



Penguin Conservation

The Penguin TAG Newsletter
Volume 17; Number 1 June 2013



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**ASSOCIATION
OF ZOOS &
AQUARIUMS**

From the Editors

This issue features information on improvements made to Magellanic penguin nesting sites in an existing outdoor exhibit. Jason Martir describes how SeaWorld California penguin keepers modified the natural landscaping, and used a new design for artificial burrows to provide better shelter and improve nest site selection. Their efforts yielded new pairings, the first parent-reared chick in ten years, and also enhanced the guest experience by providing a more natural-looking exhibit.

Margaret Roestorf provides five important SANCCOB stories. [Story 1](#) describes how a University of Pretoria veterinary dentist successfully repaired the badly damaged lower mandible of an African penguin brought to SANCCOB after being struck by a car. The knowledge gained will benefit other birds with severe beak injuries in the future. [Story 2](#) provides an update on the 2012 “Christmas” chicks. Over 350 African penguin chicks, abandoned at the end of the breeding season, were admitted to SANCCOB for critical care and rearing. These chicks would have faced starvation if not for the efforts of dedicated SANCCOB staff and volunteers. In [Story 3](#), SANCCOB expands its range into the Eastern Cape. Penguins Eastern Cape (PEC) has now merged with SANCOOB and will now operate as SANCCOB Eastern Cape. This transition will further benefit African penguin conservation efforts by ensuring that Cape St. Francis colonies are included in future research and rehabilitation planning. [Story 4](#) welcomes two new full-time staff members to the newly acquired Eastern Cape facility and six new National Research Fund (NRF) interns to the Western Cape facility. [Story 5](#) provides an update on the September 2012 SELI 1 oil slick. SANCCOB successfully rehabilitated 254 seabirds, and reared African penguin chicks affected by this major slick, resulting in a 95% success rate.

Rosamond Gifford Zoo staff, Adrienne Whitely and Deborah Tobin, presented a workshop on Humboldt penguin breeding management at the 2012 American Association of Zookeepers (AAZK) National Conference (hosted by RGZ). Since 2006, the RGZ staff has contributed to the sustainability of the captive Humboldt penguin population by producing more than 35 SSP-recommended chicks. Linda attended the conference, and provides a synopsis of the workshop and an account of RGZ's *Penguin Coast* exhibit.

Lauren DuBois describes the *Penguin Awareness Cocktail Party* hosted by SeaWorld San Diego in celebration of Penguin Awareness Day. This evening event included a Magellanic penguin meet-and-greet with souvenir photo opportunities, behind the scenes tours, a guest speaker from Scripps Institution of Oceanography, an auction, and a special penguin-themed cocktail. All auction proceeds and a portion of ticket sales were used to support the SeaWorld & Busch Gardens Conservation Fund, which supports penguin and other important species conservation projects worldwide.

In addition to our usual features, we include a summary of some of the questions which have appeared on the Penguin Listserv over the past few months. We will continue to include these in future issues, and would like to add that many of the questions raised will be addressed in the forthcoming Penguin Animal Care Manual. We have also included descriptions and photos of two unique and interesting penguin anomalies.

As always, we thank all of our contributors: Jason Martir (SeaWorld San Diego), Margaret Roestorf (SANCCOB), Lauren DuBois (SeaWorld San Diego), Dee Boersma (University of Washington), Lindsay Ireland (Detroit Zoo), Gayle Sirpenski (Mystic Aquarium), Deana Walz (Living Planet Aquarium), and Adrienne Whitely and Deborah Tobin (Rosamond Gifford Zoo) for hosting the Humboldt penguin breeding management workshop.

We look forward to seeing you Bristol!

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Penguin TAG Mission: To provide leadership for the management of penguins *ex situ* in order to maintain healthy, sustainable populations for the purpose of:

- Engendering appreciation for these charismatic species that are indicators of the health of marine and coastal environments.
- Promoting conservation concern and conservation action through education programs and internet resources.
- Furthering *in situ* conservation and research in support of *ex situ* management.

Penguin TAG Website: www.zoopenguins.org

Improving Magellanic Penguin Nesting Sites at SeaWorld San Diego

Jason Martir, *Senior 1 Aviculturist, SeaWorld San Diego*

For the 2012 Magellanic breeding season SeaWorld San Diego penguin keepers explored using the natural exhibit landscaping along with a new design for artificial burrows to maximize breeding potential. This work was done in part because established pairs in the colony were monopolizing historic nesting sites.

The outdoor exhibit originally opened in 1983. It is an open air exhibit with a 2:1 land to pool ratio. The land area consists of dirt with sections of EasyTurf® synthetic grass and gunite rockwork. The pool is kept at 50°F (10°C) and is supplied with filtered saltwater from Mission Bay. The seasonal temperatures can range from 40°F (4.5°C) during winter nights to 90°F (32°C) or higher during summer days. The majority of the landscaping consists of mature tree mallow plants (*Lavetara maritima bi-color*). These salt tolerant plants do well with a daily supply of water from exhibit maintenance and fertilizer from the birds. The bird's breeding season generally runs from the beginning of March when pairs first form until May when the last chicks hatch.

The first part of renovating the exhibit for the upcoming breeding season began with the landscaping. In order to provide natural shelter the plants were selectively pruned starting in June 2011. The plants were trimmed to encourage lateral growth and thickening of the foliage. Large grasses were also added to the exhibit at the beginning of the 2012 season. These plants helped to provide both visual blockers between sites and a source of natural nesting material.



Natural nesting sites located under the tree mallows.

The second aspect of exhibit renovation involved the nest site covers. In seasons past we had used wood teepee type shelters that while providing shade and rain protection limited the amount of airflow in the nest and were not very aesthetically pleasing. This year a cover was designed that consisted of a vinyl-clad frame wrapped in shade cloth. This material was more versatile than wood because shapes could be custom made to meet the dimensions of a certain nest location. The airflow was improved and the material proved to be very easily cleaned and disinfected. The covers also provided adequate light rain protection with most of the water running down the sides of the arch. When weather reports showed that major storms would be arriving, additional protection was added. Rain shields were constructed from the vinyl-clad frame covered in Visqueen™ plastic sheeting. They were built slightly larger than the existing nest structures so they could easily be placed directly over the nest site when needed.

The results showed a positive trend in nest site selection. While the number of nesting pairs remained the same as the previous year (at ten) more pairs opted for sites under the tree mallows and around the additional landscaping. The lower profile of the new nest site covers helped the exhibit maintain a more natural look for the park guests as well. In addition we had first time pairings from five of our younger birds and our first parent raised chick on exhibit in ten years.

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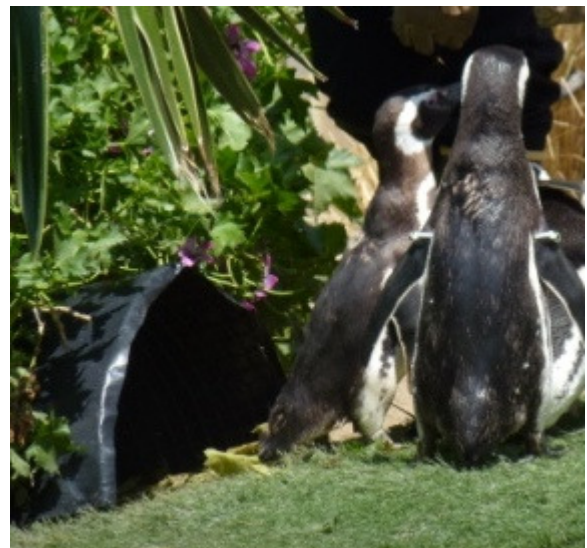


Nest cover in place showing how other natural elements (tree limbs, vegetation) can be incorporated to provide nest security.



Chick at 15 days under right wing of male parent and showing nest cover in place.

Update: Slight modifications to the initial design took place for the 2013 breeding season. In order to eliminate the need to add and remove the Visqueen™ covers a layer of Visqueen™ was added under the shade cloth. While airflow was lessened, HOBO® temperature data loggers showed that the overall temperature was a few degrees lower when compared with the temperature reading of the structures covered only in shade cloth. The length of the covers was also increased wherever possible to allow a larger amount of area to soak up any rain before it could reach the egg/chick.



2013 cover modification with Visqueen® in place under vegetation.



Chick raised in the nest in 2013.



2013 cover modification showing the elongated design.

All photos courtesy of SeaWorld San Diego.

The Penguin Coast at the Rosamond Gifford Zoo

Linda Henry, *Editor*

The Rosamond Gifford Zoo was host to the 2012 American Association of Zoo Keepers (AAZK) National Conference last September. As part of the conference program, Adrienne Whitely, Rosamond Gifford Collections Manager, and Deborah Tobin, Penguin Coast keeper, presented a workshop on Humboldt penguin breeding management. Rick Smith, of the St. Louis Zoo, presented on Humboldt penguin conservation in Peru and the ongoing work at Punta San Juan. The conference workshop included behind-the-scenes access to the penguin support area, fish freezer and life support systems. On Zoo Day the penguin exhibit was popular with all the conference attendees who crowded the viewing area during the penguin feeding presentation.

The Penguin Coast exhibit is popular with the zoo's regular visitors as well. The penguins can be observed from six different perspectives with both above and below water viewing windows. Several of the viewing windows are sheltered in cave-like alcoves that provide interactive educational graphics highlighting Humboldt penguin natural history and conservation status. One large window is at ground level, putting zoo visitors nose-to-bill with some of the more than 30 Humboldt penguins that call the Penguin Coast home.



Rosamond Gifford Zoo visitors get up close with the Humboldt penguins at the large viewing window. (Linda Henry)

but in 2011 they also nested in the fall.

During the workshop presentation, Adrienne explained that the Humboldt colony has produced more than 35 SSP-recommended chicks since 2006. The chicks are parent or foster-reared with careful monitoring by keepers. Adrienne's philosophy for success is tri-fold: communication, observation and consistency. At the onset of the breeding cycle, a plan is developed and a protocol established. All breeding activity is recorded with careful attention to territorial conflicts so that ideal foster pairs can be identified. Debra is the primary keeper for the area to provide consistency for the relief and intern staff.

Nesting burrows are available year round in the main exhibit with seasonal access to the indoor areas where #200 air kennels serve as nest burrows. The crates are lined with Dri-Dek® matting, clay cat litter and rocks. Debra has observed that because the birds tend to return to their established nests, and because only enough crates are provided indoors for the established pairs, the least aggressive birds generally occupy the outdoor nests. Additional nesting material consists of rocks made available to both indoor and outdoor nesters. Nest maintenance for those birds in crates consists of changing the crates periodically. A new crate is

Rosamond Gifford's penguin colony occupies an outdoor exhibit area with a rocky shoreline appearance and large simulated boulders jutting vertically along the back and side perimeters. The freshwater pool holds 50,000 gallons (189,271 liters) and is chilled to about 55-65 degrees F (12-18 degrees C). The volume is cycled three times per hour with biological sand filters and ozonation. A simulated rock surface provides substrate, and the concept also includes a small island feature, three smaller wading pools and several built-in burrows that have concrete, removable covers and drainage pipes. Two indoor areas provide off-exhibit holding and breeding space.

Despite New York's inclement winter weather, the Humboldt penguins have access to their exhibit daily year round. Severe storms sometimes, though rarely, require the birds to be shifted to the indoor holding. The penguins generally go into breeding season in March,

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outfitted with fresh matting, litter and rocks. Then the old nest is pulled out, the new crate put in place and the old crate is turned around to show the birds the clean crate. The eggs or chicks are transferred by the keeper and the parents follow.

Nesting birds continue to receive normal amounts of their base diet, which consists of capelin and herring, as they head into breeding. No additional vitamins are provided in the pre-lay period. Birds are fed in the indoor holding area and have been trained to go to the scale voluntarily when shifting between the outdoor and indoor areas. No birds are fed on the nest in order to encourage incubation and chick brooding bout exchanges. Once eggs are laid, they are closely monitored by Adrienne and Debra. The first egg candling and egg weight is scheduled for about seven to 10 days into incubation and no later than 2 weeks. Candling and egg weights are then scheduled once weekly until pipping. When eggs are removed for candling, a dummy egg is placed until the real egg is returned. Based on the breeding observations, foster opportunities are evaluated and eggs fostered. Sometimes, both eggs may be left in a nest for a pair to rear but fostering can reduce the burden on pairs that might otherwise be required to raise two chicks. In one instance, Adrienne described successfully fostering a 4-5 day-old chick to a pair that had laid an egg only the week before.



A behind-the-scenes look into the Penguin Coast exhibit. (Linda Henry)

As chicks learn to accept food from keepers, their feed interval is transitioned to two feedings per day.

Introductions of juvenile birds back into the colony are carried out carefully and plans are based on individual bird behaviors and responses. In general, adult birds are shifted indoors at the time the younger birds are introduced which allows the younger birds to have time to explore the exhibit environment. Then select adults are introduced to the exhibit with the juveniles and monitored for aggression. Later, the entire colony is allowed access as the juveniles are integrated into the colony.

Adrienne and Debra and their team have done a great job implementing the SSP recommended breeding for Humboldt penguins. They have grown the captive Humboldt population and contributed to the sustainability of this species. They have developed a comprehensive approach to Humboldt penguin management that is proving successful. If you have questions for Adrienne or Debra they can be contacted at AdrienneWhiteley@ongov.net or dtobin@rgzaazk.org. Visit the Rosamond Gifford website at <http://www.rosamondgiffordzoo.org> and the AAZK website at www.aazk.org.

Newly hatched penguin chicks are checked within 24 hours of emerging from the shell. A hatch weight is obtained and egg shell pieces are gathered for gender testing. The chick is examined for closure of the umbilicus and for the strength of the feeding response. Provision of food to parents is increased up to five times daily. The size of the fish presented is based on the age of the chicks, i.e., smaller fishes such as silversides are offered to parents of younger chicks. Daily weights are obtained on chicks for the first 3 weeks of life reducing to bi-weekly weights thereafter through weaning. Weaning may begin as early as 6 weeks or as late at 9 weeks of age. At weaning, chicks are removed from the nest to an indoor holding area where they become habituated to staff, receive scale

Five Important SANCCOB Stories

Margaret Roestorf, *Development Director, South African Foundation for the Conservation of Coastal Birds (SANCCOB), South Africa*

Story 1 - Beakie: A big adventure for a little penguin

Thirteen October 2012 marked a day of celebration for African penguins the world over. While SANCCOB celebrated the day with the release of a group of penguins rehabilitated at SANCCOB back into the wild, Beakie was not that lucky. Knocked down by a speeding vehicle in Simon's Town (Cape Town), his lower mandible was severely damaged by the impact of the car and his lower beak split in half.

He was brought to SANCCOB where the veterinary team tried several procedures unsuccessfully. Not ready to give up, SANCCOB's Rehabilitation Manager, Nicky Stander, consulted ex-SANCCOB veterinarian, Dr Tertius Gous, who in turn got in touch with Dr Gerard Steenkamp, an experienced veterinary dentist based at the University of Pretoria. After examining photos of the penguin's beak, Dr Steenkamp was confident that he could mend the mandible and offered to do the reconstructive surgery free of charge. Tracy Shaw, from the National Zoological Gardens (NZG) in Pretoria agreed to take care of the penguin at the zoo after the operation had been completed.



African penguin Beakie sporting his new dental acrylic beak.

With a flight-sponsorship by Bid Air Cargo (Cape Town), Beakie was flown to Johannesburg in his own personal 'enclosure' and was taken to the Faculty of Veterinary Science of the University of Pretoria in Onderstepoort on 18 December 2012 for his big operation. When the brave little patient came to, he had a beautiful new beak, with the help of some delicately placed stitches, pins, wire, and dental acrylic. The operation was very successful and Beakie was taken to the NZG to get back on his feet.

Since the operation, Beakie has been under the post-operative care of Dr Adrian Tordiffe. The first few days he was very sleepy and claimed a permanent spot in the colony where he dozed alongside his 32 new penguin friends. After 3 weeks, he surprised everyone at the NZG by coming right up to the bucket and taking his first fish all on his own. The experiment, and subsequent success of Beakie's operation, expands our knowledge and the level of expert veterinary care we can offer birds during rehabilitation. We trust that future patients can benefit from this, which will see more birds with severe beak injuries being released back into the wild.

Story 2- Christmas chicks at SANCCOB

The festive period has been another busy one for SANCCOB as the seabird rehabilitation centre in Table View admitted over 350 abandoned African penguin chicks since 1 November 2012. The bulk of the 6-8 week old chicks came from the Stony Point colony in Betty's Bay. Numerous penguin chicks historically become abandoned at the end of the breeding season just before the parents start their annual moulting cycle. During this time the parents replace their 'tuxedo' with a brand new set of waterproof feathers and are unable to hunt for fish and feed their young during the three to four week moulting process. As a result, the chicks that have yet to fledge are abandoned and face starvation unless conservation organizations like SANCCOB intervene. Working together with the Overstrand Municipality and CapeNature, underweight and ill chicks are identified

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One of the abandoned 'Christmas chicks'.

in the colonies and brought to SANCCOB on a weekly basis for rehabilitation from November to January every year. Once at the centre, the 'Christmas chicks' (as they are fondly named) are stabilised, hydrated, fed and given all the care and nurturing from the rehabilitation staff 'adoptees' for 6 to 8 weeks. Once they are the correct weight and age, and received the final nod of approval from SANCCOB's veterinary team, they are released back into the wild. The first batch of chicks was released on 1 January 2013 from Boulders Beach (Simon's Town) while the bulk of the Christmas patients headed into the wild over the course of February and March.

Story 3 - SANCCOB spreads Its wings to the Eastern Cape

Penguins Eastern Cape (PEC) has taken a bold step that could change the trajectory of the African Penguin's survival in the Eastern Cape, as they amalgamate their facility in Cape St. Francis with SANCCOB. Henceforth, PEC will operate under the SANCCOB banner. Trudi Malan, Manager of PEC, has made it clear that the transition is being made in the interest of the African Penguin and in line with the draft African Penguin Biodiversity Management Plan that was published for comments during 2012. *"The ultimate survival of the African Penguin will only become a reality if there is a well coordinated and concerted effort by all role-players. Fragmentation in the rehabilitation field creates confusion not only amongst funders but also with the general public"* said Malan.

The transition puts a longer-term sustainable plan in place for the Cape St. Francis facility, standardises its operating procedures and will ensure that all the breeding colonies in the area will be included in future research and rehabilitation planning. The four dedicated staff members from PEC now proudly wear SANCCOB uniform, and we are very excited about the appointment of veterinary nurse, Wilna Wilkinson, who will join the team in the Eastern Cape as Rehabilitation Manager. Xolani Lawo, Bird Rehabilitator at SANCCOB Eastern Cape said, *"I am very happy with the new developments here in Cape St Francis as it means we will be able to continue to give the penguins and seabirds that need help the best possible care"*.



SANCCOB Eastern Cape staff members.

Wilkinson underwent a rigorous 2-month training programme at SANCCOB's headquarters in Table View prior to taking up the new position and said, *"My career in conservation started with penguins more than 10 years ago. Looking at the census numbers, the total population of the African penguin decreased by more than 66% since then. Conserving the endangered African penguin species is a vital cause and it is an honour to step back into this mission full time. Today more than half of the total African penguin population is situated in the Eastern Cape. A strong foundation was laid by the Cape St Francis community for the survival of this little black and white marine warrior. Together with the leadership of SANCCOB and the continued support of the Cape St Francis community, we are well equipped to strive towards creating a safe haven for penguins and other seabirds in the Eastern Cape."*

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SANCCOB's Conservation Director, Venessa Strauss, relocated to SEC for 2 months to assist with the upgrade of the centre and to oversee the necessary administration of the take-over. Venessa and SEC team have been hard at work with tasks like extending the existing pen-area at the centre, adding an additional pool and doing renovations to the buildings. Staff members from SANParks and Coast Care were instrumental in assisting the SEC team with these tasks and we are grateful for their kind assistance.

Story 4: SANCCOB welcomes new staff & NRF interns

April turned out to be a very busy month for SANCCOB's 'human colony' with two new staff and six interns joining the team. The new additions are in response to SANCCOB's growing need for human capacity at both its centre in the Western Cape and the newly acquired rehabilitation centre in the Eastern Cape (previously Penguins Eastern Cape). SANCCOB is delighted to welcome two new full time staff members: Selena Flores and Wilna Wilkinson. Selena (from the United States) joins the Cape Town facility as a Bird Rehabilitator and Wilna as the Rehabilitation Manager of the Cape St. Francis facility. Both Selena and Wilna are great seabird enthusiasts and between the two of them they have many years of seabird care, conservation and research experience.

In addition, SANCCOB is glad to welcome six new National Research Fund (NRF) interns: Albert Snyman, Clarissa Brandt, Lee Brews, Sandra Setati, Zaida Cooper and Monica Nteyi to our facility in the Western Cape. The NRF internship program runs for a full year with the nine interns immersed in SANCCOB's daily operations. The eager interns will be joining SANCCOB's Conservation Department (rehabilitation and research programmes) as well as our Wild About Exploration...Environmental Education Centre. SANCCOB's relationship with the NRF, an independent government agency which promotes and supports research and high-level human capacity in all fields of knowledge, started in 2012 when three interns joined our Research programme and Wild About Exploration...Environmental Education Centre. The success of the internship programme in 2012 proved to put an excellent foundation in place for the expansion of the programme in 2013.

Together with the permanent staff, year-round local and international volunteers and interns and these eight new staff – SANCCOB is well-prepared and eager for the exciting challenges and developments that lay ahead for 2013. Find out more about SANCCOB's training and volunteering opportunities by visiting www.sanccob.co.za.



SANCCOB 2013 NRF interns .

Story 5: SELI 1 Seabird rescue a big success

SANCCOB has successfully searched for and rescued, stabilized, washed and rinsed, and rehabilitated all the 254 seabirds, and hand-reared all the African penguin chicks, affected by the 2012 SELI 1 oil slick at a current release rate of 95%. The SELI 1 caused a major oil slick off Table Bay on Saturday, 1 September 2012, which is the main feeding ground for seabirds from Robben Island and the West Coast National Park. Two-hundred-and-forty-one seabirds have been released back into their habitat and their breeding colonies. Currently, only one African penguin remains in SANCCOB's care due to unsatisfactory feather conditions and a badly injured foot. The remaining penguin will be regularly monitored until its feather condition improves and it's ready for release back into the wild.

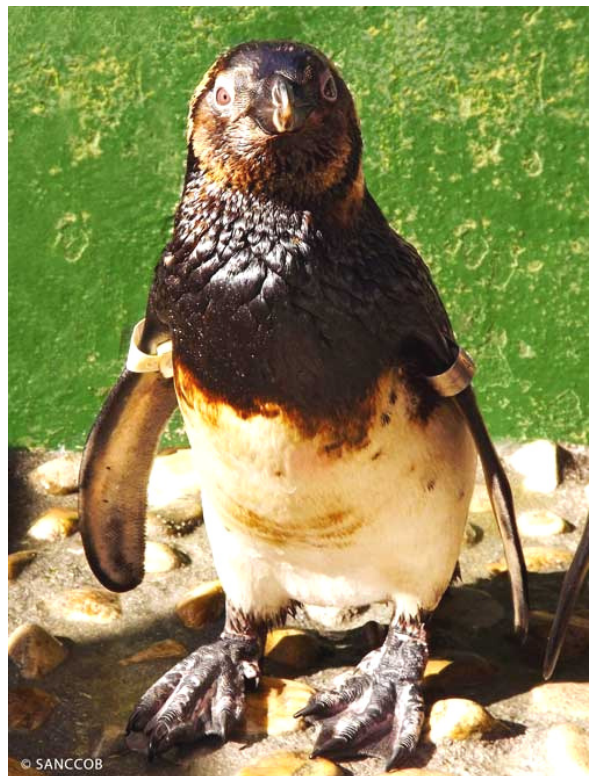
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Most of the birds affected by the SELI 1 oil spill are breeding adults and are important to the survival of the species, which is listed as Endangered on the IUCN Red Data list. The majority of the oiled African penguins originate from the Robben Island colony (one of only 7 African penguin breeding colonies) and home to an estimated 1 500 breeding pairs. The total number of birds affected by the spill translates into almost 10% of the Robben island breeding population. With SANCCOB successfully releasing 95% of these birds back into the wild over a short but successful rehabilitation period, provides the optimal chance for pair bonds not to be disrupted and for the birds to continue with their natural breeding cycle. In doing so, the spill will not have an adverse effect on the only threatened colony and on the species which is under severe decline.

Dr. Richard Sherley (from the Animal Demography Unit UCT) led an Earthwatch team on Robben Island with the assistance of Mario Leshoro (Robben Island Museum), Duncan Bolton (Birdworld Farnham Surrey) and two researchers from the ADU. The team worked tirelessly to identify, collect and transport oiled African penguins and their chicks via a ferry to the Cape Town harbour where SANCCOB's response team collected the birds from. SANCCOB also sent out a team on 8 September 2012 lead by Dr. Nola Parsons (SANCCOB's Veterinarian and Researcher) to assist the Earthwatch team by sweeping the island's nesting areas for oiled birds and identifying chicks that may be abandoned as a result of their parents being oiled.

SANCCOB has been in close consultation with the Department of Transport, the City of Cape Town's Disaster Management and associated organizations putting a plan forward for the removal of the SELI 1 wreck. The removal plan was approved starting in the week of 11 March 2013. The South African Navy, who carried out an investigation and survey of the wreck, was enlisted by The Department of Transport to undertake the operation. Assistance in the form of resources and manpower was provided by the City of Cape Town, the South African Maritime Safety Authority and the Department of Environmental Affairs. The wreck reduction strategically weakened the wreck structure and, with the help of the ocean forces, is slowly collapsing onto the seabed.



African penguin oiled by the SELI 1 oil spill.

Remedial and protective measures have been put into place by the Joint Task Team to manage and mitigate the release of any oils or pollutants, and the impact of this on the coastline and marine life. All risks with regards to oil pollution and the sensitive marine environment have been considered. Standby teams are in place to respond to any oil pollution or oiling of seabirds and SANCCOB and the Animal Demography Unit at the University of Cape Town have been engaged as part of the process. SANCCOB has yet to admit any oiled seabirds as a result of the collapsing process. As such, we are positive that removal of the wreck will likely eliminate all the remaining negative impacts of the SELI1 on our coastline.

All photos courtesy of SANCCOB.

Penguin Awareness Day Celebrated with Cocktails and Fundraising

Lauren DuBois, Assistant Curator of Birds, SeaWorld San Diego

SeaWorld San Diego hosted an evening event on January 19, 2013 to celebrate **Penguin Awareness Day**. The event, held at the Penguin Encounter™, was set up to generate funds for the SeaWorld & Busch Gardens Conservation Fund (www.swbg-conservationfund.org) and to promote an appreciation of penguins and the marine environment.

A limited number of tickets were sold for the event. Guests were greeted at the front gate after park close and were escorted to the Penguin Encounter™. A Magellanic penguin acted as ambassador for a meet-and-greet with guests and a souvenir photo opportunity. Guests were then able to spend time viewing penguins and meeting penguin keepers while enjoying cocktails and appetizers. A special penguin-themed cocktail was created by the Culinary Team for the night. Penguin keepers led behind the scenes tours that allowed visitors to view the newest arrivals: macaroni, Adelie and gentoo penguin chicks.

Keepers explained penguin natural history and described what it

takes to care for these incredible birds. Dr. Gerald "Jerry" Kooyman, Emeritus Professor of Biology at the Scripps Institution of Oceanography and a leading authority on emperor penguins, was the guest speaker. He presented on the different species of penguins and their population numbers in the wild. A closed-bid auction featured various penguin foot print art, photos, and penguin tours. Proceeds from the auction, along



Dr. Gerald "Jerry" Kooyman and his wife Mel pose with Pete Penguin.



A variety of items were offered via silent bid with proceeds benefiting the SeaWorld & Busch Gardens Conservation Fund.

with a portion of the ticket fee for the event, all went to support the Conservation Fund.

This is the second year SeaWorld San Diego has hosted this event and its popularity continues to grow. It was a true collaboration between the different departments at SeaWorld including Marketing, Education and Conservation, Entertainment, Catering and Bird. When the evening ended the **Penguin Awareness Cocktail Party** raised more than \$7,000.00 for the SeaWorld & Busch Gardens Conservation Fund. The Fund has supported penguin conservation projects worldwide as well as helping other important species.

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SeaWorld San Diego keepers Thom Hoffman and Debbie Denton pose with Animal Ambassador Pete Penguin.

Guests and penguin keepers listen to Dr. Kooyman's presentation at the Penguin Encounter.



Guests of the event took home souvenir photos of themselves with Pete Penguin.

Penguin Listserv Summaries

We at the *PCN* have been cataloguing information posted to the penguin listservs and will provide summaries as seems appropriate. In this issue we have included some listserv traffic that we have categorized by the original question followed by the responses.

The following question is related to how parent-reared penguin chicks are managed within the colony. Several factors must be considered when evaluating chick removal from the nest including the health maintenance of the parents, possible predators or other hazards (like pool access) and chick growth progress. The benefits of the weaning process include the ability to habituate the chick to the routines of hand-feeding and keeper activity as well as to begin husbandry training. Below is the original listserv question and responses from last May.

At what age do most folks [remove penguin chicks from the nest, and then] introduce skin/bones into the diet and when do you start adding small whole fish such as silversides (*Menidia menidia*) or anchovies, etc. What is your vitamin regiment for the chicks as well?

From Gayle Sirpenski , Mystic Aquarium: I think the wide range in the age of the chicks when they are pulled has much to do with each institution's program and exhibit design. At Mystic we allow the chicks to stay with the parents until about 50 days because our nesting area is inside and the parents and chicks are easily monitored. As long as the chicks are growing at a good rate and the parents are willing to feed without losing weight themselves, it works for us. We weigh all of our birds on a regular basis so have a good handle on body condition. We offer fish to them on the nest when we feed mom or dad and have had chicks make the switch to hand feeding easily this way. The chicks at 50 days are easy to handle and seem used to the daily routine. All of our birds are handled frequently to help acclimate them for our programs. Another consideration is exhibit design and how accessible the pool is to very young chicks. Some facilities pull chicks for hand rearing earlier because of the "water hazard".

Steve Sarro added: First, pulling the chicks at 3 weeks enables the staff to monitor their growth and health better especially as the second chick may be out-competed by the first chick. Second, pulling the chick at 3 weeks and feeding it to weaning gives you a more human-friendly bird that still knows it is a penguin. They accept routine handling better and are much more relaxed in the colony parent-reared birds and eat from the bucket better too. This was my protocol with African penguins. I cannot speak to other species.

And this from James Traverse, Santa Barbara Zoo: We base it on behavior. When the chick starts getting antsy and tries to exit the burrow, we pull them. Our single chick we had last year was well within the 21-50 day range when the wandering behavior presented itself.

Kerri Slifka, Nutrition Co-Advisor to the Penguin TAG, advised that supplementation should be:

30 mg Thiamin/kg of fish fed

100 IU Vitamin E/kg fish fed

As you have seen from the responses there are a number of ways to achieve this supplementation.

1. Add each vitamin individually
2. Use a multivitamin tablet specifically designed for piscivorous birds which includes appropriate levels of Thiamin and Vitamin E. Which product to choose depends on the quantity of fish offered. One commercial product is available in 3 versions to supplement 3 different feeding quantities and each version is available with or without vitamin A
3. Use a multivitamin paste designed for piscivorous animals with the appropriate levels of E and Thiamin. This product is designed to be fed at 1 ml paste/kg fish offered.

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Other responses are catalogued below:

Zoological Institution	Contact	Species	Chick age at nest removal (days)	Diet	Age introduce skin/bones (days)	Age introduce whole fish (days)	Vitamin regime	Comments
Atlantis Marine World, NY	Joe Yaiullo	African	50	Variety fish fillets, skinless/boneless				Posted original question
Maryland Zoo, MD	Jen Mignone	African	21	Smelt to start, then capelin at 4-5 weeks, squid and herring at 6 weeks	28-35 (capelin)		Seatab	It usually takes 1-2 days from nest removal for chicks to willingly take fish from keepers and develop a feeding response.
Adventure Aquarium, NJ	Michele Pagel	African	31	Filets first 1-2 feedings; smelt, sardines, capelin, trout, herring, mackerel	31	31	Mazuri sea bird	Chicks may be removed based on weight at approximately 1 kg. Chicks are weighed daily to monitor growth.
California Academy of Sciences		African	21-28	Start with capelin/herring fillets with bones along with formula and Pedialyte® the day they are removed	21-28	40 (capelin), 50 (herring)	½ Mazuri SID, ½ B1 BID, 1 Vit E three times per week	Vitamin regime begins at 1.5-3 kg chick weight. Chicks are fed three times per day to 10% of body weight each feeding with no problems. This continues until chick is 3 kg then reduces to twice daily.
Baltimore Zoo	Steve Sarro	African	21	Capelin, sardines, herring	21	21		Start with capelin
Mystic Aquarium, CT	Gayle Sirpenski	African	50					
Rosamond Gifford Zoo, NY	Adrienne Whitely	Hum-boldt	45-50		45-50	45-50	Seatab	
Woodland Park Zoo	Shawn Pedersen	Hum-boldt	50					We get chicks to hand feed from keepers by about day 30-35
Long Island Aquarium	Maggie Seiler	African	50					

Two Unique and Interesting Penguin Anomalies

Penguin hatches with extra flippers

Dr. Dee Boersma reported in the recent **Spring/Summer 2013 Penguin Project Update** that “The oddest penguin this year [at Punta Tombo] was a chick named **Four Flippers**. Under its normal set of flippers, the chick had an undeveloped second set of flippers. The chick would probably have had trouble catching fish with the extra set of flippers so we put rubber bands around the 2 small flippers and they fell off after a few weeks. Four Flippers now has 2 healthy flippers and went to sea in February. We will be looking to find Four Flippers during the next 5 years.” Read more about the penguins of Punta Tombo in the Update and sign up to receive email issues at <http://mesh.biology.washington.edu/penguinProject/publications> (scroll down to *Penguin Project Updates*). Learn more about or donate to **Penguin Sentinels** at <http://mesh.biology.washington.edu/penguinProject/home>. (Text from the *Spring/Summer 2013 Penguin Project Update* was reprinted by permission of Dr. P. Dee Boersma. Photo by Dr. P. Dee Boersma).



Penguin feathers change from black to white

Lindsay Ireland, penguin keeper at the Detroit Zoo, posted this interesting anomaly on the penguin listserv in December 2012. As the 28-year old male macaroni penguin named Jaws completed molt in September 2012, it became apparent that most of the newly molted black feathers on the head, back and flippers were now being replaced with white feathers. This is a captive-reared individual that has lived at the Detroit Zoo since 1985, with a consistent light spectrum and photoperiod, and has never presented with an abnormal molt.

A thorough physical and blood panel, including thyroid analysis, were completed. Bloodwork results indicated that all blood parameters were within the normal range. Jaws does have advanced cataracts in both eyes, and receives regular exams by an ophthalmologist. Other penguins with similar cataracts have not had molting issues. His behavior and appetite have also been normal, before, during and after molt.

Detroit Zoo penguin staff and veterinarians are curious to see if the same molting pattern reoccurs when Jaws molts this year. (Photo by Lindsay Ireland).



News and Updates

Proposed changes to **penguin transport requirements** were presented to the **International Air Transport Association (IATA)** Board last year by Gayle Sirpenski (Mystic Aquarium), Steve Olson (AZA) and Frank Kohn (USFWS). The proposals were accepted and incorporated into the 2012 edition of the IATA Live Animal Regulations (LARs). According to the IATA website (<http://www.iata.org/publications/Pages/live-animals.aspx>) the 2012 LARs include a “complete review and updated container requirements for penguins”. In brief the changes include approval of the “kennel” style pet carrier as a method of shipping penguins (2011) and approval of the fixed wall plastic “totes” for larger species of penguins (2012). Additional changes include modifications to the general language of CR22 relating to materials, flooring, container size limits, stocking density, feed and water and general care and loading (2012). Many thanks go to Gayle, Steve and Frank for their work in this area on behalf of penguins.

SeaWorld San Diego announced on 6 June that four Magellanic penguins were conceived via artificial insemination (AI) at the park in March and April and subsequently hatched in May. The four chicks are believed to be the **first ever successful result of artificial insemination in any species of penguin**. SeaWorld has already been conducting research on semen characterization and storage techniques for king penguins and has banked sperm from two males. In the future SeaWorld plans to continue developing AI technology in penguins with the goal to inseminate using frozen-thawed sperm. (Look for an article on SeaWorld’s AI work in the next issue of PCN). View the media releases at <http://www.nbcsandiego.com/news/local/Penguin-Chicks-SeaWorld-San-Diego-Breeding-Artificial-Insemination-210443901.html> and <http://www.aol.com/video/penguins-conceived-via-artificial-insemination/517809386>.

SeaWorld San Diego’s Penguin Encounter™ also celebrated its 30th Anniversary on May 30th. The Penguin Encounter™ was the first ever simulated Antarctic habitat when it opened in May 1983. Today nearly 350 penguins representing five species enjoy the naturalistic environment with 25 ° F (-3.8 ° C) air and 42 ° F (5.5 ° C) water temperatures. It is the only exhibit in the Western Hemisphere to display emperor penguins. View the live webcam at <http://seaworldparks.com/en/seaworld-sandiego/Animals/Webcams/Penguin-Cam>.

SeaWorld Orlando unveiled their new penguin exhibit **Antarctica Empire of the Penguin™** on May 24, 2013. The exhibit is a new concept that starts with an innovative, trackless, motion-based simulator ride that ends in a live animal habitat. Guests can choose their personal ride’s level of intensity. The ride immerses guests in the story of Puck, the gentoo penguin, before plunging them into the 30 ° F (-1 ° C) penguin exhibit. Antarctica Empire of the Penguin™ is home to king, Adelie, gentoo and rockhopper penguins. Take a virtual ride through the exhibit at <http://www.youtube.com/watch?v=gRo6HV4oQm0> and visit www.seaworldorlando.com.

The **Kansas City Zoo** is slated to open a **new penguin exhibit** in October 2013. A preview of the \$15 million exhibit was held April 27th. Despite the rain, only partial completion of the Helzberg Penguin Plaza and no penguins (yet), the sneak peek drew a crowd of nearly 2,000 to the zoo demonstrating the ongoing popularity of penguins. The plan for the exhibit includes two adjacent areas for about 35 penguins: a 100,000 gallon pool with snow for cold-weather penguins and a 25,000 gallon pool with a sandy area for warm-weather species. The zoo plans to house four species of penguins (king, gentoo, rockhopper and Humboldt). Watch a video of the design concept on YouTube at <http://www.youtube.com/watch?v=Jply-sRNyHk&feature=youtu.be>.

The **Living Planet Aquarium** will also be opening a new penguin exhibit in late 2013 as part of a brand new, larger facility for the aquarium (see concept mock-ups below). Currently located in Sandy, Utah (13 miles south of downtown Salt Lake City) the new, state-of-the-art facility will be just minutes away in Draper, Utah. The planned building will be three times larger than the current facility encompassing over 136,000 square

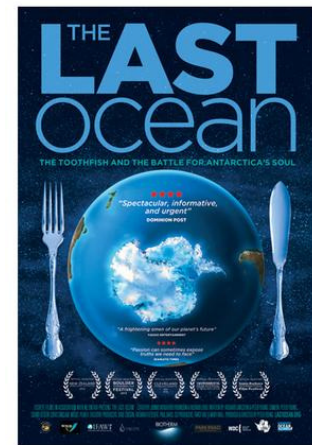
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feet. The **Penguin Encounter Exhibit** will be the main attraction of the *Bottom of the World* exhibits which will include the *Deep Sea Gallery* as well as an interactive undersea submersible. Nearly four times larger than the current penguin exhibit, the design will feature a half tunnel allowing guests to experience penguins swimming right over their heads. The Living Planet Aquarium currently houses 5.6 gentoo penguins (*Pygoscelis papua papua*) on loan from the Moody Gardens Aquarium. In the future, the Living Planet Aquar-



ium hopes to expand their penguin collection to include other species. Once the move to the new facility is completed at the end of the year, the current location will close. www.thelivingplanet.com.

The film documentary **The Last Ocean** continues its worldwide tour with a **Road Trip** of screenings in the US, Germany and the UK through June 2013. The objective of the campaign is to inspire audiences to support full protection of the Ross Sea. With the **upcoming meeting of 25 CCAMLR** (Commission for the Conservation of Antarctic Marine Living Resources) nations in Bremerhaven, Germany slated to decide the **future protection of the Ross Sea**, education and awareness of this issue is of paramount importance. View a trailer for the film at <http://www.thelastoceanfilm.com> and find a list of screening locations and dates at <http://www.thelastoceanfilm.com/watch>. Learn more and support **The Last Ocean** at <http://www.lastocean.org>. Consider hosting a screening of *The Last Ocean* at your zoo or aquarium and share the message “don’t buy Chilean sea bass from the Ross Sea”.



The **first call for papers for Volume 48 of the *International Zoo Yearbook*** was issued last December. This issue will focus on the challenges faced in the management of avian species in zoos as well as the potential conservation support of collections/institutions for avian species in the wild. Publication is scheduled for 2014. Guest Editors are Michael Macek (Curator of Birds, Saint Louis Zoo, Saint Louis, MO 63110, USA) and Paul Andrew, (Curator, Taronga Zoo, Mosman, NSW 2088, Australia). The ***International Zoo Yearbook* is an international forum for the exchange of information on the role of zoos in the conservation of biodiversity, species and habitats.** Investigative and data collection work into the biology and behaviour of wild animals is increasingly dependent on the coordinated efforts and shared results of all institutions engaged in the study and preservation of wildlife. The Editors are actively seeking research papers, descriptive articles or reviews with quality content for publication and will be inviting contributions for special themed articles in future volumes. All work is peer-reviewed and both authors and readers are international. Articles are published

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online through the **OnlineEarly** feature before the print edition is published. Potential authors should view the Author Guidelines at <http://www.wileyonlinelibrary.com/journal/izy>. All enquiries about potential submissions should be directed to the Editor: yearbook@zsl.org.

"We now know that **two of the three predominant penguin species in the [Antarctic] peninsula--chinstrap and Adélie--are declining significantly** in a region where, in the last 60 years, it's warmed by 3 degrees Celsius (5 degrees Fahrenheit) annually and by 5 degrees Celsius (9 degrees Fahrenheit) in winter." This is a quote from Ron Naveen, founder of the non-profit Oceanites, Inc., and one of the authors of a study published in *Polar Biology* (see **First direct, site-wide penguin survey at Deception Island, Antarctica, suggests significant declines in breeding chinstrap penguins** in RECOMMENDED REFERENCES, this issue). This study examined data collected at Deception Island in 2011 to assess the impacts of tourism on penguin populations. Co-author Heather Lynch adds, "While there has been considerable focus in the policy and management community about the potential impact of tourism on these penguin populations, we cannot forget the overwhelming evidence that climate is responsible for the dramatic changes that we are seeing on the peninsula. If tourism is having a negative impact on these populations, it's too small an effect to be detected against the background of climate change." Read the full ScienceDaily article at http://www.sciencedaily.com/releases/2012/11/121114113805.htmutm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily+%28ScienceDaily%3A+Latest+Science+News%29. National Science Foundation. "Changing climate, not tourism, seems to be driving decline in chinstrap-penguin populations." *ScienceDaily*, 14 Nov. 2012. Web. 28 Mar. 2013.

Dr. Paul Ponganis was among the researchers that have developed a technique for monitoring penguins at sea that, it is hoped, will help scientists better understand the relationship between sea ice levels, penguins' foraging behavior and population fluctuations. In this study it was found that emperor penguins spent short periods on the sea ice between foraging dives perhaps to avoid predators or to rest after deep dives. Read the full ScienceDaily article at http://www.sciencedaily.com/releases/2012/11/121121210255.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily+%28ScienceDaily%3A+Latest+Science+News%29. Public Library of Science. "Emperor penguins budget time for short rests on ice during chick-rearing season." *ScienceDaily*, 21 Nov. 2012. Web, 28 Mar. 2013. (See RECOMMENDED REFERENCES, this issue).

Antarctica's Princess Ragnhild coast is home to a newly discovered emperor penguin colony. First described in a 2009 paper by Fretwell and Trathan, the **very remote colony of emperor penguins was visited by the first humans last December** (2012). The scientists took the first ever photos of the colony and estimated the population at about 9,000 birds. Read the full story at http://www.antarcticstation.org/news_press/news_detail/first_contact_the_emperor_penguin_colony/.

The **Macaulay Library** at the **Cornell Lab of Ornithology** has announced that it has compiled more than 150,000 **digital audio** recordings representing 9,000 species. Though bird species are emphasized, and up to 15 penguin species are represented, recordings for mammals and amphibians are also part of the library. There are more than 7,000 hours of audio and some video clips as well. The recordings are available online at <http://macaulaylibrary.org>.

To convey the importance of preserving our world's oceans and ocean life, **SANCCOB provided an important video message to commemorate World Oceans Day**, celebrated on 8 June. This video message can be viewed at <http://www.youtube.com/watch?v=oTdmzDTz5IU&feature=youtu.be>.

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Events and Announcements

1 July – 13 July, 2013: **Commission for the Conservation of Antarctic Marine Living Resources (CCMLAR)** Meetings in Bremerhaven, Germany, including a decision on the future of the Ross Sea fishery. Learn more about CCMLAR's goal to conserve Antarctic marine life through ecosystem-based management at <http://www.ccamlr.org/en/organisation/about-ccamlr>.

31 August – 1 September 2013: **APECS International Penguin Careers Workshop** at the Bristol Zoo. For more information visit the webpage at <http://penguinconference.org/workshop/apecs.html>.

1-6 September 2013: **8th International Penguin Conference**, Bristol, UK. <http://combine.cs.bris.ac.uk/ipc>.

19 October 2013: **Mystic Aquarium's 7th Annual Penguin Run/Walk**. The 5k run or two-mile walk helps raise funds to benefit African penguins. <http://www.mysticaquarium.org/visit/calendar/details/161-penguin-runwalk>.

11-15 November 2013: **Training and Enrichment Workshop for Zoo and Aquarium Animals** presented by Active Environments and Shape of Enrichment. Hosted by Moody Gardens, Galveston, Texas, USA, the workshop cost is US\$1,350 Single-US\$975 Double. Contact Katie Zufall at active_environs@ix.netcom.com or Diane Olsen at dolsen@moodygardens.com.

18-22 November 2013: **Avian Incubation Workshop** hosted by San Diego Zoo Global and the Los Angeles Zoo. The workshop consists of hands-on lab instruction and site visits of incubation facilities at the San Diego Zoo's Avian Propagation Center, the San Diego Zoo Safari Park and SeaWorld San Diego. Registration fee US\$300. Contact Pat Witman: AIW@sandiegozoo.org.

12-16 October, 2015 *Proposed Dates*: The World Seabird Union had endorsed an Expression of Interest by the African Seabird Group to host the **World Seabird Conference II in Cape Town, South Africa**. Although formal approval is awaiting provision of further details, all those interested in seabirds are advised to put these dates in their diaries and plan accordingly. It is expected that an official First Circular would be produced in late 2013. For more information, about the World Seabird Union please visit www.seabirds.net.

Correction from last issue: *The photograph on page 7 incorrectly identified the woman feeding the penguin as Becky Elias. The woman in the photograph is Pauline Conayne of Massey University. We apologize for the error.*