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A MESSAGE FROM THE PRESIDENT & CEO

The Association of Zoos and Aquariums (AZA) is committed to all of its members, including its world-renowned aquarium members. One strategic area of aquarium member service at AZA has been to offer top-quality conference programming focused on aquatic species.

This year, AZA and the International Marine Animal Trainers’ Association (IMATA) are partnering to develop a co-located Annual Conference from September 12-18, 2014 in Orlando, Fla. The Conference is being hosted by Disney’s The Seas with Nemo and Friends, Sea World Orlando and Disney’s Animal Kingdom. The event will be attended by more than 2,500 participants and attract hundreds of product and service providers focused on improving your business. It promises to be one of the most well attended aquarium and zoo events in both organizations’ history.

AZA and IMATA both work to protect animal species around the world and ensure the highest quality animal care. Partnering with similarly focused organizations is an important way to advance the work of both organizations and provide valuable professional networking and engagement opportunities for aquarium and zoo professionals. Combining AZA’s and IMATA’s Annual Conferences in 2014 will offer all attendees opportunities to collaborate and learn from one another. Program sessions, events and the Exhibit Hall will be combined, offering valuable cross-over opportunities. In addition to the dedicated Aquatic Affairs program Track, each of the remaining ten program Tracks will have an aquarium affairs element included in it - making it easy to apply lessons learned to any type of institution. Conference participants will also have the opportunity to attend the popular “Best of RAW” session, featuring some of the work presented at the 2014 Regional Aquatics Workshop, which AZA helped sponsor.

AZA’s 224 accredited aquariums and zoos actively engage 182 million visitors through educational programs and events. On June 8th, 83 AZA-accredited institutions hosted World Oceans Day events/activities. Aquariums and zoos provide unmatched opportunities for viewing amazing aquatic wildlife and creating experiences that build connections with nature, which in turn, inspires people of all ages to help protect our precious oceans for future generations.

I hope to see you soon at the AZA 2014 Annual Conference, the AZA Mid-Year Meeting, or at one the many great AZA-accredited aquariums, including our newest member, the Acuario de Veracruz, in Veracruz, Mexico.

Jim Maddy
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PUBLIC PERCEPTION OF SHARKS

With increasing evidence of how human activities impact the quality of ocean life, research in marine issues and pro-environmental values is key to engage the public in ocean conservation. This study on public perceptions of sharks and shark conservation in the U.K., assesses knowledge of and attitudes towards sharks within a group of people with a clear interest in the marine environment. Knowledge of sharks was high and around 64 percent of respondents held positive attitudes toward sharks: only 26 percent associated sharks with fear and danger. Those who had personal connections with sharks (e.g., experiencing sharks in the wild, belonging to environmental organizations, visiting aquariums regularly) tended to have more positive and stronger pro-conservation attitudes than those without such experience. More research needs to be done to understand how to engage the general public in shark conservation.

FRIEDRICH, LA, JEFFERSON, R, GLEGG, G, 2014. Public perceptions of sharks: Gathering support for shark conservation. Marine Policy, 47, 1-7. Correspondence to: laura.friedrich@plymouth.ac.uk, rebecca.jefferson@plymouth.ac.uk, or gglegg@plymouth.ac.uk.

HARBOR SEAL RESPONSES TO ZOO VISITORS

The behavior of eight harbor seals, four males and four females, was evaluated as a function of ambient temperature, daily visitor attendance, and visitor numbers during behavioral observation periods (instantaneous). Daily visitor attendance is often used as a proxy for instantaneous visitor numbers so the comparison here is particularly interesting. Seal behavior varied as a function of either daily or instantaneous visitor numbers but did not vary as a function of ambient temperature. When daily attendance was high, seals spent more time underwater and less time scanning their environment or resting on land. As instantaneous number of visitors at the seal exhibit increased, more seals swam underwater, fewer seals swam with their heads out of water, and fewer seals were observed in social interactions. The conclusions emphasize the potential impact of exhibit design, particularly features such as underwater viewing, proximity of visitors, and whether visitors are at ‘eye level’ with seals, as factors that may have significant impact on seal responses to high numbers of visitors.


STRESS IN PENGUINS

This study measured heart rate during 589 agonistic interactions in free-living king penguins during two consecutive breeding seasons. In 366 of these interactions the birds were bystanders (not directly involved). Heart rate was significantly increased for both direct participants and bystanders (up to 30 and 16 percent of baselines, respectively). Within participants, heart rate was higher for initiators than recipients of agonistic behaviors and heart rate in these interactions also varied as a function of breeding state. The study provides valuable information on the association between behavior and stress under free-living conditions.


ENRICHMENT PROMOTES COGNITIVE ABILITIES IN FISH

Behavioral enrichment can enhance the ability to learn and remember and may also positively impact neurogenesis in areas of the brain related to spatial and relational memory. This study examined the impact of enriched rearing environments on changes within the brain and cognition, as measured in performance within a maze, of juvenile salmon. Enriched fish made fewer mistakes and exited the maze faster than did fish from the unenriched treatment. There were also higher levels of telencephalic expression of genes related to spatial orientation (NeuroD1 mRNA) in the enriched fish. This is the first time that a study has found that behavioral enrichment can positively impact both neural plasticity and spatial learning in fish.

SALVANES, AGV, MOBERG, O, EBBESON, LOE, NILSEN, TO, JENSEN, KH, BRAITHWAITE, VA. 2013. Environmental enrichment promotes neural plasticity and cognitive ability in fish. Proceedings of the Royal Society B 280: 1-6 Correspondence to: anne.salvanes@bio.uib.no.
CARING TOGETHER
WE CAN MAKE A
DIFFERENCE

As zoological professionals and advocates for animals we often speak about the quality of care we give our animals. We speak about how we do what we do because we care about animals.

By Scott Higley
The truth is that we cannot do the important work we do unless we can inspire that kind of caring in our guests, supporters and fans. The support we receive on all levels comes because of this caring. What we do translates directly to a strong desire to educate our guests and make them care too.

Every week, we help our guests to connect with conservation-dependent species and to become inspired to learn more about how they can protect these amazing animals in the wild. Even though we witness thousands, if not millions, of these transformations every year at our facilities, until recently there has not been a way to combine and elevate the voices of all of these individuals – to give them a place where the power of their collective voice could be heard loudly and clearly.

Thus was born the Caring Together community. Caring Together represents new territory for Georgia Aquarium and is an effort to give animal care experts, staff, volunteers, members, guests and supporters of accredited zoos and aquariums a place to stand together for, and speak up on behalf of, all of the animals we all collectively care so much about.

Caring Together is a community of advocates. Caring Together offers new and easy ways for people of all ages to help protect animals and to support the research, education and conservation programs of our facilities.

Participating in Caring Together costs nothing, is voluntary, and anyone – anywhere – can become involved. While the initiative is only a few months old and began on a small scale at Georgia Aquarium, thousands already have signed on.

We all have a stake in this. The vocal minority of animal rights extremists often capture public attention. It’s time for the majority to be heard.

By engaging the people who understand and value the research and conservation work of our facilities on behalf of animals globally, we are building a coalition of active, involved and educated individuals who are motivated to support our ongoing efforts.

Caring Together Debuts with Campaign for Belugas

The first species in the spotlight under the Caring Together banner is belugas, but we believe this is only the beginning. What we are doing for belugas today can be done for other conservation-dependent species tomorrow.

Currently, there are only seven AZA-accredited facilities in North America where the public has the opportunity to see, learn from and grow to care about beluga whales. But in spite of great success in breeding these magnificent animals in human care – more than half of the population in these accredited facilities was born there – we find ourselves at a crossroads, with fewer than 35 belugas in our care. Because there is currently not enough genetic diversity to promote future healthy breeding, this population of belugas is facing certain extinction.

Increasing the number of belugas in accredited facilities in North America will help ensure the continuation of public education, non-invasive scientific research and global conservation programs to protect this species for as many as six-plus decades. Unfortunately, after much work on this conservation program, and a complete and thorough application, we were disappointed to have been denied the necessary permit by the U.S. government to bring additional whales to the U.S. This denial could prove disastrous for belugas.

The Caring Together community has responded. In its first few months at Georgia Aquarium, more than 8,000 people had signed a petition in support of the beluga conservation project and/or have sent letters to the U.S. Department of Commerce supporting the importation of belugas to accredited zoos and aquariums in North America. Supporters have also submitted personal stories illustrating the importance of these facilities.

Caring Together is quickly expanding to incorporate most aspects of our animal care and welfare program, and will not be limited to the animals in our living collection. Supporters have provided their e-mail addresses, eager to learn, and do, more.

When future needs arise, this community can be kept informed and be invited to respond. With your help, this army of supporters will continue to grow.

Please join and encourage your fans to join the Caring Together community and to show their support by signing a petition in support of the beluga whale conservation project today at www.CaringTogetherForBelugas.org and by using #CaringTogether.

A toolkit of materials for AZA-accredited facilities, including templates for various audiences, social media posts that can be tailored to your facility, and brand-neutral links to post the petition and other Caring Together materials directly to your own website, is available by contacting the author of this article at Georgia Aquarium, shigley@georgiaaquarium.org.

Please also encourage your staff, volunteers, guests and supporters to share firsthand stories about the personal connections they have formed or witnessed between humans and animals at your facility. Working together, this community will bring the needs of animals that rely on us for protection and the positive impact of all of our programs to life in new ways for the entire world to see.

Caring Together, we will make an even greater difference in the lives of the animals we study, teach on behalf of, and care for every day.

Scott Higley is Vice President of Communications & External Affairs at Georgia Aquarium
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IT ALL BEGINS WITH ONE

SeaWorld’s Rescue and Rehabilitation Work

It all began with one. One animal in need. One far-reaching decision to use the facilities and expertise at hand to help. There was no fifty-year vision then. No calculated choice was made. Just a simple attempt to do the right thing on behalf of an animal in need of an assist. Five decades beyond that first act of kindness, SeaWorld has rescued over 23,000 animals — some injured, some ill, some orphaned — all in need of a helping hand. That averages out as a little more than a rescued animal taken in every single day for the past 50 years.
In each instance, the ultimate goal has been and is always to rehabilitate the animal back to a state where they can be successfully returned to the wild. If individual circumstances are such that this isn’t possible, SeaWorld either directly provides or finds an appropriate long-term home for the animal in need. In every instance, the thousands of employees who have been and are involved in the rescue and rehabilitation process are totally committed to providing the highest level of care and attention for the animals in their care as they work tirelessly to provide them with a second chance.

Every rescued animal inspires us. While each rescue is special, looking back, a few of the stories particularly stand out. Amongst those are the tale of JJ, the orphaned gray whale – a calf who was cared for over 14 months and during that time doubled in length and increased in weight tenfold; the 2010 mass influx of over 300 cold-stunned sea turtles – a figure an order of magnitude greater than a typical rescue year; the 2000 oil spill in South Africa to which we contributed effort and expertise in the rehabilitation of over 20,000 oiled penguins; and the wayward Everglades manatee, who had managed to work its way so deeply into a tangled labyrinth of mangroves and sawgrass that the team had to go to the air – rescuing the animal via helicopter airlift.

Whether it be crawling into a spider-filled drainage pipe to find a wayward manatee, responding to a mass mortality event involving ocean-borne toxins and pinnipeds, exporting expertise and effort abroad to assist with environmental disasters affecting wildlife, or dealing with the all too common injuries imparted by discarded fishing line and other plastics, SeaWorld has been a proud member of the wildlife rescue community from the earliest days of the parks’ inception. Over the decades, dedicated rehabilitation facilities have been created and expanded, staff has grown in both knowledge and numbers, and ground-breaking techniques and tools have been developed and added. SeaWorld’s dedicated efforts in animal rescue, rehabilitation, and (hopeful) return lie at the core of who we are.

Our job is to meaningfully connect people with the sea. On occasion, that means directly intervening on behalf of an animal in need. All too often, that need is human caused. Improperly discarded fishing line, plastic refuse, and other pollutants make their way into the ocean and often create truly dire circumstances for wildlife. SeaWorld has, is, and will continue to do all we can to deal with the impacts on wildlife of such materials and circumstances, but the truth is, so much more good could come from a broad swath of people making positive, ocean stewardship-based choices every day. The best rescue is the one you don’t have to make in the first place. That ideal requires us to think about what we’re putting down our sinks, consider how we’re managing our daily energy usage, pick paper over plastic (or better yet, opt for a reusable bag), properly dispose of our trash, or just pick up a piece of fishing line the next time you find yourself along a stream, on the lake, or at the beach. Any one of these could literally save the life of animal.

Every action, every choice, counts. It all begins with one.

Scott Gass is the Director of Zoological Communications & Interpretation at SeaWorld Parks & Entertainment
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Octopuses have long been a star attraction at public aquariums. Our guests are fascinated by these charismatic eight-armed, suckered, three-hearted, blue-blooded, boneless animals—both for their alien appearance as well as for their engaging behaviors and apparent intelligence. Displaying octopus in public aquaria, however, has its challenges.

Historically, public aquaria have displayed a low diversity of octopuses and their relatives. Most tropical octopuses have a lifespan of approximately one year, and there has been little success raising their planktonic paralarvae to adulthood. Collectors can have difficulty differentiating between species of octopuses, and because the aging of animals is difficult, many are collected late in their lives resulting in a display period of perhaps only weeks or months. The shipping of octopuses also presents a variety of husbandry obstacles to overcome, particularly through the chain of custody.

These challenges have led to a limited diversity of octopuses on display in public aquaria, with many facilities displaying only the giant Pacific octopus (*Enteroctopus dofleini*): one of the most studied octopuses, with a lifespan of two-to-five years. At Steinhart Aquarium, in San Francisco, Calif., we have been conducting research on collection and display techniques for two species of octopus that are perfect for aquaria: the coconut octopus (*Amphioctopus marginatus*) and the larger Pacific striped octopus, currently undescribed.

The coconut octopus is an ideal candidate for public aquarium display. It is an engaging tropical species with minimal space needs, and most facilities will be able to successfully care for the animal for the duration of its natural lifespan. It has a tendency to be active during daylight hours, is popular with guests due to its interesting behaviors, and it can be taught to open jars to retrieve food. As part of our long-term collaboration with the Bureau of Fisheries and Aquatic Resources in the Philippines, we have developed techniques that minimize stress and eliminate mortality during collecting and transport (Shepherd, Ross and Avila, 2014). We have displayed this species for up to 375 days, post-collection. Future research is needed to develop breeding and larval-rearing protocols for the animals in our care, and to examine whether populations within the Philippines are robust enough to sustain repeated collections.

The larger Pacific striped octopus is another octopus that may prove perfect for public aquarium display. This temperate octopus from Central America has stunning a stunning pattern of stripes.
and spots. Unlike many species, a pair can be displayed together long term. The species mates in a unique ‘beak to beak’ position, and the species is iteroparous — that is, the female doesn’t die after laying a single clutch of eggs. Multiple females continually laid eggs and produced copious numbers of paralarvae in our aquaria while continuing to eat normally. As we are the first institution to work with this undescribed species, more research is needed to determine the status of wild populations, methods for reliable collection, and larval rearing protocols. In collaboration with UC Berkeley, we are publishing a description of the species, as well as some of its unique behaviors.

Cephalopods are amazing animals that can effectively engage our guests and help inspire ocean conservation. Recent advances in collecting, transporting and husbandry techniques, as well as collaboration with the scientific community, offer great potential to increase the diversity of cephalopods within our facilities. At Steinhart Aquarium, we will continue to study these species in the wild and in our aquaria, and work toward developing breeding protocols in order to increase the sustainability of the marine aquarium trade and help provide economic development in the animals’ countries of origin.

BART SHEPHERD is the Director of the Steinhart Aquarium
RICHARD ROSS is a Senior Biologist at the Steinhart Aquarium

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SURF’S UP

The Latest from Rising Tide Conservation

Sustainability of marine ornamental fish is a complex challenge. Approaches to the long-term solution include assuring proper and sustainable collection and aquaculture. Rising Tide Conservation is an aquaculture program designed to address one of these two needs in a novel and effective way. The program is founded on the premise that supporting aquaculture research at universities and oceanic research institutes is the best way for zoos and aquariums to advance aquaculture of species important for display. Once these techniques are developed, they are transferred to commercial producers so that fish from aquaculture can be purchased for display. But Rising Tide is about a vision bigger than just the tanks in zoos and aquariums. In order to assure the economic sustainability of the program, Rising Tide Conservation looks to change the way the marine hobby industry gets its fish, too. Only by combining these two goals will aquaculture of marine species be viable for the long term.

By Judy St. Leger
As of today, 20 Association of Zoos and Aquariums (AZA)-accredited aquariums and zoos are members in the program. Membership varies from fish egg collecting in large reef displays, to providing materials for the researchers, and to educating the public about marine fish and aquaculture as part of reef and ocean education. Doug Warmolts and Ramone Villaverde at the Columbus Zoo and Aquarium in Columbus, Ohio, determined the best way to ship fertile eggs cross country. This contribution has made access to reproductive material a reality at centers doing investigative work. At Discovery Cove in Orlando, Fla., Gary Violetta and Denise Swider facilitated collecting spawns from Atlantic blue tangs and angelfish through net collecting during certain times of the lunar cycle. Before the diver-assisted collections, routine collections yielded thousands of eggs from multiple grunts species. Now, divers enter the reef just at sunset – the spawning starts soon afterwards. With selective egg collecting, targeting species of interest for aquaculture can be achieved.

Research facilities have expanded. We now have Dr. Chad Callan of the Oceanic Institute and Hawaii Pacific University (HPU) focused on yellow tang. The first HPU graduate student working on this project is Emma Forbes. In the past few months, they successfully broke through two classic larval bottle-necks to get larvae to grow to day 83. It looks like these fish should be ready to settle at about day 90 – so the folks in Hawaii are close. Current efforts include repeated trials to enhance and improve larval rearing success and survival percentages. At the University of Hawaii, Karen Brittain is working in the laboratories of Dr. Clyde Tamaru. Karen has been rearing purple-masked angelfish. This pygmy angelfish is uncommon in collections because they tend to be elusive and flighty when collected. However, the aquaculture reared specimens are calm and well-adjusted to aquarium life. The folks at the Tropical Aquaculture lab in Ruskin, Fla., continue to make advances. After battling two years of sex changes and bad eggs, the Bartlet’s anthias are now making good pairs and larvae are growing out to day 40 post-hatch. Full development to fish is the goal for 2014. Milletseed butterflies are breeding. Larval rearing trials are progressing.

The biggest advance for Rising Tide over the past year is the establishment of a Banggai cardinal fish aquaculture facility in Thailand. This commercial facility is rearing Banggais in numbers sufficient to meet the demands of all of North America. While Banggais are not tough to breed, having a sufficient aquaculture supply as an alternative to collecting is a great advance.

As things move forward in 2014, new researchers are coming on board, new display facilities are joining in, and most importantly, plans for in-situ aquaculture facilities are coming to reality. Aquariums can get involved by committing to buying aquacultured fish, by including Rising Tide Conservation in ocean conservation messaging, and by participating with brood stock holding and egg collecting. Keep up to date on the changes as they happen by subscribing to the blog: www.risingtideconservation.blogspot.com

Come on in! The water’s fine – and the tide is rising.

**Judy St. Leger** is the Director of Pathology and Research at SeaWorld Parks and Entertainment.
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AFTER NINE SUCCESSFUL YEARS, NEW ENGLAND AQUARIUM’S CEO & PRESIDENT BUD RIS TO TURN HELM OVER TO NIGELLA HILLGARTH, HEAD OF SAN DIEGO’S BIRCH AQUARIUM

With a record number of tourists visiting Boston’s New England Aquarium’s newly renovated Giant Ocean Tank, the completion of a $43 million capital campaign and the expansion of critical ocean research and conservation initiatives, New England Aquarium CEO & President Bud Ris has decided to step down after a successful nine year tenure revitalizing Boston’s popular aquarium and marine conservation organization. Ris will be succeeded by Dr. Nigella Hillgarth, the longtime executive director of UC San Diego’s Birch Aquarium at Scripps in La Jolla, Calif., which is part of the world renowned Scripps Institution of Oceanography.

Aquarium board chairperson Donna Hazard said, “Bud’s legacy is best represented by his vision for the Aquarium, both as an important cultural and educational force in Boston and also as a global leader dedicated to protecting the oceans.” She added, “We are thrilled to have found in Nigella an experienced aquarium leader and scientist who shares the Aquarium’s passion for the oceans and commitment to education, conservation and research.”

Since coming to the Aquarium in 2005, Ris has worked closely with the Aquarium’s immediate Past Chair Bill Burgess and COO Walter Flaherty to revitalize one of America’s most prominent aquariums. Together, they helped raise $43 million over a six-year period that rebuilt infrastructure, enhanced mission programs and developed popular new exhibits including the dramatic renovation of the Giant Ocean Tank last year, the opening of east coast’s largest shark and ray touch tank in 2011, and the construction of a spectacular harbor-side marine mammal center and Harborwalk in 2009. The Aquarium also developed a state-of-the-art, multi-million dollar sea turtle hospital and animal care center in the old Quincy Shipyard.

Since its opening in 1969, the Aquarium has emphasized marine conservation and research. Under Ris’ leadership, the Aquarium
was instrumental in helping to create one of the world’s largest marine protected areas in the Phoenix Islands of the central Pacific. Critically endangered right whales are enjoying a resurgence along the U.S. east coast, thanks in part to protection measures initiated by Aquarium whale researchers. The Aquarium’s sustainable seafood program has worked with some of the nation’s largest seafood companies and helped make sustainability become an integral business practice in the industry. Aquarium researchers have also benefited from the modernization of their laboratory for cutting-edge work in assessing the impacts of noise and other human activities on the stress levels of marine animals.

Ris, who is also a policy expert on climate change, served on several commissions advising both Mayor Menino and Governor Patrick on mitigation measures that can better prepare the city and the state for the impacts of sea level rise. Also over the past several years, the New England Aquarium has spearheaded a nationwide collaboration of aquariums and zoos to educate millions of visitors about climate change, its impact on the oceans and what to do about it. That project is funded by $6 million in grants from NSF and NOAA.

“Among the top accomplishments of our board supporters and staff during my tenure here has been restoring the Aquarium to good financial health and building a strong foundation for future growth and impact,” Ris stated.

Moving that legacy forward will be Irish native and Oxford-educated Hillgarth. She has led the San Diego aquarium since 2002 and prior to that headed up the largest bird park in the United States at the Tracy Aviary in Salt Lake City. While at the Birch Aquarium, she spearheaded the renovation of exhibit halls and brought in regular changing exhibits including the award-winning Feeling the Heat: The Climate Challenge. She also dramatically increased private giving to an institution, that like the New England Aquarium, receives only a small amount of direct operating support from local or state governments.

Dr. Hillgarth is also a highly regarded zoologist and has conducted research on penguins and other birds. Her field work has brought her to the Arctic, Antarctica, Argentina, the Amazon, the Galapagos, Peru, India and Thailand. While at Scripps, she also served as the assistant director for outreach in oceanography working to ensure that the institution’s mission and research are effectively communicated to the world.

“I’m very proud to have led Birch Aquarium at Scripps Institution of Oceanography, UC San Diego, for nearly 12 years and pleased with the many successes that I shared with colleagues there, from exciting new exhibits to community outreach and conservation programs,” said Hillgarth. “I now look forward to a wonderful new opportunity at the New England Aquarium.”

As Ris wraps up his work, he traveled to the remote, island nation of Kiribati in April to meet with government officials there to review progress in the management of the Phoenix Islands Protected Area. Ris finished his turn at the Aquarium’s helm in May.

Dr. Hillgarth began working in Boston after Memorial Day.

RED RIVER ZOO ANNOUNCED STACEY HAGGREEN AS THE ZOO’S NEW DIRECTOR OF EDUCATION

A national search was conducted in late 2013 to fill the director of education position at the award winning living museum. Stacey Hagreen comes to the Red River Zoo from Los Angeles, Calif., where she spent over seven years at the Los Angeles Zoo and Botanical Gardens, working for the Greater Los Angeles Zoo Association. She has an extensive background in publications, organizational communications, community outreach, volunteerism, as well as educational content research and dissemination of information to all ages. Born and raised in Spokane, Wash., Stacey holds a Bachelor of Arts from Western Washington University and a Master of Arts from Teachers College, Columbia University.

WILLIAM DAVIDSON FOUNDATION FUND GRANTS $3 MILLION TO SUPPORT POLK PENGUIN CONSERVATION CENTER AT THE DETROIT ZOO

The William Davidson Foundation Fund has made a $3 million grant intention to the Detroit Zoological Society (DZS) in Detroit, Mich., to support the development of the Polk Penguin Conservation Center at the Detroit Zoo. Construction of the $26 million facility began in the spring near the Zoo’s entrance.

“This very generous grant will help us create an extraordinary conservation center of international significance for iconic polar animals – penguins of Antarctica. The center will highlight that incredible ice continent and the dramatic effect of global climate change,” said Ron Kagan, DZS executive director and CEO.

“The Detroit Zoo is known regionally, nationally and internationally as a leader in the field of animal welfare, science education and visitor experience,” said Jonathan Aaron, president, William Davidson Foundation. “Research and personal experience tell us that having strong cultural destinations, like the Zoo, promote the region’s growth and vitality. We are pleased to support this worthwhile and exciting project.”

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and sustained for the estimated two-year development period of the Polk Penguin Conservation Center, and the facility will add several full-time employees to the DZS staff. With an associated annual increase of 100,000 visitors, the new attraction is expected to have a regional economic impact of several million dollars per year, adding to the $100 million economic impact the Zoo already has on the region.

Inspired by Sir Ernest Shackleton’s legendary Antarctic expeditions and epic crossings of the Drake Passage, the facility’s dramatic exterior design will evoke a tabular iceberg. The interior experience will feature 4-D effects such as arctic blasts, waves and snow, and will include a penguin “deep dive” with views above and below water as the birds dive and soar through a chilled 326,000-gallon, 25-foot-deep aquatic area.

THE CENTRAL FLORIDA ZOO & BOTANICAL GARDENS AGREES TO OPERATE THE ORIANNE CENTER FOR INDIKO CONSERVATION

The Orianne Society and The Central Florida Zoo & Botanical Gardens in Sanford, Fla., announced that they have partnered to conserve eastern indigo snakes, with the Central Florida Zoo taking over operations of the Orianne Center for Indigo Conservation in Eustis, Fla.

The Orianne Center for Indigo Conservation was built and formerly operated by The Orianne Society, the world’s foremost comprehensive-based conservation organization dedicated to the conservation of reptiles and amphibians around the world.

“We are thrilled to have the opportunity to take over operations of the Orianne Center for Indigo Conservation. This allows the Zoo to vigorously support conservation with an established entity that has a proven track record of scientific conservation programs and successful reproduction efforts,” says Dr. C. Smith, chief executive officer at the Zoo. “We look forward to working with Fred Antonio and his team of scientists as we pursue new conservation and education programs together.”

“The Orianne Society has long been effective in accomplishing our mission to conserve reptiles and amphibians by partnering with organizations that have expertise and an impeccable reputation. The Central Florida Zoo certainly fits that criteria and they are dedicated to conservation,” says Orianne CEO, Dr. Chris Jenkins. “This partnership allows us to continue to focus on things such as land conservation, researching and monitoring species occurrence, and mitigating factors that cause reptiles and amphibians to decline, while trusting that the Central Florida Zoo will continue our efforts to captive breed eastern indigo snakes for reintroduction into areas which they no longer occur.”

The Orianne Center for Indigo Conservation, located on 25 acres in east Lake County, will also complement and enhance the Zoo’s already diverse education programs. This location is an ideal environment to teach conservation and an appreciation of our natural communities while immersing students in nature.

WHITE HOUSE HONORS AQUARIUM VP BILLY SPITZER FOR ENGAGING THE NEXT GENERATION OF CONSERVATION LEADERS

On 18 March 2014, the White House honored fourteen heroes from across the country that it calls “Champions of Change” for their efforts to engage communities and youth in environmental stewardship and conservation. Among them was Dr. Billy Spitzer, the New England Aquarium’s vice president for programs, exhibits and planning.

Spitzer has helped the popular Boston aquarium to better integrate messages about current environmental challenges, including climate change, into exhibits for its 1.3 million visitors annually. Long a leading summer employer of Boston teens, the Aquarium’s programs under Spitzer’s leadership have started up three innovative programs for teens and offered free community-based marine biology programs for tens of thousands of children from low income communities.

Spitzer, who holds a PhD in oceanography from a joint M.I.T/Woods Hole Oceanographic Institution program, has long focused on expanding the reach of the Aquarium beyond its walls. Spitzer has helped develop a wide variety of educational programs and conservation initiatives that combine learning, service, and stewardship. These efforts include immersive experiential learning and citizen science opportunities for youth; workplace learning and career development for teens; volunteer service and stewardship programs for adults; and interpretation and communication training for staff. In addition, Spitzer has helped land millions of dollars in grants to build regional and national networks with other informal science centers around such initiatives.

Spitzer, a Needham resident, is officially responsible for oversight of exhibit design, visitor experience, volunteer, and education programs as well as institutional strategic planning. Practically, he helps lead the Aquarium in redefining what it means to be an aquarium - combining education, entertainment and action to address the most challenging problems facing the ocean.
The Aquarium of the Pacific, located in Long Beach, Calif., requires a lot of electricity – about 1.8 megawatts at its peak to care for 11,000 animals and 1.5 million annual visitors. Pumping 1.2 million gallons of water through the tanks every hour and maintaining proper water temperatures consumes about 35 percent of the Aquarium’s power.

To reduce the institution’s environmental footprint, greenhouse gas emissions, and expenses, the Aquarium explored different renewable energy sources, including solar and fuel cells. Solar solutions did not work as the Aquarium roof is already crowded with equipment and skylights to illuminate some exhibits. The neighboring parking structure had space, but building the infrastructure to support the solar panels and sending that energy back to the Aquarium, solar was deemed cost prohibitive.

Next, the Aquarium began to explore fuel cells, working with the University of California, Irvine’s National Fuel Cell Technology Center. After reviewing the Aquarium’s power needs, they recommended a combined-heat-and-power fuel cell solution. Fuel cells combine hydrogen and oxygen to create electricity. Once installed, the fuel cells will generate quiet, clean, and green electricity.

The Aquarium hopes to install two fuel cells in spring 2015, each producing 400 kilowatts and off-loading over 50 percent of the facility’s annual power usage. Excess heat from electricity generation will be rerouted to maintain temperatures in fish tanks and the Aquarium lobbies and exhibits, part of a technology called combined heat and power. Aquarium life support systems run 24/7, making them good candidates for fuel cells, which also operate 24/7. The 800 kilowatts of electricity from the fuel cells will cover the Aquarium’s base electricity needs, for example almost all of the nighttime load.

Aquarium President and CEO Jerry Schubel hopes that other institutions will follow the Aquarium’s lead in looking to alternative energy sources. The Aquarium will sign a multi-year contract to buy electricity generated by its fuel cell. Schubel said. “We will make a 15-year commitment. I don’t consider this to be very high risk. I think not doing a fuel cell is higher risk.”

Once the fuel cell is installed, the Aquarium will buy the electricity it generates as part of a power purchase agreement.

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The ornate box turtle (*Terrapene ornata*) is protected in six Midwestern states, including Illinois, where this threatened species is fragmented across limited prairie habitat. To further its recovery in the state, conservation scientists and animal care staff at Lincoln Park Zoo in Chicago, Ill., and Niabi Zoo in Coal Valley, Ill., are undertaking an expanded headstart and release program in partnership with the U.S. Fish and Wildlife Service (USFWS).

How does it work? Eggs are collected from a stable ornate box turtle population in the wild and brought to Lincoln Park Zoo and Niabi Zoo, where they’re incubated. After hatching, juveniles will spend a year growing under the expert care of zoo professionals. This head start will give the growing turtles a better chance to gain a foothold in the wild.

“Our team is going to see to it that these turtles are strong, mature and ready to thrive in the wild when they leave the Zoo,” says Lincoln Park Zoo General Curator Dave Bernier. “In addition to providing them a wonderful home, we’re setting them up for success.”

When the turtles are mature enough to be released, the Zoo’s partners from the USFWS help the reptiles settle into their new home at Lost Mound Sand Prairie in Savanna, Ill. The area was determined to be the best site within the state to reestablish the ornate box turtle. It includes 1,629 hectares of sand prairie, ideal habitat for the species, and is managed under state and federal protection.

Thanks to the generous support of the Association of Zoos and Aquariums’ (AZA) Conservation Grants Fund (CGF), the zoos were able to reintroduce 23 ornate box turtle hatchlings. At the Lincoln Park Zoo, 21 additional hatchlings continue to grow. These will be released in 2014.

Headstarted turtles will be released and monitored for at least five years to track behavior and survival. The project’s long-term goal is to establish 100 turtles at Lost Mound Sand Prairie.

To view footage of the recovery site, and learn more about this conservation initiative, please visit: www.lpzoo.org/conervation-science/projects/ornate-box-turtle-population-recovery-illinois.

James Seidler is the Communications Manager at Lincoln Park Zoo.
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For this issue of CONNeCT, which is focused on aquariums, it’s my great pleasure to share just a few of the many examples of work aquariums are doing to save species and engage people, and how the Association of Zoos and Aquariums (AZA) is supporting us in these efforts through member services.

With regard to AZA member services, as you know, AZA-accredited aquariums and zoos want to – and are uniquely qualified to – help wildlife when disasters strike, whether natural or man-made. In 2010, for example, many of us jumped in to help sea turtles and other marine wildlife, first, when sea turtles were affected by record cold temperatures, and again following the Deepwater Horizon oil spill in the Gulf of Mexico.

Despite our willingness to help and many heroic efforts, we were hampered by not currently being included in any formal response network. The great news is that AZA is creating an Association-wide environmental disaster response prototype that will focus on identifying and coordinating AZA animal care professionals who are fully trained and able to respond in a wide variety of environmental disasters in the U.S. and possibly beyond. As a first step, AZA is working to ensure that potential responders from our facilities have the training required by OSHA before going to an oil-spill site or helping oiled wildlife. This includes working with the staff at the Alaska SeaLife Center to provide Hazardous Waste Operations and Emergency Response Standard training to a select number of our animal care professionals at the AZA Annual Conference in Orlando. Please stay tuned for more information on this training and the network.

Of course, saving species is an everyday matter. A great example is the Dallas World Aquarium’s (DWA) work in Peru. The DWA has been assisting local agencies and people in Peru with rescues, rehabilitations and releases of Amazonian manatees since 2008. So far, 40 manatees have been part of this program, with four rehabilitated manatees returned to their natural habitat this past spring. The next time you see AZA President and CEO Jim Maddy and AZA Executive Director Kris Vehrs, be sure to ask them about this recent release, which they had the opportunity to witness first hand. Not only will they tell you what an amazing experience it was, but I know that they will encourage you to tell your own conservation stories at every available opportunity.

Speaking of sharing stories, here are some examples of how AZA-accredited aquariums and zoos are engaging millions of people by sharing stories, sometimes in non-traditional ways – and getting awards as a result. Television shows from the Georgia Aquarium (Ocean Mysteries with Jeff Corwin), the Columbus Zoo and Aquarium (Jack Hanna’s Into the Wild) and SeaWorld (Sea Rescue) all have been nominated for Emmys. And the Mystic Aquarium was chosen by the Institute of Museum and Library Services to receive its National Medal for Museum and Library Service for 2014. A major criterion for the award is the institution’s impact on its local community, including educational and public engagement programs that, in Mystic Aquarium’s case, promote appreciation and understanding of our oceans and natural environment.

These accomplishments are a great reminder to all of us to keep telling our great conservation stories – the impact they make is extraordinary.

Jackie Ogden, PhD
Vice President, Animals, Science and Environment
Walt Disney Parks and Resorts
PANAMANIAN GOLDEN FROGS, CRITICALLY ENDANGERED IN THE WILD, BRED FOR FIRST TIME AT VANCOUVER AQUARIUM

For the first time in its history, the Vancouver Aquarium in Vancouver, B.C., Canada, has successfully bred Panamanian golden frogs (Atelopus zeteki), thought to be extinct in the wild, as part of a worldwide effort to preserve the species. Classified as critically endangered by the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, the Panamanian golden frog has experienced a catastrophic population decline in the wild.

The steep depopulation of Panamanian golden frogs, which are native to the mountainous, higher-altitude regions of western-central Panama, is thought to be largely due to the spread of chytridiomycosis, an infectious disease of amphibians caused by an aquatic fungal pathogen, as well as habitat deforestation and collection for the pet trade.

“Through this breeding program, the Vancouver Aquarium is joining a global initiative to conserve the Panamanian golden frogs and to save them from extinction,” says Dr. Dennis Thoney, Vancouver Aquarium’s director of animal operations. “Since this species is in critical danger of disappearing from its natural habitat, a number of institutions throughout the world, including ours, are working to maintain the genetic diversity of this species with the goal of one day re-populating their native ecosystem.”

The current goal of the Aquarium’s Panamanian golden frog breeding program is to master the successful breeding of these frogs. Ultimately, the objective is to release frogs bred in zoos and aquariums to repopulate their natural habitat in Panama, once chytridiomycosis and other threats are no longer present.

In an effort to save the Panamanian golden frogs from extinction, the government of Panama provided frogs to zoos and aquariums to create assurance populations in the event they disappear from the wild.

“Amphibians are key indicators of environmental health in our ecosystems, and they have an important role in local ecology, says Dr. Thoney. “Every single species is part of an intricate ecological web, and taking a species away from that web creates an imbalance that may have negative effects on other species.”

Known as a poisonous, brightly-coloured golden toad with a distinct “wave” used in mating, the Panamanian golden frog is one of many species that the Aquarium is working to preserve through the Association of Zoos and Aquariums’ (AZA) Species Survival Plan® (SSP) program designed to manage populations of critically endangered or threatened species.

The Vancouver Aquarium is also part of a worldwide effort, along with other zoos and aquariums, to conserve this and other amphibian species under the Amphibian Ark (AArk) project, a joint effort of key conservation organizations to ensure the global survival of amphibians, with a special focus on species that are currently endangered or threatened in the wild.
GEORGIA AQUARIUM ANNOUNCES BIRTH OF BLACK BLOTCHED STRINGRAY PUPS

The Georgia Aquarium in Atlanta, Ga., announced the birth of black blotched fantail ray pups. The Aquarium welcomes the birth of every animal, but these ray pups represent an important milestone. To the knowledge of Georgia Aquarium, these new additions are the first of their kind born in human care in the United States and only the third known birth in human care worldwide.

“As a leading institution in stingray care, Georgia Aquarium staff and volunteers are proud to be a part of such a significant event,” said Dr. Tim Mullican, senior vice president of zoological operations at Georgia Aquarium. “This birth is a testament to the quality of exhibit and animal care practices at Georgia Aquarium as reproduction is an indication of healthy, thriving animals.”

The pups were discovered by the Georgia Aquarium Dive Operations team during a routine dive in the world’s largest aquarium exhibit, Ocean Voyager. The litter consists of five pups, including two males and three females. The zoological team, working with veterinary services, currently have the pups housed in a behind-the-scenes area where the young animals can be under continuous observation during this critical, post-partum phase of their development.

This species of stingray, endemic to the South Pacific, has been gracefully gliding along the bottom of Ocean Voyager for about eight years. According to the International Union of Conservation of Nature (IUCN) Red List, this species of ray is considered vulnerable, yet another reason why this birth is so significant. Georgia Aquarium currently houses three adult black blotched fantail rays, two females, each about five feet wide and 400 pounds, and one male, four feet wide and weighing 125 pounds.

These remarkable rays are known to reach 11 feet from snout to tail and ten feet in disc width. Their diet consists mostly of bottom fishes, bivalves, crabs and shrimp. To find prey this ray often digs large holes into the sand by blowing water from its mouth. However, because the pups are still in the early stages of development, staff are hand feeding them natural diet items such as shrimp, squid and other similar foods, creating a diet based on meeting their nutritional needs. With their dramatic composition and poise in the water, these rays are undoubtedly a fan favorite and inspiration to all who watch them.

PAIR OF SCIMITAR-HORNED ORYX BORN AT CAPE MAY COUNTY ZOO

Winter is usually a quiet time at the Cape May County Zoo in New Jersey, but February proved to be a departure from the normal with the birth of two scimitar-horned oryx, the first born at the Cape May County Zoo since 1998. Zoo Veterinarian Dr. Alex Ernst reported that on 15 February, a male scimitar-horned oryx was born, and on 27 February, a female was born.

“Both calves are healthy and strong and at this time isolated with their mothers until they are old enough to be introduced to Dad. A pair of Watusi share the same habitat. The birth of two scimitar-horned oryx is significant to both the County and the Species Survival Plan® (SSP),” Dr. Ernst explained.

“Zoo Director Dr. Hubert Paluch and the Staff of both the Park and the Zoo do a tremendous job and have put Cape May County on the world map in their contribution to the AZA and the SSP. The Cape May County Board of Chosen Freeholders are proud of the staff and appreciate the work they do to ensure the safety of the animals under their care and how well they maintain the Parks and Zoo,” Freeholder Hayes added.

Scimitar-horned oryx historically were widespread across North Africa, in arid and Saharan areas, but now extinct in the wild over all its range. Captive herds are kept in fenced protected areas in Tunisia, Senegal and Morocco as part of long-term reintroduction programs. Over hunting and habitat loss, including competition with domestic livestock, has been reported as the main reasons for the extinction of the wild population of scimitar-horned oryx.

There are currently 20 AZA institutions holding 187 scimitar-horned oryx in North America. Listed as one of the most important and critical of all managed under the SSP, the scimitar-horned oryx has been
considered extinct in the wild since 1998. An estimated 500 Oryx survived at least until 1985 in Chad and Niger, but by 1988 only a few dozen individuals survived in the wild and since then there have been no confirmed reports of any wild oryx surviving in the wild.

**AARDVARK ARRIVES AT DETROIT ZOO**

A female aardvark (*Orycteropus afer*) was born at the Detroit Zoo in Detroit, Mich., on 11 February 2014, the third offspring for ten-year-old Rachaael and 11-year-old Mchimbaji. Named Kaatie, the calf weighed less than four pounds at birth and has since more than quadrupled in size. Mature aardvarks can weigh from 90-to-145 pounds and grow five-to-six feet in length.

“Kaatie is healthy and adorable, and seems to be enjoying her time with mom, nestling in close and nursing throughout the day,” said Detroit Zoological Society Curator of Mammals Elizabeth Arbaugh.

Animal care staff have been monitoring Rachaael and Kaatie closely. Aardvarks are small and fragile at birth, and the mothers are sometimes clumsy and can accidentally injure their little ones. “We are ready to intervene should mom decide to roll over or get up for a snack,” said Arbaugh.

The aardvark is an African mammal whose name derives from the Afrikaans word “earth pig”. The animal’s unusual appearance plays a role in its success as a forager. Its large ears point forward to enable it to listen for the sound of insects during nocturnal feeding forays. The snout is long and filled with hair that acts as a filter, letting scents in and keeping dirt out. Strong limbs and spoon-shaped claws can tear through the sturdiest of termite mounds and the most hard-packed earth, allowing the aardvark to trap insects with its sticky tongue, which can be up to 12 inches long. ■
The large crested toad (*Incilius cristatus*) is a critically endangered amphibian species that inhabits cloud forests on the slopes of the Mexican Sierra Madre Oriental. This species was thought to be extinct by the 1990s; however, at the beginning of 21st century it was rediscovered in Xocoyolo, a small locality in the North Sierra of Puebla. The habitat for the large crested toad is a 300 meter deep rift where the Apulco River flows. The cloud forest in the rift is still well preserved and the river is an excellent breeding habitat for the toads. Nowadays, the large crested toad population from Barranca de Xocoyolo is the last known wild population of this species.
In 2009, Africam Safari in Puebla, Mexico, started a conservation program for the large crested toad. This program was focused mainly on ex-situ reproduction, but also has an in-situ component aimed at mitigating possible threats that the large crested toad faces in the wild. The program started with the collection of adult toads as founders for the captive population. We also surveyed the local population to evaluate the impact people are having on the environment, and we carried out field sampling along the Apulco River to assess the toad’s population size and the quality of the remaining habitat. During the fieldwork, we observed the toads coming down to the river and laying eggs. In later visits we observed tadpoles and metamorphs coming out from the river, and we have established that the habitat in Xocoyolo seems to be still suitable for the toads.

Our ex-situ program has already had two successful reproductive events with the large crested toad: the first one in December 2012 and the second in March 2013. Our toads laid 856 eggs in the first clutch and 300 in the second. Tadpoles hatched after four days and completed metamorphosis between 40-and-120 days. The survival rate was 42 percent from the first clutch and 75 percent from the second clutch. However, after having succeeded in breeding this species, we started thinking about the best destination for this species, we started thinking about the best destination for that many toads. So we decided to release some of our captive bred toads to the original site where parents were collected. The toads’ reintroduction by itself was not our only goal.

We wanted to involve people from the community. During April, Africam’s Education Department performed workshops directed at school children from the community of Xocoyolo. These workshops created awareness among children about the importance of amphibians as environmental indicators, the environmental conditions they need to survive, the importance of the river and the forest, and the actions they can take to protect their environment. During workshops we showed children and their teachers some young toads so they could have a sense of ownership in the project and the protection of the species. At the end, participants were told that we were going to go back and release some toads in the forest with their help.

During June, we prepared the toads from the first clutch to be released. They hatched in January and completed metamorphosis during February and March. Their size ranged from 14mm-to-20mm and their weigh ranged from 0.2g-to-1.0g. The toads were submitted to medical tests and treated against chytridiomycosis to avoid introducing diseases to the wild population. They were marked using the toe clipping method. We divided them in two groups according to their size and each group was marked on a different toe so we can recognize them in future recaptures and evaluate their survival according to their size.

At this point we already had almost everything we needed to release the toads. The animals were ready. They were healthy and the corresponding markings had been made. We also had already prepared people from the community to help us release the toads. So we were just waiting for the permits to be ready. Once we received the permits, we planned the trip for early July. The reintroduction would take us two days to allow most children participate. So we called them and asked the teachers to make two groups. Each group would walk down the rift with us one day to release the toads.

Finally, the expected day came and we travelled to Xocoyolo to release the toads. The walk down the rift lasted an hour or so. All the participants were very enthusiastic about the event because each one had the privilege to release two toads. They also had the privilege to see some wild individuals we found on the way down. We went back to Puebla after having released our toads in the wild with the hope that people from the community now identify with the toads and their habitat.

We have achieved some important goals in our program, but there is still much to do. Our captive colony still has 250 offspring from two different clutches. So now we are planning to rear them to a bigger size and release some of them in the future. The others will be kept in our colony. We are also planning to continue the field work to evaluate the success of the reintroduced toads. We will plan our visits during the breeding season with the aim of monitoring the adult population, the breeding site and their clutches, hoping to find some of the toads we released. Then we will continue with an annual monitoring of the wild population as well as the education program to involve people in the habitat conservation. This is just the beginning, but the future looks promising for the large crested toad.

I want to thank all the people that have made this project possible. Firstly, I want to thank Amphibian Ark for supporting the project. Also, my collaborators from the Herpetology Department of Africam Safari: José Antonio Díaz Vallejo and Julieta Contreras Rodríguez; the Veterinary Department: Carmen Carmona and Marco Benítez; the Education Department members: Laura Aceves, Patricia Cortés, Josué Campos, Francisco Paredes, Eva Poblano, Yasmin Otero; our photographer, Edith Ramos; and Africam’s Director Frank Carlos Camacho.

José Alfredo Hernández Díaz is the Curator of Reptiles and Amphibians at Africam Safari in Puebla, Mexico.
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ANIMAL WELFARE
STUDY REVEALS EFFECTIVE TOOLS TO REDUCE PACING IN POLAR BEARS
By Sharon Dewar and David Shepherdson

A new study published in the journal of Applied Animal Behaviour Science analyzed 55 polar bears living at 20 different zoological facilities over a one-year period. The authors assessed exhibit size and configuration, social structure (if bears were housed with other bears or alone) as well as husbandry practices. They recorded the bear’s behavior at various intervals throughout the year, tested fecal samples to measure hormone levels, and used a polar bear personality test to assess each bear’s temperament based on how it engaged or did not engage with a novel object being placed in its exhibit.

The study, led by David Shepherdson from Oregon Zoo, found a clear connection between pacing behavior and environmental factors such as husbandry and exhibit design. Bears that experienced good enrichment programs (programs designed specifically to encourage natural behavior and engage and interest the bears), and exhibits with a view out to their surroundings, were less likely to pace. They also found that the levels of hormones often associated with chronic stress were lower for bears that paced less and for bears in larger exhibits thus confirming the long-held belief by zoo keepers that efforts to reduce the behavior are worthwhile.

The study uncovered an intriguing connection between pacing and personality. Bears that demonstrated more caution and were “slow to approach” the novel object in their exhibit were classified as having a “shy” temperament, whereas those that displayed less caution and were quicker to approach the item could be classified as having a temperament that is more exploratory or bold. It turns out that shy bears pace more frequently. With this knowledge, the researchers suggest that zoos have an opportunity to proactively assess a bear’s temperament early in life and can more clearly and proactively target which bears might benefit from more enhanced behavioral management programs to increase welfare.

Another somewhat surprising finding that may be contradictory to what animal experts might expect, is that polar bears that live with other bears seem to be less likely to pace. Wild polar bears are solitary creatures by nature, often preferring to keep distance from one another. Zoos have often mimicked this solitary nature by housing animals alone or in small groups believing this is preferred and would provide the most appropriate living environment. The authors recommend zoos might explore opportunities for social companionship for these animals when feasible and appropriate.

The authors point out that many zoos are already building new and modern polar bear exhibits that provide bears more space and viewing opportunities. The study also found good evidence that positive reinforcement training also contributes to reduced pacing, but this area needs further study.

Sharon Dewar is the Director of Public Relations at the Lincoln Park Zoo

David Shepherdson, PhD, is the Deputy Conservation Manager at the Oregon Zoo

Note from Nadja Wielehnowski, Chair of AZA’s Animal Welfare Committee:
This series is intended to provide regular communications about the work of the Animal Welfare Committee and to better inform AZA members about animal welfare-related news.
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TEXAS STATE AQUARIUM CELEBRATES GRAND OPENING OF NEW NEARSHORE EXHIBIT

The Texas State Aquarium announced the public grand opening of its newest exhibit, Nearshore, on 9 April. Construction of the new $735,000 exhibit began in November 2013.

The new exhibit is the first area visitors encounter as they enter the Aquarium – creating an introduction to the Gulf of Mexico and the gradual deepening of waters as guests tour the facility. The Nearshore exhibit portrays life at the shoreline, where sand dunes and mangroves meet shallow saltwater habitats. The new space houses species both beneath and above the water - from Atlantic stingrays, American alligators, flounder and spotted sea trout, to avian species like the roseate spoonbill, green heron, and white ibis.

Many of the animals in the new Nearshore exhibit were brought to the Aquarium's Second Chances Wildlife Rehabilitation Program injured or ill, were rehabilitated and deemed not releasable, and now serve as ambassadors to their wild counterparts.

“This $735,000 project is the first of many planned Aquarium exhibits which will take our visitors on a fully immersive journey into diverse habitats,” says Jesse Gilbert, vice president & chief operating officer. ■
CONSERVATION SPOTLIGHT
Audubon Aquarium of the Americas

At the 2010 Association of Zoos and Aquariums (AZA) Annual Conference, the Field Conservation Committee set an aspirational goal that in three years, every member institution would be dedicating three percent of its operating budget annually to field conservation. Each month, this feature will highlight the work of one of the zoos or aquariums that have achieved this goal and how they have made field conservation an integral part of the work they do.

Audubon Aquarium of the Americas Mission
Audubon Aquarium of the Americas is part of the not-for-profit Audubon Nature Institute in New Orleans, La., operating ten parks and museums dedicated to Celebrating the Wonders of Nature.

Conservation Efforts
Audubon Aquarium of the Americas creates hope for disappearing wildlife through unprecedented partnerships and collaborations, bringing together a broad spectrum of interests in a robust effort to bolster dwindling animal populations.

“Audubon Aquarium of the Americas is committed to joining with AZA in taking a leadership role in conservation, particularly in the area of field work,” said Audubon Nature Institute President and CEO Ron Forman. “We know the critical importance of taking our mission beyond the boundaries of our attractions. Dedicated experts at AZA zoos and aquariums exemplify this philosophy and put it to work every day.”

Audubon Aquarium of the Americas Conservation Facts

• Audubon’s Gulf United for Lasting Fisheries (G.U.L.F.), founded in 2012, continues to work with the Louisiana Department of Wildlife and Fisheries in obtaining third party sustainability certification for blue crab and other important commercial species. Additionally, G.U.L.F. has been contracted by the Gulf States Marine Fishery Commission to assist all five Gulf States in executing Marine Advancement Plans, which are roadmaps tailored to address areas in fisheries management where there is room for more sustainable practices. G.U.L.F. is a strong presence in regional communities, working with marine managers to collect data, and educating retailers, fishers and consumers about the work of G.U.L.F., and its power to positively affect our region’s preservation efforts.

• The Louisiana Marine Mammal and Sea Turtle Rescue Program (LMMSTRP), coordinated by Audubon Aquarium of the Americas, is the primary partner for the state of Louisiana in marine mammal and sea turtle rescue operations.
Louisiana for rehabilitating marine mammals and sea turtles at the Audubon Aquatics Center. LMMSTRP works at the direction of state and federal agencies such as the National Oceanic and Atmospheric Administration and Louisiana Department of Wildlife and Fisheries to respond to stranded marine mammals and sea turtles, to collect data about existing populations of marine animals along the Louisiana coast and waterways, and to assist and support researchers in the conservation of marine species.

Conservation Success Story
In the wake of the Deepwater Horizon oil spill, the Louisiana Marine Mammal and Sea Turtle Rescue Program (LMMSTRP), along with federal and state agencies, coordinated a massive sea turtle rehabilitation effort. In early May 2010, Audubon began receiving oiled animals, including endangered Kemp’s ridley, green, hawksbill and loggerhead sea turtles. The Audubon Aquatic Center was transformed into a massive response center for marine mammals and sea turtles. LMMSTRP staff and volunteers worked tirelessly to rehabilitate oiled marine life, resulting in a total of 193 sea turtles rescued and released back into the Gulf of Mexico and three bottlenose dolphins rescued and rehabilitated. Since the disaster, Audubon has taken a leading role in the development of a coastal network to greatly improve coordinated cooperation in wildlife disaster response.

To learn more visit www.auduboninstitute.org.
ANNOUNCEMENTS

A BIG THANK YOU

Each year, many professional colleagues volunteer their time to assist the Accreditation Commission by conducting accreditation inspections and certification inspections. The process is a dynamic one that continues to educate and enrich all involved. We are lucky to have the pleasure of working with the individuals involved in the inspections.

On behalf of the Accreditation Commission, and AZA, we wish to recognize and express our sincere gratitude to all who assisted with our Fall/Winter cycle and participated in inspections of institutions that processed in March, 2014. They have performed an enormously important service for AZA and for our profession.

Denny Lewis  
Vice President, Accreditation Programs

Jennifer DiNenna  
Manager, Accreditation Programs

Our March 2014 Accreditation Inspectors

Jim Anderson  Joe Choromanski  Ryan Gulker  Nancy McToldridge  Tom Schmid
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John Chapo  Katie Gillis  }

ACREDITATION AND CERTIFICATION REVIEW SEPTEMBER 2014

Listed below are the institutions to be evaluated for accreditation or certification by the Association of Zoos and Aquariums (AZA) Accreditation Commission when it meets September 12 - 14, 2014 at the AZA Annual Conference in Orlando, Fla. In most cases, inspections for these institutions and facilities will take place between May and August, culminating in a hearing before the Commission in September.

Anyone wishing to offer comments, positive or negative, should submit them in writing as soon as possible to Jennifer DiNenna, Manager, Accreditation Programs, AZA, 8403 Colesville Road, Suite 710, Silver Spring, MD 20910. Comments can also be faxed to (301) 562-0888 or e-mailed to Jennifer DiNenna at jdinenna@aza.org.

Accreditation Applicants

Assiniboine Park Zoo  Binder Park Zoo  Omaha's Henry Doorly Zoo & Aquarium  S.E.A. Aquarium  Walter D. Stone Memorial Zoo
Binghamton Zoo at Ross Park  Bramble Park Zoo  Philadelphia Zoo  SEA LIFE Grapevine  Woodland Park Zoo
Butterfly Pavilion  Central Park Zoo  Potawatomi Zoo  Sedgwick County Zoo  Zoo de Granby
Children's Zoo at Celebration Square  Children's Zoo at Celebration Square  Prospect Park Zoo  Staten Island Zoo
Cincinnati Zoo & Botanical Garden  Cleveland Metroparks Zoo  Queens Zoo  Steinhardt Aquarium  Sunset Zoological Park
Dolphin Island  Franklin Park Zoo  Saint Louis Zoo  Tautphaus Park Zoo  Tracy Aviary
Greenville Zoo  Greenville Zoo  Salisbury Zoological Park  Utah’s Hogle Zoo

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MARCH 2014 ACCREDITATION/CERTIFICATION RESULTS

The Association of Zoos and Aquariums (AZA) is pleased to announce the results of the Accreditation Commission hearings held in March 2014 in Memphis, Tenn.

We would like to welcome a newly accredited member institution, Acuario de Veracruz, Veracruz, Mexico.

**Accredited for another cycle were:**
- Abilene Zoological Gardens, Abilene, Texas
- Adventure Aquarium, Camden, N.J.
- Audubon Aquarium of the Americas, New Orleans, La.
- Bermuda Aquarium, Museum and Zoo, Flatts, Bermuda
- Birch Aquarium at Scripps, La Jolla, Calif.
- Buttonwood Park Zoo, New Bedford, Mass.
- Dallas World Aquarium, Dallas, Texas
- Florida Aquarium, Tampa, Fl.
- Fossil Rim Wildlife Center, Glen Rose, Texas
- Gladys Porter Zoo, Brownsville, Texas
- Greensboro Science Center, Greensboro, N.C.
- Jenkinson’s Aquarium, Point Pleasant Beach, N.J.
- John G. Shedd Aquarium, Chicago, Ill.
- The Living Desert, Palm Desert, Calif.
- Memphis Zoo, Memphis, Tenn.
- Museum of Science, Boston, Mass.
- Nashville Zoo, Nashville, Tenn.
- National Mississippi River Museum & Aquarium, Dubuque, Iowa
- Oakland Zoo, Oakland, Calif.
- Reid Park Zoo, Tucson, Ariz.
- The Seas, Lake Buena Vista, Fla.
- Tennessee Aquarium, Chattanooga, Tenn.
- Zoo Atlanta, Atlanta, Ga.

**Certified for another cycle were:**
- Natural Encounters, Inc., Winter Haven, Fla.
- White Oak Conservation Center, Yulee, Fla.

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**2014 AZA PHOTO CONTEST**

Photos must be taken in 2014 or the last three months of 2013 by staff or volunteers at an AZA-accredited institution. CONNECT staff will judge the photos, and the winner will appear on the December 2014 cover. Other exceptional photos will be highlighted inside the magazine. The photos may also appear on AZA’s website and/or other promotional materials.

**Format for Submission**

Submissions should include the name of the photographer, the AZA institution, the species, the date of the picture, and the equipment used. Only one photo entry will be accepted per photographer, so send in your best image. Pictures can include animals, people, and zoo or aquarium scenes – if you think it will make a good cover, send it in.

**Deadline:**

The deadline for entries is 15 September 2014.

**Format:**

JPG, TIFF or EPS; 300dpi and 9”x12” in size (juegos preferred). Send to: Both electronic and hard copy images will be accepted – though electronic images are preferred. All submissions become the property of AZA and will not be acknowledged or returned. Send electronic images to Tim Lewthwaite at Tleuthwaite@aza.org with “Photo Contest” in the subject line. **Hard copies may be mailed to:** 2014 Photo Contest; Tim Lewthwaite; AZA Publications Manager; 8403 Colesville Road, Suite 710; Silver Spring, MD 20910-3314

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By entering the contest you grant to AZA, and its successors and assigns, the non-exclusive, worldwide, perpetual right and license to use, display, reproduce, publish, transmit, and distribute your photograph on AZA’s website, in our magazine, and/or in any other promotional materials. Your grant and license shall also apply to any reprints, revised editions, or derivative works in any media or format, whether now or hereafter known, including without limitation other kinds of print media and electronic media.

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**Release Form:**

To be considered for publication in CONNECT, all contest photos that include people must be accompanied by AZA’s Model Release Form signed by each person depicted. Download the Photo Release Form (in PDF) here: www.aza.org/AZAPublications/PhotoContest/
MEMBER UPDATES

WELCOME NEW MEMBERS

AZA is pleased to warmly welcome new Professional Affiliate, Professional Fellow, Conservation Partners, Accredited Institutions, Certified Related Facilities and Commercial Members.

NEW PROFESSIONAL AFFILIATE MEMBERS

Cassie Anderson, Lead Teacher, Sunset Zoological Park
Heather Bell, Operations Coordinator, The Wilds
Paula Blair, Animal Keeper I, The Maryland Zoo in Baltimore
Colin A. D. Borck, Individual Giving Director, Chicago Zoological Society – Brookfield Zoo
Megan Rae Cotton, Animal Care Specialist, Busch Gardens Tampa Bay
Andrew Feldkamp, Marine Mammal Trainer, John G. Shedd Aquarium
Laura Gruber, Animal Care Specialist, Disney’s Animal Kingdom
Alisha Huettig, SeaWorld Orlando
Katherine Quinn Kurec, Animal Care Specialist, Busch Gardens Tampa Bay
Daniel L. Lorenzen, Security Manager, Oregon Zoo
April Marie Marler, Animal Health Technologist, Dickerson Park Zoo
Ben Martino, Aquarist, Audubon Aquarium of the Americas
Georgia Minnich, Exhibits Coordinator, North Carolina Aquarium at Pine Knoll Shores

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Kerri Perusse, Human Resources Manager, Palm Beach Zoo

Janet Rose, Senior Director of Development, Pittsburgh Zoo and PPG Aquarium

Lillian E Schemadovits-Norris, Zoo Keeper, Village Dept, Wildlife Safari

Kyle Soller, Education Manager – Hurvis Center for Learning Innovation & Collaboration, Lincoln Park Zoo

Michael D. Stafford, Veterinarian, Dickerson Park Zoo

Erin Stromberg, Animal Keeper, Smithsonian National Zoological Park

Kate Sulzner, Wellness Coordinator, San Francisco Zoological Gardens

Amy Walter, Volunteer Programs Manager, Nashville Zoo, Inc.

Elise Ward, Zookeeper, Arizona-Sonora Desert Museum

Carol J. Woodson, Special Events Manager, Jackson Zoo

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Ashley Bowen, General Curator & Conservation Programs Manager, Pueblo Zoo

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<td>520-571-1999</td>
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<td>215-564-0250</td>
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<td>GLMV Architecture, Inc.</td>
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<td>Go Age</td>
<td><a href="http://www.goape.com">www.goape.com</a></td>
<td>800-971-8271</td>
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<td>Hammerhead International</td>
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<td>888-429-4635</td>
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<td>International Association of Amusement Parks &amp; Attractions (IAAPA)</td>
<td><a href="http://www.IAAPA.org">www.IAAPA.org</a></td>
<td>703-836-4800</td>
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<td>Madewell Products Corporation</td>
<td><a href="http://www.madewell.net">www.madewell.net</a></td>
<td>800-741-8199</td>
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<td>Mariculture Technologies International</td>
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<td>904-737-8287</td>
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<td>WDM Architects P.A.</td>
<td><a href="http://www.wdmarchitects.com">www.wdmarchitects.com</a></td>
<td>316-262-4700</td>
<td>21</td>
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CALENDAR

JULY 2014

16–18: Mexican Wolf Species Survival Plan® (SSP) Meeting is being hosted by the Endangered Wolf Center in St. Louis, Mo. The meeting brings together conservationists, wildlife managers, and zoo professionals from all over the United States and Mexico to plan and improve the ex-situ and in-situ management of this critically endangered wolf. In addition to the SSP meeting, a Capture Forum will be held on July 18 that will focus on sharing knowledge and enhancing capture techniques, which can be challenging for a recovery species. This year marks the 20th Anniversary of the Mexican Wolf SSP. For more information contact Regina Mosotti at rmosotti@endangeredredwolfcenter.org.

SEPTEMBER 2014

12-18: This September, AZA is partnering with the International Marine Animal Trainers’ Association (IMATA) for the premier event for zoo and aquarium professionals. Hosted by Disney's Animal Kingdom, The Seas with Nemo and Friends, and SeaWorld Orlando, the 2014 Annual Conference in Orlando brings together more than 2,500 leaders in the community to network with peers, explore ideas and best practices, share successful programs, and learn new technologies and services. Attendees are guaranteed to be challenged with vibrant speakers from inside and outside the community, expert led programming, face-to-face meetings with colleagues, more than 150 service providers in the Exhibit Hall, exciting networking and social events. For more information, visit www.aza.org/annualconference.

For more information about these courses and other opportunities to enrich your career, visit www.aza.org/professional-training

SEPTEMBER 2014

4–7: The 12th Annual Symposium on the Conservation and Biology of Tortoises and Freshwater Turtles will be held in Orlando, Fla. The meeting is sponsored by Zoo Med Laboratories, Inc. and is co-hosted by the Turtle Survival Alliance and the IUCN Tortoise and Freshwater Turtle Specialist Group.

As the largest gathering of non-marine turtle biologists in the world, the symposium has hosted an average of 244 attendees from a total of 35 countries over the past five years and provides an unmatched opportunity for networking and strategizing turtle conservation. Visit www.turtlesurvival.org for more information or to register. Contact Hbowe@turtlesurvival.org for more information.

AUGUST 2014

5-6: The Detroit Zoological Society’s Center for Zoo Animal Welfare is hosting a 2-day fruit bat husbandry course. The course will benefit individuals with an extensive background in fruit bat management as well as those with limited or no experience. Participants will learn husbandry techniques in a practical hands-on setting. Presentations will discuss biology, ecology, and conservation issues affecting bats. Course material will also include anesthetia, tissue sampling, training & enrichment, restraint techniques, and identification options. The Great Welfare Workshop will be held at the Detroit Zoo in Royal Oak, Mich. For more information, visit www.czaw@dzs.org.

8-12: The 41st Annual American Association of Zoo Keepers (AAZK) National Conference is being hosted by Disney's Animal Kingdom and the Greater Orlando AAZK Chapter in Orlando, Fla. “Keepers Making a World of Difference” will highlight how zoo and aquarium professionals work to advance animal care and conservation. Core and specialized workshops, as well as paper and poster sessions will engage delegates and focus on continuing education and professional development. There will be opportunities to network, share best practices, knowledge and techniques and be challenged with husbandry, training, enrichment and animal welfare topics. Explore the possibilities together during social events, Zoo Day and at the Exhibitor Hall.

Arrive early for our Pre-Conference trip to Busch Gardens, hosted by the Tampa Bay AAZK Chapter or stay late and join the Association of Zoos and Aquariums (AZA) and the International Marine Animal Trainers’ Association (IMATA) for the 2014 Annual Conference, September 12-18, hosted by Disney's Animal Kingdom, The Seas, and Sea World Orlando. For more information, visit www.greaterorlandoaazk.org or www.aza.org/annualconference.

5-6: Lubee Bat Conservancy is hosting a 2-day fruit bat husbandry course. This course will benefit individuals with an extensive background in fruit bat management as well as those with limited or no experience. Participants will learn husbandry techniques in a practical hands-on setting. Presentations will discuss biology, ecology, and conservation issues affecting bats. Course material will also include anesthesia, tissue sampling, training & enrichment, restraint techniques, and identification options. Lubee Bat Conservancy is a world-renowned breeding and conservation center currently housing over 200 bats representing 12 species. For more information, contact Brian Pope at bpop@lubee.org.

November 2014

5-6: Over 200 zoo and aquarium professionals will convene to conduct in-situ and ex-situ conservation efforts across Borneo and Sumatra for this very special event. For more info: orangutan@houstonzoo.org.
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