego, CA.

Emergency and Critical Care Veterinarian**Emergency Pet Care of Jupiter, Jupiter, FL**

6/04-6/05

Served as emergency veterinarian in a brand new, state of the art, exceptionally equipped emergency veterinary hospital. Assisted in creation of standard operating procedures, computer programs and form development. Lead team meetings and assisted overall in the management of the practice. Served as the only emergency exotic veterinarian in Palm Beach County, Martin County and St. Lucie County.

Marine Animal Veterinarian**Alaska SeaLife Center, Seward, AK**

8/00-11/03

Served as Associate Veterinarian for research and collection animals. Manager of the Center's Rescue and Rehabilitation Program for injured, stranded marine mammals and birds. Developed and organized standard operating procedures and protocols, rehabilitation and volunteer manuals, quarantine protocols, volunteer training, as well as upgraded medical chart forms and systems. Also developed and managed a veterinary/husbandry intern program for the Veterinary Services Department. Involved with education and training of large whale entanglements procedures and protocols. Managed grant writing and fund raising efforts for veterinary services and rehab program. Participated in federal permit procedures and the IACUC program committee.

Emergency and Critical Care Veterinarian**Animal ER of San Diego, San Diego, CA**

9/99-6/00

Performed emergency and critical care procedures for small animals and exotics. Internal medicine, oncology, dermatology, and surgical specialists present in day practice for consultation and referral.

Chief of Staff Veterinarian

11/98-9/99

Medical Management Inc. Vetsmart Pet Hospital, Encinitas, CA

Managed doctors and staff in a small animal and exotic general practice. Ensured the practice of high quality medicine and surgery. Facilitated teamwork and efficiency, consulted with internal medicine specialist, excellent client service and maintained high professional standards.

Small Animal, Avian and Exotic Veterinarian

6/97-11/98

Medical Management Inc. Vetsmart Pet Hospital, San Diego, CA

Practiced general medicine at a high volume, high quality, and innovative small animal, avian and exotic veterinary hospital.

ADMINISTRATIVE EXPERIENCE

- **Author** of Alaska SeaLife Center Rescue and Rehabilitation Program Manual 2/1/2001
- **Principal Investigator:** John H. Prescott Marine Mammal Health Stranding Grant, "Rescue and Rehabilitation of Pinnipeds and Cetaceans in Alaska" 9/1/2001-8/31/2002 Grant amount of \$99,837
- **Co-Investigator:** John H. Prescott Marine Mammal Health Stranding Grant, "Improved rehabilitation techniques through the monitoring of nutrition and growth rates in free ranging and rehabilitated harbor seal pups" 9/1/2001-8/31/2002 Grant amount of \$99,939
- **Principal Investigator:** NMFS Marine Mammal Stranding Grant for the Alaska SeaLife Center 7/1/03 Grant amount of \$981,975
- John H. Prescott Marine Mammal Rescue Assistance Grant peer review panel for National Marine Fisheries Service 2002 and 2003

RELEVANT EXPERIENCE

- Provided volunteer veterinary services to the Seward Animal Shelter, Seward, Alaska. 11/00-11/03
- Relief emergency and general practice veterinarian for Pet Emergency Treatment and Diamond Animal Clinic in Anchorage, AK 11/01-11/03
- Provided veterinary services to the Seward community, Seward, Alaska 9/00-11/03
- Instructor for annual Alyeska Sea Otter Oil Spill training courses 2002, 2003
- Vice President of Save our Seward Pets (SOS Pets) - a pet advocacy society that promotes respectful, responsible pet care, Seward, Alaska. 11/00-11/03
- Volunteer Veterinarian for Mission: Wolf- a wolf sanctuary in Westcliffe, CO 3/00-9/00
- Provided volunteer veterinary services to several small animal shelter facilities in Baja California, Mexico. 10/97-1/00
- Volunteer veterinarian for Project Wildlife in San Diego, CA. 7/98-8/99

PROFESSIONAL MEMBERSHIPS

American Veterinary Medical Association
International Association of Aquatic Animal Medicine
Florida Veterinary Medical Association
California Veterinary Medical Association
San Diego Veterinary Medical Association

Top notch references furnished upon request

Emily Hall, DVM



6450 Coki Point • St. Thomas, USVI • Phone: 918-521-7579 • E-Mail: veterinarian@coralworldvi.com

EDUCATION & TRAINING

Ross University School of Veterinary Medicine 2012-2016

1st-3rd year pursuing Doctorate of Veterinary Medicine on the island of St. Kitts

4th year Clinical Rotation at the **University of Illinois Veterinary Teaching Hospital**

Oklahoma State University 2009-2012

Zoology student-Freshman, Sophomore, Junior

- Dr. Matthew Bolek's research on Coccidia, using a microscope to locate the coccidian oocyst, measure multiple parts including the sporocysts, sporozoites and the oocyst itself
- Dr. Bolek's master's student Crystal Wiles research on community structure of damselflies and their role as paratenic host for a turtle nematode, assisted in the field capturing damselflies, preparing them for parasite collection, measuring many different points of the parasite oocyst using computer software, recording data
- Dr. Alexander Ophir's research on prairie voles, I observed and recorded particular behaviors and exact time that they were displayed

KEY ACHIEVEMENTS

- Presented a poster at the 2014 AAZV Conference- Efficacy of a gonadotropin-releasing hormone (GnRH) vaccine (GonnaCon™) on reproductive function in female vervet monkeys (*Chlorocebus aethiops*)
- Select Sires Bovine Artificial Insemination Certification 2014
- President's Honor Roll, Oklahoma State University Fall 2009
- Dean's Honor Roll, Oklahoma State University, entirety of undergraduate career 2009-Spring 2012.
- Earned Girl Scout Gold Award (Equivalent to Eagle Scout Award)
- State FFA Degree recipient

EMPLOYMENT / EXPERIENCE

Staff Veterinarian, Coral World Ocean Park

2019-Present

- Physical exams, diagnostics, and treatment of all animals within the facility
- Maintain accurate and up to date medical and controlled drug records
- Participate in animal transport as well as emergencies requiring assistance
- Perform rounds weekly with heads of animal care departments
- Communicate regularly with consulting Director of Veterinary Services

Associate Veterinarian, Banfield Pet Hospital- Owasso

2017-2018

- Educated about and provided comprehensive preventive medical care
- Performed spays, neuters, dentals, mass removals, and oral surgeries
- Provided medical care for both Petsmart and client owned exotic pets
- Assisted in training veterinary staff

Associate Veterinarian, Kindness Animal Hospital

2016-2017

- Performed surgeries on cats, dogs, and exotic species
- Provided thorough physical exams and work ups on cases
- Kept up to date records and answered client call back questions

**Veterinary Extern, The Oklahoma City Zoo****2016**

- Assisted with procedures (routine physicals, vaccinations, diagnostics, fluid therapy etc)
- Performed necropsies and wrote necropsy reports
- Accompanied veterinarians on daily rounds out in the zoo
- Vaccinated zebras with CO2 remote darting

Veterinary Student Extern, The Calgary Zoo**2015**

- Assisted with procedures (routine physicals, vaccinations, surgery, fluid therapy etc)
- Assisted with treatments in-house and on zoo grounds
- Performed necropsies on both zoo and wildlife specimen
- Participated in both drill and real code situations
- Created and presented a power point presentation on General Anesthesia in Captive Adult Giraffe
- Practiced multiple darting techniques

Veterinary Student Extern, The Houston Zoo**2015**

- Responsible for drawing up all in-house treatments and assisted in administration
- Accompanied veterinarians on daily rounds out in the zoo
- Assisted with procedures (routine physicals, vaccinations, surgeries, fluid therapy etc)
- Performed necropsies and wrote necropsy reports
- Created and presented power point presentation on Fibrosing Cardiomyopathy in Great Apes

Student, SA (South African) World Vets**2014**

- Administered numerous intramuscular injections to sable, cape buffalo and impala
- Administered rabies vaccine to African wild dog and monitored respiration and anesthetic depth
- Assisted in multiple methods of relocation of sable, cape buffalo and impala
- Observed lame elephant tranquilization, assessment, blood draw, treatment, and reversal
- Assisted with casting procedures
- Assisted in mass capture
- Practiced rifle darting for tranquilization, including from helicopter

Leatherback Sea Turtle Project Volunteer, St. Kitts Sea Turtle Monitoring Network**2014**

- Performed cloacal swabs on leatherback sea turtles
- Properly recorded on data sheets during leatherback nesting (carapace measurements, lesions, markings, identification numbers, nesting conditions, eggs laid, etc)
- Trained to perform blood draw via dorsal cervical sinus and interdigital vein
- Relocated leatherback nest
- Trained in turtle nest excavation
- Trained in flipper tag placement, microchip placement, and microchip detection

Research Assistant, Ross University School of Veterinary Medicine**2013- 2014**

- Performed ELISA test kits for estradiol and progesterone
- Transformed the data using logistic regression equations in Microsoft Excel
- Vaccinated vervet monkeys and preformed proper handling and restraint techniques
- Preformed ultrasound on vervet monkeys to assess pregnancy status
- Made and presented a poster on the project to RUSVM faculty and students



- Extern, Kansas State University College of Veterinary Medicine- exotics** **2013**
- Participated in rounds with Dr. James Carpenter and his exotics department
 - Assisted Dr. Carpenter with preparing darts with proper drug dosage for the maned wolves at the Sunset Zoo and learned about dart mechanics
 - Assisted with two maned wolves transport, physicals, vaccinations, fluids, and blood collection (observed and participated when needed from darting to reversal)
 - Observed a mandrill OVH process (from sedation to reversal) and intermittently took documentation pictures
 - Learned about equipment and practiced darting techniques (both blow darting and CO2)
 - Assisted with physical exams and treatment of exotic animals in a clinic setting (from history taking to discharge)
- Unpaid Intern, Wild Heart Ranch: Wildlife Rescue & Rehabilitation** **2013**
- Prepared fawn diets and bottle fed over 20 fawns
 - Administered subcutaneous fluids to a turkey vulture
 - Learned proper handling and husbandry of different wild animals
 - Observed treatment of a slipped tendon in a goose.
- Shorebird research project volunteer, Ross University School of Vet Med** **2013**
- Walked the primary nesting beach, on St. Kitts, where two endangered shorebird species nest, looking for new nests and observing not only bird behaviour, but also watching for sea turtle tracks to report to the Sea Turtle Monitoring Network
 - Recorded data on the Least Turn and Piping Plover nests including GPS location, predation, hatchling health and such
 - Worked as a team to have consistent accurate information being recorded every other day
- Volunteer Assistant Tech, Dewey Humane Society Spay/Neuter Clinic** **2011-2012**
- Assisted veterinarian and veterinary technician with all needed tasks
 - Communicated with concerned clients and assisted with intake paperwork
- Volunteer, Ark Animal Hospital** **2011**
- Assisted the veterinary technician with day to day tasks
 - Assisted Veterinarian with procedures and observed surgical procedures
- Unpaid Intern, Tulsa Zoo** **2009-2011**
- Worked Bird Department zookeeper routines
 - Prepared diets, cleaned exhibits, and responsible for other husbandry needs
 - Assisted in emergencies such as swan fight, blood feather issues, primate escape, etc.
 - Broke down and recreated exhibit enclosures as well as properly relocated the animals during the process
 - Learned how to properly restrain multiple birds including raptors, parrots, flamingos, and more for multiple procedures not limited to beak trims, nail trims, physical exams, penguin injections etc.
- Volunteer/shadow, Oklahoma State Veterinary Teaching Hospital** **2011**
- Assisted with treatment and diagnostic work such as bone marrow tap in a calf, wrapping an alpaca leg, trimming and setting bovine hooves, etc.
 - Observed many clinical cases

**Volunteer, Companion Animal Assistance Program****2010-2011**

- Communicated with clients, sorted paperwork and payment
- Assisted with patient recovery and discharge

Volunteer, Spay Oklahoma**2009**

- Assisted Veterinarian and vet techs with recovery, vaccinations, surgery, pain medication, dewormers, sterilized surgical instruments, etc.
- Scrubbed into problematic spay when extra hands were needed
- Participated in the Rosebud Sioux Reservation Spay/Neuter Clinic project where I was solely responsible for the recovery station and delegating duties

Kennel Tech, VCA Owasso Animal Center**2009**

- Assisted veterinarians and veterinary technicians with procedures
- Responsible for dog and cat husbandry as well as laundry and facility upkeep

Zoo-teen, Tulsa Zoo**2006-2009**

- Shadowed zookeepers of different departments
- Assisted with zoo animal husbandry, enrichment, and basic medical procedures
- Learned safety protocol and procedures in zoo environment

CONTINUING EDUCATION**Oiled Wildlife Response Workshop, participant****2018**

- 8 hour course instruction on regulation, triage, response protocol, and more
- Certified to assist with an oil spill clean up animal response as directed by authorities

Wildlife & Exotic Animal Symposium, attendant**2018**

- Attended numerous lectures on varied exotic animal medicine aspects

Wildlife and Exotic Animal Handling Training by HSUS, attendant**2016**

- Attended the full day course provided by Tulsa Technology Center and presented by The Humane Society of the United States.
- Course focused on triaging calls and responding appropriately for different situations, safe wildlife capture and handling techniques and when to use which ones, and an overview of laws regarding captive dangerous, wild and exotic animals including what to look for on inspections/suspect cruelty cases.

Wisconsin Exotics Animal Veterinary Conference, attendant**2016**

- Attended lectures (Sedation as an Alternative to General Anesthesia in Exotic Companion Mammals, Fluid Therapy in Exotic Animals, Sugar Gliders 101, General Considerations of Small Mammals Soft Tissue Surgery, Rabbit and Rodent Soft Tissue Surgery, Managing Abscesses in Rabbits, Euthanasia Techniques for Exotic Pets)
- Attended master classes (Anesthesia and Analgesia for the Higher Risk Small Mammal Patient, & Reptile Anesthesia and Analgesia)
- Participated in hands on lab (Rabbit and Rodents Intubation & IO Catheter)

W.A.Z.E Symposium, attendant**2015**



- Attended and participated lectures (Intraosseous catheters in exotics, amphibian chytridiomycosis, Zoo animal immobilization with ketamine, coyote coexistence, stress in sharks, gorilla medicine and conservation, and Q&A panel)

AAZV Conference, presenter and attendant

2014

- Elephant Workshop wet lab – lectures (EEHV, pain medications, reproduction, etc) observation labs (blood draws, abdominal ultrasound, and contact behavior training), hands on labs (rectal ultrasound, ocular ultrasound, and foot radiograph placement and interpretation)
- Manatee Workshop - lectures (Manatee rehabilitation and manatee medicine), observation wet labs (manatee radiograph procedures, nasogastric intubation, and blood draws)
- Presented a poster- Efficacy of a gonadotropin-releasing hormone (GnRH) vaccine (GonnaCon™) on reproductive function in female vervet monkeys (*Chlorocebus aethiops*)
- Attended numerous educational and interesting lectures on a variety of zoo veterinary medicine topics

COMMUNITY SERVICE

Omega Tau Sigma- Theta Chapter Veterinary Fraternity

2015-2016

- Participate in monthly visits to the local assisted living and nursing home where we bring our well-behaved pets to visit with the residents there.
- Help put on the Road Race For Animals, which is OTS' biggest annual charity event. Proceeds benefit the Wildlife Medical Clinic and A Pet's Place.
- Worked at the vaccination clinic in a low-income community providing physical exams, vaccines, deworming, microchip placement, and such.

INTERESTS

In addition to being extremely passionate about zoo and wildlife veterinary medicine, I also enjoy hiking with my dogs, beekeeping, yoga, and crafting. I also enjoy spending time with family and close friends as well as snuggling with my pets.



Office of Protected Resources
Permits and Conservation Division
National Marine Fisheries Services
National Oceanic and Atmospheric Administration
1315 East-West Highway
Silver Spring, MD 20910

April 15, 2019

I am writing in reference to application file number 22686. The veterinary staff at the Chicago Zoological Society - Brookfield Zoo has reviewed the complete medical records of the dolphins living at CoralWorld, including two animals that previously resided at the Dolphinaris Arizona. Furthermore, we have reviewed all publically available materials related to the death of four dolphins at the Dolphinaris Arizona facility. We do not see evidence of a common cause of death among the Arizona dolphins. The animals at CoralWorld appear in good health and we do not perceive any risks of infectious disease that could endanger other animals or people.

Please feel free to contact me if I can provide any additional information.

Best,

Michael Adkesson, DVM, Dipl. ACZM, Dipl. ECZM (ZHM)
Vice President, Clinical Medicine
Chicago Zoological Society / Brookfield Zoo

**ENVIRONMENTAL AND WATER QUALITY MONITORING PLAN
FOR THE
OPERATION OF AN OFFSHORE DOLPHIN
ENCLOSURE IN WATER BAY AT CORAL WORLD
ST. THOMAS, U.S. VIRGIN ISLANDS**

MONTH 1

INTRODUCTION

The following are the results of the first month of monitoring after the arrival of dolphins in the offshore dolphin enclosure at Coral World in Water Bay St. Thomas. Four dolphins were placed within the enclosure on February 22, 2019. These were not the dolphins they were planning to have in the habitat, these were an emergency evacuation.

Initially, Coral World interactive program is permitted to commence with six breeding age Atlantic Bottlenose dolphins. Overtime the number is allowed to expand to ten-twelve dolphins through acquisition and breeding. To increase the number of dolphins from the initial 6, Coral World, pursuant to a Special Condition in its CZM Permit, “must provide CZM with water quality monitoring results for a twelve-month consecutive period. This report represents the first of the 12 months of monitoring. Parameters monitored shall be consistent with Virgin Islands Class B Water Quality Standards as set forth by the Division of Environmental Protection.” Currently water quality standards allow for 3NTU turbidity, standards are proposed to decrease the allowable turbidity to 1 NTU. Coral World will adhere to the Class B guidelines when they change.

The dolphins will feed and will defecate within the pen and therefore will have an impact on water quality. This plan includes increased monitoring as the number of dolphins increases to ensure that impacts to water quality or the environment do not occur.

This monitoring plan includes monitoring to ensure that fecal coliform levels and nutrient levels do not become elevated above the allowable limits within the facility or immediately surrounding areas. As modeled, 6 to 18 dolphins are not reasonably anticipated to result in elevated levels of fecal coliform or nutrients in the pen areas or to the outlying bay. If levels increase above allowable limits, Coral World will take steps to identify whether Coral World dolphins may be acting as a possible source(s) and whether their potential contribution is the primary cause for the elevated parameters.

A baseline was established as shown below. During this baseline elevated bacterial readings above the allowable standard of 70 did occur on occasion at the west control which is close to the Margaritaville Beach and down current from the dolphin enclosure.

Date	Sample Description	Time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH (s.u.)	Turbidity (NTU)	MPN	MPN
								E. coli /100 ml	Enterococcus /100 ml
11.15.2016	Control West	1136	28.18	35.17	6.11	7.8	1.7	593	<10
	CW-1	1141	28.09	35.17	6.07	7.8	1.3	41	<10
	CW-2	1145	28.13	35.17	6.15	7.8	1.2	20	<10
	CW-3	1148	28.24	35.17	6.18	7.8	1.1	<10	<10
	CW-4	1150	28.18	35.16	6.17	7.8	1.2	10	<10
	Control East	1155	28.03	35.16	6.22	7.8	0.97	<10	<10
11.29.2016 5" rainfall 24hrs	Control West	0956	28.14	35.22	6.09	7.9	2.2	312	20
	CW-1	0959	28.11	35.20	6.00	7.8	1.6	10	<10
	CW-2	1001	28.08	35.21	6.15	7.9	1.2	30	<10
	CW-3	1004	28.08	35.21	6.23	7.9	1.3	<10	<10
	CW-4	1007	28.00	35.20	6.22	7.9	1.1	31	<10
	Control East	1010	27.98	35.21	6.24	8.0	0.87	10	<10
1.04.2017	Control West	1022	27.97	35.16	5.87	7.9	1.2	52	<10
	CW-1	1026	27.87	35.19	6.11	7.9	0.89	<10	<10
	CW-2	1032	27.86	35.22	6.12	7.9	0.89	<10	<10
	CW-3	1034	27.86	35.22	6.12	7.9	0.92	10	<10
	CW-4	1037	27.86	35.20	6.09	7.9	0.94	<10	<10
	Control East	1042	27.85	35.21	6.23	7.9	0.87	<10	<10
1.12.2017	Control West	1215	27.89	35.10	6.00	7.9	1.1	30	<10
	CW-1	1220	27.88	35.19	6.21	7.9	0.88	10	<10
	CW-2	1223	27.88	35.21	6.17	7.9	0.79	<10	<10
	CW-3	1235	27.86	35.20	6.18	7.9	0.99	10	<10
	CW-4	1228	27.86	35.21	6.21	8.0	1.0	<10	<10
	Control East	1231	27.83	35.20	6.21	8.0	0.97	<10	<10
1.17.2017	Control West	1300	27.81	35.24	6.14	8.0	1.3	10	<10
	CW-1	1306	27.83	35.24	5.99	7.9	1.3	31	<10
	CW-2	1310	27.82	35.22	6.11	7.9	1.0	<10	<10
	CW-3	1315	27.83	35.20	6.11	7.9	1.1	10	<10
	CW-4	1320	27.82	35.20	6.12	7.9	0.98	31	<10
	Control East	1325	27.83	35.20	5.98	7.9	0.77	<10	<10

1.24.2017 .75" rainfall 24hrs	Control West	1107	27.77	35.22	6.51	8.0	3.4	10	<10
	CW-1	1116	27.73	35.22	6.32	7.9	1.6	31	<10
	CW-2	1127	27.72	35.22	6.34	7.9	1.4	<10	<10
	CW-3	1138	27.71	35.20	6.34	7.9	1.4	10	<10
	CW-4	1144	27.71	35.18	6.07	7.8	1.2	31	<10
	Control East	1151	27.71	35.19	5.65	7.9	1.0	<10	<10
1.16.2018	Control West	1312	26.55	34.97	5.98	7.9	1.8	97	<10
	CW-1	1317	26.58	34.99	6.12	7.8	1.7	20	<10
	CW-2	1321	26.57	34.98	6.15	7.9	1.3	41	<10
	CW-3	1323	26.53	35.02	6.23	7.9	1.4	10	<10
	CW-4	1324	26.54	35.02	6.22	7.9	1.3	<10	10
	Control East	1327	26.53	35.02	6.21	7.8	1.2	<10	<10
1.24.2018	Control West	0820	26.43	35.11	5.97	8.0	1.7	31	85
	CW-1	0825	26.56	35.11	5.99	8.0	1.3	85	<10
	CW-2	0828	26.56	35.13	6.11	8.0	1.3	41	<10
	CW-3	0837	26.54	35.14	6.05	7.9	1.3	31	<10
	CW-4	0840	26.55	35.12	6.14	8.0	1.5	<10	<10
	Control East	0845	26.53	35.13	6.10	8.0	1.3	<10	10

The DO is usually lowest at the west control closest to the drainage discharge. The turbidity is usually the highest at the west control and the bacterial contamination has been highest closest to points of runoff into the bay. Enterococci has not exceeded 104 and fecal coliform has been higher than 70 colonies/100ml three times at the west control and once at monitoring station CW-1. The highest bacterial count encountered was at the west control and 593 fecal coliform were found in 100ml. Only once at a sampling point adjacent to the pen did the fecal coliform surpass the 70 fecal coliform colonies/100ml.



Figure 1. Baseline and Control sampling locations.

OPERATION MONITORING

Monitoring of water quality within the facility (e.g., main habitat area) is being performed on a weekly basis for the first year when dolphins are present and then at a lower frequency throughout the period of operation, consistent with Coral World's obligations for the care, treatment and housing of dolphins under the Animal Welfare Act and USDA requirements and in order to assure the continued health of the benthic community. Accordingly, monitoring within the facility throughout the period of operation to insure dolphin welfare is separate from the scope of monitoring activities described below. As presented, monitoring in areas immediately outside as well as within the facility will be performed to insure protection of the surrounding marine environment of Water Bay

MARINE WATER QUALITY MONITORING

Now that the facility is operational, water quality in areas immediately bordering the facility (i.e., sample locations 1, 2 and 3, and two identified control locations, shown in Figure 3) will be sampled on the same day and timeframe for temperature, salinity, dissolved oxygen, secchi depth and turbidity expressed as NTUs as well as fecal coliform and enterococci bacteria, TKN and total phosphates. Sample location 4 in Figure 3 depicts the within the enclosure sample. Samples will be obtained from locations 1 through 4 and the control locations on a weekly basis for the first year of operation of the facility, during the initial period of time a maximum of six dolphins will be present, consistent with the 12-month period of monitoring stipulated in the Special Condition of the CZM Permit and then throughout the operation of the facility. Anytime additional

dolphins are added water sampling will be taken weekly for the first 3 months to ensure that no water quality degradation occurs. If no degradation occurs water quality sampling will decrease to bi-weekly for the following 6 months and then every 4 weeks (monthly) if no degradation of water quality is noted. If degradation is noted methods must be undertaken to abate that impact whether it be turbidity, nutrients or bacterial. Coral World will work with the monitor, CZM, DEP, NMFS and COE to come up with method to abate them impact if the impact cannot be abated the number of dolphins may have to be decreased to that at which water quality standards can be maintained.

Should exceedances to allowable limits at the three locations bordering the facility (i.e., locations 1, 2 and 3) or within the facility be attributed to the operations, steps will be taken to evaluate the source.

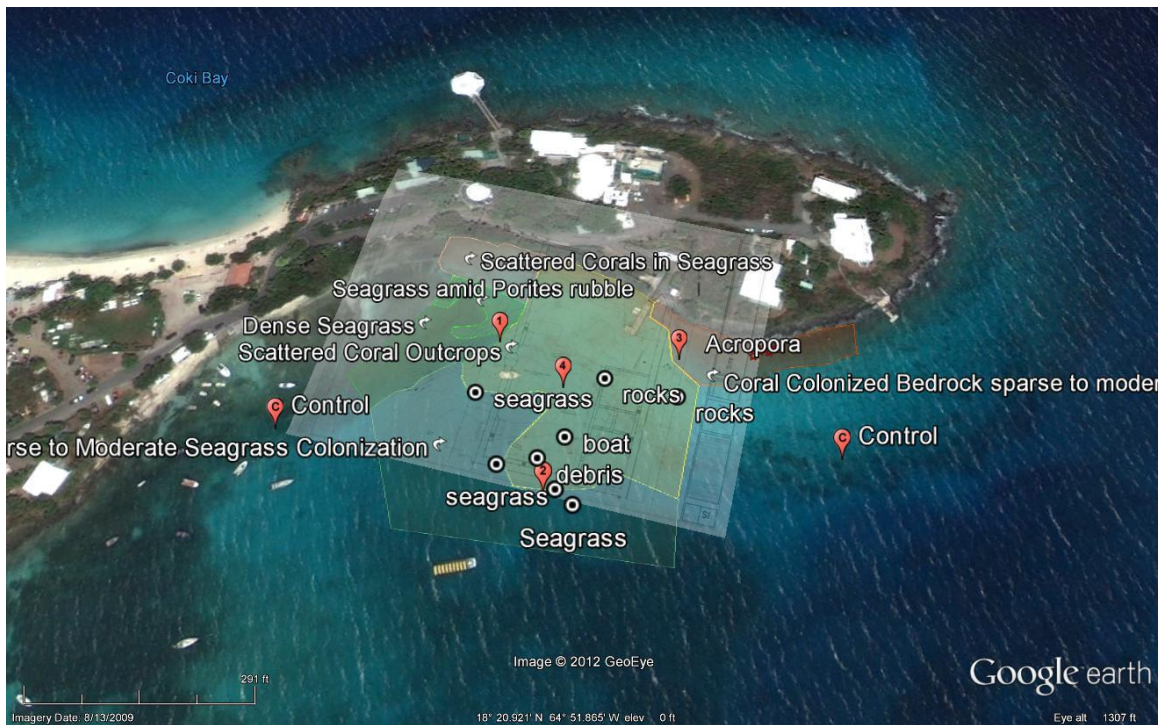


Figure 2. Location of sampling stations.

RESULTS OF FIRST MONTHS SAMPLING

Date	Sample	Time	Temp (°C)	Salinity (ppt)	DO (mg/L)	pH (s.u.)	Turbidity (NTU)	Nitrates (ppt)	Ortho Phospha tes (ppt)	MPN E. coli /100ml	MPN Entero /100ml
2.28.19	Control West	1505	26.71	34.21	6.02	8.04	0.86	< 0.2	1	A	<10
	CW-1	1444	26.52	34.15	6.24	7.95	0.58	< 0.2	0.2	A	<10
	CW-2	1449	26.13	34.69	6.68	7.98	0.63	< 0.2	< 0.2	P	<10
	CW-3	1453	26.19	34.19	6.6	7.96	0.26	< 0.2	0.2	A	<10
	CW-4	1520	26.46	34.37	6.93	7.96	1.33	0.4	< 0.2	A	<10
	Control East	1500	26.34	34.29	6.45	7.99	0.29	< 0.2	< 0.2	A	<10
3.08.19	Control West	1108	26.33	34.96	6.46	8.1	2.11	< 0.2	0.8	P	<10
	CW-1	1103	25.90	34.99	6.96	8.22	0.91	< 0.2	< 0.2	A	97
	CW-2	1015	26.35	34.64	7.42	8.08	1.18	< 0.2	< 0.2	P	<10
	CW-3	1032	26.05	34.63	7	8.13	0.47	< 0.2	< 0.2	A	<10
	CW-4	1002	26.69	34.71	6.17	8.15	0.71	< 0.2	< 0.2	A	<10
	Control East	1027	25.99	34.74	6.28	8.15	0.82	< 0.2	< 0.2	A	<10
3.11.19	Control West	1210	26.99	35.44	6.13	7.92	1.59	< 0.2	0.6	P	9 *
	CW-1	1205	26.84	35.44	6.82	7.93	1.33	< 0.2	< 0.2	P	17 *
	CW-2	1114	25.96	35.42	6.38	7.92	1.04	< 0.2	< 0.2	P	4 *
	CW-3	1136	26.25	35.45	6.22	7.94	1.43	< 0.2	< 0.2	P	< 1 *
	CW-4	1122	26.36	35.44	6.55	7.95	1.68	< 0.2	< 0.2	P	< 1 *
	Control East	1133	25.88	35.48	6.92	7.95	0.41	< 0.2	< 0.2	P	< 1 *
3.18.19	Control West	1014	27.31	35.21	5.21	7.98	2.78	< 0.2	0.8	P	20
	CW-1	1020	26.61	35.25	6.33	7.92	0.76	< 0.2	< 0.2	P	10
	CW-2	1053	26.33	35.25	6.15	7.93	1.21	< 0.2	< 0.2	P	< 10
	CW-3	1033	26.78	35.28	6.2	7.99	1.32	< 0.2	1	P	< 10
	CW-4	1038	26.73	35.22	6.31	7.96	1.36	< 0.2	< 0.2	P	< 10
	Control East	1049	26.11	35.32	6.67	7.98	0.68	< 0.2	< 0.2	P	< 10
3.25.19	Control West	1043	27.66	35.13	5.92	7.98	1.94	< 0.2	0.2	<10	110
	CW-1	1050	27.24	35.17	6.71	7.99	0.71	< 0.2	< 0.2	20	< 10
	CW-2	957	27.31	35.17	6.13	7.99	0.82	< 0.2	< 0.2	<10	< 10
	CW-3	1018	26.99	35.18	6.4	8	0.85	< 0.2	< 0.2	<10	< 10
	CW-4	950	27.51	35.16	7.1	7.95	1.21	< 0.2	0.2	<10	< 10
	Control East	1014	26.87	35.18	6.89	7.98	0.32	< 0.2	< 0.2	<10	< 10

Note: E. coli presence/absence was determined for all samples using the Colilert-18 Presence/Absence method, except 3.25.19 samples. “P” indicated presence and “A” indicates absence. E. coli was quantified for 3.25.19 samples using the Colilert-18 MPN method. Enterococci was quantified using the IDEXX Enterolert for all samples except those collected on 3.11.19. The 3.11.19 samples were analyzed using Enterococci MF-1600 method and are reported as colony forming units per 100 ml (CFU/100ml).

RESULTS SUMMARY

The first month of water quality monitoring post dolphin arrival shows mixed water quality results similar to baseline monitoring results. Dissolved oxygen was often low at the west control, which is closest to the drainage discharge near Margaritaville Beach. Turbidity levels were often higher at the west control than other sample locations as well. Besides the west control, variation in many of the parameters was slight between sample locations. Generally speaking, temperature, salinity, dissolve oxygen, and turbidity levels did not show great variation between sample locations. Nitrate levels remained low (≤ 0.2 ppm) in all water samples in each sampling week. Phosphate levels reported as orthophosphates remained below < 0.2 ppm at all sites except the west control and once on 3/18/19 at CW-3 when the level rose to 1ppm, but was back at < 0.2 ppm the following week.

Bacterial analysis results varied from week to week. The first two weeks post dolphin arrival, levels of enterococci were < 10 MPN/100 ml for all sites except CW- 1 on 3/08/19 where 97/100 ml was found. This is still below the safe swimming level of 104/100ml. On March 25, 2019 the enterococci exceeded EPA’s safe swimming level of 104/100ml at the west control adjacent to the Margaritaville beach and well down current from the dolphin enclosure. All of the other readings in and around the pen and the control to the east remained low.

While Enterococci is the parameter utilized for testing ambient water by both EPA and DPNR, Coral World is also testing for E. coli bacteria. The E. coli test were being run as Presence/Absence the first 3 weeks due to issues with a shipment of Colilert from IDEXX which arrived late and the unanticipated arrival of dolphins. During these first two weeks E. coli was only found to be present at the west control and at CW- 2. However, the third and fourth week of sampling (3/11/19 and 3/18/19) indicated the presence of e. coli bacteria in all sample sites. There were high winds, swell, and some rain during this time which may have affected these results. All sample sites including both controls, and an additional sample site close to Coki Beach all tested positive for E. coli, which further points to the explanation of the E. coli presence being affected by environmental processes and not related to the dolphins. The presence of the E. coli bacteria by no means indicates that it is over the 70/100ml regulatory limit and with the Enterococci being low throughout the sample period it is probable that though present E. coli were present levels were low as well. The final week of sampling in March (3/25/19) showed that E. coli levels were below 10 MPN/100 ml in all sample locations except CW- 1 which was 20/100ml well below the regulatory limit of 70/100ml.

Bacterial analysis methods varied throughout the study period due to shipping issues. E. coli presence/ absence data was obtained using the Colilert-18 Presence/Absence method from 2/28/19-3/18/19. This method indicates if E. coli is present or absent in a sample but does not provide an estimate of the number of cells present. E. coli bacteria was quantified using the Colilert-18 MPN method on 3/25/19 and the number of viable bacterial cells were counted. Enterococci bacteria were quantified using the IDEXX Enterolert method for all samples except 3/11/19 samples. These samples were analyzed using the Enterococci MF- 1600 method which reports results as colony forming units per 100 ml (CFU/100 ml).

SEDIMENT TESTING

Bacteria and nutrients are known to concentrate in sediments therefore on a monthly basis for the first year of operation sediment samples will be collected and analyzed for fecal coliform, enterococci, TKN and total phosphate. A sample will be taken inside the enclosure and to the east and the west. These samples will be compared to the baseline result collect prior to construction of the facility. If any of the parameters increase methods will be implemented to abate the accumulation. This may include reducing feeding volumes and or reducing the number of dolphins present in the pen if it is determined that the increase is due to the facility. Other parameters will be utilized to help determine if it is a result of the facility.

RESULTS OF SEDIMENT TESTING

DATE	SAMPLE DESCRIPTION	TIME	Nitrates (ppm)	Orthophosphates (ppm)
Baseline	Control West		0.3	0.5
	CW-1		0.2	1.1
	CW-2		0.3	0.3
	CW-3		0.2	0.8
	CW-4		0.2	0.6
	Control East		0.2	0.9
3.28.19	Control West	1110	0.3	0.6
	CW-1	1103	0.2	0.3
	CW-2	1030	0.3	0.2
	CW-3	1026	< 0.2	1
	CW-4	1041	< 0.2	0.8
	Control East	1020	0.2	0.4

The result of the first month's sediment sampling is within the range of the results found in the samples taken prior to the construction of the facility. Nitrates are found between <0.2ppm and 0.3ppm and Orthophosphates are more variable and range from 0.2ppm to 1.1ppm.

Respectfully submitted,

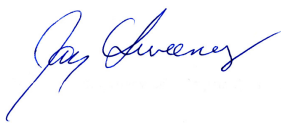
Amy Claire Dempsey, M.A.
President, Bioimpact, Inc.



Dolphin Quest Bermuda

Certifying statement:

Dolphin Quest Bermuda has a breeding program for common bottlenose dolphins. The breeding program, undertaken in large part through an educational breeding loan with the Chicago Zoological Society – Brookfield Zoo, is highly successful. Dolphin Quest Bermuda’s propagation strategy for population sustainability has been managed through onsite breeding to honor genetic diversity within the collective groups. Population growth at the Dolphin Quest Bermuda location has been sustained through this breeding program. Dolphin Quest Bermuda will not collect any animals from the wild as a replacement for animals exported from Bermuda and has no plans to import any wild caught animals at this time.

Veterinarian/Owner signature/date _____  _____4-15-19_____

Jay Sweeney, V.M.D.