

*Animal Training and Research,
International
&
SLEWTHS Project
Science, Learning, and Exploration
With the Help of Sea lions*

**END OF THE YEAR SUMMARY
2010**

*Animal Training
&
Research International*



Research

Molting Dynamics:

2010 brought an end to our 7 year documentation of the molting patterns of California sea lions of different age and sex classes. We completed the study with our juvenile subjects finally arriving at adulthood. The data has been partially processed and analyzed for the capstone project of one of our graduates, Heather Yeager and the remainder will be completed by another student, Tiana Hanna in the years to come. California sea lion molting appears to occur as follows: The front and rear flippers molt first, followed by the ventral surface (starting at the midline and forming a “Y” pattern as the molt moves to the sides of the body and the ventral surface). Molt progresses around the sides of the body to the dorsal surface; the head begins to molt, followed by the neck and chest. The timing of the molt seems to be correlated with age. There is often a second partial molt in older males, which as yet has not been reported elsewhere and we postulate may be related to recovering disturbed surface fur after mating season.

Growth and morphometrics:

We continue to add weekly data collection on weight and monthly length measurements for our on-going, long term morphometrics data collection. These efforts comprise a long term study on growth dynamics in California sea lions, contrasting male and female development. The males and youngest females continued to grow this year with each male adding over 2 inches and our youngest female growing by 1.5 inches. Nemo is now one inch shy of full grown length, Jonah is four inches shy and Cali and Ariel both exceed adult female length!

Testing Electronic Barriers as a Deterrence Method with California sea lions:

In 2008 SLEWTHS began a multi-year collaboration with Smith-Root, Inc to test a new strategy for deterring pinnipeds from undesirable areas and predation on endangered spawning salmon. We conducted the first-ever testing with California sea lions of the effects of a mild underwater electronic barrier. Based on results of our tests in 2008, California sea lions, we believe are extremely sensitive to a mild, underwater field of pulsed DC electricity which could be used safely to deter them from areas even in the presence of food motivation. Smith-Root, Inc, in collaboration with SLEWTHS, continued this year to pursue the evaluation of an electronic barrier to be placed in the Columbia river near Bonneville Dam by investigating the effects of a small scale barrier placed in the fish ladder on various crucial fish species in May of this year. Unfortunately the results were mixed and one species of salmon, the spring Chinook, were partially deterred by the presence of the barrier when exposed continuously for a brief window of time, although it is as yet unclear whether the field could be reduced or varied to alter this effect. Concurrently, Dr. Zeligs completed writing for the necessary federal permits to place and test this barrier on wild California sea lions, Harbor seals, and Stellar sea lions should the investigation be able to proceed to its next stage in the future.

In the meanwhile, Dr. Zeligs having been selected as the Principal Investigator for marine mammal electronic barrier research, overseeing the evaluation and safety of all the field trials of this new technology, continued to pursue other avenues of use.

Proposals investigating the use of this technology to exclude manatees from power plant inflow areas in Florida have been submitted to locate a test facility and generate possible funding and this work will continue in 2011. Early in 2010 SLEWTHS staff and Smith Root collaborators led a meeting of California harbor masters interested in the potential use of this technology to be applied to managing unwanted populations of sea lions in harbors and on boats. Proposals generated by these meetings caught the attention of several California agencies and law makers and we continue to search for funding to test this possible application. SLEWTHS is proud to be involved with helping to solve such important conservation issues for both marine mammals and endangered fishes.

Environmental Factors, Water Quality and Sea lion Eye Health

In late 2008, several of our animals suffered from a still-mysterious sequence of severe symptoms resulting in a long lasting corneal disease epidemic. As of 2009 one animal was apparently cured, two were very improved and one animal remained heavily symptomatic. By the end of 2010, three of the four animals originally beset with the disease were apparently completely asymptomatic and we believe cured of the disease. Unfortunately, the final sea lion, Nemo, remains seriously impaired. We have continued to collect data monthly correlating his health changes with environmental and water quality changes. As this now appears to be a stable condition, we intend on presenting our story to marine and terrestrial veterinary conferences, while still exploring further experimental treatment options.

Publications, Presentations, Proposals and Permits (P⁴)

Publications

- The staff as a whole wrote and published 2 volumes of our *Inspiring Minds* Newsletter (4/10 and 10/10).
- Nancy Wenkel created a new SLEWTHS Internship pamphlet which was distributed widely by our staff.

Presentations and conference participation

- Dr. Jenifer Zeligs attended a meeting of Pacific Coast Harbor Masters April 8 to co-author a presentation on the affects of electronic barriers as pinniped deterrence.
- Following a positive response from the meeting in April, Dr. Zeligs and SLEWTHS staff hosted and coordinated a central California coast harbor masters meeting and presentation for congressional aides on August 24. As a follow-up to this meeting, local federal congressman and long-time SLEWTHS supporter, Rep. Sam Farr and staffers came to visit the sea lion facility at MLML as part of a campaign stop for Rep. Farr's reelection.
- In May, SLEWTHS staff collaborated in a presentation made by our veterinary dentist, Dr. Steve Holmstrom to the International Association for Aquatic Animal Medicine entitled: "Dental Techniques in Marine Mammals."

Proposals

Smith-Root, Inc applied and was awarded a continuance grant for the electronic barrier research at Bonneville Dam. The Bonneville Power Administration awarded Smith-Root, Inc a grant to include funding for SLEWTHS. Supporting this effort, Dr. Zeligs authored a MMPA permit application for several years of field trials to be conducted with marine mammals on the Columbia River.

Stefani Skrovan submitted a Home-Depot Community grant application for facility upgrade supplies.

Permits

-Renewed our APHIS public display license.

-Renewed IACUC protocols #863, 887

-Dr. Zeligs completed an on-line certification course in Institutional Care and Use of Captive Animals as part of a new SJSU permitting requirement for proper animal care and research.

-Extended our existing NMFS permit to acquire stranded animals (California sea lions and harbor seals)

Education and Public Outreach

Sea Lion Stewards Environmental Education Program and Beach clean-up activities

SLEWTHS conducted 15 Sea Lion Stewards half-day programs for over 445 participants who collected over 175 lbs of garbage from our local beach in the process.

Sea Lion Encounters Public Outreach Program

Based on daily performance tallies, approximately 16,260 people attended performances of *Sea Lion Encounters* in 2010.

We developed a new Sea Lion Encounters Performance this year featuring our “Talented” baby sea lions: Cali and Ariel.

Sea Lion Encounters was featured at:

- The Stockton Asparagus Festival in Stockton, CA: April 23-25
- The Siskiyou Golden Fair in Yreka, CA: August 11-15
- The Santa Cruz County Fair in Watsonville, CA: September 14-19

Tours for MLML, CSU, and other academic institutions and affiliates

26 private tours and/or demonstrations were provided on-site by SLEWTHS.

- 1-7-10 Kenneth Coale with the tour organizer for SJSU
- 3-16-10 Tour & Demo for staff from Six Flags Animal Training Dept.

- 4-13-10 Kenneth Coale tour
- 4-16-10 Jocelyn Douglas and kids tour
- 4-17-10 MLML Open House - two sea lion demonstrations plus public viewing
- 4-18-10 MLML Open House- two sea lion demonstrations plus public viewing
- 4-23-10 Kenneth Coale tour
- 4-27-10 Kenneth Coale tour for CSUMB photographer
- 4-28-10 Kenneth Coale tour for family and friends
- 5-22-10 Kenneth Coale tour for Endless Summer
- 6-6-10 Lowell Darling candidate for governor tour
- 6-13-10 Larry Young from SJSU IACUC retreat tour
- 6-19-10 Susan Coale tour
- 6-23-10 Marine OPS Employee tour
- 8-24-10 MLML new student orientation tour
- 8-26-10 Kenneth Coale tour with graduate coordinator for MLML
- 8-28-10 SJSU Alumni tour
- 9-8-10 Tour and demonstration for Congressman Sam Farr and staff
- 10-25-11 Kenneth Coale tour
- 10-27-10 Kenneth Coale tour for prospective grad student
- 10-28-10 Moorpark Exotic Animal Training and Management Program tour & Demo
- 10-28-10 Kenneth Coale tour & Demo for French engineers
- 11-2-10 Hartnell Marine Science Class tour
- 12-7-10 MLML tour for 11th and 12th graders

Classes

-A total of 24 undergraduate students from the all over the US attended 2 intensive immersion classes in marine mammalogy through CSUMB extended education department and 1 additional student audited the classes for no college credit.

-In March, a total of 31 people attended a special animal training workshop conducted by Dr. Zeligs and coordinated by 5 Star Parelli Professional Horse Instructor Dave Lichman.

Internships

- 33 adult internships were conducted
- 3 Jr. Internships were provided for aspiring future marine mammalogists
- 4 Certificates of Completion in Marine Mammalogy were earned by people who successfully completed both classes and a week-long internship.

Media

- Numerous interviews for local media were provided by SLEWTHS staff at each of our public outreach events.
- Sake and undergraduate student members of SLEWTHS staff were featured in an advertisement for Rep Sam Farr's reelection campaign in Oct.

Consulting and Contract Work

- Dr. Zeligs continued, in 2010, to act as the marine mammal biologist consultant for Smith-Root, Inc. and all associated marine mammal work with electronic barriers done by Smith-Root, Inc.
- In March, Jonah, Sake, and Cali were featured in “Wild” a show for National Geographic Channel on the subject of sea lions and domoic acid poisoning.
- Also in March, SLEWTHS participated in an outreach event for a Salinas theater in conjunction with the release of the “How to Train Your Pet Dragon” movie in which our animals’ voices were featured.
- Sake and Cali were photographed for a special art exhibit in July.

Facilities

Projects

- Repaired the salt water aquarium by re-caulking the interior and repairing its lights and resting platform.
- We fixed and strengthened the floor of the encounters trailer with bondo and a large steel plate covering a hole.
- Had our main facility pool drain line snaked and cleaned for better drainage.
- Purchased and installed new bulbs on our U.V. salt water purification system.
- Reorganized underneath office area.
- Created a new T3 shade cloth system
- Created a new larger pigeon cage with divider to separate animals.
- Repaired our Encounters microphone system.
- Repaired our fish kitchen refrigerator, caulked the flooring and sliding glass doors.
- Overhauled our water quality testing procedures using numerous experimental trials and new products.
- Developed a new Sea Lion Encounters Performance.
- We expanded and developed an enhanced SLEWTHS membership program.

Acquisitions

- Purchased and installed a new garbage disposal for the fish kitchen after almost a year of ours not functioning!
- Received a donation from O’Neill of wetsuit shorts and booties.
- Received multiple donations of medications for the sea lion eye disease.
- Purchased a custom stage tarp to cover and protect the decks of T3.
- Acquired a new Apple desktop computer.
- SP donated a new coffee machine and grinder as a parting gift to the staff and similarly HY donated a variety of facility maintenance supplies☺.

Animals

Behaviors started but not completed this year are called *started*, behaviors started and completed this year are called *learned*, work in progress behaviors neither started nor completed this year are called *working on*, and behaviors started in a previous year and finished this year are called *finished*.

Beaver

In early 2010 Beaver began to develop lumps which required multiple biopsies and medications. At the estimated age of 32, Beaver passed away due to extensive cancer on March 25th. We are proud to say that even in the end when he could not and would not eat, he still cooperated with trained cues that enabled us to voluntarily sedate and then euthanize him peacefully.

- Working on PC blood sample training
- Finished to line up to trapdoor on lie down
- Finished PC needle aspiration of lump on neck

Sake

On Feb 12, 2010 Sake underwent a complex cataract surgery, removing the lens from her right eye under anesthesia. As always, we invested heavily in training and preparing Sake in every way possible to voluntarily cooperate with the entire procedure and extensive post-operative treatment. Without food reinforcement, she was conditioned to enter a cage for a one hour transport to Long Marine Laboratory surgical facilities, where she, again with out food, placed herself in a restraint cage, placed her head in an anesthesia mask, and accepted gas induction. After her recovery she spent three weeks isolated in a dry pen accepting daily sponge baths and over sixteen different daily eye drops (five minutes each). Having been carefully desensitized to dry docking in advance of the surgery, Sake's recovery went extremely smoothly. She now has full use of her right eye again and seems much healthier and happier as a result. We could not have been more pleased with the experience and the results.

- Finished dry dock training
- Learned fasting transport/medical cage induction chain behavior
- Working on hydration during stomach tube
- Started reigns training in water

Nemo

- Finished follow-me
- Learned slap
- Working on vogue
- Working on embarrassed
- Started PC front flippers
- Started PC rollover
- Started tooth brushing
- Started painting

Jonah

Jonah did his first work for Hollywood this year and performed several behaviors in front of a green screen, working in tight proximity to the camera!

- Finished follow-me
- Finished PC eye presents
- Finished spin-jump
- Finished tongue
- Learned green screen/Hollywood desense
- Learned tooth brushing
- Working on not
- Working on water work
- Working on Sea Lion Encounters Performance
- Started embarrassed

Ariel

- Finished look
- Finished slap
- Finished water spirals
- Finished diving
- Working on tandem kiss
- Working on blood stick
- Working on tactile desensitization
- Working on compound training
- Working on yes
- Started sing
- Started pillar catch
- Started follow-me
- Learned first animal encounters performance and solo-performance shows

Cali

Cali performed and interacted with the public at all our Sea Lion Encounters public outreach events this year! She also took part in her first professional photo shoot.

- Finished seal
- Finished balance/handstand
- Finished bark
- Finished yes
- Finished Encounters show performances
- Finished follow me
- Learned painting
- Learned high five
- Learned flex
- Working on harness
- Working on stomach tubing
- Working on water work
- Started toothbrushing
- Started flip
- Started tap

Fluffy

- Working on retrieval
- Working on "Coo"
- Working on wing lift
- Learned shifting

Shamu

- Started bridge conditioning
- Started perch
- Started hand feeding

Staff

6 new people were hired into *Animal Care*

(Megan Cuzick, Danielle Dale, Michelle Jones, Angela Preston, Laura Lockwood, Vince Santos)

4 people left the project after an average longevity of 3.8 years!

(Shelby Peters (3.5 yrs), Daniel Holsapple (1yr), Danielle Dale (0.7 yr), Heather Yeager (10.25 yrs!))

3 people became *Senior Animal Care*

(Shaylyn Rasmussen, Tiana Hanna, Megan Cuzick)

4 people became *Assistant Trainers*

(Arielle Romero, Ashley Acridge, Camille Sierra, Shaylyn Rasmussen)

2 people became *Trainers*

(Rachel Daggett, Ari Smith)

2 people became *Senior Trainers*

(Allison Limbaugh, Sophie Darling)

1 person received their *Multi-year Senior Trainer* anniversary Badges

(Nancy Wenkel (3))

SMD was hired into a full time position in April

AR worked short-term single events on contract with SLEWTHS this year