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IMATA
International Marine Animal Trainers' Association

SOUNDINGS

Magazine of the International Marine Animal Trainers' Association

SOUND STATIONING

Using Auditory Cues with a Visually Impaired Bottlenose Dolphin (*Tursiops truncatus*)

ALSO IN THIS ISSUE:

ISSN # 1007-016X

CONFERENCE WRAP-UP of the 40th Annual IMATA Conference in Hong Kong

A Novel Approach to Training Phlebotomy Procedures in Atlantic Bottlenose Dolphins (*Tursiops truncatus*) to Treat Iron Storage Disease

IMATA

DEDICATED TO ADVANCING THE HUMANE CARE AND HANDLING OF MARINE ANIMALS BY FOSTERING COMMUNICATION BETWEEN PROFESSIONALS THAT SERVE MARINE ANIMAL SCIENCE THROUGH TRAINING, PUBLIC DISPLAY, RESEARCH, HUSBANDRY, CONSERVATION, AND EDUCATION.

Front Cover Photo Credit: Marineland Dolphin Adventure

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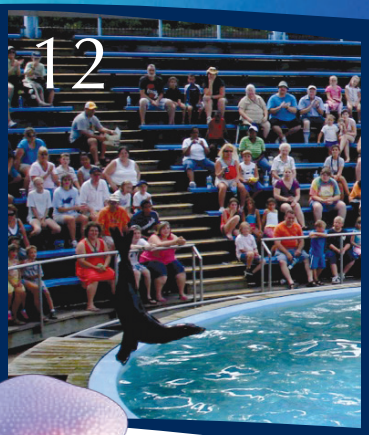
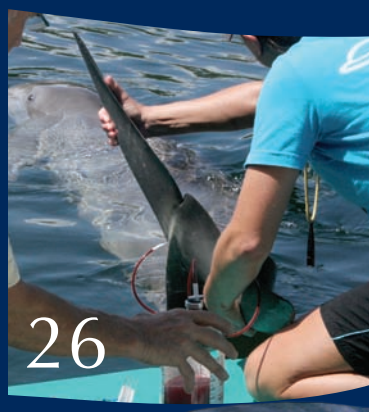
SOUNDINGS

MAGAZINE OF THE INTERNATIONAL MARINE ANIMAL TRAINERS' ASSOCIATION





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PRESIDENT'S CORNER

Happy New Year IMATA!

2013 is certain to be another inspiring year and I am excited to be serving this year as President of IMATA. I know many of you recently attended our 40th Annual IMATA Conference in Hong Kong. I hope you enjoyed this groundbreaking meeting as much as I did. It was a meeting during which I had the opportunity to fully embrace IMATA as an international organization. We've had conferences in North America, Australia, Europe, and now ASIA! For the first time I had the pleasure of meeting new colleagues from numerous facilities throughout Asia and now have a true appreciation for how experience with different cultures further enhances our perspective on our animals, as well as our approaches to training and animal care. I now have new friends in Japan, Hong Kong, and mainland China. As I mingled with conference participants from all over the world I once again enjoyed the camaraderie of our organization. We all have one thing in common as we share the passion to provide the best care possible for animals in our care by being the best trainers we can be. Last year, President Shelley Wood wrote *"By embracing new ideas, cultures, and philosophies, I have not only become a better trainer, but also a better teacher and person."* After my Hong Kong experience I could not agree with her more! IMATA has once again afforded me the opportunity to grow my relationships in the industry and I am a better person as a result of it. Shortly after the conference I returned to Georgia Aquarium inspired and enthusiastic to share the latest information with my team to help foster continued growth of our staff and program.

What a fantastic job done by Grant Abel, our former first Vice President, for the 2012 Conference! Grant is a true friend and has taught me so much about the nuances of managing and caring for marine animals in the Pacific Rim. It was through Grant's vision, drive, dedication, and leadership we were able to bring trainers together from almost every continent on the planet. This conference was a huge success! We are so grateful for Grant's efforts and the graciousness of our host facility, Ocean Park Hong Kong, for their incredible financial and in kind support of the meeting, and of course Grant's time.

2012 Board of Dirctors in Hong Kong. *(from left to right)* Laura Yeates, Patty Shilling, Michele Sousa, Eric Gaglione, Shelley Wood, Grant Abel, Jennifer Leech and Mike Osborn.

Our 40th Conference had record breaking support from sponsorship. Through the hard work of our Sponsorship Committee we have grown our sponsorship program in recent years, and the work done by Grant and his team this past year was outstanding. Sponsorship allows us to offset costs incurred in operating annual conferences, enhance the conference program, and provide better value to our members. For example, this past year conference presentations were translated in three languages; a very costly service that greatly enhanced the conference experience. I encourage all IMATA members to take time to learn about the companies that support our mission and goals, and patronize them as often as possible.

This was a monumental meeting for our organization. IMATA's board has worked hard in to launch the organization to global status and the 40th conference was instrumental in helping to achieve this goal. Now, as I have the opportunity to serve as IMATA's President, I stand committed to help lead the organization to build upon the international advancements made in recent years. IMATA's Board and Committee chairs are busy working to strengthen our global outreach and communication. We plan to accomplish this by increasing world wide networking through enhanced website, electronic media (*eSoundings*), IMATA TV, and social networking.

Regional workshops are another area we plan to grow. In 2012 we had several very successful regional meetings throughout the world. This included Southwest (San Diego), Midwest (Iowa), Northeast (Long Island) and Southeast (Florida Keys) meetings in the US and great gatherings in Caribbean (Freeport Bahamas and Cuba). These meetings were driven by the initiative, hard work and dedication of IMATA members in these regions. We will work to provide greater infrastructure within IMATA to provide stronger support to regional meetings as well as develop increased connections between regional workshops and annual conferences.

I am honored and humbled to work with and lead IMATA's Board of Directors in 2013. Please don't hesitate to contact me or any member of the leadership team as are here to serve you and the organization.

- Eric

Nellie

SOUND STATIONING

Using Auditory Cues with a Visually Impaired Bottlenose Dolphin (*Tursiops truncatus*)

Melissa E. Berdine, Rachel E. Aizcorbe, Michael Hunt, & Billy Hurley
Marineland Dolphin Adventure

Introduction

Nellie is a 59-year-old female Atlantic bottlenose dolphin (*Tursiops truncatus*). She was born to Happy (sire) and Susie (dam) at Marine Studios (later named Marineland Dolphin Adventure) on 27 February 1953. Nellie has spent her entire 59 years at Marineland, and is currently the oldest known dolphin at any zoo or aquarium location in the world.

In 2003, Nellie was diagnosed with the beginning stages of cataracts in both eyes. Over the next several years, progressive lenticular opacities occurred with gradual loss of visual acuity, and the animal training staff noticed Nellie missing and having difficulty discriminating between Sds. By 2009, Nellie's vision had deteriorated to the point where she rarely emitted any behaviors on visual stimuli. If she did respond, the behavior was often incorrect. As her condition progressed, Nellie began showing other tell-tale indicators of blindness; stationing when not under stimulus control, drifting off to either side of her trainer, and continuing to remain at station after a session was ended. A-to-B behaviors were also challenging. Nellie appeared to become desensitized to hand taps on the surface of the water, as well as any redirection taps.

Training techniques used with marine mammals are generally designed to modify the behavior of sighted animals. Even non-visual conditioned stimuli and reinforcements are generally established using visual prompts. "As a result, it can be disconcerting to work with an animal that has suddenly lost its sight" (Streeter, 2005). Working with these impaired animals can prove tricky at times; hand signals cannot always be relied on, and training methods often must be modified to accommodate them (Hepting, 2006). With this in mind, a proactive behavior management plan was implemented to assist in non-visual communication with Nellie as her eyesight deteriorated. "Efforts to implement non-visual training techniques helps the animals reestablish their social status, relearn old behaviors, learn new behaviors, and have an opportunity to participate in the same programs available to sighted animals" (Streeter, 2005).

The process began with the transfer of visual Sds to tactile stimuli or a cue involving a directional splash in the water – essentially presenting the novel Sd immediately before the existing one. "Adjusting Sds enables us to continue to communicate with the animals despite vision loss or physical changes" (Burtis, Garver, Hoffman & Roberts, 2008). This was similar to techniques described by Mango, Laule, and Vitug (2009) when visual signals were converted to auditory and tactile cues with a 13-year-old South American sea lion (*Otaria byronia*).

First, we transferred Sds for less complex behaviors. For example, for a pectoral wave, a visual Sd (a wave of the hand) was paired with a tactile stimulus (a touch on her shoulder). The process was comparable to techniques described in Sayre and Wright's article, "Disabled but Not Discounted: A Case Study of Two Tursiops truncatus," in which tactile stimulation was introduced to evoke a pectoral presentation. Another example, to solicit vocalizations, a visual Sd (a shake of the pointer finger) was paired with a tactile stimulus (touch on her melon). In our experience with Nellie, her melon was an ideal area to transfer Sds onto because the information transmitted was clear and the contact with her was maintained (Dolphin Discovery, 2009). For A-to-B behaviors and pool shifting, a visual directional point was paired with a directional splash in the water and the B-point trainer tapped the surface to indicate Nellie's destination.

The Life of Nellie

1953 Nellie is born on 27 February

1954 Velcro is invented

1955 McDonald's opens its first restaurant

1961 Cosmonaut Yuri Gagarin is first human in space

1963 Nellie turns ten-years-old

1969 Neil Armstrong walks on the moon

1973 IMATA is founded; Nellie turns 20-years-old

1975 Karen Pryor publishes Lads Before the Wind

1982 "E.T. the Extra-Terrestrial" premiers in theaters

1983 Nellie turns 30-years-old

1985 First "Baby Shamu" born at SeaWorld

1989 Exxon Valdez oil spill in Alaska

1993 Nellie turns 40 years old

1997 IMATA celebrates 25-year anniversary

2001 September 11th tragedy

2003 Nellie turns 50-years-old

2009 Sunny, Nellie's calf, turns 25-years-old

2012 Nellie turns 59-years-old

A target pole was also utilized to aid Nellie in following her trainer around the habitat. As the target was touched to her rostrum, she oriented to whichever direction it lead her. This became a very effective way to maneuver Nellie during sessions and to aid in basic behavioral conditioning (Carollo et al., 2012).

Overcoming Challenges with Communication

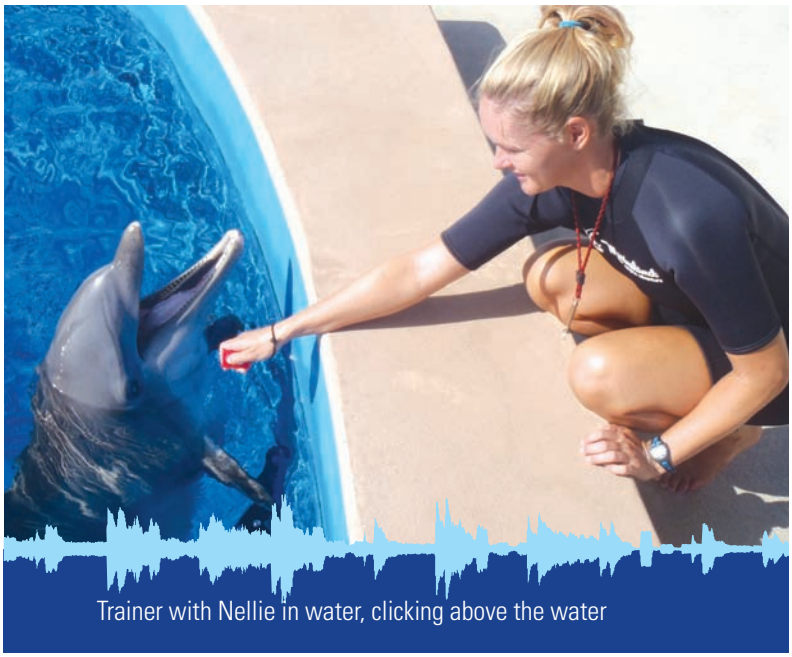
By 2010, the conversion away from visual stimuli was complete. Despite the success with tactile signals within sessions, Nellie's pre and post session behavior seemed to indicate she was unsure about when formal sessions were beginning and ending. Nellie also began to have challenges accurately performing A-to-B behaviors and being redirected successfully. To troubleshoot these challenges, we experimented with a variety of audible stimuli: snapping fingers underwater, fist popping hands underwater, and gently tapping the pool wall. This is similar to techniques utilized by Dolphin Quest Bermuda when they established alternative forms of communicating expectations using sound, tactile, and underwater Sds (Rice, Trainor, Hayward, & Campbell, 2006). Despite these efforts, Nellie continued to appear disoriented when starting sessions or while being redirected.

It became clear that we needed to fine-tune the methods by which we communicated the initiation and termination of formal sessions, redirected Nellie in the event of uncertainty, and provided consequences for undesirable behavior. By creating scenarios in which animals can succeed, we found an increase in motivation and a decrease in frustration (Dolphin Discovery, 2009).

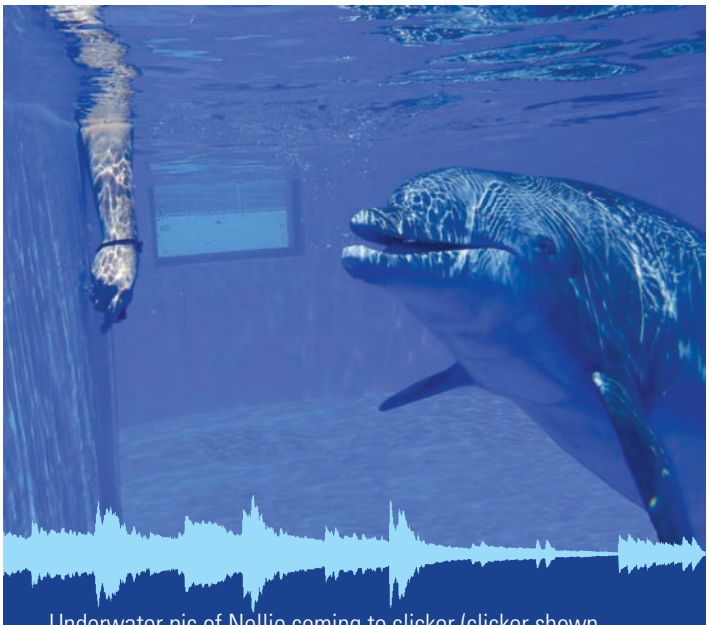
Start-of-Session Stimulus

When starting to focus the scope of this project, we utilized an extended duration whistle to indicate the start and the end of training sessions with Nellie exclusively. However, the use of the long whistle was replaced with a clicker to prevent generalization issues with animals involved in other sessions occurring in adjacent pools.

We introduced the clicker sound by pairing it with an extended whistle when initiating and terminating sessions. Use of the whistle was quickly faded. We approximated the start of each session with three clicks below the surface of the water, leaving our hands in the water to provide a destination on which to echolocate. When correctly oriented towards the destination, a whistle bridge was utilized to reinforce Nellie's response to the clicker cue. Nellie quickly responded to any click below the water, which effectively became a form of recall. A recall is a trained behavior. You give the signal (whatever you have chosen), the



Trainer with Nellie in water, clicking above the water



Underwater pic of Nellie coming to clicker (clicker shown under water too)

animal returns to station (is recalled), and the animal is then reinforced like any other behavior (Ramirez, 1990).

Use of Redirection Click

We found value in utilizing the clicker as an audible directional cue. If Nellie did not approach the correct station at the beginning of session, appeared disoriented, or was drifting from station the trainer could offer one additional underwater click as a prompt to provide clarity and direction. If Nellie reoriented toward the correct station, no further clicks are offered; instead, the whistle bridge is used to indicate a correct response.

This worked initially, but Nellie started deviating from the correct approach to her control trainer and would refuse the redirection click to station. To troubleshoot this and to prevent Nellie from becoming desensitized to numerous redirection clicks, a contingency was implemented which allowed for a maximum of two opportunities for a redirection click before terminating a session.

As Nellie's reinforcement history grew with following basic audible prompts, we employed its use as a B-point location in other areas of the pool. Nellie learned that a directional underwater hand sweep from the A-point trainer was followed by an underwater click prompt from the B-point trainer. This process is utilized when shifting Nellie between pools; the B-point trainer simply clicks once in the destination habitat.

End-of-Session Stimulus

Marineland's training program does not employ a formal end-of-session stimulus. However, we decided to make an exception for Nellie in reaction to her continuing to station after a session ended. The end-of-session stimulus is three clicks above the water. If a session is terminated because of refusal to respond to a start of session stimulus, redirection click, or if Nellie stations at an incorrect control point, the control trainer (without moving their position) offers three above-water clicks.

Conclusion

Many species of animals must deal with failing vision as they age. This is no reason to give up on the relationship already established with these animals. New relationships are formed and new training begins even when an animal is blind from the start. "Often it is an animal with a disability or medical concern that can benefit most from a good training program" (Ramirez, 1999).

Since the initiation of this proactive behavior management plan, Nellie's behavior has proven to be consistent and reliable. Providing framework for sessions and clear redirection has allowed Nellie to safely continue to participate in guest interaction programs and make history each day she is with us. Working with animals like Nellie lends us the opportunity to learn about age-related issues as they get older. We are able to track their daily age-related changes through our husbandry interactions.

Older animals also afford the opportunity to conduct research about the species in its senescence. For example, Marineland funded and conducted a hearing threshold study exploring the Auditory Brainstem Response (ABR). This is a non-discriminatory method used to measure hearing abilities. It established hearing thresholds on the Marineland dolphins, ranging in age from 3.5 years to 52 years (Nellie's age at time of study). This allowed for comparison to wild dolphins and select populations in human care. These studies are made possible through our preventative healthcare and animal training techniques combined with the incredible relationships we develop with each animal. It is important to remember that visually-impaired animals of all ages are still active learners. "While it may take a little more time and effort to engage these animals, the results are well worth it" (Hepting, 2006).

Acknowledgments

The authors wish to thank our fellow Marineland Dolphin Adventure animal trainers for coordinating as a team to implement Nellie's clicker training plan. In addition, we wish to acknowledge Kevin Roberts, Curator of Animal Care, for offering perspective on Nellie's medical and behavioral history.

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CONSERVATION BRIEFS

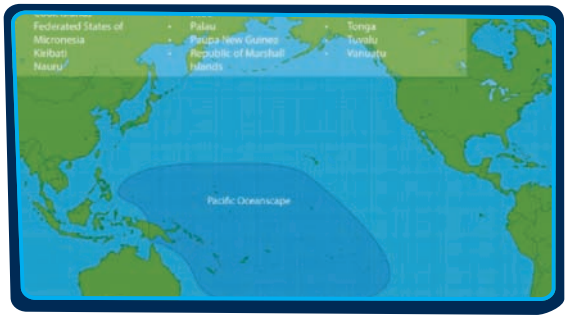
Half of Great Barrier Reef Corals Lost

Crown-of-thorns sea star (*Acanthaster planci*).
Photo Credit: Jon Hanson

Researchers from the Australian Institute of Marine Science (AIMS) have found that the coral cover of the Great Barrier Reef has decreased by over 50% in the last 27 years. Analyzing data collected on the 217 separate reefs that make up the World Heritage Site has shown a decline in coral cover from 28.0% to 13.8% between 1985 and 2012. The findings which were drawn from the world's largest reef monitoring project involving 2,258 separate surveys spanning over 27 years showed the three main causes for this decline to be tropical cyclones, coral-feeding sea stars and coral bleaching events. 48% of the damage is attributed to tropical cyclones with 34 storms recorded in the 27 year period. The next most damaging cause, however, is coral-feeding sea stars. The crown-of-thorns sea star (*Acanthaster planci*) is responsible for 42% of the decimation of the coral. This species of sea star is second largest to the sunflower sea star and is known for its multiple arms which are covered with venomous thorn-like spines. The crown-of-thorns sea star feeds on the hard coral polyps, leaving behind a white scar of coral skeleton. Coral bleaching, due to climate changes, accounts for the last 10%. The two severe coral bleaching events in the central and northern parts of the reef occurred in 1998 and 2002, and were due to ocean warming. The coral cover loss is significant as it represents habitat loss for tens of thousands of species associated with tropical coral reefs. Recovery of reefs is possible, but generally takes 10-20 years. The close intervals in which these events have been occurring makes it difficult for the reef to bounce back. While stopping storms and bleaching events could be difficult, researchers can focus short-term efforts on the sea stars. Controlling water quality will assist in controlling the sea star outbreaks. For instance, fertilizer associated with agricultural run-off leads to algal blooms on which sea star larvae feed. (BBC News)

Tiny Pacific Island Nations Create World's Largest Marine Park

Two of the world's smallest countries will be creating a marine protected area covering nearly 2.5 million square kilometers of the south Pacific Ocean. Using a new approach to sustainable ocean management called Pacific Oceanscape, the Cook Islands and New Caledonia have pledged to manage two of the world's largest marine reserves. The Cook Island marine park will be zoned for multiple uses including tourism, fishing and potentially deep-sea mineral extraction, but only if the activities can be carried out sustainably. This region of the Pacific Ocean contains the largest pristine marine ecosystems and is home to 60% of the world's tuna stocks. (The Guardian)



The 15 Island Nations of the Pacific Oceanscape.
Photo Credit: Conservation International

Bluefin Tuna Carrying Radioactive Pollution Across the Ocean

Bluefin Tuna.
Photo Credit: Osaka Kaiyukan Aquarium

Pacific Bluefin tuna (*Thunnus orientalis*) caught off the coast of California are found to contain radioactivity from the Fukushima Daiichi nuclear plant accident which occurred in 2011. Muscle tissue of 15 Bluefin tuna caught in August of 2011, just a few months after the nuclear plant accident, showed elevated levels of radioactive caesium, the isotopes 134 and 137. Caesium-137 is present in seawater as a result of fallout from atomic weapons testing. It is because of the short two-year half-life of caesium-134 that the levels found in the tuna can be tied directly to Fukushima. These fish, who spend one to two years in the same Japanese waters where their parents spawned, travel to eastern Pacific feeding grounds. The measured concentrations were found to be about 10 times the amount found in the species prior to the accident. Yellowfin tuna (*Thunnus albacares*) were used as a control and found to have no differences in their pre- or post-Fukushima concentrations. While consumers should have no health concerns about eating the tuna caught in 2011, the fish caught in 2012 will needed to be closely monitored, as they spent more time in Japanese waters after the accident before migrating east. This is an example of how migratory species can carry pollution over vast distances, and how interconnected eco-regions can be, even when separated by thousands of miles. (BBC news)

Google Maps: Virtual Diving the World's Great Reefs

One can now take a virtual dive on the Great Barrier Reef as Google Maps has paired with Catlin Seaview Survey in pioneering underwater scientific expeditions. Catlin Seaview Survey is sponsored by a United Kingdom-based insurance company, Catlin, and backed with technology from Google and support from non-governmental organizations, research institutes and the University of Queensland. Three islands on the Great Barrier Reef, as well as sites in Hawaii and the Philippines, are currently available while 20 more sites along the reef are in the works. When completed, nearly 50,000 high-definition panoramic images will be taken and geolocated. The user will be able to choose a location along the reef and take a virtual dive using the street view feature of Google Maps. Not only will the images be available via Google Maps, but also Google+, a dedicated YouTube channel, and Panoramio, a geolocation photo-sharing website. The survey aims to help bridge the gap between scientific awareness and public knowledge. The virtual diver will be able to see first-hand how the reefs are affected by climate change. (The Guardian)

Google Maps screenshots. Photo Credit: Catlin Seaview Survey

World's Rarest Whale Identified

The world's rarest species of whales had only been identified by skull fragments found three times in the last 140 years, twice in New Zealand in 1872 and the 1950s, and most recently in Chile 26 years ago. The spade-toothed beaked whale (*Mesoplodon traversii*) has never been seen alive, but two whales that stranded in New Zealand in 2010 have been identified as this species of elusive whale. Originally identified as the more common Gray's beaked whale (*Mesoplodon grayi*), the mother and calf were found stranded and dead on Opape Beach of the North Island on December 31, 2010. Tissue samples were taken, and the carcasses were buried. In the analysis of samples, DNA showed that the two were not Gray's beaked whales, but rather the spade-toothed beaked whales. The adult female was 5.3 m (17.4 ft) in length, and had a spindle-shaped, triangular dorsal fin with a concave trailing edge. The fin was set about two-thirds the way back. The whale was dark gray-black dorsally and white ventrally with a light thoracic patch extending from the eye downwards and back to the dorsal. She had dark eye patches, flippers and rostrum. The common name was derived from the shape of the protruding tooth, which resemble the flensing spade of 19th century whalers. (The Independent, Wikipedia)

CONSERVATION BRIEFS is compiled by **Shelly Samm**.

Female spade-toothed beaked whale found in New Zealand 2010. Photo Credit: New Zealand Department of Conservation

Notices & Announcements

ASZK CONFERENCE
The Australasian Society of Zoo Keeping Inc. will be holding its 2013 conference in Auckland, Australia. Visit www.aszk.org.au as updates come available.

ABWAK ANNUAL SYMPOSIUM
The Association of British and Irish Wild Animal Keepers will hold its annual symposium 2-3 March 2013 at the Edinburgh Zoo, United Kingdom. Please visit www.abwak.org for updates.

EAAM 41ST ANNUAL SYMPOSIUM
The European Association for Aquatic Mammals will be holding its 41st annual symposium 15-18 March 2013. The conference will be hosted by the Nurnberg Zoo in Nurnberg, Germany. Please visit www.eaam.org for more information.

AKAA CONFERENCE
The Animal Keepers Association of Africa's conference, hosted by uShaka Sea World, will be 18-20 March 2013, in Durban, South Africa. Visit www.akaafrica.com for updates.

AALSO ANNUAL SYMPOSIUM
The 19th annual Aquatic Animal Life Support Operators Symposium will take place 24-27 March 2013, in Oakland, California. Visit www.aalso.org for more information.

AZA MID-YEAR MEETING
The American Zoological Association's mid-year meeting will be 7-12 April 2013, and will be hosted by the South Carolina Aquarium in Charleston, South Carolina. Visit www.aza.org.

ABMA CONFERENCE
The Animal Behavior Management Alliance 2013 conference will take place 14-19 April 2013. This event will be hosted by the Toronto Zoo in Toronto, Canada. Please visit www.theabma.org for updates.

IAAAM 44TH ANNUAL CONFERENCE
The International Association for Aquatic Animal Medicine conference will take place 21-26 April 2013. The event will be hosted by The Marine Mammal Center in Sausalito, California. Updates can be found at www.iaaam.org.

INTERNATIONAL ANIMAL TRAINING CONFERENCE
The 1st International Animal Training Conference is being hosted by the Twycross Zoo in the United Kingdom from 28 April – 1 May 2013. Please visit www.twycrosszoo.org to learn more.

ABC ANIMAL TRAINING WORKSHOP
Learn the science of animal training while having fun working with dolphins, sea lions and manatees. The 2013 workshops are hosted by Dolphin Discovery Puerto Aventuras, Riveria Maya, Mexico. Basic courses are scheduled from 29 May to 2 June 2013 and 26-30 August 2013. Advanced courses are scheduled for 5-9 June 2013 and 1-5 September 2013. Further information is available at www.abcanimaltraining.com.

BIAZA ANNUAL CONFERENCE
The British and Irish Association of Zoos and Aquariums will be holding its annual conference 13-16 June 2013. The event will be hosted by the National Marine Aquarium in Plymouth, United Kingdom. Updates can be found at www.biaza.org.uk.

ZACC CONFERENCE
Zoos and Aquariums: Committing to Conservation will hold a conference in Des Moines, Iowa, 8-12 July 2013. The conference will be hosted by the Blank Park Zoo. Visit www.zaccconference.com for more information.

ABS ANNUAL CONFERENCE
The Animal Behavior Society's 50th annual conference will be held in Boulder, Colorado, from 28 July to 1 August 2013. Visit http://animalbehaviorsociety.org for information.

AZA ANNUAL CONFERENCE
The American Zoological Association annual conference will be held 7-12 September 2013, in Kansas City, Missouri, hosted by the Kansas City Zoo. Visit www.aza.org for updates.

FIELD COURSE WITH THE DOLPHIN COMMUNICATION PROJECT
The Dolphin Communication Project in the Bahamas has created a special course for marine mammal trainers interested in field work. This week long course is scheduled for 15-22 September 2013. For more information please contact Kathleen Dudzinksi at Kathleen@dcpmail.org or Kelly Melillo Sweeting at Kelly@dcpmail.org, or visit www.dolphincommunicationproject.org.

AZAD REGIOINAL CONFERENCE
The Association of Zoo and Aquarium Docents is holding a regional conference at the Woodland Park Zoo in Seattle, Washington. The dates are 19-22 September 2013, but are subject to change. Continue to check http://azadocents.org for updates.

AAZK NATIONAL CONFERENCE
The American Association of Zoo Keepers conference will take place in Greensboro, North Carolina, 22-26 September 2013. Continue to visit http://aazk.org for information.

EAZA ANNUAL CONFERENCE
The European Association of Zoos and Aquaria's 2013 conference will be in Edinburgh, United Kingdom on 24-28 September 2013. Updates can be found at www.eaza.net.

WAZA ANNUAL CONFERENCE
The World Association of Zoos and Aquariums annual conference will be hosted by Disney's Animal Kingdom in Orlando, Florida, on 13-17 October 2013. Continue to visit www.waza.org for information.

ICEE CONFERENCE
The 11th International Conference on Environmental Enrichment dates and venue have changed. The conference will now be hosted by the Dinokeng Game Park, South Africa, on 15-18 October 2013. Visit www.enrichment.org for more changes and updates.

SMM BIENNIAL CONFERENCE
The Society for Marine Mammalogy's biennial conference will be in Dunedin, New Zealand, 9-13 December 2013, and hosted by the University of Otago. Please visit www.marinemammalscience.org for more information.

PHOTOS NEEDED
All IMATA members are invited to submit photographs for use in *Soundings* magazine. High quality images at 300dpi are preferred. Please identify the photographer for credit and mail your photos to "IMATA Photo Archivist" as well as "*Soundings* Chief Editor" at the IMATA Central Office, info@imata.org.

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NOTICES & ANNOUNCEMENTS is compiled by **Haley Merritt**.

Mission Accomplished!

Jessica Jenkins
Denver Zoo

On 22 March 2008, a California sea lion (*Zalophus californianus*) named Bismarck was rescued by the Pacific Marine Mammal Center (PMMC) at a pier in Newport Beach, California. At approximately 7 months old and weighing only 10.8 kg (24 pounds), he was malnourished, and had suffered an injury causing the loss of his hind flippers and blindness in his left eye. His right hind flipper was amputated at the tarsal area (equivalent to a human foot), leaving a stump, which is essentially his ankle bone. The trauma to his left side was more severe and he lost up to the middle of his tibia (equivalent to the middle of a human shin) along with part of his tail. Due to these injuries, Bismarck was deemed non-releasable by the National Marine Fisheries Service (NMFS).

Denver Zoo's mission is to secure a better world for animals through human understanding. It has established six core values as means for accomplishing this mission: Protect, Innovate, Engage, Empower, Serve, and Honor. These values enable us to establish an environment best suited for learning. While the primary role of a trainer is animal care and husbandry, trainers play a crucial role in educating the public and inviting them to participate in the zoo's mission. One of the ways we have reached this goal is by connecting visitors to the animals in our care. We find that when visitors make these connections they become more passionate about animals. Bismarck is an example of an animal ambassador that helps convey the zoo's message and educate the public about the importance of ocean conservation.

Protect

Once Bismarck was deemed non-releasable, PMMC had to find a suitable home for him. This proved to be a difficult task for the Center as the full extent of his injuries and his long-term outlook were unknown. Denver Zoo was approached and asked if it was interested in providing a home for this young sea lion. Although the zoo's mission is to protect species of animals, this was an opportunity to help an individual animal and provide him with a safe environment in which he could thrive. By incorporating Bismarck into demonstrations, zoo visitors have become more aware of the challenges pinnipeds face in the ocean, and how human activities in land-locked Colorado affect all marine life. Many visitors to the zoo are unaware of the issues surrounding the impact of overfishing, fishing techniques, and pollutants in the ocean on marine life. They also do not realize rescue facilities exist, and that there truly is a need for these facilities to help animals affected by these issues.

Innovate

Several changes were made to the facility to ensure Bismarck's safety and wellbeing. Steps were built for all of the holding pools to allow him safe access, and soft mats were placed in high traffic areas to ease the impact on his joints. Although most of the changes made to accommodate Bismarck are never seen by our visitors, staff are able to educate them about how each animal has a different training plan based on its needs. We want visitors to understand that Bismarck can accomplish the same goals as our other animals by simply modifying the techniques used to get him there.

Engage

The connection of young visitors to Bismarck is simple. He is easy to identify, and children love that they can pick him out of the group and know his name. He is one of the most recognizable animals in the zoo, and although this is based on how he looks physically, it still creates a strong bond between the visitors and Bismarck. We feel that once a connection is made, it becomes much easier for people to become excited about the zoo's message. The most common question is "What happened to Bismarck?" While we do not have the answer to this question, it provides us with a perfect platform to educate visitors about rescue centers and issues concerning marine life. Additionally, signs have been placed around the exhibit that explain Bismarck's history for times that we are unavailable to answer these questions. We find that this is a great tool to help us engage visitors outside of show times.

Photo Credit: Ashley Snow/ Denver Zoological Foundation

Denver Zoo guests showing their support for Bismarck.

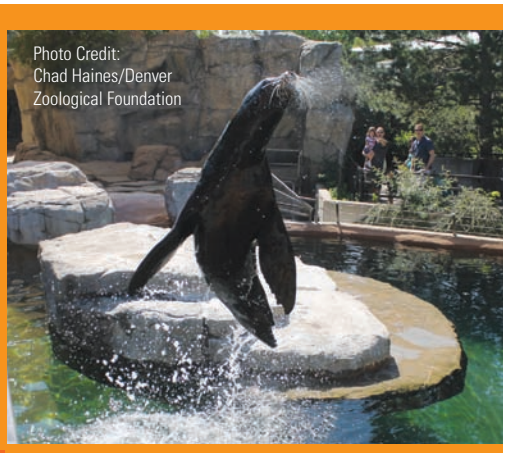


Photo Credit: Chad Haines/Denver Zoological Foundation

Jumping sky high! Bismarck showing that his disability doesn't limit him.

Empower

By having Bismarck as an animal ambassador, we have seen an increase in zoo visitors' enthusiasm to make a difference. While we have always made an effort to educate visitors on ways to help, the pinniped training staff has also been inspired by Bismarck to make more of a difference. We now hand out thousands of seafood watch cards a year and incorporate even more messaging in our shows. We want zoo visitors to know that we all can make a difference and help these amazing animals.

Serve

Having Bismarck at our facility has allowed us to far surpass our goal of serving the community. Bismarck has participated in Dream Night, an annual event for chronically ill or disabled children. He was the animal ambassador for his very first Dream Night and did a special demonstration to show how he has overcome his challenges. In his second year, the crowd for his demonstration grew exponentially. It was apparent children knew who Bismarck was and were thrilled to see him. Children with disabilities are able to relate to Bismarck and become connected to him after seeing how agile he is despite his disability. He also has done special demonstrations for the National Veteran's Wheelchair Games and continues to inspire special needs visitors. In addition, the zoo is starting a program called Bismarck's Buddies. This program connects Bismarck to children and veterans that are missing limbs or have other serious medical conditions. It is designed to show that anything is possible and that unique circumstances shouldn't stop anyone from succeeding. While ocean conservation is one of the zoo's main goals, we also want to help those going through difficult times while dealing with their own personal challenges.

Honor

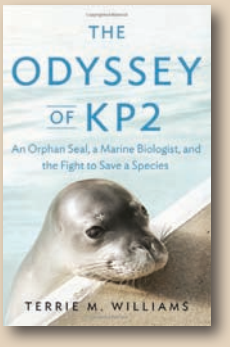
Denver Zoo honors its commitment to its guests through education and providing a home for animals in need. The zoo is upfront with visitors about Bismarck's story and his needs, feel it is important to acknowledge his differences, and make decisions based on what is best for Bismarck. For example, in hopes of mitigating weight gain and lessen the strain on his joints, the zoo plans to castrate Bismarck. In 2011 he underwent surgery on his left eye that had suffered trauma. Initially the plan was to remove this eye to decrease his discomfort. It was decided to do the more complex cataract surgery in hopes of Bismarck regaining some sight in that eye. While we are unsure of his vision in that eye we feel this was the appropriate decision to give him the opportunity to have the best life possible.

Denver Zoo strives to be a progressive institution by demonstrating that special needs animals have a place in our facilities and can be strong components of educational programming. Bismarck not only represents all of the zoo's mission statement goals, but his impact on the staff has been tremendous. He has given us the confidence to overcome training challenges presented by special needs animals. Through this we have become better trainers and more passionate educators. Bismarck's presence has had a vast impact at the Denver Zoo, and we are eager to learn and grow with him.

EDUCATION FORUM is compiled by **Jason Jones**.

OFF THE SHELF

The Odyssey of KP2
by Terrie Williams, reviewed by Susan Young



You may be familiar with the journey of Hawaiian Monk Seal, KP2, as presented in Soundings Volume 36, Number 4, 2011. The story is further explored in the recently published memoir, The Odyssey of KP2. This book is unlike Professor Terrie M. Williams' numerous scientific publications; it tells the inspiring story of an orphaned seal that ignited coastal conservation efforts and touched the hearts of his human companions.

The Hawaiian Monk Seal (*Monachus Schauinslandi*) is the most endangered pinniped species in the United States, and until the birth of Kaua'i Pup Two (KP2) in 2008, there was very little known about their physiology or immunological responses. Professor Williams had struggled for years to obtain the necessary permits to perform research on Hawaiian Monk Seals and her story outlines how her passion combined with luck allowed her to cross paths with this special monk seal that would impact her life more than she could have expected. This book will take you on the journey of KP2's birth and through the first few, very important, years of his life. He is not your average wild seal; he is a Hawaiian icon and a YouTube sensation across the US. Taking on what seemed to be an impossible feat; Terrie was prepared to tread lightly when it came to the boisterous and spirited KP2. Terrie was determined to ensure that her emotions did not interfere with her science. Terrie shares that "hugs and tears never saved an endangered species".

The book outlines the struggles and successes that Terrie and her team went through with training KP2 for scientific data. Along with data collections, a relationship develops that makes this opportunity much more than a scientific discovery. Terrie utilizes the strongest tool she has to capture the nation with KP2's story; the social media. With this outlet to the world, his story sparks a turn of events that inspires others to get involved in the conservation of our oceans. Through her trials and tribulations in her personal life and the events of an orphaned seal, the reader can understand what made this tenacious animal so special to her. KP2 was able to wiggle his way through the tough exterior of a scientist and right into her heart. This particular relationship between human and animal will tug on your heart strings and remind you, as an animal trainer, how important it is to read our animals, and how special it is when they read us back.

OFF THE SHELF is compiled by **John Widick.**

DESIGN AFFECTS SHORT-TERM KNOWLEDGE AND ATTITUDE OUTCOMES IN SEA LION SHOW AUDIENCES

Emmeline R. Miller[1, 2] & Richard J. Snider[2]
[1] Oceans of Fun, Milwaukee Wisconsin; [2] Department of Zoology, Michigan State University

INTRODUCTION

Zoological parks traditionally have had one or more primary missions: conservation, education, science, and/or recreation (Association of Zoos and Aquariums, 2009). Effective education in zoos is perhaps the highest priority mission (Clayton, 2009; European Association of Zoos and Aquaria, 2008) and is based on the notion that environmental knowledge both increases awareness and encourages more responsible, positive environmental actions (Hungerford & Volk, 1990). While it has been shown that achieving a conservation objective depends upon effectively inspiring people to care about animals, zoos have increasingly linked conservation success with effective education (Clayton, 2009).


FIG 1

Keeping animals in controlled environments is a complex issue. Zoos continuously adapt to public demands by increasing visitor-animal interactions and emphasizing entertainment value, while maintaining education as a priority (Fernandez, Tamborski, Pickens, & Timberlake., 2009; Hyson, 2004). Special attractions, such as animal shows, are becoming more common as a means to satisfy these demands while delivering educational messages. Some animal rights activists have voiced opposition to animal shows in particular, exclaiming that they exploit animals for monetary gain (Yerke & Burns, 1991). By definition, a show is "an event… involving the public display or exhibition of animals" (Show, 2010). Facilities that promote animal shows justify their programs by claiming educational benefits.

Various types of animal shows do share similar educational and conservation objectives, however, implementation of these objectives varies considerably between different facility types. Zoological venues have designed shows (FIGURE 1) based on the belief that impacting a visitor's conservation knowledge and attitudes was necessary in order to evoke environmentally responsible behavior (Penn, 2009). This reflects what is known as the Knowledge-Attitude-Behavior (KAB) model concept. This model describes a linear relationship between knowledge, attitude, and behavior. It asserts that increased knowledge leads to more positive attitudes, in turn leading to increased responsible environmental behavior (Hungerford & Volk, 1990). Like zoological park animal shows, theme park shows (FIGURE 2) were designed to change visitors' conservation attitudes and behavior, though show content was not commonly designed around the KAB model. Often, emphasis was not placed on species biology and natural history information, but on stimulating emotion while continuing to provide an entertaining experience (Beardsworth & Bryman, 2001).


FIG 2

Hungerford and Volk (1990) criticized the KAB model and stated that environmental behavior research had not extensively supported linear models for changing human behavior. In contrast, zoo historian Hyson (2004) later criticized any institution that strayed from the basic KAB model premise, and stated that zoos, "consistently undermined their educational-conservationist image with attractions and amenities more suited to theme parks" (p.249).

Animal shows and various show scenarios have emerged in animal facilities as educational tools. Examination of these shows' impacts on visitor knowledge, attitude, and behavior has been minimal (Yerke & Burns, 1991). More specifically, a comparison has not yet been made between the conservation education achievements of KAB model inspired shows versus non-KAB model show designs.

This study attempted to answer the basic question; Do species conservation message impacts differ between animal shows of varying designs? The goal was to 1) evaluate show effectiveness through inspiring an audience's curiosity and appreciation for animal conservation, and 2) compare and contrast the effectiveness between two different show designs. A research plan was developed using one zoological park (KAB model inspired design) and one theme park (non-KAB model design), both of which used the California sea lion (*Zalophus californianus*, Lesson) in their shows.

Specific research objectives were to compare and contrast the following outcomes between audiences of each show type:

1. level of change between show educational/entertainment value expectations and observations,
2. sea lion show attendance motivation,
3. level of species understanding and conservation knowledge change, and
4. level of attitude change toward sea lions, trainer-sea lion relationships/interactions, and the human individual's role in sea lion conservation.

The hypothesis was that species conservation impacts differ between animal shows of varying designs.

METHODS

For this study, data were obtained using retrospective pretest-posttest surveys (Falk et al., 2007). The retrospective pretest-posttest design was utilized to reduce response shift bias. Participants gain understanding as they experience an event, resulting in a discrepancy between pre/post event responses, threatening a study's internal validity. Therefore, response shift bias often can occur when traditional pretest-posttest survey designs are utilized, because survey participants answer questions both before and after a particular event under investigation.

Retrospective pretest-posttest surveys are completed immediately after the event. Participants simultaneously indicate their current responses and what they perceived would have been their responses before the event. Response shift bias is reduced and a more accurate estimate of the treatment effect is made because participants respond to each question within the same reference frame (Drennan & Hyde, 2008; Howard et al., 1979).

For the study presented here, two different surveys were constructed; one instrument was used to measure knowledge and the other, attitude. In addition to knowledge and attitude assessment statements, both surveys included questions addressing show educational and entertainment value and attendance motivation. Location-specific demographic questions concluded each survey. Each survey consisted of 21 total questions. Pilot testing occurred May 2010 with a small group of adults aged 20-58 with varying educational backgrounds, to ensure content clarity and appropriate survey length. The final products were further refined so that they could reliably assess sea lion show survey participant knowledge and any attitude change towards species conservation.

Surveys were distributed to Oceans of Fun Milwaukee (FIGURE 3) and Oceans of Fun Hersheypark sea lion show audiences (FIGURE 4) during June-August 2010. Restricted by time, travel, and resource restraints, surveys were distributed and collected on Fridays, Saturdays, and Sundays. A microphone announcement to show audiences five minutes prior to each show's commencement explained the study's purpose and procedure; all audience members 18 years and older were invited to complete surveys at the show's conclusion. Adults were the chosen demographic because they comprise 55-70% of zoo visiting populations and are considered society's decision makers whose actions would have the most direct institutional effects (e.g., monetary, political) (Conway, 1982; Heimlich, 1996).

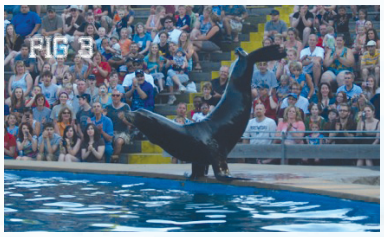


FIG 3

At each show's conclusion, surveys were handed out on a voluntary basis, distributed only to those that expressed interest in completing a questionnaire (convenience sampling). The surveys (knowledge or attitude) were handed out in an alternating fashion so that each consecutive participant


FIG 4

received a different assessment. Completed surveys were returned to a labeled box or handed directly back to the investigator. The investigator was always present to ensure each participant only completed one survey. Convenience sampling was used to increase response rate. There were some limitations to this method, including the fact that data collected were only representative of the sample population. The established methodology was designed for individual facility modification and utilization. Therefore, to more accurately determine the causality between show observation and knowledge/attitude change, a high priority was given to increasing internal validity. In addition, convenience sampling may be a more cost effective option for future primary survey investigators. The Michigan State University Institutional Review Board approved all methods (IRB Approval #: i035770).

THE SURVEY

Educational and Entertainment Value

Participants were asked to indicate their opinions of overall show purpose (education and/or entertainment) based on their pre-show expectations and post-show observations. A single question provided a numeric scale for each participant to circle the integer that best represented his or her perspective of the viewed show's educational/entertainment value. The scale began at one (purely educational) and included all integers up to ten (purely for entertainment). The difference between expected and observed values was calculated by subtracting each subject's total before-show value score from his/her total after-show value score.

Motivation

Surveys included one question addressing the visitor's motivation to attend animal shows because of its influence on experiential message reception (Falk et al., 2007). Motivation statements were adapted from Falk et al. (2007). Given four different motivations: (1) complete facility experience, (2) watch animals perform tricks, (3) learn about species, and (4) learn about species conservation), participants were asked to identify and rank their top three reasons for sea lion show attendance, with a '1' indicating the primary reason for attendance followed by a '2' and a '3'. In addition, participants were provided with an 'other' option to report attendance motivations outside those specified.

Knowledge

To assess knowledge, nine different statements were derived from show script material addressing basic California sea lion biology and natural history, training, and conservation. Participants were asked to indicate if each statement was true or false based upon their knowledge before and after the show. A 'don't know' option was also provided to prevent forced true/false guesses from skewing results (Weisberg, 2005). Scoring was based upon right or wrong responses, with a '1' indicating a correct response and '0' indicating an incorrect or 'don't know' response. Change in knowledge was calculated by subtracting each subject's total before-show knowledge score from his/her total after-show knowledge score. Scores were calculated for subjects that responded to all knowledge statement questions.

Attitude

Nine different statements were generated to reflect subjects' overall appreciation of California sea lions and sea lion conservation. 'Appreciation' was defined by attitude measurements in three major categories: (1) sea lions, (2) trainer-sea lion relationships/interactions, and (3) the individual human's role in sea lion conservation. Based upon their opinions before and after the show, participants were asked to indicate their agreement level with each statement using the following five-point Likert-type scale: '1' – strongly disagree, '2' – disagree, '3' – neither agree nor disagree, '4' – agree, '5' – strongly agree. This attitude measuring system was used because scales containing five to seven points are the most reliable and valid (Krosnick & Fabrigar, 1997). A five-point scale was used to score how positive (in relation to each measured attitude category) each response was, with '5' as the most positive answer, down to '1', the least positive. Change in attitude was calculated by subtracting each subject's total before-show attitude score from his/her total after-show attitude score. Attitude change was also calculated for each individual attitude statement. Scores were calculated for subjects that responded to all attitude statement questions.

Demographics

Nine demographic questions concluded all surveys. Question topics included subject gender, age, location of residence, education level, show attendance frequency, varying show attendance, park and zoo membership statuses, as well as show cost. These questions were included to account for possible demographic factors influencing survey participants' calculated species conservation knowledge and attitude change.

STATISTICAL ANALYSES

Non-parametric tests were used for analysis because samples were non-random and normality tests confirmed data were not normally distributed (Vaske, 2008). Wilcoxon rank sum tests were performed to compare and contrast education/entertainment value, knowledge, and attitude change levels between theme and zoological park sea lion show research subjects (Conover, 1980). Chi square tests for independence explored specific demographic variable effects on knowledge and attitude change. Fisher's exact tests were utilized for all demographic variable analyses that resulted in a two-by-two contingency table and/or a sample size that was not large enough for valid chi square test results (Conover, 1980; Daniel, 1990). An alpha level of 0.05 was used in all statistical analyses (Conover, 1980). All statistical analyses were performed in Windows SAS 9.2.

RESULTS & DISCUSSION

Anderson, Kelling, Pressley-Keough, Bloomsmith, and Maple (2003) found that public animal training with interpretation provided visitors with a more positive zoo experience. The study presented here attempted to better define the term 'positive' by specifically measuring knowledge and attitude impacts. Falk et al. (2007) was criticized for not accounting for individual zoo visit components (e.g., specific exhibits, shows, etc.) and consequently, those components' specific effects on visit outcomes (Marino Lilienfeld, Malamud, Nobis, & Broglio, 2010). The study presented here focused on a single captive animal facility component (animal shows), enabling a more reliable showing of causality between an experience and its outcomes.

This study's results show that audiences' preconceived educational/entertainment value expectations and attendance motivations may affect overall show conservation impacts. Zoological park research subjects were pleasantly surprised by the extent of show information, while theme park subjects expressed a desire for more educational content. Measured knowledge change levels corresponded with subject perceptions of the extent of show information presented (FIGURES 5). In addition, theme park visitors that had seen a sea lion show at a different institution were more likely to have nonexistent or negative species conservation knowledge or attitude change after show observation ($p = 0.0013$). These results provide evidence of expectation effects (e.g., disappointment, elements of surprise, number of novel experiences) on animal show impacts. Positive knowledge and attitude change occurred despite 'learning' not being identified as a primary show attendance motivation; though, changes in both variables (knowledge and attitude) were significantly less when show educational value expectations were not met, as shown in FIGURE 6. Heimlich (1996) said that knowledge gained by adults after a zoo visit did not depend on whether they came to learn or to socialize. However, Falk et al. (2007) found that attendance motivations impacted visitor outcomes directly.

Attendance motivations' influences on show conservation impacts remain unclear; additional research is needed. It is evident that facilities should consider visitor expectations and motivations when designing animal shows, and if desired outcomes are not being achieved, look to audience expectations and motivations as possible show impact barriers.

It is evident that both study sites achieved their shared objective of inspiring curiosity and appreciation for sea lion conservation; after a sea lion show experience, both zoological and theme park research subjects reported increased species understanding and conservation knowledge and positive attitudes. However, results support the hypothesis that species conservation impacts differ between animal shows of varying designs.

Presenting species conservation information may be linked to an increase in positive environmental attitudes. Both species conservation knowledge and attitude change was significantly higher in zoological versus theme park research subjects (FIGURES 5 & 6). The zoological park sea lion show had a greater effect on subject perceptions of sea lions as unique individuals with large behavioral repertoires. Even more importantly, the zoological park sea lion show convinced a greater number of subjects that sea lion shows do in fact inspire conservation action ($p = .0086$). Behavior change was not measured directly, though KAB model principles predict positive behavioral outcomes in research subjects as both knowledge and positive attitudes increased (FIGURES 5 & 6). In the future, behavioral outcomes could be specifically measured, though this study identifies knowledge and attitude as practical show success evaluation criteria. Indicators of success should measure progress and provide needed information, but should also account for available skills and resources (Flora et al., 1998). Measuring knowledge and attitude may be more feasible and cost effective than directly measuring behavior.

Overall, this study provides support for KAB model application in animal show design and highlights a desire for increased information presentation in theme park shows, supporting the integration of educational elements into non-KAB model show designs. Milman (1991) even reported elevated adult interest in visiting local theme parks if a learning experience was involved. However, it is important to note that educationally based zoological park shows may appeal more to adults, whereas theme park shows may appeal more to children. Future studies researching show impact on children are necessary, though the importance of reaching adults should not be underestimated. Adults have the capacity to be proactive and opportunity to reinforce conservation messages to their children (Heinrich & Birney, 1992). In addition, other show designs, e.g., zoo theater, that attempt to achieve greater balance between show educational and entertainment content and reach a more diverse audience should be further explored (Penn, 2009).

Animal facilities continually work hard to better convey conservation messages to their visitors. Although constructing future conservation education objectives is important, initial evaluation of facilities' current conservation impacts is invaluable; these assessments provide the

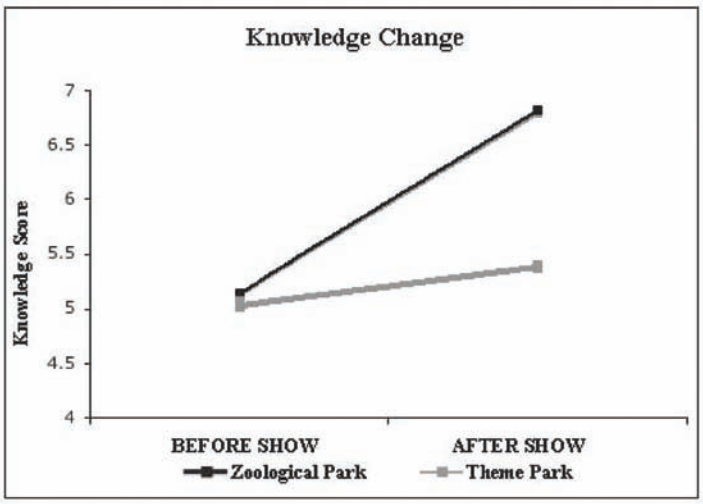


FIG 5 Mean knowledge change significantly more positive in zoological park (1.62) versus theme park (0.34) research subjects ($p<0.001$). Total scores based upon correct answers given (Correct=1, Incorrect=0)

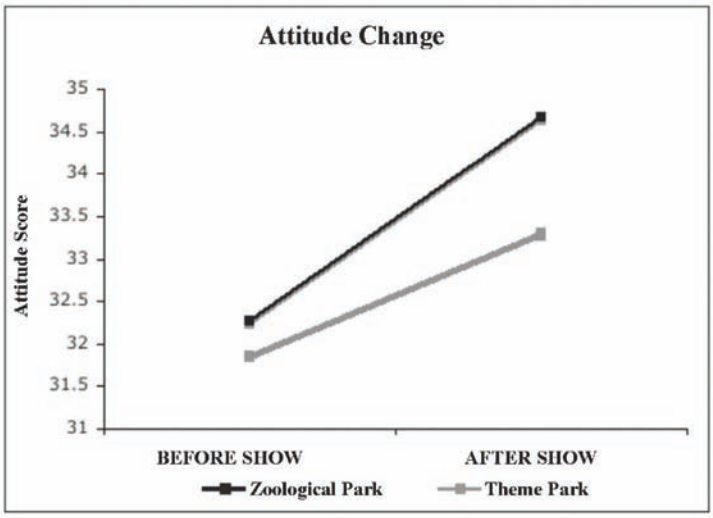


FIG 6 Mean attitude change significantly more positive in zoological park (2.40) versus theme park (1.43) research subjects ($p=0.0484$). Total scores based upon five-point Likert –type scale (Least Positive=1 to Most Positive=5)

information necessary to maximize future conservation education success and support animal facilities as sustainable tourism industry members (Smith, Broad, & Weiler, 2008).

This study evaluated show effectiveness through inspiring audience animal conservation curiosity and appreciation while it compared and contrasted effectiveness between two different show designs. Based upon the results, it is apparent that show design affects overall audience impact – not all animal shows are created equal. This finding emphasizes the importance of evaluation. Continually increasing controversy has made it a necessity for animal facilities to defend their existence with supportive evidence. This study's established methodology can be used to evaluate various animal shows' effectiveness in a broad range of facilities. Critics' claims of animal exploitation with minimal gain (Yerke & Burns, 1991) stress the need to change from output to outcome-based evaluation. Evidence of educational effectiveness now needs to be quantitative.

Contact: emme@oceansoffun.org

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IMATA CONFERENCE

HONG KONG • 2012 WRAP-UP

A picture speaks a thousand words! The sight of so many IMATA friends and colleagues beneath the Christmas tree at Ocean Park during the 40th annual conference in Hong Kong is a compelling story.

IMATA is alive and strong. Over four hundred delegates attended the conference representing more than one hundred facilities from 38 countries. IMATA's first conference in Asia, four years in the making, was an astounding commitment from our global zoo and aquarium community. Half of the attendees originated from Asia, demonstrating a depth of interest and support for the values of IMATA within Asian region, which will continue to be nurtured into the future.

The theme for the 2012 conference was "Connect to Conserve" and our opening video produced by Alex Mata of Dolphin Discovery in Mexico was a keen reminder that our actions can and do make a positive difference in this world. Now more than ever those positive values of our association need to expand around the globe; be culturally relevant, effective at a local level, and communicated to the millions of visitors that we connect with each year.

Each morning of the conference opened with a message and since everyone needed headsets tuned into English, Chinese or Japanese; being there a few minutes early helped our supporting volunteers enormously. The opening ceremony with its celebration of Hong Kong, Year of the Dragon and sincere welcome by the Chief Executive of Ocean Park Mr. Tom Mehrmann and the Deputy Chairman of the National Aquatic Wildlife Conservation Association of China Mr. Hu Wei Yong, signaled China's strong support for IMATA.

After the ceremony, Ms. Wang Shili Chairperson of the Aquarium Committee of the Chinese Association of Natural Science Museums spoke on the development of aquariums in China that first began in 1938 with a small facility on the shores of Qindao in Eastern China. Today, a community of more than 70 aquariums with marine mammals has opened within the last 20 years during China's recent period of accelerated economic growth. The afternoon plenary sessions were a mix of papers and presenters from around the world covering a range of topics from training Orcas in Argentina, sharks in the Caribbean, Common Bottlenose dolphins in Beijing, whale sharks in Japan and multi-cultural teams of trainers in the Middle-East.

Rounding off the first day of the conference, the Animal Training Advisory Committee (ATAC) headed by Dennis Christen of Georgia Aquarium and Todd Coffman of Sea World USA, presented their new and refreshed "back to basics of behavior and training terminology", captivating everyone with their uniquely entertaining instructional video. Highly recommend every IMATA member to view it!

Tuesday began with an inspiring presentation from Ken Ramirez of Shedd Aquarium Chicago, talking on the history of IMATA from his unique inside-view. Ken has been connected with IMATA and attended every conference for the past 30 years. With this history, he presented a host of memorable moments and milestones on IMATA with a passion that touched the hearts and minds of everyone in the room.

The Tuesday sessions continued focusing mainly on training for health care and managing those naturally occurring issues that all mammals (yes humans too!) have to deal with

such as dental & eye care, medical therapies, the use of traditional Chinese medicine with marine mammals and sonography. Among the Tuesday selections were two compelling stories about 5th generation common bottlenose dolphins bred at Enoshima aquarium in Japan and the planned release of illegally caught Indo-Pacific bottlenose dolphins in Korea.

The IMATA business meeting was well attended in the afternoon and everyone who attended received their bag of cookies to take home to those colleagues holding down the fort. While most evenings during the week were left free for everyone to get out and experience Hong Kong, Tuesday evening saw Shelley Ballmann from Oceans of Fun Milwaukee give us an in-depth look into their pathway to a successful pinniped program with California sea lions. Dolphin Quest, Snow Penguins at Ski Dubai, and Fleming Creative Concepts also kindly hosted an informal career night that was novel for our Asian colleagues, but familiar for regular IMATA conference goers.

Hiroshi Katsumata of Kamogawa Sea World Japan introduced the Japan Association of Zoos and Aquariums (JAZA) on Wednesday morning and spoke on the devastating impact of the March 11, 2011 earthquake, tsunami, and nuclear disaster, on the zoo and aquarium animals in northeastern Japan. Through Hiroshi, JAZA conveyed their thanks and gratitude to the world zoo and aquarium community for the support and assistance given to those directly affected facilities and animals, immediately after the disaster. Aquariums in Japan were first established in 1939 and consist of 151 institutions comprising 86 zoos and 65 aquariums across the Japanese archipelago. In 1988, JAZA established their Species Survival Committee and today manage studbooks for 143 rare and/or endangered species being managed under human care.

The latter part of the morning focused on novel training programs in projects from Sea World's new Dolphin Point project replacing feeder pools for dolphins with educational interaction opportunities for Park guests; matching to sample paradigms and population management with multi-species exhibits. After lunch saw a series of presentations focused on in-situ conservation projects for common bottlenose dolphins in the Indian River Lagoon in the US and Steller sea lions in Alaska. The afternoon was devoted to poster presentations, meeting sponsors, fundraising for the IMATA research and conservation fund; and generally making new friends before getting out and seeing more of HK by night!

Buses to Ocean Park began transporting the congregation on Thursday morning, where first order of business was to gather everyone beneath the Christmas tree for a group photo. Afterward, everyone spent the day roaming the 80 hectares of theme park, participating in over 40 back of house tours, and meeting up by 4pm at the Whiskers theatre where the informal presentations were held. Thirteen presentations were given during the two hours that preceded an informal party with entertainment, hot meals, and Christmas drinks together with award presentations to the conference sponsors. There was rumor that hordes of IMATA delegates were seen touring the City's nightlife and watering holes until very early the next morning!

Friday was again dedicated to conservation and training medical behaviours. The morning kicked off with a keynote presentation by Dr. Olga Shpak, Research Associate at the A.N. Severtsov Institute of Ecology and Evolution in Russian Federation. Olga is also the principal investigator for a longitudinal study on the population of belugas in the Russian Far East and is uniquely positioned to speak authoritatively for ensuring sustainability of the Okhotsk Sea belugas. Olga also gave new and interesting accounts of mammal eating killer whales and the endangered bowhead whales that are also found in that region of Russia.

The morning continued with presentations on medical training with the endangered Yangtze River finless porpoise that is suffering a similar fate in the wild as the Baiji, which was recently classified as functionally extinct. The Ocean Park veterinary and training team presented a case history of in-line catheter training with a California sea lion, used to administer intensive medical therapy for combating the disease Melioidosis. After the morning break, Dr. Geraldine Lacave of Belgium gave an inspiring wrap-up to the conference on the history and future importance of the working relationship between animals, trainers, and veterinarians.

Incoming VP for the 2013 IMATA conference in Las Vegas Michelle Sousa gave everyone of taste of Vegas and the progress that she and the team have made to create an exciting and memorable conference in September!

Finally, it was almost over – the week was coming to close with nothing left to do except tally up the judge's results and have a ball later that evening. Meanwhile, about 100 conference goers relaxed during the afternoon watching the local Indo-Pacific humpback dolphins (Sousa chinensis) feeding among the busy north Lantau channel in front of the conference hotel. The Honors and Awards banquet kicked off at 7pm.

Many Thanks!

The 2012 IMATA conference in Hong Kong was the culmination of effort by more than 100 people, supported by a record number of sponsors and service providers. I tried to thank all who have supported and been involved during the week because this conference could not have been successful without everyone's energy and input to make it happen in Hong Kong. A Huge THANK YOU to All! The knowledge and experiences shared during the week will benefit the lives of thousands of marine animals under human care. The opportunity to connect our global community in Asia was important and I hope the friendships and knowledge gained during the week will continue to advance and grow.

- Grant Abel

2012 HONORS AND AWARDS CEREMONY

By Nicole O'Donnell

It was an exciting night of Honors and Awards in Hong Kong where many were recognized for their efforts to IMATA and the 40th Annual IMATA Conference! Read below to see who received awards!

JOHN KIRTLAND AWARD OF DEDICATION

The John Kirtland Award, given to acknowledge persons or organizations that have demonstrated true dedication towards and made major contributions to IMATA, was presented to **Nedra Hecker** during the 2012 conference. Nedra has served IMATA in various roles for years and has done a phenomenal job. Congratulations Nedra!

Past recipients include:
2005 – John G. Shedd Aquarium (home of the IMATA Central Office)
2010 – Patrick Berry

IMATA DONATION

"IMATA Gives Back" was the recipient of the 2012 IMATA Silent and Live Auctions donation for $2,850! This money will be contributed to the IMATA Conservation Fund and IMATA Research Grant.

The 2012 recipient of the IMATA Conservation Fund Award of $3,000 is Wuhan Baiji Conservation Fund to continue their work to protect the endangered Yangtze River cetaceans, the Baiji dolphin, and the Yangtze finless porpoise in the wild.

The 2012 recipient of the IMATA Research Grant of $3,000 is Joseph Gaspard - Mote Marine Lab & Traci Kendall - Long Marine Lab for collaborative study into the investigation of the physiological adaptations of marine mammals.

PEOPLE'S CHOICE AWARD

1ST – Ocean Park Hong Kong – Host Facility and Day at the Park
2ND – Nikki Morrison – "From Peng-uin to Peng-Friend: The Journey of a Group of 'Green' to 'Guest Friendly' Penguins for the Purpose of Education and Conservation Awareness"

ACCREDITATION AWARDS

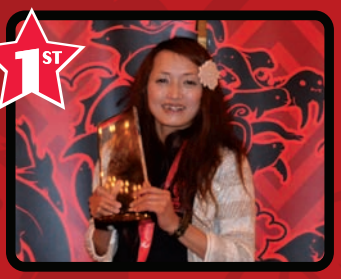
During 2012 several facilities underwent the IMATA accreditation process. Billy Hurley, Accreditation Committee Chair, recognized the facilities that now have IMATA accredited animal trainer training programs:

Delphinus Xcaret
Delphinus Xelha
Dolphin Discovery Los Cabos
Dolphin Explorer
Marineland Dolphin Adventure
Mirage Dolphin Habitat
Moorea Dolphin Center

HOST FACILITY AWARD

Ocean Park

BEHAVIORAL TRAINING



1ST – Keiko Kawamura*, Kazutaka Harada, Toshiyuki Tatsukawa & Toshiaki Ishibashi – Shimonoseki Marine Science Museum – *"Increasing Behavioural Variety of Bottlenose Dolphins in Conjunction with Four Stationing Positions"*
2ND – Eric Bogden – Sharks! Interactive, Dolphin Cove – *"Marine Animal Interactions in the Caribbean"*

HUSBANDRY TRAINING

1ST – Paolo Martelli*, Tommy Im*, Nimal Fernando, Lee Foo Khong, Nathalie Mauroo, Sam Chow, Lionel Poon & Lau Chi Lin – Ocean Park Hong Kong – *"Basic Training Allows Intensive Advanced Therapy Using a Central Indwelling Catheter in a California Sea Lion on Treatment for Melioidosis"*
2ND – Stephen Lai*, Jack Cheng, Cody Lai, Ken Kwok, Elaine Lee, Paolo Martelli & Nimal Fernando – Ocean Park Hong Kong, **Dr. Cedric Tutt** – European Veterinary Dental College – *"Training for Dental Work Poolside"*

RESEARCH ADVANCEMENTS

1ST– Andrew W. Trites* & David A. S. Rosen – arine Mammal Research Unit, Fisheries Centre, University of British Columbia – *"Solving Ecological Mysteries One Fish at a Time: The Case of the Missing Steller Sea Lions"*
2ND – Stephen D. McCulloch*, Juli D. Goldstein, John S. Reif, Steve P. Burton & Adam Schaefer – Harbor Branch Oceanographic Institute at Florida Atlantic University, **Gregory D. Bossart** – Georgia Aquarium – *"An Overview of the Indian River Lagoon Bottlenose Dolphin Health and Risk Assessment (HERA) Project – International Implications"*

EDUCATION AND CONSERVATION

1ST – Geraldine Lacave – Marine Mammal Veterinary Services – *"Animals-Trainers-Veterinarians: An Indispensable Trio! Where Do We Come From and Where Do We Go?"*
2ND – David Roberts* & Jennifer Leach* – Sea World San Diego – *"The 'New' Dolphin Point: Creating a Multi-Dimensional Interactive Area"*

2012 IMATA JUDGING TEAM

As special thanks to this year's judges. They watched every single presentation and did a wonderful job at selecting this year's award recipients

FIRST TIME PRESENTER

Stephen Lai – Ocean Park Hong Kong – *"Training for Dental Work Poolside"*

EDITOR'S CHOICE AWARD

A $300 cash award, sponsored by The Dolphin Connection, given to the author of the abstract that most effectively and accurately reflects the formatting guidelines IMATA Proceedings and requires the least amount of editing.

Huang Wanhsiu*, Chien Kuo-Chieh, Chang Kuang-Lien, Lee Chien-Ming & Jen I-Fan – Farglory Ocean Park, **Juli D. Goldstein & Stephen D. McCulloch** – Harbor Branch Oceanographic Institute – *"Two Types of Voluntary Nebulization Therapy through Operant Conditioning in Bottlenose Dolphin"*

POSTER

1ST – Stefanie Klahn* & Dr. Dirk Wewers – Allwetterzoo Muenster – *"Grey Seals – Team Training"*
2ND – Cindy Maur*, Mary Gremler* Melissa Nelson, Jessica Moody & Josh Charlton – Bronx Zoo / Wildlife Conservation Society – *"He Ate What?!? Discovery, Diagnosis, and Treatment of Problematic Rock-Eating in a Male California Sea Lion"*

OUTERNET TECHNOLOGY AWARDS

This $200 for 1st and $100 for 2nd place cash award sponsored by Outernet Technologies recognizes the best or most innovative use of science and technology in training sessions, shows, play sessions, husbandry, conference presentations, or record keeping for any formal or poster presentation.

1ST – Andrew W. Trites* & David A. S. Rosen – Marine Mammal Research Unit, Fisheries Centre, University of British Columbia – *"Solving Ecological Mysteries One Fish at a Time: The Case of the Missing Steller Sea Lions"*
2ND – Paolo Martelli*, Tommy Im*, Nimal Fernando, Lee Foo Khong, Nathalie Mauroo, Sam Chow, Lionel Poon & Lau Chi Lin – Ocean Park Hong Kong – *"Basic Training Allows Intensive Advanced Therapy Using a Central Indwelling Catheter in a California Sea Lion on Treatment for Melioidosis"*

IMATA SERVICE AND BOARD MEMBER AWARD

Patty Schilling – Treasurer – 2010 – 2012

Grant Abel – Vice President – 2010 – 2012; *(pictured second from Left)*

PRESIDENT AWARD

A special plaque was given to outgoing IMATA President Shelley Wood to honor and recognize her outstanding service and dedication to IMATA and its members.

PASSING OF THE GAVEL

The gavel was officially passed from the outgoing IMATA president **Shelley Wood** *(right)* to the incoming IMATA President **Eric Gaglione** *(left).*

S.A.I.C. ART CONTEST

ART

1ST – Kaycie Merrihew – Sea Life Park Hawaii
2ND – Carmen Leung – Ocean Park Hong Kong

HUMOR

1ST – Nikki Morrison – Ski Dubai
2ND – Angel Galicia – Interactive Aquarium

PHOTO

1ST – Valentine Pillet – Moorea Dolphin Center
2ND – Craig Allum – Sea Life Park Hawaii

OVERALL WINNER

Valentine Pillet – Moorea Dolphin Center

Thanks go to all involved who made the 2012 IMATA Conference such a huge success, especially Grant Abel and his incredible team. I'LL SEE YOU ALL IN LAS VEGAS!!!

- Nicole O'Donnell

REGIONAL REPORTS

The following reports were submitted for publication on 30 November 2012

ASIA REGION

Philip Wong, Ocean Park – *Hong Kong, China*

Photo Credit: Falgory Ocean Park

Celebrating the Chinese New Year at Farglory Ocean Park.

Farglory Ocean Park – *Hualien, TAIWAN*

Da-Tou, an adult male California sea lion (*Zalophus californianus*) that has been a resident for 10 years at Farglory Ocean Park will greet park guests on 10 February 2013 to celebrate the Chinese New Year. To bring good luck, Da-Tou will bite into a lucky basket with his favorite foods hidden inside which symbolizes sharing luck to others. Beside him will be a spring festival couplet which will read Gong-Xi-Fa-Cai in hope that everyone will improve their income throughout the year. Lastly, there will be red envelops which symbolize blessedness. In the Chinese culture, elders will give red envelops to junior generations for blessing them healthy, safe and well.

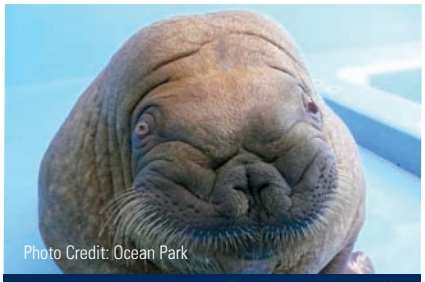


Photo Credit: Ocean Park

Rock, a male Pacific walrus (*Odobenus rosmarus*) at Ocean Park, Hong Kong.

Ocean Park – *Hong Kong, CHINA*

Ocean Park is pleased to report that Rock, a male Pacific walrus (*Odobenus rosmarus*), was transported from Kamogawa Sea World Japan and arrived safety to Hong Kong on 27 October. Rock has adapted well to the change and is doing well with his new trainers. Ocean Park would like to thank everyone involved in this successful move and look forward to introducing him to the female walrus named Miru very soon.

AUSTRALIA REGION

Ryan Tate, Taronga Zoo – *Sydney*

Taronga Zoo – *Sydney, AUSTRALIA*

Taronga's marine mammal trainers were pleased after obtaining a blood sample from their male leopard seal (*Hydrurga leptonyx*) Casey, which hasn't had blood taken in a number of years. The behavior was being trained for health screening and research purposes and the trainers reached their goal of finishing the behavior before the breeding season when Casey, now a mature male, would lose motivation. The behavior was achieved by getting the leopard seal to perform several high energy behaviors, then hauling out and having blood taken from the soft tissue just past the nail on the rear flipper.

Taronga recently acquired a young female New Zealand fur seal (*Arctocephalus forsteri*) named Kekeno, which is Maori for fur seal. She was found in Sydney Harbour swimming in circles and showing signs of a head injury after a suspected boat strike. After a few months recuperating in the vet hospital, she has finally moved down to the Seal Theatre and is adjusting well. She is meeting other seals and learning the daily routine.

CANADA REGION

Brian Sheehan, Vancouver Aquarium – *Vancouver, British Columbia*

Vancouver Aquarium – *Vancouver, BRITISH COLUMBIA*

With construction in full swing, the Vancouver Aquarium has installed a new sound monitoring system in the Wild Coast Exhibit which is proving to be of value to insure that sound levels do not exceed acceptable levels. Two strategically placed hydrophones hooked up to a monitoring system are set to inform appropriate staff immediately through e-mail should sound levels exceed a set level in intensity or duration. Construction could then be immediately shut down and assessed. Animal behavior is also closely observed when new sounds are introduced into the habitat. This system is a valuable tool in monitoring the animals as well as ensuring the visitors that the animals are well taken care of.

Research continues to play an important role in the training goals of the marine mammal department. The Pacific white-sided dolphins (*Lagenorhyncus obliquidens*) are moving to the next step of a current study of how they use echolocation for determining the presence of fishing nets. The beluga whales (*Delphinapterus leucas*) were just introduced to a newly completed vest which they will wear as part of a study to look at cardiovascular variation in belugas. The Steller sea lions (*Eumatopias jubatus*) continue with their transmitting study, while the Northern fur seals (*Callorhinus ursinus*) are almost ready to begin a dive study.

CARIBBEAN ISLANDS REGION

Adrian Penny, Atlantis Paradise Island – *Paradise Island, Bahamas*s

Photo Credit: Coral World

Staff at Coral World accepting an award from Princess Cruises.

Coral World Ocean Park – *St. Thomas, US VIRGIN ISLANDS*

Over the past few months, the 4.0 South American sea lions (*Otaria flavescens*) at Coral World Ocean Park have been preparing for the upcoming season. This included their annual medical exams, highlighted by the first voluntary, free contact blood sample given by Romulo, an 8-year-old male with an extensive history of aggression.

The marine mammal staff was also excited to find that the Sea Lion Swim program was recently named the best guest-rated low volume tour of the 2011-2012 season by Princess Cruise Lines. The staff is looking forward to another wonderful season with the sea lions.

Dolphin Cay Atlantis – *Nassau, BAHAMAS*

Miss Turner, an Atlantic bottlenose dolphin (*Tursiops truncatus*), was rescued in 2011 by the Atlantis Animal Rescue Team which is home to the only Live Animal Stranding Rescue and Rehabilitation Center in the Bahamas. Miss Turner, deemed non-releasable, suffers from severe scoliosis of the spine. Upon arrival to Dolphin Cay she could not swim or keep her head above water; however, through hard work and dedication the staff held her at the surface for weeks and outfitted her with a lifevest for support. Since this time and as part of her rehabilitation, Miss Turner has been acclimated to one of the dolphin social structures at the facility. She is interacting with other animals, which helps aid in keeping her muscles active. She has also learned to gate and basic targeting. The Marine Specialist have begun to teach voluntary husbandry behaviors such as hydration and medical pool gating. Dolphin Cay is very proud of her progress and hopes for continued success with her rehabilitation and training goals.

The Dolphin Experience UNEXSO – *Freeport, BAHAMAS*

Hurricane Sandy, which recently blew through the Bahamas, was kind to Dolphin Experience. The facility suffered minimal damage, mostly wind-blown debris and broken tree branches. However, the animals are none the worse because they were well taken care of by the training staff throughout the duration of the hurricane.

Fortunately, the Dolphin Experience has such a large body of water for the dolphins to roam in that it is the safest place for them to be during such a major event. For those unfamiliar with the Dolphin Experience, the facility is protected from the ocean and yet in close proximity for taking dolphins out in the open water.

Should anyone find themselves in Freeport, don't hesitate to give Dolphin Experience a shout if you'd like to drop by and visit.

Photo Credit: Dolphin Experience

Aerial view of the Dolphin Experience Facility in Freeport, Bahamas.

Dolphin Explorer – *Punta Cana, DOMINICAN REPUBLIC*

Dolphin Explorer personnel are preparing for the launch of the Sea Explorer program. Juvenile bottlenose dolphins are currently being trained to interact on

the sea floor with guests equipped with helmets that are supplied with air from the surface. Also, semen collection training which is part of an artificial insemination study is going well with Dolphin Explorer's two proven males, one of which is regularly providing samples of 70 ml (2.3 oz).

Dolphin Quest Bermuda – *Sandys, BERMUDA*

Dolphin Quest Bermuda is actively involved in the research efforts of the Bermuda Turtle Project. Bermuda is one of very few locations worldwide where post-pelagic, immature, juvenile green turtles (*Chelonia mydas*) occur in the complete absence of adults and it may be the best site in the world for green turtles of this age to be studied in their natural habitat. The Sea Turtle Conservancy visits Bermuda every summer for exactly this purpose. The research efforts of the Bermuda Turtle Project are focused on filling in the information gaps on green turtle biology so that successful protection efforts can be developed to help conserve this endangered species.

In August of this year five turtles participated in the Bermuda Tour de Turtles, a 3 month race through the island waters. All five turtles were fitted with a satellite transmitter to monitor which travels the farthest in the inaugural race. Dolphin Quest Bermuda crew volunteered with parts of the project in order to help educate the community and increase survival rates.

EUROPE NORTH CENTRAL REGION

Christiane Thiere, Tiergarten Nuremberg – *Nuremberg, Germany*

Dolfinarium, Harderwijk – *Harderwijk, NETHERLANDS*

An important chapter is about to begin for the Dolfinarium in 2013 as the park will be closed for 6 months of renovation, including renovation of the dolphin theatre's dome. The park will reopen in April 2013 with a world-class, innovative dolphin show. The animals which are currently being housed at other facilities will return when the construction is finished.

The rescued killer whale (Orcinus orca) named Morgan, now living in Tenerife for almost 1year, is still subject of a court case in the Netherlands to evaluate if the former decision to rescue and transport Morgan were legal at that time. On the 13 December 2012 the court will come to a decision.

Zoo Dortmund – *Dortmund, GERMANY*

Rubio, the albino South American fur seal (*Arctocephalus australis*) born on the 26 May 2012, is being raised by zoo keepers after the loss of his mother. A few weeks ago, after some setbacks he finally started eating fish. At 5 months old, he weighs 15kg (33 lb) and also his appearance is changing. Rubio has a prominent, oddly-looking coloration on the back of his head, which appears much brighter than the rest of his body. Moreover, some of his back hair is also brighter in color. Most of the day he enjoys playing with his pool mate, Baby Blue, who is a female only 1 week younger than him. Both are now experiencing the autumn season by enjoying and observing how much excitement fallen leaves can be, when seen for the first time.

Photo Credit: Guillermo Lobo

Dolphin Dreams Resort of the Dolphin Discovery Group

EUROPE NORTH WEST REGION

John-Rex Mitchell, John G. Shedd Aquarium – *Chicago, Illinois*

Chessington World of Adventures Resort – *Surrey, UNITED KINGDOM*

The trainers had a busy peak-season in 2012, conducting four animal presentations daily along with animal-guest interactions between March and November. With the park only open on weekends and school holidays during the winter, the work days are now slightly different with a lot more time available for brainstorming sessions, planning, and training new behaviors. In December, CWoAR teamed up with Sabrina Brando from AnimalConcepts and Tim Sullivan from Brookfield Zoo to host a successful 4 day seminar on animal training.

The team would like to thank Rebecca Apperley for assisting with duties on the training team back in October and would like to welcome Jamie Curtis and Lindsey Partridge as permanent members of the training team.

EUROPE SOUTH CENTRAL REGION

Pablo Joury, Amnéville Zoo – *Amnéville, France*

Zoomarine – *Rome, ITALY*

After a long year of preparation, Zoomarine Italy is happy to announce the first bottlenose dolphin calf born at the facility. The mother, Leah, and the female calf are doing fine.

MEXICO REGION

Alejandro G. Mata, Dolphin Discovery – *Cancún, Quintana Roo*

Dolphin Discovery Group – *Cancún, Quintana Roo, MEXICO*

In November 2012, Dolphin Discovery Group announced the opening of the eleventh facility of the group located in Riviera Maya, Puerto Aventuras. Dreams resort hotel is the third largest facility at Dolphin Discovery with almost 9.0 m2 (97 sq.ft.) of natural environment, hosting 2.0 West Indian manatees (*Trichechus manatus*) and 3.3 bottlenose dolphins. This is the first facility in Mexico and South America to have marine mammals which have only been born under human care, being part of Dolphin Dreams protocol to host animals of the first or second generation, including manatees.

Dolphin Discovery Cozumel – *Cancún, Quintana Roo, MEXICO*

In November 2012, Dolphin Discovery Cozumel reached the goal of housing 11.10 Atlantic bottlenose dolphins which were born solely at Dolphin Discovery. Together with Dolphin Dreams Resort at Riviera Maya, both are the first facilities in Mexico with this type of population, thanks to the reproduction program which began in 2001.

Photo Credit: Ricardo Aguilar

Male calf with mother Ixchel at Dolphin Discovery Los Cabos in Baja California, Mexico.

Dolphin Discovery Los Cabos – *Los Cabos, Baja California, MEXICO*

After 2 years since the opening of Dolphin Discovery Los Cabos, the first calf was born in Baja California Mexico on 26 September 2012. The male calf is doing perfect with his mother Ixchel. Thanks go out to all the staff, veterinarians, volunteers, and Los Cabos facility for all the hours dedicated on observations for this calf.

Dolphin Discovery Puerto Aventuras – *Puerto Adventuras, Quitanta Roo, MEXICO*

Julieta, an adult West Indian manatee, gave birth to her fourth calf in 6 years. Now an expert mother, she took control of the male calf by nursing efficiently under correct coordination. Her first calf, Yoltzin, required


Photo Credit: Dolphin Quest Oahu

Sharing the spirit of aloha with Japanese children orphaned by the 2011 tsunami.

artificial bottle feeding but after 6 years of experience, she is doing much better. This calf will be named by schools kids of Riviera Maya region.

PACIFIC ISLANDS REGION

Stephanie Vlachos – *Waimanalo, Hawaii*

Dolphin Quest Hawaii – *Waikoloa, HAWAII*

In September and October, Dolphin Quest Hawaii (DQH) welcomed three newborn Atlantic bottlenose dolphins to the family. Kona and Pele, are experienced mothers. Keo, at 12 years old, is a first time mother. Footage of Keo giving birth is available to view on the Dolphin Quest website. Keo's calf is the first 2nd generation calf to be born at DQH. All calves have been doing very well and already have been integrated into the interactive programming.

At DQH, many of the dolphins, including the expectant dams, receive up to 3.0 l (0.8 gal) of water and jello to supplement their daily nutrition plan. Pre-parturition, the dams were receiving water voluntarily through a hydration apparatus. In anticipation of the births and the criteria of stationing for extended periods of time required, the trainers decided to modify the supplemental jello plan by mimicking their feed patterns post parturition. This association was the winning answer for allowing the dams to remain hydrated and therefore medically baseline. In the past, they would often discriminate with the jello during their change of food presentation. Chumming jello has shown to be an effective way to ensure that the mothers stay hydrated.


Photo Credit: Dolphin Quest Hawaii

Dolphin Quest Hawaii's newest additions.

Dolphin Quest Oahu – *Honolulu, HAWAII*

Japanese children who lost family members or were orphaned by the 2011 tsunami have enjoyed special dolphin shows at Dolphin Quest Oahu (DQO). The Rainbow for Japan Kids program, founded by the Japan-America Society of Hawaii, creates educational and cultural activities to provide physical and psychological relief from the children's tragic experiences. DQO proudly shares the spirit of aloha in this healing project and has hosted three shows since the program's inception.

SOUTH AFRICA REGION

Gabby Harris – *Durban, South Africa*

Dolphina Dolphinariums – *Sharm El Sheikh/ Hurghada, EGYPT*

Dolphina Dolphinariums hosted many exciting events throughout the year including visits from two schools for special children, two orphanages and several homes for the elderly to come see the show for free, as well as, attend awareness seminars for the environment and caring for wild dolphins.

The facility also rescued a juvenile male dolphin from Cairo in which the sire and dam had died due to negligence. The animal has been introduced to a new social group and is doing well.

Sea World at uShaka Marine World – *Durban, SOUTH AFRICA*

At uShaka Sea World, a number of staff members attended the International Aquarium Congress which was held at the Two Oceans Aquarium in Cape Town. The facility presented on Penguin Promises and is happy to report that the concept was well received. A number of international delegates then made the effort to cross the country and visit the park on the east coast. It was an honor to host them. International African Penguin Day was a great success in that seven facilities in South Africa participated to share the Penguin Promises message. Gabrielle Harris spent time at Bayworld in Port Elizabeth sharing information on behavior management and animal care. It was a great experience to bond with fellow South African marine mammal specialists.

The staff welcomes Tony Mcewan as the new director and congratulate Judy Mann on her promotion as the new CEO.

Bayworld – *Port Elizabeth, SOUTH AFRICA*

Bayworld is currently busy with upgrading the seabird and seal enclosures. Therefore, the daily seabird talks have been moved to the museum and the seabirds and seals are being cared for in temporary holding areas.

A stranded sub-Antarctic fur seal (*Arctocephauls tropicalus*) has been rescued and nursed back to health by the animal keepers. The animal arrived weighing just over 5 kg (11 lb), dehydrated and seriously malnourished. Now 3 months later he weighs 10 kg (22 lb) and has been given veterinary clearance to spend some time with Bayworld's other seals. The resident African penguin (*Speniscus demersus*) colony has fledged 2 more chicks, namely Bob and Marley amid all the building chaos. Sea turtle husbandry training has been going well and the 2 loggerhead turtles (*Caretta caretta*) have been trained to come over for full body inspections daily, as well as, being stretcher trained.

Steve Warren, Chief Aquarist, has after 23 years with Bayworld, left the team for more challenges and the staff wish him well in his new position.

U.S. MIDWEST REGION

Stacey Lonski, Indianapolis Zoo – *Indianapolis, IN*

Blank Park Zoo – *Des Moines, IOWA*

Blank Park Zoo's trainers and animals are already hard at work getting ready for next summer. New script ideas and behaviors are in the works now that the trainers and animals, 0.2 California sea lions and 1.2 harbor seals (*Phoca vitulina*), have had a chance to acclimate to the new exhibit pool. Ross, the young male harbor seal is a huge crowd favorite. Since his arrival in October 2011 his repertoire of behaviors has grown and he is constantly learning new ones. His apparent eagerness and high-energy approach to learning new behaviors make him a favorite of the trainers and visitors.

Como Zoo – *St. Paul, MINNESOTA*

Berlin, the Duluth Zoo polar bear (*Ursus maritimus*) that was transported to Como Zoo in June due to flooding, underwent exploratory surgery in October to remove a necrotic mass of tissue that was causing internal bleeding near her stomach. Keepers had found her lethargic and unwilling to shift off exhibit a few days prior. Thanks to the help of the University of Minnesota, surgeons and other numerous staff, her road to recovery is looking bright.

Indianapolis Zoo – *Indianapolis, INDIANA*

The Indianapolis Zoo is excited to have three new members in the collection. China, an Atlantic bottlenose dolphin, gave birth to a malecalf on 12 July 2012. He is a spunky little squirt that keeps everyone in smiles. Ray is a male California sea lion that was found with multiple gunshot wounds and also missing his right eye. He has been introduced to the other sea lions and is now on exhibit. He is also moving along with his training. Pakak is a 6-month-old Pacific walrus calf from the Alaska SeaLife Center weighing over 350 lbs (158.76 kg). Although he is still being bottle fed, he is learning to target and other basic training behaviors. He has been spending his days with the staff and playing with his toys.

Oceans of Fun – *Milwaukee, WISCONSIN*

Oceans of Fun is excited to announce the birth of Colby, a male California sea lion born on 20 June 2012. His mother is Makaia. Colby is a playful, healthy pup and continues to grow and amaze the staff every day with his antics. In Wisconsin, the summer season was

very successful with the launch of new educational programming and a new show design. The guests were able to enjoy learning about seals and sea lions in different themed camps, as well as, being entertained with the presentations with a more high energy performance. These new designs will continue to inspire visitors to do what they can to protect the world. In Pennsylvania, the staff and animals also experienced an exciting and successful show season. In October both the training staff and animals re-joined the team once again back in Milwaukee for the winter season. The staff looks forward to another season of training together and preparations for another successful year!

U. S. NORTHEAST REGION

Beth Manning – *Baltimore, Maryland*

Long Island Aquarium and Exhibition Center – *Riverhead, Long Island, NEW YORK*

The Long Island Aquarium was very fortunate during Hurricane Sandy. Surrounding areas of the facility and a good amount of the outside grounds were flooded, but the main building escaped the flooding. All of the animals were safe and unaffected by the storm.

After Labor Day, 2.2 harbor seals and 0.1 gray seal (*Halichoerus grypus*) were moved into temporary holding inside the main building for maintenance and construction on the exhibit. There are also some minor changes, such as additional haul out surface and a bridge for access to the haul out area.

The Animal Training staff underwent a few changes at the end of the year, Senior Trainer, Candyce Paparo was promoted to Assistant Director of Animal Training and the staff also welcomed Apprentice Trainer, Beverly Hanson.

Riverhead Foundation for Marine Research and Preservation (RFMRP), located on site, is currently rehabilitating Noodle, a juvenile male harbor porpoise (*Phocoena phocoena*). Noodle was originally found stranded on 17 October 2012. Following a week long triage period at University of New England's Marine Animal Rehabilitation Center, Noodle was transported to the Riverhead Foundation cetacean rehabilitation facility for long term rehabilitation. Noodle can be viewed on the live web cam at

http://mail.riverheadfoundation.org:8040/top/liveapplet.html

Mystic Aquarium & Institute for Exploration – *Mystic, CONNETICUT*

The Pacific Northwest (PNW) team at Mystic Aquarium & Institute of Exploration welcomes two male Northern fur seals from the New York Aquarium. Sam and Jack, a 9-year-old and a 10-year-old, have joined the collection and are acclimating very well. They reside in the outdoor exhibit with Spanky, the aquarium's 13-year-old harbor seal. The PNW team also helped to house 2.1 harbor seals from the Buttonwood Park Zoo as their exhibit underwent renovations. Mystic Aquarium wishes them well in their updated exhibit.

The Arctic Coast team welcomes senior trainer Chris Harris. The team would like to thank seasonal assistant trainer Kate Faust and Program Facilitator Amanda Wheeler.

The Mystic Aquarium Stranding Program has successfully completed their summer season by releasing two gray seals and two harbor seals. The team also responded to over thirty stranded sea turtles most of which were loggerheads. This makes for the highest number of sea turtle strandings in 1 year for the Aquarium to date.

Photo Credit: Oregon Zoo

A Southern sea otter at Oregon Zoo (*Enhydra lutris nereis*) with a crab shell wedged in the mouth.

The Aquarium Zoological Team spent a day and a half riding out Tropical Storm Sandy keeping all animals safe.

New England Aquarium – *Boston, MASSACHUSETTS*

The New England Aquarium is excited to announce that the Northern fur seal pup born in July has been named Flaherty. When he isn't nursing, he spends most of his time sparring with, 1-year-old, Leu. Flaherty is well established with the entire fur seal colony and is now spending some supervised time with Zoe and Sierra, the 2-year-old California sea lions.

The Marine Mammal staff welcomes two new Senior Trainers, Kim Cummings and Vanessa Varian, to the department.

The Aquarium is undergoing renovation of the Coral Reef exhibit, otherwise known as the Giant Ocean Tank (GOT). Some of the fish from the exhibit, as well as the African penguins (*Spheniscus demersus*) and Southern rockhopper penguins (*Eudyptes chrysocome*), have moved to NEAq's off-site holding facility in Quincy, Massachusetts. The rest of the animals from the GOT, including the sea turtles, moray eels, hundreds of reef fish, and a newly added zebra shark, are temporarily residing in the former penguin area below the GOT exhibit. The little blue penguins (*Eudyptula minor*) are still on-site, living in a temporary exhibit open to the public. Projected opening for the renovated GOT is July 2013.

Pittsburgh Zoo and PPG Aquarium – *Pittsburgh, PENNSYLVANIA*

On 31 May 2012, Pittsburgh Zoo sea lion keepers witnessed the birth of their newest California sea lion pup, Piper. Piper is the fifth pup to be born at The Pittsburgh Zoo & PPG Aquarium and the second pup for Zoey. In July, Calli, Summer, Sophie and Sidney returned home to the Smithsonian's National Zoo in Washington, D.C. While staff was sad to see the four females leave Pittsburgh, the animals are doing well in their new exhibit.

U.S. NORTHWEST REGION

Cinthia Alia-Mitchell – *Tualatin, Oregon*

Oregon Coast Aquarium – *Newport, OREGON*

The Oregon Coast Aquarium's marine mammal department is busy preparing for renovations to the pinniped exhibit. The renovations will expand the viewing area by about fifty percent. During construction pinnipeds will be held behind the scenes in three holding pools that are now fully operational. The team is excited about the new opportunities the additional viewing will bring such as more interactive presentations and greater ability to see water work.

The newest sea otter (*Enhydra lutris*), Schuster is flying through his maintenance and husbandry training. He is currently learning open mouth free contact and is eager to participate in play sessions with the trainers and the other otters.

Aialik, a 14-year-old male Northern sea otter (*Enhyrdra lutris lutris*), had bladder marsupilization surgery in early 2011. He has since had a very unique procedure that implants a bobbin into his stoma to allow for the site to remain open. Aialik is excellent at allowing his trainers to clean the site daily and manipulate the hardware.

The mammal department would like to congratulate seasonal husbandry assistant Christina Tweed, who has accepted a trainer position at the Virginia Aquarium.

Seattle Aquarium – *Seattle, WASHINGTON*

In September 2012, the Seattle Aquarium temporarily relocated the harbor seals to Point Defiance Zoo & Aquarium in Tacoma, Washington to prepare for the renovation of their exhibit and the adjacent promenade pier. The new exhibit will feature seating for 100 visitors, underwater viewing, close-up above water viewing, a deeper pool and greatly expanded haul out areas for the seals. The project is due to be completed in June 2013. Although the staff will miss the seals, everyone is looking forward to this long awaited upgrade for the seals and guests.

Oregon Zoo – *Portland, OREGON*

Marine Life staff at the Oregon Zoo has now completed voluntary blood draw training with 1.1 polar bears. Routine blood draws for the polar bears is now scheduled for once a month.

In September, 0.1 Southern sea otter (*Enhydra lutris nereis*) Thelma was found to have a crab shell lodged in the roof of her mouth. She allowed staff to try to pry it out, but the attempts were unsuccessful.


Photo Credit: Point Defiance Zoo & Aquarium

A Northern sea otter (*Enhydra lutris lutris*) named Homer at the Point Defiance Zoo and Aquarium.

She had to be anesthetized to remove it and was also given a full physical and check up. The physical showed that arthritis in Thelma's hips, previously found through voluntary radiograph training, has progressed slightly in the past 6 months although she has not shown any signs of pain. 1.0 Southern sea otter Eddie, also has arthritis and staff has begun training both otters for more energetic behaviors in order to exercise the joints.

The zoo bids a fond farewell to JoEllen Marshall, who is retiring after over 20 years at Oregon Zoo. She has previously been the Senior Keeper of Marine Life and has spent recent years as the Dive Safety Officer.

Point Defiance Zoo & Aquarium – *Tacoma, WASHINGTON*

In early October, due to exhibit renovations, the Seattle Aquarium staff brought their harbor seals to join the collection at PT. Defiance Zoo & Aquarium, which is now housing seven seals. Introductions went well, and the seals have settled into their new social group.

Condolences go out to the staff at the Shedd Aquarium for the loss of Kenai, their remaining Northern sea otter (*Enhydra lutris lutris*) from the 1989 Exxon Valdez oil spill. The unfortunate passing of Kenai has left Homer, a 24-year-old resident sea otter, as the only remaining sea otter from the spill. Homer arrived at PDZA in 1989, shortly after the spill, and has been a member of the PDZA family ever since.

U.S. SOUTH CENTRAL REGION

Shannon Ray, Oklahoma City Zoo – *Oklahoma City, Oklahoma*

Houston Zoo – *Houston, TEXAS*

The Houston Zoo experienced a devastating loss this past October when 4-year-old male California sea lion, Astro, unexpectedly became ill and passed away. Preliminary necropsy results indicate gastroenteritis, pending further pathology for cause. Astro had a challenging start on life after stranding three times along the California coast, which led to him finding a home at 10 months old with the Houston Zoo and their two female California sea lions. The prominent scar on his neck, presumably caused by marine debris, served as a visible reminder to all of the impact that can and is made to the environment. He was an especially laid back adolescent that was always eager at the start of a training session and became the first sea lion they successfully conditioned for a voluntary cart ride across the zoo. Watching him grow up gave everyone plenty to laugh about; from his youthful playfulness with toys to his comical first attempts at breeding. It was a privilege to care for him and he will be missed tremendously.

Oklahoma City Zoo – *Oklahoma City, OKLAHOMA*

The Oklahoma City Zoo enjoyed another busy sea lion show season; however, the training staff is now enjoying the break to work on husbandry behaviors and show behaviors for next season. This summer was also a busy time within the California sea lion population, as active breeding pairs were managed during the show season, which will hopefully result in two pregnancies. Ultrasound behaviors and breast pump behaviors are being worked for gestational updates and milk composition/sampling, as one of the females has had mastitis issues in the past.

Late summer also wrapped up weekly Skype sessions with children involved with Camp Pinniped at The Pacific Marine Mammal Center in Laguna Beach, California. Weekly sessions included question and answer time, live training sessions with the zoo's sea lions and resident African grey parrot (*Psittacus erithacus*). Sessions were the highlight of the week for both campers and trainers.

This fall yielded the completion of several life support projects. The multi-year ozone project for the 350,000 gal (1,324,890 l) show pool is complete and in November, the outside pinniped exhibit area which is 50,000 gal (189,270 l) had a mini renovation and is back in operation and looking beautiful again.

SeaWorld San Antonio – *San Antonio, TEXAS*

SeaWorld San Antonio had a great Howl-O-Scream and now everyone is working hard to transform the park for "SeaWorld's Christmas Celebration". The show teams are busy with rehearsals to ready their respective Christmas themed shows involving lots of new behaviors and set changes. The aviculture team enjoyed their most successful waterfowl breeding season in their 22 year history. They're also very pleased to announce the hatching of a Chilean Flamingo (Phoenicopterus chilensis); the first in five years. SeaWorld San Antonio looks forward to continued support of IMATA and the zoological community at large.

U.S. SOUTHEAST REGION

Sarah Graff, Miami Seaquarium – *Miami, Florida*

Audubon Aquarium of the Americas – *New Orleans, LOUISIANA*

At Audubon Aquarium of the Americas, staff has been training many new behaviors to their 15-year-old 1.1 Southern sea otters, Buck and Emma. Due to their increasing age, they will be receiving frequent veterinary exams which will require more physical contact. The sea otters have been learning new tactile behaviors to allow the veterinarian to listen to their heart via stethoscope and eventually conduct ultrasounds. Buck is learning this behavior using protected contact, while Emma is learning to do the same through free contact. Both otters are doing extremely well with these behaviors. In addition, they are also learning behaviors that will increase their interaction with the public during scheduled sea otter presentations. The geriatric California sea lion population is currently participating in husbandry training for voluntary rear flipper blood draws, as well as, exciting new show behaviors.

The staff is redesigning the Internship Program to accommodate both Basic and Advanced Interns. The training staff is looking forward to working on cognitive and behavioral research with Dr. Stan Kuczaj of the University of Southern Mississippi and Dr. Holli Byerly from Dolphins Plus Inc. AAoA would like to welcome Dr. Elsburgh "Tres" Clarke as their new veterinarian.

Dolphin Connection – *Duck Key, FLORIDA*

A male dolphin named Semo which belongs to Dolphin Connection and has been on loan to the Minnesota Zoo was recently transported to Six Flags Discovery Kingdom in Vallejo, California. At 48 years old, Semo is the oldest male dolphin in the United States. An adult female named Allie, which was born at Dolphin Connection and was also on loan to Minnesota, was successfully transported to Brookfield Zoo in Chicago, Illinois. Congratulations to the training teams at Minnesota Zoo, Brookfield Zoo, Six Flags Discovery Kingdom and Dolphin Connection on their teamwork that resulted in the safe transport and successful acclimation of these two wonderful animals.

The staff at Dolphin Connection has also been busy this fall with professional meetings. They attended the Atlantic Bottlenose Dolphin Breeding Consortium meetings hosted by the National Aquarium in Baltimore, the Alliance of Marine Mammal Parks and Aquariums education committee meetings co-hosted by Disney and SeaWorld, and the first AMMPA Strategic Planning Session hosted by SeaWorld.


Photo Credit: Dolphin Cove

Samantha's back dive approximation at Dolphin Cove.

Dolphins Plus - *Key Largo, FLORIDA*

Dolphins Plus and Dolphin Cove would like to thank the animal care and training staff of both facilities for their hard work and dedication over the summer season. Currently at both facilities, animals as young as 13 months and up to 35 years old are learning novel,

husbandry and research focused behaviors. Samantha, the eldest female dolphin at Dolphin Cove, is in the process of learning a back bow. Isaac, a 17-month-old dolphin calf, is progressing with husbandry behaviors including blood draws and hydration. Fiji, Lotus and Grace continue perfecting their front flip training. Three of the male pod members at Dolphin Cove, Alfonz, Kimbit, and Leo, are participating in a study involving a behavior named create or innovate where dolphin cognition and communication are analyzed.

In other exciting news, Dolphins Plus welcomes Tashi to the dolphin family. Born on 13 August 2012, Tashi impresses trainers with his fearless nature and curiosity concerning in-water guests.

Dolphins Plus and Dolphin Cove would like to welcome Melissa Lopes, Jake Berman, Kate Lawrence and Stacy Fairfax to the family. The staff would also like to congratulate Jordan Wallin, Emily Campbell and Kim McCallister on their new positions as Intern Coordinators.

Dolphin Research Center – *Grassy Key, FLORIDA*

In addition to hosting a Regional Workshop this fall, the Dolphin Research Center staff has been busy training seven dolphin youngsters under the age of five. Dolphins Manners is a top priority as the youngsters are taught the basics of targeting, waiting, and playing with others.

The staff was honored again this October to host the Wounded Warrior's-Project Odyssey. Fifteen of the countries heroes had the opportunity to interact with dolphins and sea lions, participating in activities such as swims, in-water enrichment, and signal sessions.

In October DRC artificially inseminated four female dolphins. The protocol involved teamwork between staff and dolphins including multiple daily urine samples, conducting some AI's in the middle of the night and one memorable AI as Hurricane Sandy passed through. DRC would like to thank all of the collaborating facilities who helped accomplish the goal of contributing to genetic diversity of the entire marine mammal community.

Clearwater Marine Aquarium – *Clearwater, FLORIDA*

Clearwater Marine Aquarium takes pride in how much individual attention is given to the animals. The facility values the importance to be more than just food providers and have decided to set a goal of making more than half of all time spent with them unrelated to food by using socialization or secondary reinforcement instead. Most recently the training team has developed a new variable daily schedule that gives each animal a different randomized goal of interaction time per day. Ranging from a 75 minute light day, in which interaction is kept to a minimum, a 175 minute moderate day, and ultimately 300+ minute day. Most days out of the month fall into the last category. CMA is very satisfied with the way this quota system has improved relationships with the dolphins. It has forced the staff to be creative while trying to make each day as exciting as possible!

Gulfarium Marine Adventure Park
– Fort Walton Beach, FLORIDA

Facility and educational updates continue throughout Gulfarium Marine Adventure Park with the completion of the second phase of life support renovations, the addition of new educational signage to supplement animal exhibits, and the introduction of an onsite instructor led academic program for school field trips. Additionally, an extension has been made to the Asian small clawed otter (*Aonyx cinerea*) exhibit for increased shifting options and variable temperature preferences during the winter months. The park welcomed several new African penguins to support an active breeding program and has also successfully rehabilitated and released several sea turtle hatchlings under the Gulfarium Sea Turtle C.A.R.E. program.

HBOI-MMRC short-finned pilot whale (*Globicephala macrorhynchus*) rehabilitation.

Harbor Branch Oceanographic Institute's Marine Mammal Research and Conservation Program
Fort Pierce, FLORIDA

On 1 September 2012 first responders from HBOI-MMRC worked with NMFS to coordinate a multi-agency response to a mass stranding event at Florida's Avalon Beach State Park in St. Lucie County involving 22 short-finned pilot whales (*Globicephala macrorhynchus*). Five juvenile whales were transported to HBOI's Critical Care Center for evaluation. After 5 days and the loss of one of the pilot whale, due to illness, the remaining 4 whales were transported to Sea World Orlando for long term care.

On 2 November 2012 HBOI-MMRC team led a high risk disentanglement of a mother/calf dolphin pair in the Indian River Lagoon, Florida. The seven-month-old calf was entangled by its flukes being wrapped in a crab pot line and float. The intervention team was successful in capturing the pair and successfully disentangling, treating the calf and then finally releasing both animals back to the wild in less than 12 minutes after the initial net set.

HBOI-MMRC would like to acknowledge members of the NMFS Marine Mammal Health and Stranding Response Network for their assistance including, Ocean Embassy, Dolphins Plus, Sea World, The Marine Mammal Conservancy, University of Florida and Florida Wildlife Conservation Commission.

Marineland Dolphin Adventure –
Marineland, FLORIDA

Marineland is celebrating its 75th anniversary in 2013. A short lecture series is being developed to highlight the history of Marineland as a movie studio, a pioneer for dolphin training, and knowledge of the commitment to research and conservation efforts. The year will conclude with the St. Augustine Film Festival and Marineland's 75th anniversary gala.

MDA's dolphin population grew by one on 5 November 2012, with the arrival of Zac, an eighteen-year-old male dolphin on breeding loan from Gulfarium Marine Adventure Park.

Memphis Zoo – *Memphis, TENNESSEE*

The staff at the Memphis Zoo Northwest Passage is pleased with the progression of the hand raised California sea lion pup, Teva. She has been introduced to two of the adult females and the staff is hoping to have her out on exhibit sometime in the near future. Until then the marketing department has produced a short video about her development that plays in the underwater viewing building. The staff would like to welcome Caitlin Miller to the team.

SeaWorld – *Orlando, FLORIDA*

One of the largest and most intensive cetacean rescue and rehabilitation efforts in SeaWorld's history is currently underway. The Animal Rescue Team recently assisted Harbor Branch Oceanographic Institute with responding to a mass stranding of 22 short-finned pilot whales near Fort Pierce, Florida. Initially 2.3 juvenile whales survived and were temporarily transported to HBOI for recovery. Unfortunately one male passed away during the first part of the rehabilitation plan.

For the whales' long term recovery, SeaWorld was chosen because of the park's expertise, resources, the space they could provide, as well as the recent success rehabilitating pilot whales. A large backstage pool which normally functions as a freshwater rehabilitation area for manatees was selected. Before the whales arrived on 5 September 2012, SeaWorld's Water Quality experts quickly isolated the pool's water system for quarantine, converted it to saltwater, and the recovering manatees were transferred to another backstage pool.

Rehabilitating the whales has been a multi departmental effort conducted 24 hours a day by SeaWorld and Discovery Cove Animal Care and Training experts. The youngest whale, a female which had yet to cut any teeth did not survive. The remaining 1.2 whales are eating well and health assessments are positive.

U.S. SOUTHWEST REGION

Brittany Harris, SeaWorld – *San Diego, California*

Monterey Bay Aquarium – *Monterey, CALIFORNIA*

The sea otter exhibit at the aquarium was closed down for renovations after Labor Day and will be shut down to the public for 6 months. Since the otter exhibit is down, Mae, Rosa and Abby have been living in the holding area behind the scenes, which has given them a lot of opportunities to be moved around and placed with some of the wild and soon to be released SORAC animals. This can provide a lot of enrichment for the otters, both environmentally and socially. When Mae, Rosa and Abby are separated from the releasable animals, the girls continue their training on new behaviors.

Marine Mammal Physiology Project at Long Marine Laboratory – *Santa Cruz, CALIFORNIA*

The Marine Mammal Physiology Project welcomes the new year with many exciting projects. The newest addition is a 10-year-old adult male Hawaiian monk seal (*Monachus schauinslandi*). He has joined the team to help the staff learn about the physiology of Hawaiian monk seals in order to provide new information to conservation efforts in the Hawaiian Islands. Recently, staff visited Hawaii for a Hawaiian monk seal workshop and also to perform an educational outreach program to the local schools on Molokai. Both were a great success.

As the new year gets underway, there is anticipation of new research projects with the resident animals. Long Marine Laboratory is very excited to give back to the animal community and the numerous conservation efforts with the information being learned at the facility.

REGIONAL REPORTS is compiled by **Martha Hill**

Figure 1. Animal care staff member, Melissa Weierick, 'rolling' the subject from a ventral to a dorsal position to elicit a breathing response during the phlebotomy procedure.

A Novel Approach to TRAINING PHLEBOTOMY PROCEDURES IN ATLANTIC BOTTLENOSE DOLPHINS (*TURSIOPS TRUNCATUS*) TO TREAT IRON STORAGE DISEASE

Jill L. Richardson[1, 2, 3], Holli C. Byerly[1, 2], Kayla R. Bergman[2, 4], Melissa M. Weierick2, Jessica L. Lilli2, Robert O. Stevens1, 2 and Nancy J. Cooper[1, 2]
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[4]Wildlife Conservation Society- New York Aquarium

Iron storage disease, or hemochromatosis, has been identified in both wild and captive mammals, as well as humans and birds (e.g. Bossart, Brawner, Cabal, Kuhns, Eimstad, Caron, Trimm, & Bradley, 1990; Dorrestein, De Sa, Ratiarison, & Mete, 2000; Jaber, Pérez, Arbelo, Herráez, Espinosa de los Monteros, Rodríguez, Fernández, & Fernández, 2003; Powell, Jazwinska, & Halliday, 2000; Venn-Watson, Smith, & Jensen, 2008), and the diagnosis of the disease is becoming increasingly more common among captive populations of Atlantic bottlenose dolphins (*Tursiops truncatus*) (Mitchell, Solangi, Clemons-Chevis, Vanderpool, Ramagnoli, Hoffland, & Jowett, 2008). With the available data, it is unclear whether hemachromatosis is increasing in prevalence among captive populations or if the ability to detect the disease is improving. It's likely a combination of both and may even be an indirect 'side-effect' of the new science of managing geriatric marine mammal populations. Although the origination of the disease in mammals is poorly understood, nutritional supplementation, genetics, and ecology are thought to play a role in the onset of hemochromatosis (Andrews & Schmidt, 2007; Dorrestein et al., 2000; Mitchell et al., 2008). Though some iron in the liver, spleen, marrow, and reticulocytes is normal, the excessive deposition of iron, particularly in the liver, can lead to toxicity, liver damage, liver failure, and death (Andrews & Schmidt, 2007; Dorrestein et al., 2000; Mitchell et al., 2008). Routine phlebotomies, utilized to remove iron from the body and to promote the production of new red blood cells, have been used as a treatment for hemochromatosis in humans, non-human primates, birds, marine mammals, and other zoological species (Dorrestein et al., 2000; Powell et al., 2000). Although controlled studies of phlebotomy treatment in humans are lacking, current data suggest that iron removal increases patient survival (Bomford & Williams 1976; Niederau, Fischer, Sonnenberg, Stremmel, Trampisch, & Strohmeyer, 1985; Niederau, Fischer, Purschel, Stremmel, Haussinger, & Strohmeyer, 1996; Powell & Kerr, 1970; Venn-Watson et al., 2008). Dietary management and chelation therapy are also utilized to mitigate the effects of hemochromatosis, but the latter is less efficient and more expensive than phlebotomy.

The clinical diagnosis of hemochromatosis is achieved through a complete blood count (CBC) and an analysis of the serum iron level and the

total iron binding capacity of the plasma. When serum ferritin concentrations indicate an excess accumulation of iron stores, bilirubin and hepatic and biliary enzymes (e.g. LDH, ALT, AST, and GGTP) are utilized to indicate whether the liver has become impaired and/or damaged (e.g. Sorensen, Venn-Watson, & Ridgway, 2008; Venn-Watson et al., 2008). All of these indicators are also used to assess the success of the phlebotomy procedure, as well as the justification for retreatment. Potential adverse effects of the procedure (e.g. anemia) are also closely monitored.

Hemochromatosis was first identified in *T. truncatus* at the United States Navy Marine Mammal Program and Johnson, Venn-Watson, Cassle, Smith, Jensen & Ridgway (2009) described the first application of routine phlebotomies in cetaceans, involving weekly removals of large amounts of blood (ca. 1 - 2 L (2 - 4 pt.)), effectively decreasing iron levels. In order to acquire a large volume of blood in a short period of time, blood is extracted from the caudal vascular bundle at the base of the ventral surface of the peduncle. Unlike routine blood collections, the phlebotomy procedure requires specific equipment designed to withstand both high blood volumes and the high pressure associated with the large blood vessel. To date, several managed care facilities have implemented routine phlebotomies as an effective tool in mitigating the disease, but these procedures involve animal haulouts and/or medical seclusion, all of which require sophisticated equipment and extensive staffing. For example, Vlachos, Breese, Pacini, Look, Braun, Coisman, and Nachitgall (2010) detailed a phlebotomy treatment with the use of a stretcher and a false bottom pool, which required voluntary restraint and the involvement of 10 qualified staff members. These techniques are logistically impossible at smaller facilities that often lack drop pools, multiple enclosures, gating protocol, seclusion areas, or extensive staff. Husbandry training allows for the execution of these behaviors voluntarily, enabling animal trainers and veterinary staff to practice preventative medicine with limited operational amenities.

Dolphins Plus (DP) and Dolphin Cove (DC) are managed care facilities in Key Largo, Florida, located on open waterways adjacent to the Atlantic Ocean (DP) and Florida Bay (DC) and housed 4.1 and 3.10 *T. truncatus* at the time of the study, respectively. Both facilities are natural seawater facilities, with water depths ranging from 1 - 6 m (3.2 - 19.6 ft). In early 2009, three captive born, adult, male *T. truncatus* were diagnosed with early signs of hemochromatosis, and phlebotomies were prescribed as a treatment. Due to operational limitations at both DP and DC, the procedure involved a voluntary ventral fluke presentation on a floating platform, with a single trainer and the staff veterinarian. Training the subjects to perform this behavior voluntarily involved operant conditioning through positive reinforcement, using a variable ratio reinforcement schedule with reinforcement variety, or VRRV **(See Footnote 1.)**. Secondary reinforcers (e.g. ice, toys, tactile) were conditioned prior to the phlebotomy procedure for each of the subjects and varied between individuals. Both reinforcement history and contexts played an important role in the successful training of the voluntary phlebotomy procedure, particularly in a training environment in which distractions from local fauna (both inside and outside of enclosures), residential boat traffic, conspecifics, abrupt changes in weather, and ongoing guest interaction programs were unavoidable.

Prior to initiating the husbandry training, various prophylactic measures were initiated, including selectively eliminating and gutting of high iron fish (i.e. removing the liver and spleen, which are common ferritin storage sites), the cessation in use of all vitamins and supplements containing iron, an increase in daily hydration via tubing and gelatin (i.e. 1 - 4 L/day (2 - 8.5 pt./day)), and routine CBC screening of the subjects to document any changes in iron levels. The CBC results indicated that the process of fish gutting, which was time consuming and inefficient, did not influence iron levels and was subsequently terminated.

Husbandry training began in June of 2008, and the length of time required to achieve voluntary phlebotomy varied between individuals, ranging from 9 – 14 months. Daily training sessions varied in length of time, as well as the number of sessions conducted per day. Preliminary tasks included gate training, stretcher desensitization, beaching, ventral fluke holds at the floating platform/dock, breathing under stimulus control, and desensitization to the medical instrumentation. Successive approximations, with selective reinforcement, were utilized to shape the desired behaviors. The phlebotomy procedure is lengthy, requiring approximately 20 - 30 minutes to complete. Thus, the procedure was broken down into basic components for training, and each component was trained to completion (i.e. 80% success rate) and in succession. Although the subjects were trained to enter the medical pen at each facility, the pens were not small enough to prevent the need for restraint, nor secluded enough to prevent distractions. Therefore, their use was eliminated from the training plan. Similarly, the use of a stretcher or beaching the animal completely out of the water on a lift or floating platform required at least minimal restraint and more than three staff members.

Stationing was central to the phlebotomy procedure, and the subjects were trained to present their flukes, ventrally and perpendicular to the dock, using approximations to increase hold times and to minimize movements. Due to the length of time required to obtain a sufficient blood sample (i.e. 1 - 3 L (2 - 6.3 pt.)), the subjects were required to remain motionless during the procedure and would need to respire periodically without dislodging the needle or contaminating the injection site. The stabilization of the injection site was not only crucial to maintaining a sterile procedure and consistent bloodletting, but the site also required compression immediately following needle retraction to prevent excessive bleeding. Thus, before initiating the desensitization phase of the training, the subjects were required to perform ventral fluke holds, exhibiting minimal movements, for up to 20 minutes. This was achieved through selective reinforcement of increased durations until the required threshold of 20 minutes was consistently exhibited. During the process, various reinforcers were applied as a behavioral consequence immediately after the animal achieved new thresholds. These included food, toys, tactile, and access to other behaviors, interspersed with the least reinforcing scenario (LRS) when appropriate.

Previous studies utilized a target pole to elicit a breathing response from the subjects (Vlachos et al., 2010), but this method proved impossible with limited staff members and the position of the animals on the dock. A behavior called 'rolling', in which the trainers manually roll the dolphins by their flukes in 180°+ increments (clockwise or counterclockwise), had a strong reinforcement history at both facilities. Thus, this behavior was capitalized in the phlebotomy training to elicit a breathing response from the subjects. The trainer manually positioned the subject from a ventral to a dorsal position until the animal respired and then rolled the subject back to the ventral position, taking great care not to submerge the injection site or dislodge the needle **(Figure 1)**. This behavior provided primary reinforcement through respiration, as well as secondary reinforcement via the *Premack Principle*. Thus, the colloquial 'breath roll' became a secondary reinforcer for the ventral fluke hold position and could be delivered intermittently throughout the procedure on a variable ratio schedule.

The phlebotomy procedure requires the use of a 17-gauge needle and an insertion depth of approximately 3.8 cm (1.5 in), in addition to frequent needle adjustments post-puncture. Therefore, to increase training efficiency, as well as minimize localized discomfort to the phlebotomy site, ≥ 1.5cc of anesthetic (2.0% *Lidocaine* with epinephrine 1:1000,000) was administered intramuscularly to the venipuncture site. Anesthetics are common site-numbing agents used in managed care facilities during both basic and complex medical procedures (Joseph & Cornell, 1988), and Lidocaine is the preferred intramuscular injectable used in minimally invasive procedures (e.g. biopsies, tagging, and abscess treatment) because of its immediate

and long lasting effects, as well as minimal side effects (Hubbard, 1969; Joseph & Cornell, 1988; Koopman, Westgate, Read, & Gaskin, 1995; Noren, Iverson, & Boness, 2005; Ollivet-Courtois, Lécu, Yates, & Spelman, 2003).

The subjects were desensitized to the Lidocaine injections via a series of approximations, including venipuncture site scrubs and needle pricks. The ventral flukes were scrubbed regularly, alternating scrub materials and sterilization solutions (e.g. alcohol and *Betadine*). The needle prick was approximated using dull objects and slowly increasing the sharpness of the objects used to probe the injection site. When full approximations were achieved, the dolphins exhibited minimal to no reactions to the injections. It is critical to note that, prior to the injection of Lidocaine, the needle is aspirated to ensure that a vessel has not been punctured, because the injection of Lidocaine into a vessel can result in animal mortality. Therefore, this procedure should be conducted with extreme caution and only by a trained veterinarian. Initially, only 200-500 cc of blood was extracted from each subject. However, within a few weeks, this amount was increased to 1 - 3 L (2 – 6.3 pt.). The criteria for initiating the phlebotomy procedure was the subject lying in the ventral position, perpendicular to the floating dock, with flukes fully emerged and positioned in front of the trainer on the dock. The animals were also required to be motionless, except when breathing under stimulus control. When these criteria were met, the injection site was sterilized with both alcohol and Betadine, and no more than 1.5 cc of the localized anesthetic was administered in a two part series. Following the first Lidocaine injection, the completed fluke present behavior was bridged and reinforced. The animal was then asked to perform multiple other behaviors while the numbing agent took effect. After 1 - 2 minutes of localization, a second injection of Lidocaine was administered following another sterile scrub. This allowed the anesthetic to reach deeper tissue layers, closer to the artery where the blood would be extracted during the phlebotomy. Again, the completed fluke present behavior was bridged and reinforced, and other behaviors were requested for 2 - 5 minutes to allow for full localization.

Figure 2. Voluntary phlebotomy procedure conducted at a natural seawater facility with a senior animal care staff member (Marylou Wright) and the veterinarian (Robert Stevens, D.V.M.)

The phlebotomy was initiated by requesting the subject to return to a ventral fluke hold with the criteria mentioned above. Following sterilization of the injection site, the veterinarian inserted a 17-gauge needle into the subject's caudal vascular bundle **(Figure 2)**. On average, the entire process, including a few minutes post needle retraction to apply pressure to the venipuncture site, required a fluke present duration of approximately 20-30 minutes and was supplemented with strategic requests for 'breath rolls'. When the entire process was complete, the subjects were asked to present in a ventral layout. This allowed the veterinarian to perform a final inspection of the injection site and to ensure the cessation of blood flow. Critical to maintaining the health of the subjects and mitigating any potential complications associated with the procedure, the blood collection site was monitored closely for signs of inflammation or infection for several days following the procedure.

The lack of a static training environment and seclusion areas posed challenges for training this medically sensitive behavior at both DP and DC, and early in the training process, it became apparent that the phlebotomy procedure would need to become a part of the daily training regimen of each subject, performed with a multitude of distractions. The inability to seclude the subject meant that the procedure was only executed with conspecifics under stimulus control, but there was always a possibility of those animals breaking station and causing disruptions. Additionally, the guest program schedule required that phlebotomies be conducted during ongoing in-water programs, as well as in the presence of new calves at each facility not yet under stimulus control. Each of these scenarios required an increase in the number of daily training sessions, the adjustment of primary and secondary reinforcement, increased variability, and the implementation of mock disruption scenarios during training to desensitize the subjects to potential changes in their environment. These techniques proved successful in acquiring the voluntary phlebotomy with minimal to no response from the subjects during environmental fluctuations and minimized potential procedural complications.

Iron saturation levels decreased in all three subjects **(Figure 3)**, but the length of time associated with the post-procedural increase in ferritin concentration varied between individuals. Therefore, the phlebotomy schedules also varied between individuals, and maintenance training resulted in minimal breakdown of the phlebotomy behaviors over time, even with the introduction of a new calf to the resident population. Both Johnson et al. (2009) and Vlachos et al. (2010) indicated that the phlebotomy procedure required well planned reinforcement training to maintain the behavior beyond the induction phase for scheduled treatments of as many as one treatment per week for up to 31 weeks. Since September 16, 2010, a total of 40 samples have been successfully acquired from the three subjects at weekly or monthly intervals. To date, at least one of the three subjects has exhibited prolonged and sustained decreases in iron saturation levels as a result of a regular phlebotomy regimen, which highlights the potential long-term benefits of this procedure. Similarly,

Johnson et al. (2009) documented sustained decreases in serum iron levels in bottlenose dolphins treated with phlebotomy.

CONCLUSION

This study documents a novel training approach to treating hemochromatosis with a voluntary phlebotomy procedure from a floating platform, using one trainer, and a veterinarian. The successful completion of this behavior was achieved by detailed approximations, the maintenance of strict criteria, the use of strong training foundations and well-planned reinforcement training, including the use of the Premack Principle, and detailed environmental and procedural desensitization plans. The phlebotomies resulted in a significant decrease in blood iron levels in each of the affected animals, which exemplifies the success of this novel approach. The goal of this project is to provide valuable information to other marine mammal facilities with similar environmental and operational limitations and enable the successful treatment of an increasingly pervasive disease.

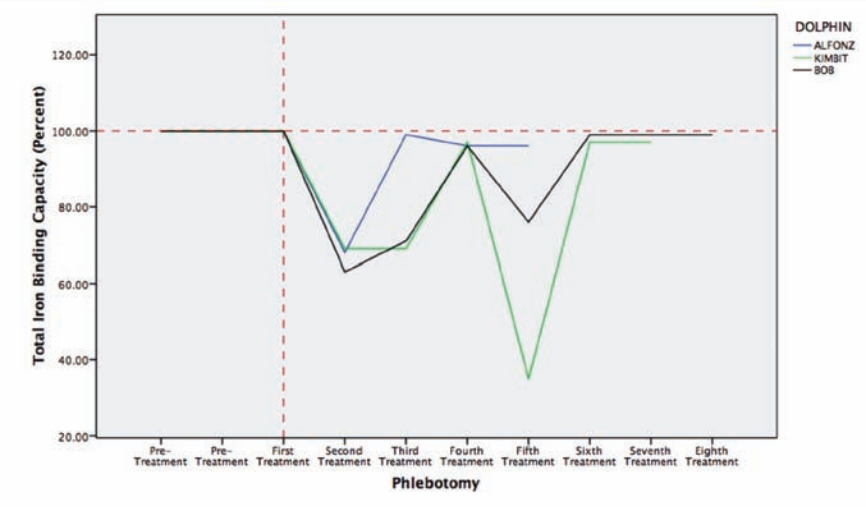

Figure 3. Total iron binding capacity (percent) pre- and post-phlebotomy treatments at various intervals. Blood draw V = 500ml +.

ACKNOWLEDGEMENTS

We would like to acknowledge the remarkable training and animal care staff at Dolphins Plus and Dolphin Cove, without whom this procedure could never have become a reality. Marylou Wright was the first trainer to achieve the voluntary phlebotomy at Dolphins Plus. We'd also like to thank Ted Turner for the suggestion to administer Lidocaine intramuscularly and for providing manuscript edits.

FOOTNOTE 1

VRRV is a frequently overused term and a somewhat generalized description that is not fully understood. However, the training employed in this study did in fact fulfill the definition of a VRRV application through the use and maintenance of LRS within the training sessions. So, the animals were not bridged after every behavior, nor did they receive primary or secondary reinforcement after each response. Unfortunately, the VR schedule relevant to this study cannot be assessed retroactively, and for the purposes of describing and replicating precise methodologies, it should be quantified (e.g. VR2, VR3, VR7). Given the current state of record keeping within the industry, precise recording of applied reinforcement schedules is rare. Obtaining these data at our facilities has therefore been integrated into ongoing projects that examine reinforcement history and schedules of reinforcement.

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RESEARCH BRIEFS

UNDERWATER HEARING IN THE LOGGERHEAD SEA TURTLE (*CARETTA CARETTA*)

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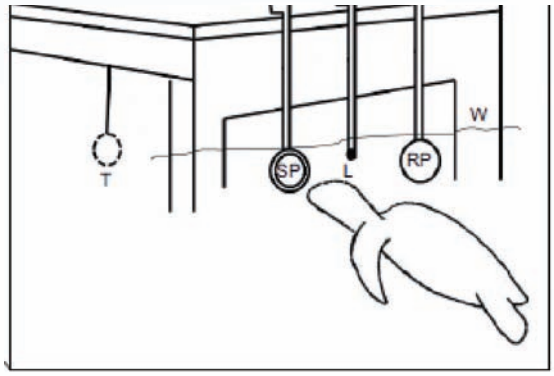

Figure 1 - Experimental design for the collection of behavioral audiogram data indicating locations of the transducer (T), located 1m from subject, station paddle (SP), indicator light (L), response paddle (RP) and water level (W).

The impacts of anthropogenic noise in the marine environment are poorly understood in marine turtles partly because of limited studies addressing their auditory ability. Existing studies have relied on auditory evoked potential (AEP) testing, in which electrodes are used to detect voltages generated by the brain in response to acoustic stimuli. Previous attempts at measuring behaviorally assessed hearing abilities have been unsuccessful. Beginning in 2007, researchers at Mote Marine Laboratory and Aquarium in Sarasota, Florida, trained a loggerhead sea turtle to participate in a behavioral hearing test. A comparison of behavioral and AEP audiograms from the same individual would allow for a better understanding of marine turtle hearing and ground-truth future results obtained through electrophysiological methods with animals that cannot be trained for a behavioral audiogram.

Testing was conducted with a facility-raised, 31-year-old female loggerhead. Data collection took approximately one year following a one year training period. Training began by reinforcing the turtle for pressing a response paddle when an auditory cue was played. The response paddle was then introduced as the turtle remained stationed at her standard husbandry target. The turtle was reinforced for leaving her station and pressing the response paddle only when the audible cue was present. A signal of known audible level was used to train the series of behaviors required to collect the behavioral audiogram.

The experimental design consisted of a station paddle (husbandry target), response paddle, light emitting diode (LED) indicator, and transducer (located in front of the test subject) suspended in the middle of the habitat **(Figure 1**). The trainer was positioned on the platform above the apparatus to ensure the turtle was properly positioned in front of the station paddle and to reinforce the turtle for correct responses. The turtle approached the station paddle, and once still, the LED light positioned just to the right of the turtle flashed to indicate the start of a trial. A randomly distributed go (signal-present) trial or no-go (signal-absent) trial was initiated. During go trials, a 2 second tonal stimulus followed the LED, and if detected, the turtle would press the response paddle within 4 seconds. During no-go trials, the turtle would refrain from pressing the response paddle for 6 seconds. Correct responses were indicated by an audible secondary reinforcer (clicker) followed by a primary reinforcer (food). Incorrect responses were indicated by turning off an overhead session light, and the turtle would return to the station paddle for the next trial. The trainer wore headphones to remove human-induced bias and trials were initiated by a computer system operated by a second trainer out of sight.

Trials were grouped into ten-trial blocks with five go trials and five no-go trials (trial order was balanced based on Gellermann scales), and performance was averaged over the block. If the turtle correctly detected the audible cue at the assigned stimulus level for that block and did not respond to signal-absent trials, the sound pressure level (SPL) was decreased by 6 dB for the next block and continued until the turtle failed to detect the stimulus during a block. Upon failing to detect the stimulus, the signal was increased by 6 dB until once again correctly detected. Each positive-to-negative or negative-to-positive switch in dB level was deemed a reversal. This increase and decrease of SPL based on detection

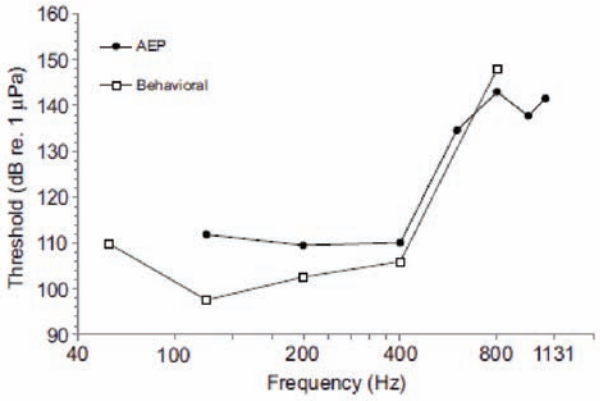

Figure 2 - Comparison of underwater behavioral and mean AEP audiograms. AEP threshold values are averaged over two testing sessions.

created a staircase centered around the turtle's hearing threshold. SPL was calculated for each block and thresholds were determined by averaging the SPL over 10 or 12 consecutive reversals. This series of steps was used to determine thresholds at frequencies known to be within the previously determined hearing range. Testing was then conducted at frequencies near the limits of detectable frequencies until the turtle could no longer detect the cue. In the end, researchers were able to determine not only the range of frequencies that the subject could detect but also the turtle's auditory threshold at each frequency.

Loggerhead sea turtle, Montego, stations in preparation for the next trial.
Photo Credit: Mote Marine Laboratory and Aquarium

A 'trainer's-eye' view of loggerhead sea turtle, Montego, stationing for a trial.
Photo Credit: Mote Marine Laboratory and Aquarium

Initial training attempts with the test subject proved to be difficult. Husbandry training designed to train the test subject to participate in health management procedures such as blood and weight collection occurred for one year prior to the initiation of research training. Through this initial training, the subject was slow and inconsistent to perform learned behaviors, as is often seen when training reptiles. Only after months of repetition did behavioral consistency become evident, and even after prolonged training, behavior was sometimes erratic and unpredictable. For this reason, the modified staircase method was designed for collecting behavioral data, using blocked trials instead of single trials to account for reversals. Analyzing performance in blocks of ten trials smoothed the erratic trial-by-trial performance of the subject.

Results obtained through behavioral testing were compared to those obtained through AEP testing. AEP testing was conducted in two sessions near the completion of behavioral testing with the animal and transducer located in the same location as during behavioral testing. Tones of varying frequencies were presented in decreasing SPL increments. Subdermal electrodes measured evoked potentials generated by the brain in response to these stimuli and computer software was used to detect responses and indicate thresholds. Both methods of testing indicated a hearing range of approximately 50-1131 Hz with best sensitivity between 100-400 Hz **(Figure 2)**.

The frequency range detected by marine turtles overlaps with common sources of anthropogenic noise like shipping, seismic exploration, and construction in the marine environment. This highlights the need to conduct further behavioral studies to better understand marine turtle response to sound. In addition, it is important to understand if marine turtle hearing abilities are being masked by noise in the environment. The results of this study suggest that AEP testing can be a good alternative to training a behavioral audiogram with wild or untrained marine turtles and when time is a critical factor.

RESEARCH BRIEFS is compiled by **Beau Richter**

Southeast Regional Workshop Wrap-Up

September 7-9, 2012, Dolphin Research Center was happy to welcome 205 guests to our IMATA Southeast Regional Workshop! The weekend began with an Ice Breaker at Catch 53 restaurant in Marathon, FL. Saturday activities at DRC included a live Blindfolded Imitation research demo, dolphin voluntary semen collection, sea lion training discussion, an enrichment party, and live interactive programs with workshop participants. The fun lasted well into the evening with a catered dinner on-site and presentations from Dr. Hal Goforth (Retired U.S. Navy), Melissa Berdine (Marineland), Robert Eiser (UNEXSO: The Dolphin Experience), Katharine Nicolaisen and Laura Denum (Mote Marine Laboratory and Aquarium), Jeff Hester (Point Loma Nazarene University), and Willy Coto and Kathleen Milk (Zoo Miami). Sunday morning featured a live demonstration led by Mandy Rodriguez of How We Medically Assist Dolphins as well as small discussion groups with topics such as how to train voluntary artificial insemination behaviors, the College of Marine Mammal Professions, and trainer Q&A's. Our neighbors at Dolphin Connection closed out the weekend by offering a complimentary lunch and Dolphin Explorer programs for participants. Information was shared, friendships were made, and animals from the 16 facilities who attended are sure to benefit!

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