



# SOUNDINGS

NEWSLETTER OF THE INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION

Volume 19, Number 2

Spring 1994

## The Amazon River Dolphin

(*Inia geoffrensis*)

Also...

**IMATA'S  
GROWTH AND  
DEVELOPMENT:**

**Meeting Our  
Goals and  
Planning for  
the Future**

**PLUS... Conference  
Countdown '94**

*To be held in Tacoma, WA*





## IMATA

Dedicated to those who serve marine mammal science through training, public display, research, husbandry, conservation, and education.



**Front Cover:** Chuckles, the only Amazon River dolphin in North America, resides at the Pittsburgh Zoo in Pittsburgh, Pennsylvania. *Photograph by Tim Smith.*



**Inset:** Beautiful Mt. Rainier looms like a sentinel over Tacoma, Washington, site of the 22nd Annual IMATA Conference. *Photograph by Mark Holden.*



**Back Cover:** Graphics play an important role in the public display of animals; they are essential education tools that provide the public with a wide range of important information about animals and the environment. *Photograph by Marcye Miller-Lebert*

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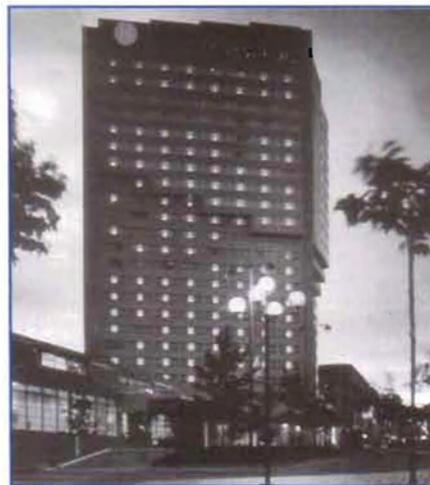
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Submissions of manuscripts, photographs, and illustrations are welcomed and encouraged, but will be returned only if accompanied by a return envelope and adequate postage. Any material accepted is subject to such revision as is necessary in our sole discretion to meet the requirements of publication. **Soundings** is produced in WordPerfect®; submissions via WordPerfect® files on either a 3-1/2" or a 5-1/4" disk, accompanied by a hard copy, are preferred. Typed submissions should be double-spaced on 8-1/2"x11" paper. Include the name, address, FAX number and phone number of the author on the title page. Photographs should be at least 4"x5", preferably black and white glossy. Include captions and identify all recognizable persons. The act of submitting an article, photograph, or illustration constitutes an agreement that (1) the materials are free of copyright restrictions, (2) photo releases have been obtained, and (3) the material may be published by IMATA in **Soundings** or other IMATA publications. Deadlines for submission are the first day of the month of March, June, September, and December. All submissions should be addressed to the Editor, John Kirtland, c/o IMATA, 1720 South Shores Road, San Diego, California 92109 USA, or FAXed to (619) 226-3964. Address changes should be sent to IMATA's Secretary, Nedra Hecker, at the same address.



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## Trainer's Forum

This column is dedicated to providing a place where problems and solutions, questions and answers, and new ideas can be shared.



# PRESIDENT'S Corner

Boy, you see a lot sitting in the "president's chair" of IMATA. The best view is of the dedication, effort, and commitment that is put forth by the Board of Directors and the committee chairs—a collection of terrific individuals. I merely represent the team, not dictate its direction, and I am excited about the direction that we have been taking so far this year.

At our mid-year Board meeting, just held in May, we focused on a number of issues which should have a very positive impact on the membership. Although the list is long, some of the items that were discussed at this meeting include: IMATA's Board intends to continue to take a pro-active approach towards detractors of our industry and in responding to letters and articles in the print and electronic media that we feel unfairly represent your dedication and commitment to marine animals. Although it has been greatly improved, we want to find ways to fully "modernize" our membership record keeping. The L.I.P. committee has been extremely busy with active participation in permit issues and the re-authorization of the U.S. Marine Mammal Protection Act, and committee representatives will once again be attending both the International Whaling Commission (IWC) and the Convention on International Trade of Endangered Species (CITES) meetings this year.

IMATA has also received an unsolicited request to be involved in discussions with the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS)

in a process referred to as Negotiated Rule Making. This is a system where input by experts, not just policy makers, is provided *prior* to the implementation of regulations involving the care and maintenance of marine mammals (now there's a novel idea!). This is yet another example which reinforces our intention to be recognized as experts in the science of behavioral conditioning, husbandry, and research with marine mammals.

The Board of Directors is also evaluating IMATA's five-year strategy plan which came out of meetings that were conducted during our 1991 conference in Concord, California. We now intend to establish updated goals and objectives for IMATA. Cheryl Messinger is heading up this project and

will carry it through during her administration. For more on this, be sure to check out Cheryl's article elsewhere in this issue.

These are just a few of the "highlights," but you can see that while we might not be at a high profile point in the year, we are continuing to work for the benefit of IMATA and its members.

Let me close this column by wishing all of you and your animals the very best as you go into the summer season, or for those of you "downunder" and elsewhere in the southern hemisphere, may the winter be equally productive.

P.S.: When was the last time that you spoke to an IMATA member from another facility?

-Dave Force

## FROM THE EDITOR



The first six months of this year have proven to be extremely trying and frustrating, and due to numerous complications and delays, both the Winter and Spring issues of **Soundings** have come out extremely late. Because I have received a number of inquiries wondering where the issues are, I wanted to take this opportunity to let everyone know what has been happening.

Although the Winter issue was actually sent to the printer on time in early January, due to a great deal of miscommunication, as well as a lack of communication, it was not mailed until late March. Apparently, there was some confusion with our bank regarding which account one of our checks should be cashed against; this resulted in the printer not being paid a substantial sum for previous work and, while they did the layout, they refused to actually print the magazine until they received their money. Unfortunately, I did not learn about this until I just happened to be in San Diego in late February. Once the confusion between the printer, IMATA, and the bank was resolved, the issue was finally printed and mailed.

This current issue is also quite late. This is due in part to a great deal of

political controversy regarding dolphins in the Bahamas which has demanded my attention, as well as several critically ill dolphins at another Bahamian facility, all of which took me away from my office and even off the island for a period of time. In addition, because the Winter issue of **Soundings** did not reach anyone until well after the deadline for this issue, most people were unaware that I had left Hawaii. Consequently, submissions for this issue have been following me from ocean to ocean, and I was still receiving them as late as the first week in May.

Ironically, perhaps, the question of tardiness may stem from increased expectations. When I think back to just five or ten years ago, I remember that we used to receive **Soundings** on a rather haphazard and unpredictable schedule, some years we didn't even receive four issues; it was what we expected and it was seldom questioned. Since the creation of the Publications Committee three years ago, however, we have been able to publish the magazine on a very regular basis and even a slight deviation

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# The Amazon River Dolphin

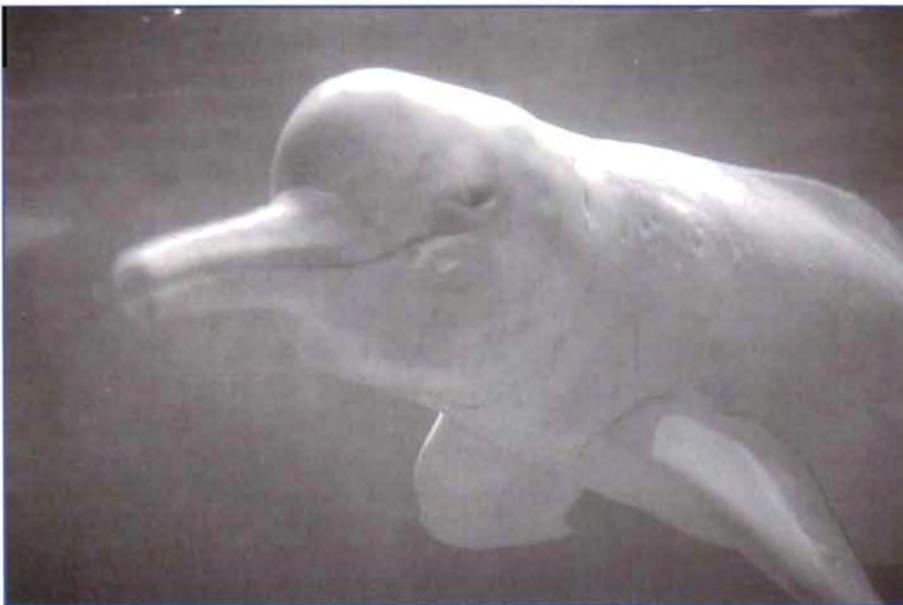
(*Inia geoffrensis*)

by  
Sandi Schreib, Annie Burrows, and Tim Smith  
Pittsburgh Aqua Zoo – Pittsburgh, Pennsylvania

**EDITOR'S NOTE:** The following article is the third in an on-going series devoted to presenting factual and detailed information regarding the various species of marine animals that many of us work with on a daily basis. This series will continue in future issues of **Soundings**.

The Amazon River dolphin (*Inia geoffrensis*) is a freshwater cetacean of the suborder Odontoceti (toothed whales), belonging to the superfamily Platanistoidea. Learning about this species is a challenge. Few *Inia* (pronounced IN-ee-uh) have been housed in captivity for long periods, and little research has been done in the wild. Also, within the literature there are contradictions and pure conjectures based upon hearsay, small sample sizes, and brief observational periods. Because of this, trying to learn about this unusual species is often frustrating. The following information, therefore, relies heavily upon the work of the most widely respected *Inia* researchers, Robin C. Best and Vera da Silva.

**CLASSIFICATION.** In Bolivia, the Guarayo Indians called this dolphin "Inia," and



Tim Smith

*The Amazon River dolphin exhibits the exceptionally long rostrum typical of platanistoid dolphins.*

de Blainville adopted that name for its genus when he described it in 1817. The name "geoffrensis" is reflective of Geoffrey St. Hillaire, who collected *Inia* specimens (including the original "type specimen" of this species) from Portugal for Napoleon (Leatherwood & Reeves, 1983). The first collection of the species, however, was by Alexandre Rodrigues Ferreira around 1790 (Best & da Silva, 1993). *Inia* are also known by the common names "boto" (often misspelled as "boutu"), "buefo," "pink dolphin," and Amazon River dolphin.

Relative to marine cetaceans, *Inia* and the other platanistoids are more primitive in terms of evolution. *Inia* is more closely related to, and morphologically representative of, the Miocene fossil cetaceans (Archaeoceti) than are any other living cetacean (Barnes, 1990; de Muizon, 1985; Mchedlidze, 1984). Morphological features linking *Inia* to fossil cetaceans include long rostrums, pre-molariform teeth, and free cervical vertebrae. Grabert (1984) suggested that relatives of *Inia* may have immigrated from the Pacific coastal waters to previously submerged regions of western South America and subsequently adapted to freshwater.

*Inia* is traditionally classified within the Platanistidae family. However, some researchers classify each platanistoid genus in its own family, listing *Inia* in Iniidae. Recently, *Inia* have been considered related to other platanistoid dolphins at the superfamily level (Platanistidoidea) (Zhou, 1982; Barnes, Domning, & Ray, 1985), or related to *Pontoporia blainvillei* and *Lipotes vexillifer* at the family level (Iniidae) (Heyning, 1989).

It has been disputed whether there is a single species within the genus, several species, or several subspecies since some populations of *Inia* are partially isolated. At the 1986 Workshop on the Biology and Conservation of Platanistoid Dolphins, participants agreed to recognize only one species until more extensive investigations are completed.

Confusion with other species is unlikely because of the *Inia*'s distribution and distinctive physical characteristics. Occasionally oceanic

*Inia* - continued on page 8

# CONFERENCE COUNTDOWN '94



## JOIN US IN THE BEAUTIFUL PACIFIC NORTHWEST

by  
Kathy Sdao  
IMATA First Vice-President

With spring finally here, it's time to begin thinking about this year's conference. The staff of Point Defiance Zoo and Aquarium is pleased and excited to be hosting the 22nd Annual International Marine Animal Trainers Association Conference here in Tacoma, Washington. Plans are already well underway to make this a memorable, enjoyable, and informative week.

The conference will begin on Sunday, 06 November 1994 with registration in the afternoon and the traditional Icebreaker Reception in the evening. The week will be filled with formal presentations, poster presentations, group discussions, audio-visual night, a visit to Point Defiance Zoo and Aquarium, and other events which will be detailed in future *Conference Countdown*

columns. The closing banquet, including awards ceremony and dancing, will take place on Friday, 11 November.

The conference will be held at the Sheraton Tacoma Hotel and the adjacent Tacoma Convention Center. Located in the heart of Tacoma's financial district, the Sheraton Tacoma is a new 26-story art-deco styled high-rise hotel overlooking Commencement Bay and Mt. Rainier. It has two restaurants and three cocktail lounges, a spa and sauna, and health facilities available to all guests. When Al Gore, Vice-President of the United States, visited Washington State for an environmental meeting earlier this year, he and his staff chose to stay at the Sheraton Tacoma Hotel!

Many of you may be unfamiliar with the city of Tacoma, though you probably have some information about our neighbor to the north, Seattle. In fact, Bob Hope used to tell a joke that the word "Tacoma" was derived from an ancient Native American word meaning "When is the next bus to Seattle?" But seriously, Tacoma is in its own right a friendly, scenic, and affordable destination. Tacoma is Washington's second largest city, with a metro area population of over 600,000 people. It is located only 16 miles south of the Seattle-Tacoma International Airport, serviced by every major airline carrier (special airfare and rental car discounts are being negotiated, details will be available in this column in subsequent issues).

The climate in Tacoma is mild



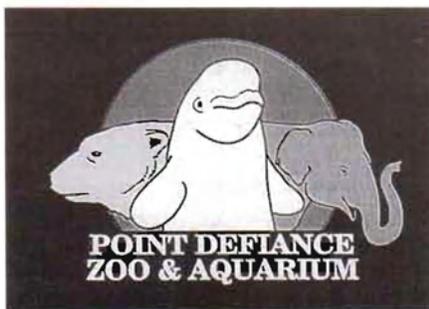
James Reutter, Jr.

*IMATA First Vice President Kathy Sdao consulted many experts in planning the menu for the conference banquet.*

year-round. But no, you won't be needing to pack sunscreen and thongs this year like you did for the two previous conferences! The temperature here in November averages between a high of 50°F (10°C) and a low of 39°F (4°C). Snow is unlikely in the city, although there will undoubtedly be snow in the surrounding Cascade Mountains (about a one to two hour drive). More likely, weather in Tacoma will be a mixture of some sunshine and some rain or drizzle, so bring a water-resistant jacket and a "bumbershoot" (i.e.: umbrella).

Internationally acclaimed Point Defiance Zoo and Aquarium is located within Point Defiance Park, one of the largest urban parks in the nation, covering nearly 700 acres. Contained within its boundaries are over 30 miles of hiking trails, many gardens and ponds, acres of old-growth forest, a five-mile scenic drive, views of surrounding Puget Sound and mountain ranges, and much more.

Further points of interest around Tacoma, Puget Sound, and Point Defiance Zoo and Aquarium will be included in the next *Conference Countdown* column. The important thing for each of you to consider right now is "How can I get involved in this year's conference?" Isn't there some innovation, research project, training technique, or professional accomplishment that you would like to share with your colleagues? Where else can you find literally hundreds of trainers gathered together at one time in order to learn and exchange



*Point Defiance Zoo and Aquarium trainer Nolan Harvey works with beluga whale Mauryak on an ultrasound procedure. IMATA members will have the opportunity to visit the PDZA during the annual conference.*

Point Defiance Zoo and Aquarium

information (not to mention socialize)? I urge you to make plans not only to attend the 1994 conference, but to participate to the fullest extent possible. Take a look at the information provided in the mailing you received (or will receive shortly) calling for submission of abstracts. This year, think about sending in an abstract as well as your registration form. Remember, it is up to all of us to make this yet another successful conference. I sincerely look forward to hearing from you. Please direct any questions or suggestions that you might have to either:

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dolphin species such as *Tursiops* are mistakenly labeled river dolphins because they travel briefly into river systems or canals (in Florida, for example). In contrast, *Inia* live their entire lives in freshwater, never traveling into the ocean.

Platanistoid dolphins are found only in the continents of South America and Asia, and each platanistoid genus inhabits separate river systems. While the *Inia* is the only platanistoid found in the Amazon and Orinoco river systems, it is not the only dolphin. At times the *Inia* is confused with a small population of the delphinid *Sotalia fluviatilis*, also known as “tucuxi” (pronounced TOOK-a-shee). While tucuxi are largely oceanic, one population lives 1,200 miles (1,931 km) into the Amazon River system. The tucuxi (which resembles the bottlenose dolphin) possesses a significantly shorter rostrum, a more triangular dorsal fin, and is much smaller than the *Inia*.

**DISTRIBUTION.** *Inia* range throughout the Amazon and Orinoco River systems (including all of their tributaries) except where estuaries, rapids, and waterfalls exist. They are found most commonly at the mouths of rivers and below rapids, possibly for increased feeding success. During the cyclic seasonal flooding of this area, the *Inia* range through the entire floodplain, even in extremely shallow pools and amidst trees of the flooded forest (Best & da Silva, 1993).

Attaining an accurate population estimate is difficult due to many factors, including the species' extensive range, the poor visibility of the riverwater, and the discrete way in which *Inia* surface. The populations are considered to be in good condition, but highly vulnerable due mainly to hydroelectric development along the rivers, as well as deforestation and pollution factors. The rapidly growing Amazon fisheries industry is not a major threat presently, but may pose a threat in the future (Perrin, Brownell, Zhou, & Liu, 1989). *Inia* is listed on Appendix II of CITES.

**DESCRIPTION.** The *Inia* has been called “the ugly dolphin” (Caldwell & Caldwell, 1969a, 1969b, 1972), but this simply reflects the fact that bottlenose dolphins have long been considered the standard model for a dolphin's



The Amazon River dolphin (*Inia geoffrensis*) is one of six species of river dolphins found around the world.

appearance. Any other type of dolphin therefore appears odd-looking to the average observer.

The *Inia* has many physical features which differ not only from the bottlenose dolphin, but from the oceanic dolphins in general. Like the rest of its riverine superfamily, *Inia* has the distinctive platanistoid feature of an extremely long rostrum. A unique feature among all cetaceans, however, is that *Inia* rostrums are covered with small hairs which remain throughout their lives. The tooth count varies (between 24 and 34 on each ramus) within different populations of *Inia* (Best & da Silva, 1993), but in addition to conical teeth, all *Inia* have molariform teeth, which is a unique feature among cetaceans.

Like belugas, *Inia* have been observed wrinkling, pulsing, and flexing their bulbous melons, apparently voluntarily (Leatherwood & Reeves, 1983; Schreib & Burrows, 1988). The eyes appear small, yet it is actually the eye opening which is reduced. The eyeball itself is similar in size to that of *Tursiops* (Krieger, 1986). The pectoral flippers of *Inia* are large and wide, resembling sea lion flippers more than bottlenose dolphin flippers, and are well-suited for

assisting in the locomotion of the *Inia*. The dorsal fin is more of a ridge, peaking approximately two thirds of the way down the back at a few inches in height, and tapering into the peduncle.

The *Inia* is known as the “pink dolphin” because of its unusual skin coloration which varies between pink and grey. Best and da Silva (1989) suggest that the variation is affected by age, water clarity, sunlight, temperature, or some combination of these factors. *Inia* are born grey, and the pink coloration becomes more evident in older individuals, possibly due to a loss of pigmentation. *Inia* from opaque waters are also pinker than those found in clear water, where a “sun-tan effect” (Layne & Caldwell, 1964) may mask pinkness. Captive *Inia* have been observed to have a “flushing” response, temporarily becoming pinker on the belly and ventral side of the pectoral flippers when excited (Schreib & Burrows,

1988). This is probably caused by increased blood flow through subcutaneous capillaries, since pinkness is lost in cold water and is not evident after death (Krieger, 1986; Best & da Silva, 1989).

The largest of the platanistoid dolphins, the *Inia* reaches maximum adult lengths of 255 cm (8.4 ft.) and 156.5 kg (345 lbs) in males, and 201 cm (6.6 ft.) and 98.5 kg (217 lbs) in females. Best and da Silva (1989) note that longer measurements of *Inia* may have resulted by measuring over the dorsal ridge.

**NATURAL HISTORY.** The *Inia* is a far more solitary species than many oceanic dolphins. A majority of observers report mostly single animal sightings (58-81%), a few pair sightings, and only occasional group sightings (Layne, 1958; Trebbau & van Bree, 1974; Best & da Silva, 1989). Best and da Silva (1989) also suggest that the pairs may be mothers and calves, and the group sightings may be related to courtship and mating behavior. Additional evidence of this

# REGIONAL REPORTS

The Regional Reports are designed to help membership keep track of what is going on at other facilities around the world. If you have something that you would like to include in a regional report please send it to **Soundings** or to the regional reporter for your area. Please note that there are a few regions that still need reporters, particularly Canada, Central and South America, Africa, and Eastern Europe. If you would like to help collect reports from your area please contact John Kirtland.

## U.S. ALASKA/HAWAII REGION

Laura Bottaro & Stephanie Vlachos  
Sea Life Park  
Waimanalo, Hawaii

### *Dolphin Quest* - Waikoloa, HAWAII

The Dolphin Quest staff would like to say *aloha* and *mahalo* to all the IMATA members who attended the 1993 conference. The participation and enthusiasm of all who attended made it a very special week. Thanks to all.

The new year has produced expansion for Dolphin Quest with the addition of a new facility in French Polynesia. Located at the Moorea Beachcomber Parkroyal on the island of Moorea, just eleven miles from Tahiti, this new facility will further the goal to educate and share the beauty of marine mammals to other parts of the world. The facility currently houses three rough-toothed dolphins (*Steno bredanensis*). Expect to hear more about this new facility and their animals very soon.

The focus at Dolphin Quest-Hawaii is currently toward their four pregnant bottlenose dolphins (*Tursiops truncatus*). All four dolphin are now in the latter stages of pregnancy and are expected to calf early this summer. The staff has been closely monitoring the animals with monthly ultrasound examinations and have gained valuable information by comparing the pregnancies. The Dolphin Quest staff would enjoy hearing from other IMATA members who have had experiences with dolphin deliveries, as

well as with the care of newborns.

### *Waikiki Aquarium* - Honolulu, HAWAII

Daily activities during the winter progressed slowly towards the Waikiki Aquarium's spring reopening. After nearly 17 months of renovation everyone was looking forward to the big day.

The aquarium's Hawaiian monk seals (*Monachus schauinslandi*) were kept busy by their involvement in experiments conducted by University of Hawaii graduate students under guidance from their professor and from the U.S. National Marine Fisheries Service. An impedance study went very well once the animals learned that all they had to do was lie motionless. A saliva study is on-going, with weekly samples being taken from two seals.

The most recent test has been getting the seals use to ultrasound probes. This test is progressing very well, however, from time-to-time the animals do get a little spooked by all the people who want to watch.

Tom Fenske would like to extend his thanks to Marlee Breese and the staff at Sea Life Park for allowing him to begin training one of the monk seals at their park. It is hoped that this animal can be moved to the aquarium once the construction has been finished. The training is going nicely and the seal is now conditioned to human touch and being moved around on a target.

### *Sea Life Park* - Waimanalo, HAWAII

The Hawaiian monk seal Head Start program is still going strong at Sea Life Park. They have rehabilitated six under-sized pups born in the spring of 1993; four of which were relocated to the northwestern Hawaiian Islands in January. The two other pups still needed to gain some more pounds to reach their target weight of 150 lbs (330 kg) and were scheduled to be released in late spring. These two pups will be the 26th and 27th pups successfully rehabilitated by Sea Life Park since they became involved with the Head Start project in 1989.

The Sea Life Park nursery was home to five Laysan albatross (*Diomedea immutabilis*) chicks over the winter. Due to less than optimal nesting sites at several runways around the state, eggs were collected from several airfields on the islands of Oahu and Kauai and incubated under close supervision at the University of Hawaii by Dr. Casey Whittow. Dr. Whittow studied the eggs and the pipping and hatching process and then turned the chicks over to Sea Life Park to be raised. When the chicks arrive, they are anywhere from three or four days to three weeks old and they weigh between 300 and 800 grams.

A pilot study has recently been launched in an attempt to attract some of the albatross that have been attempting to nest on Oahu and relocate them to a small island about one mile offshore from Sea Life Park. Decoy albatross, as well as the bird's calls (played on solar powered CD

players), have been set up and are being closely monitored by volunteers from the Hawaiian Audubon Society. This technique, known as social attraction, has been successful with other sea bird species and seems to be working in this project, as observers have recently seen a few wild albatross who appear interested in this future nesting site.

Finally, Sea Life Park is collaborating with a doctoral student from Colorado State University. Researcher/student Ginger Le Blanc is interested to see if a California sea lion (*Zalophus californianus*) is able to use the visual perspective of a human being to obtain a food reward. As of this writing, three-year-old Po'okela is just getting used to her apparatus. Hopefully the task will come naturally to Po'okela, as her mother, Huapala, was the subject of Adam Pack's thesis research at the Kewalo Basin Marine Mammal Laboratory back in 1984.

#### U.S. CALIFORNIA REGION

Dave Roberts  
Sea World of California  
San Diego, California

*EATM/Moorpark College* - Moorpark,  
CALIFORNIA

The staff and students of the Moorpark College Exotic Animal Training and Management (EATM) program held their biggest Spring Spectacular fundraiser ever this past March. They rehearsed a new show and their zoo received a complete makeover to help them reach their goal of \$20,000.

The second-year class had a fantastic experience in February on the program's annual field trip to San Diego. The trip proved to be a fabulous learning experience thanks to the help of many IMATA members at Sea World and the San Diego Zoo. The students would like to extend their thanks to the entire sea lion staff at the San Diego Zoo, and especially to Kristi for her "motivational" speech. Another special thanks to Julie and Don Ludwig, Dave Roberts, and everyone at the bird show and Killer

Whale Stadium at Sea World for sharing their time.

*Sea World of California* - San Diego,  
CALIFORNIA

The trainers at Dolphin Stadium worked very hard and diligently over the winter and it has paid off handsomely in their husbandry training. They now have six *Tursiops* giving voluntary urine samples daily. Needless to say, this will provide the veterinary staff with a wealth of information regarding the dolphin's health and body chemistry.

Extensive training with the park's pilot whale (*Globicephala macrorhynchus*), Betty, has also caused much excitement as she is now doing footpushes and "hydrohops."

Sea World hosted the First Annual Bird Conference of the International Association of Avian Trainers and Educators (IAATE) at the beginning of February. The bird trainers did a superb job putting together a great program and presented some very interesting papers concerning avian training and husbandry.

The social structure at Shamu Stadium underwent a few changes this winter with the arrival of Ulises, a beautiful 15-year-old male killer whale (*Orcinus orca*) from Spain. Ulises is at Sea World on a breeding loan from the Barcelona Zoo after outgrowing the zoo's facility. While the Barcelona Zoo is awaiting the construction of a new killer whale facility, the staff at Sea World will make every effort to ensure that Ulises enjoys a healthy and stimulating lifestyle with his new companions in San Diego.

The park's Rocky Point Preserve, which is comprised of Otter Outlook and Dolphin Bay (an interactive exhibit with bottlenose dolphins), continues to be a big hit with Sea World's guests, continually delighting folks of all ages.

The staff at Sea World is looking forward to a fun, busy, and productive summer and wish all IMATA members a fulfilling season.

#### U.S. PACIFIC NORTHWEST REGION

Cynthia Alia  
Oregon Coast Aquarium  
Newport, Oregon

*Oregon Coast Aquarium* - Newport,  
OREGON

The aviculturists at the Oregon Coast Aquarium have been working hard coming up with enrichment ideas for their tufted puffins (*Fratercula cirrhata*), common murre (*Uria aalge*), rhinoceros auklets (*Cerorhinca monocerata*), pigeon guillemots (*Cepphus columba*), and American black oyster-catchers (*Haematopus bachmani*). Some of their ideas include drilling holes in driftwood and placing mealworms in them, placing "live rocks" (rocks covered with



*A napping polar bear is reflected in the quiet water of its exhibit at the Point Defiance Zoo and Aquarium.*

Mel Woods

mussels, barnacles, worms, etc.) in the shallow areas of the pool, and putting large bull kelp whips in the deep end near the underwater viewing window. These enrichment ideas have been a great success and the birds are interacting with them frequently.

The pinniped and otter exhibits have undergone some minor construction. By the time this issue of **Soundings** goes to press, the new otter viewing window will have been installed and work will have begun on replacing the acrylic underwater viewing window in the pinniped exhibit with a glass one.

*Point Defiance Zoo & Aquarium* - Tacoma, WASHINGTON

So far, 1994 has been a particularly busy year for the staff at Point Defiance. Much of their time has been spent preparing for two exciting upcoming events: the 22nd Annual IMATA conference to be held in Tacoma in November, and the birth of beluga whale (*Delphinapterus leucas*) Mauyak's second calf, due in late summer. Additionally, structural modifications were made to the beluga pool in early March to allow the staff greater flexibility in managing animals.

**U.S. ROCKY MOUNTAIN REGION**

Jim Blankenship  
Denver Zoo  
Denver, Colorado

*Marine Life Aquarium* - Rapid City, SOUTH DAKOTA

Lee Kellar would like to introduce the newest staff member at Marine Life Aquarium. Barbara Riemenscheider has joined the team in Rapid City as the facility's new Assistant Curator.

*Denver Zoo* - Denver, COLORADO

The Denver Zoo reports that they are seeing considerable hair loss in their polar bears (*Ursus maritimus*). According to Jim Blankenship, the zoo's bears tend to spend significantly more time inside their holding area, where it is much warmer, than they do outside. He does not know if this is

contributing to the hair loss, however. Jim would be interested in hearing from anyone who has seen this problem in other polar bears.

**U.S. MIDWEST REGION**

Faith Dunham  
Marine World Africa USA  
Vallejo, California

*Brookfield Zoo* - Brookfield, ILLINOIS

The staff of the Seven Seas Panorama at the Brookfield Zoo have been busy this winter with many projects, but none more exciting than watching the development of their baby dolphin, Kaylee. The female bottlenose dolphin is now eight months old and is a charmer, according to reports. She is learning many new and fun things from her poolmates and is very receptive to interactions with the training staff. Kaylee has been eating fish for many weeks and now understands a whistle bridge and she enjoys touching and following targets. Her spontaneous participation in shows has equally delighted many visitors.

Recently, the zoo transferred two adult male *Tursiops* from their Dolphin Connection facility in the Florida Keys to the Seven Seas facility. The move went smoothly and Lucky and Hastings are acclimating nicely to their new environment.

The training staff would like to welcome new trainers Wendy Komar and Ronnie Martell to Seven Seas and wish them much success.

Very regrettably, the Brookfield Zoo announces the recent loss of a very special friend. Amy the harbor seal (*Phoca vitulina*) passed away at the age of 43. Amy arrived at the Brookfield Zoo in 1953, originally making her home in the Children's Zoo. Years later, she came to Seven Seas and joined forces with Olga the walrus and they became the most famous animal pair in the zoo. Amy will be remembered for her gentle disposition and the incredible prowess she displayed for many a hapless duck that landed in her pool. Amy touched the lives of many trainers and visitors

alike; she will be missed.

*Lincoln Park Zoological Gardens* - Chicago, ILLINOIS

The Lincoln Park Zoo will begin construction on a new pinniped exhibit very soon. During the construction phase, the zoo's resident pinnipeds will need temporary homes. Lincoln Park would like to lend the animals to an appropriate facility on a short-term basis. The available animals are 1.2 adult California sea lions and 1.3 harbor seals. None of the animals are trained and they currently live in a colony situation. The animals will need temporary homes for approximately two to three years. If any facility would be interested in adopting these animals, please contact Mark Rosenthal, Curator of Mammals, at the Lincoln Park Zoo for more information (312) 294-4663.

*St. Louis Zoo* - St. Louis, MISSOURI

Jim Alexander reports that everyone is very excited about the new marine mammal show, as well as the new animals, which debuted at the St. Louis Zoo on 14 May. Jim would also like to welcome Meg Hart-Dudek to his staff; Meg formerly worked in the zoo's bird house.

*Indianapolis Zoo* - Indianapolis, INDIANA

The staff of the Indianapolis Zoo's marine mammal department is looking forward to the spring and summer season. Along with preparing for several births, they have been working on scripts and performance ideas for their cetaceans and pinnipeds.

The zoo hosted the Mid-West Marine Mammal Meeting on 18 March and would like to extend their thanks to everyone who attended and shared thoughts and ideas. This was the third annual gathering of representatives from midwestern facilities. The number of people attending has been growing steadily each year and everyone is now looking forward to next year's meeting.

*Glen Oak Zoo - Peoria, ILLINOIS*

Roz Wolfram of the Glen Oak Zoo is in the process of formatting a new show and would appreciate any suggestions for interesting behaviors that will help her educate the public about the animal's natural behaviors. Roz is working with 12 California sea lions; if anyone has any suggestions, please give her a call at (309) 686-3365.

*Sea World of Ohio - Aurora, OHIO*

It was a very busy and productive winter in snow-covered Ohio. Sea World's pinnipeds and otters were temporarily moved to Sea World of Florida while the back area and filtration area of the Sea Lion and Otter Stadium were rehabed. The remodeled facility now has new and larger pools, a new North American and Asian otter area, as well as a new fish preparation area.

In other news, the park's killer whales all advanced in their tone repertoire (computer generated tones as an auditory stimulus to perform behaviors) over the winter, and the staff continued to advance the husbandry program with their killer whales and Pacific white-sided dolphins (*Lagenorhynchus obliquidens*). The staff also spent the winter brainstorming for new behaviors and ideas to implement into their education shows for the current season.

Sea World of Ohio was also excited to assist with the recent IMATA mid-year Board of Directors meeting which was held in the Cleveland area. They were equally delighted to have the Directors and several committee chairpersons attend the park's opening week-end.

Lastly, everyone at Sea World of Ohio would like to welcome Dennis Gilbert as their new Executive Vice President/General Manager.

*Oceans of Fun - Milwaukee, WISCONSIN*

The Oceans of Fun staff spent a winter of big midwestern snowstorms writing program scripts and training new behaviors in anticipation of another busy summer season. Although normally Oceans of Fun is open year-round, this past season they were closed temporarily in order to complete some pool maintenance. They reopened in mid-March in time for the spring season.

*Knoxville Zoological Gardens - Knoxville, TENNESSEE*

Tina Judd of the Knoxville Zoo reports that their 10-year-old, captive-born, hand-raised polar bear, Kanook-Suia, gave birth to her first cub over the Thanksgiving 1993 weekend only to eat it. Obviously this was very disheartening to the staff, but Kanook-Suia seems to have recovered and the staff is now discussing her future breeding plans.

On a happier note, two blackfooted penguin chicks (*Spheniscus demersus*) recently fledged. The father of these chicks is the fourth oldest living wild-caught African penguin in North America; he is approaching 30 this year. Way to go, Sylvester!

The zoo's educational pinniped talks took on a unique conservational flair this spring as Alpha, a bull California

sea lion, began recycling paper and plastic into the appropriate containers. Two female sea lions are also helping to focus attention on topics such as medical behaviors and their importance, diet, and the animals' physical adaptations. These educational talks also include harbor and grey seals (*Halichoerus grypus*) so that the public can gain a better understanding of the differences between seals and sea lions.

**U.S. SOUTHEAST REGION**

Shara Tarule  
Dolphin Research Center  
Grassy Key, Florida

*Clearwater Marine Science Center - Clearwater, FLORIDA*

In early January, CMSC Aquarium dolphin trainers traveled to the Florida Keys to visit marine facilities and network with other marine mammal trainers. The first stop was Theater of the Sea in Islamorada where they observed Annette and Pam conducting a public session. Later they all discussed methods of adding environmental messages to public presentations and ways to keep the message "fresh." Jerry was also kind enough to introduce Theater of the Sea's 3-month-old calf to the CMSC



*This young Kogia, either a pygmy or dwarf sperm whale, is recovering and will soon be released, thanks to the dedicated efforts of the animal care staff at the National Aquarium in Baltimore's stranding center.*

John Kirtland

staff.

The next stop was the Chicago Zoological Society's Dolphin Connection at Hawk's Cay. It was a miserable, rainy day, but the training staff welcomed the Science Center staff to their facility and shared a training session despite the weather (they also shared raincoats and coffee!). Everyone discussed husbandry ideas, and the Clearwater staff thoroughly enjoyed the hospitality shown by trainers Gena, Beth, Kevin, and John.

The third visit was to the Dolphin Research Center in Grassy Key, where trainers Linda, Kathy, Barbara, and Shara introduced their many animals and involved the staff in sessions throughout the day. They also observed Dr. Nathanson and dolphin Santini working with special-needs children.

The Clearwater staff would like to extend a very heartfelt "thank you" to the staffs of all the facilities for their gracious hospitality and kindness. This trip confirmed the belief that networking is a valuable way to share ideas, thereby improving training and presentations through the discussion of both similarities and differences with others in the field. It's a wonderful way to keep in contact with old friends, and make new ones as well.

At the CMSC Aquarium, the staff is continuing to train husbandry behaviors with Sunset, their resident dolphin, and he is progressing nicely. Construction is scheduled to begin shortly on a husbandry platform which will add a new dimension to these behaviors. Thanks to West Marine Products for their generous donation of the funding for the platform. CMSC would also like to thank Michelle Wells for her valuable input as a behavioral consultant to CMSC. Michelle has brought many creative ideas to the training program, and her expertise and upbeat attitude make it a pleasure to work with her.

*Dolphin Research Center - Grassy Key, FLORIDA*

The tourist season is in full swing down in the Florida Keys and the staff

at DRC have been kept busy with new programs which have shown great promise. In January they conducted their first Intermediate Dolphinlab which included seminars on manatees and sea lions, current research, conservation, the reauthorization of the U.S. Marine Mammal Protection Act, and endangered marine mammals. DRC's internship and volunteer programs have also expanded, offering experience in many of their departments, such as animal care and training, research, education, and membership and development.

Everyone at DRC is happy to report that their four-month-old bottlenose calf is doing well. They found out only weeks ago that the baby is a female (the natural enclosures are not the best at viewing the under-side of a fast moving baby). Now the naming process will begin (at DRC a suggestion list of names is kept, the difficulty is in trying to narrow down the choices to one that the entire staff agrees on. For this baby they had 856 names to choose from!). With the help of Dr. Debbie Duffield and some blood from the placenta it should be determined in a few months whether Rainbow or Sandy is the proud father.

DRC once again had the extreme pleasure of working with Dr. Terrie Williams, Scientific Officer—Office of Naval Research, on her blubber thickness/heat flow study. All of the DRC dolphins cooperated perfectly, providing Dr. Williams with a wealth of information.

*Dolphin Connection - Duck Key, FLORIDA*

The Dolphin Connection staff is pleased to announce that Hawk's Cay Resort has been awarded the Florida Hotel and Motel Association's Environmental Quality Achievement Award for 1993. This was due in part to the environmental education programs developed and implemented by the Dolphin Connection.

In December, the Dolphin Connection staff hosted a meeting of local South Florida dolphin facilities. The gathering was the 2nd annual

meeting held at Hawk's Cay to promote communication between facilities and share information concerning the animals in zoological habitats. Facilities represented included the Dolphin Research Center, the Ocean Reef Club, Ocean World, and Theater of the Sea; staff from the Chicago Zoological Society's Brookfield Zoo also attended. The sixty people in attendance had an educational and fun evening and everyone is looking forward to meeting again next year.

*Mote Marine Laboratory - Sarasota, FLORIDA*

As of April 1994, the construction of the first phase of the new Mote Marine Lab Marine Mammal Research and Rehabilitation facility will be complete. The first phase consists of a research building to house the existing marine mammal and sea turtle program, an animal care complex which includes two medical pools, animal care office, fish prep room, veterinary laboratory and office, as well as a public education component with visitor center and classroom. Everyone at Mote feels that the center will be a significant contribution to the care of stranded marine animals along the west coast of Florida.

Michelle Wells reports that a few hours after she finished her last report to IMATA telling of their successful rehabilitation of a bottlenose dolphin, they had yet another live stranding! This time it was an unusual species for this area—a pygmy killer whale (*Feresa attenuata*). This was Michelle's first experience with this species and he was an incredible animal. The extremely poor condition of Lunar (as he was named) put the MML staff and their volunteers through the most rigorous times they had yet to go through in taking care of a stranded animal. Unfortunately, despite the dedication of 315 people and 6,600 hours of round-the-clock care, Lunar died on Christmas morning. The necropsy revealed significant findings of a parasitic infection of the brain, possible meningitis, pneumonia, and intestinal

ulcers. The Mote staff was saddened by Lunar's death, but feel their efforts throughout the forty days of care were not in vain. They learned invaluable lessons in the care of this species, as well as better insight into the care of other cetaceans.

### U.S. EASTERN REGION

Jennifer Lawson  
National Aquarium in Baltimore  
Baltimore, Maryland

*New England Aquarium* - Boston,  
MASSACHUSETTS

So far it has been an exciting year at the New England Aquarium. Architects and a target date have been determined for the expansion of the aquarium. The target date is 1999, and the plans call for a new pinniped exhibit to replace the old Discovery. In the meantime, the Discovery, home to the aquarium's California sea lions, has received a face-lift. All of the animals and the trainers are adjusting well to the new stage and backdrop design. The staff is also putting together a new presentation that will focus on over-fishing and entanglement.

The aquarium saw the birth of two Atlantic harbor seals (*P. v. concolor*) in 1993; Reggae and Cayenne were born in May and June respectively. Both pups are fat and doing well with their first taste of training.

The animal care staff is also quite busy due to an unusual number of hooded seal (*Cystophora cristata*) sightings. At the time of this writing, the staff is caring for five hooded seals, two harbor seals, two Ridley turtles (*Lepidochelys spp.*), and five loggerhead turtles (*Caretta caretta*). The turtles will be moved to St. Augustine, Florida for further rehabilitation.

The aquarium is also opening a new exhibit called "The Everglades" which features animals such as alligators, snakes, turtles, and spiders. It is an exciting exhibit and IMATA members are invited to come view it.

*National Aquarium in Baltimore* -  
Baltimore, MARYLAND

The snow has gone and the staff at NAIB are busy preparing for their summer season. They have spent the winter training new behaviors and maintaining old ones. Their two *Tursiops* calves, Cobie and Chesapeake, are eating well and increased their training interaction. The staff intends to have the two calves gating into the front exhibit pool so that they can start participating in the summer shows.

The aquarium's marine mammal stranding program was also very busy this winter. On the day after Thanksgiving they received a small sperm whale of the genus *Kogia*; the species is yet to be determined as either a pygmy (*K. breviceps*) or dwarf (*K. simus*). After undergoing several endoscopy procedures to remove swallowed plastic, the whale is improving and is eating well.

The following week a loggerhead turtle arrived suffering from bilateral cataracts. While the staff is working to stabilize the animal, it is eating and slowly increasing in weight.

Finally, the aquarium's new off-site holding facility for stranded animals was officially christened during the first two weeks of February with the arrival of three stranded harbor seals. All are suffering from parasites and various other medical problems. Efforts are ongoing to help stabilize these animals and to encourage unassisted feeding. The staff extends their thanks to the dedicated volunteers for all their time and effort.

### EUROPE REGION III

Géraldine Lacave  
Boudewijnpark  
Brugge, Belgium

*Dolphinarium Brugge* - Brugge,  
BELGIUM

According to Géraldine Lacave, Gorki, the most recent bottlenose dolphin calf born at the Dolphinarium Brugge, is doing great. After four months alone with this his mother, the calf is now together with the rest of the park's population. Gorki, who will be a year old in August, is actively

playing and has started eating fish. As a newborn, Gorki was taken out of the water everyday for the first three weeks (*see Vol. 19, No. 1*) in order to receive an antibiotic injection to protect against infection. The dolphinarium intends to follow the same program with future calves.

*Mont Mosan* - Huy, BELGIUM

Jean Marc Van Berg, pinniped keeper at Mont Mosan and new IMATA member, has submitted his first report to **Soundings**. Jean Marc reports that he is currently working with three harbor seals that are nearly four-years-old, as well as a Patagonian sea lion (*Otaria flavescens*) that was acquired in August of 1993. Mont Mosan also has two California sea lions named Neptune and Elsa. Elsa is now pregnant and will give birth to her first pup later this summer.

*Duisburg Zoo* - Duisburg, GERMANY

Dr. Bernhard Neurohr, veterinarian at the Duisburg Zoo, reports that construction on their new bottlenose dolphin facility is underway with completion scheduled for this summer. The new pool will have a surface area of 500 square meters (1640.5 sq. ft.), with a water volume of 2000 cubic meters (6562 cu. ft.); it will be connected to the zoo's existing pool by means of a 35 meter long (115 ft.) underwater passage. Underwater rockwork, similar to that in the beluga habitat at the Vancouver Public Aquarium, will add the finishing aesthetic touches to the new exhibit.

On 24 January, Hansaland in Sierksdorf transferred a female bottlenose dolphin to the Duisburg Zoo. The 13-year-old dolphin, named Pepina, was successfully introduced to the zoo's resident population and quickly mated with a male named Playboy. She now appears to be pregnant.

Lastly, the zoo is proud to announce that their 20-year-old grey seal bull recently sired another pup. The pup was born on 07 February; he has since been weaned and is doing just fine.

*Tierpark Dortmund* - Dortmund,  
GERMANY

Since last summer there has been extensive media coverage regarding the alleged suffering of zoo animals, especially dolphins, according to Volker Gatz of the Dortmund Zoo. "At the moment," he writes, "the animal rights movement hits the German zoo community with its full power." The keepers and trainers at the zoo's sea lion show are taking every opportunity to discuss the accusations and inaccuracies with their visitors. They are also working closely with the German Association of Zoo Keepers to organize discussions with the animal rights extremists and to get the true facts into the media. Any information they receive from IMATA members or through **Soundings** will be extremely helpful.

#### EUROPE REGION V

Simon Ede  
Park Asterix  
Paris, France

*Park Asterix* - Paris, FRANCE

Park Asterix writes that their female *Tursiops* calf, Athena, is now ten-months-old and doing very well. She has recently discovered that basketballs are simply the best toys ever invented and is keeping the staff amused for hours with her antics. The calf has also started playing with capelin and, hopefully by this issue of **Soundings**, she will have started eating.

*Marineland Antibes* - Côte d'Azure,  
FRANCE

Marineland's killer whale calf celebrated her first birthday on the 25th of February. According to her trainer, Bruce Walton, she is very boisterous and is supplementing her mother's milk with an average daily intake of about 12 kilograms (26.5 lbs) of herring and mackerel.

In related news, the film *Free Willy* went into general release in France on 09 February. Marineland's head

trainer, Jon Kershaw, was invited by Warner Brothers to address an audience at the end of a preview screening of the film in Marseilles. To his surprise, he found a very receptive audience who asked sensible questions and, even more surprisingly, he found not even one person who agreed with the film's theme of releasing captive killer whales into the wild.

#### AUSTRALIA REGION

Steve Romer  
Sea World Australia Limited  
Gold Coast, Australia

*Underwater World* - Perth, WESTERN  
AUSTRALIA

Mark Whitfield of Underwater World reports that the past summer was exceptionally hot, with air temperatures around 40°C (104°F) and water temperatures around 24°C (75°F). All their dolphins are fit and healthy and are working well on a reduced summer food intake due to the warm weather. The animal care staff is continuing to use ultrasound examinations to monitor the pregnancy of one of their female dolphins, and Mark reports that some minor behavioral changes are starting to creep into this animal's presentations, which he feels is a good indication of her progress. She is expected to have given birth by the time this issue of **Soundings** goes to press.

Underwater World's new "Dive with the Dolphins" program has been very well received by both divers and dolphins. The dolphins are responding well to the extra attention, and the divers are enjoying the opportunity to interact with the dolphins.

Lastly, Mark wishes everyone a prosperous 1994 and invites all IMATA members to visit Underwater World when visiting Australia.

*Taronga Zoo* - Sydney, NEW SOUTH  
WALES

On 02 December 1993, Taronga Zoo's male southern elephant seal (*Mirounga leonina*) underwent an eye

operation. With the help of an animal eye specialist, the operation involved extending a piece of the cingulum membrane over the ulcerated area and suturing it in place to try to thicken and strengthen the area. The operation took 50 minutes and went well. The seal is now back with the female after separation for the breeding season.

Taronga's Australian sea lions (*Neophoca cinerea*) have been placed together to commence a breeding program that will hopefully not only produce offspring, but also lead to research on breeding strategies of this species. The zoo has also had their New Zealand fur seals (*Arctocephalus forsteri*) together in the hope that they too will breed.

Taronga's marine mammal department is planning on integrating two southern skuas (*Catharacta maccormicki*) into their Macquarie Island exhibit. They are interested in any advice from IMATA members who have experience working in a mixed species exhibit of pinnipeds and birds.

The zoo received the body of a melon-headed whale (*Peponocephala electra*) from the Pet Porpoise Pool for postmortem and skeletal collection by the Australian Museum. Although Taronga does not display cetacea, they continue to receive dead or injured animals for necropsy or rehabilitation.

In staff news, Cathy Horvat has left the zoo after seven years to pursue qualifications in teaching. Cathy will continue her postgraduate degree study on elephant seals. Michelle Odewahan has taken a year's leave of absence to work in Africa.

*Pet Porpoise Pool* - Coffs Harbour,  
NEW SOUTH WALES

The Pet Porpoise Pool and Sea World Enterprises were involved in a joint rescue operation of an entangled bottlenose dolphin on 16 January 1994. The animal had approximately two kilograms (4.4 lbs) of nylon line, weed, and barnacles covering its tail, with much of the line cutting deeply into the flesh of its mutilated flukes. This animal was identified as being the

same mature female freed from a similar situation by Sea World sixteen months earlier.

On 23 January, a newborn bottlenose calf stranded 80 kilometers (50 miles) north of Coffs Harbour. The calf was placed with the previously mentioned stranded dolphin, appeared to bond immediately, and was observed suckling unsuccessfully. The calf was tube-fed a formula every other hour and rapidly gained weight before dying of pneumonia after six days.

The Pet Porpoise Pool also recovered a 2.8 meter (9 ft.) male melon-headed whale which was washed up 90 kilometers (56 miles) north of Coffs Harbour. The body was transferred to the Taronga Zoo for a postmortem examination. Coincidentally, on 9 February, another slightly smaller male whale received temporary stabilization and antibiotic treatment at the oceanarium before being tagged and released.

#### *Oceanworld* - Sydney, NEW SOUTH WALES

Shane Austin of Oceanworld reports that the past summer holiday period was very busy, with guest attendance increasing by 40% over the same period last year. Four shows were required per day with the stadium being constantly sold out. All their animals are well and have now settled back into the daily routine of the slow season. Training is now progressing on a new show using Australian (*Arctocephalus pusillus doriferus*) and New Zealand fur seals. Oceanworld is looking forward to a productive 1994 and is planning many new exhibits.

#### *Sea World Enterprises* - Gold Coast, QUEENSLAND

Sea World enjoyed their busiest summer holiday season ever. All shows went well and the swim-with-the-dolphin and other interactive programs were fully booked. The oceanarium's new educational dolphin show has been very well received,

with many positive comments from guests.

Sea World is sad to report the loss of Zippy, a 23-year-old male California sea lion that had been at the park since 1972. Zippy died of a prolapsed bowel on Christmas Eve. On New Year's Eve, however, a healthy 7.8 kilogram (17 lbs) female California sea lion was born. The pup, named Amber, is doing well and now weighs over 15 kilograms (33 lbs).

As mentioned in the Pet Porpoise Pool report, Sea World was involved in a joint operation to rescue an entangled dolphin found in the Tweed River 20 kilometers (12.4 miles) south of Sea World. The animal is currently recovering and doing well at the Pet Porpoise Pool.

On 29 January, Sea World received an orphaned Indo-Pacific humpback dolphin calf (*Sousa chinensis*) that stranded 1000 kilometers (621.5 miles) north of the Gold Coast. The young animal, estimated to be less than a week old, weighed just 15.7 kilograms. The calf was placed with one of Sea World's lactating bottlenose dolphins (whose own calf had, ironically, just finished weaning) and immediately bonded with his new surrogate mother. The calf successfully suckled approximately every half hour and began to put on weight over the ensuing days. His behavior and relationship with the adult female dolphin was as normal as could be hoped. After seventeen days, however, his behavior took a downward slide and on 16 February, after not responding to treatment or tubing, he unfortunately died. Necropsy results revealed that he had systemic nocardiosis due to an immuno-suppressed condition associated with his young age. The Sea World staff was understandably saddened by the death, as they had all grown very fond of this beautiful little animal of a species that they had never before seen at such a young age. Hopefully the valuable data and knowledge gained over the 2-1/2 week period will benefit any future stranded calves.

#### *Marineland of New Zealand* - Napier, NEW ZEALAND

Gary Macdonald writes that the past summer season was terrific for both Marineland and for Napier. The weather was great and the "Holiday in Napier" advertising campaign was successful in drawing many tourists to the area. The peak period of 26 December to 31 January saw attendance at Marineland up by 30%.

On 6 December, a male California sea lion was born to Lady, who has had five previous pups over the years. Lady, and the sire, Pepe, were both obtained from Sea Life Park in Hawaii in 1981.

Lastly, Gary reports that Marineland has recently received two twelve-month-old short-clawed otters (*Aonyx cinerea*) from the Wellington Zoo in New Zealand. The two yearlings have instilled a new sense of fun into the otter display, frolicking about like "mad-cap" youngsters do.

#### **CARIBBEAN REGION**

Burnette Rolle  
The Dolphin Experience  
Freeport, Bahamas

#### *The Dolphin Experience* - Freeport, BAHAMAS

The Dolphin Experience would like to bid a fond farewell to Mike Schultz and John Newell. Mike, founder and Program Director for the last seven years, resigned his position last November in order to pursue other career opportunities. John recently resigned his training position as well. Everyone at The Dolphin Experience wishes both Mike and John all the best in their future endeavors. At the same time, the staff would like to welcome John Kirtland who joined The Dolphin Experience at the beginning of the year as General Manager and Director of Training.

The training staff is also pleased to announce an addition to their dolphin population. Cayla, one of the program's original dolphins, gave birth to a male calf on Halloween Day. Now nearly seven months old, the calf is

very adventurous, quite comfortable around large groups of people, and is always picking the most inopportune times to nurse. Currently, The Dolphin Experience also has one, and perhaps two, pregnant females.

The Dolphin Experience's "Dive-with-the-Dolphins" continues to be one of the most popular diving attractions in the Caribbean. Additionally, filming was recently completed, and this unique dive program will be featured on a segment of *World of Wonder* which is scheduled to air sometime in September or October on the Discovery Channel.



*Editor - continued from page 4*

now raises eyebrows. The Publications Committee, like every other IMATA committee, is made up of volunteers who donate their time to the Association, and I can assure you that a great deal of time is required to edit and publish **Soundings** and the other IMATA publications. For better or worse, my new job here in the Bahamas is much more demanding of my time than my previous position in Hawaii. Consequently, I find myself with significantly less free time than I had before. Nevertheless, I am hoping that we can get back on schedule with the Summer issue, which means that you will probably be receiving two issues in a very short space of time.

Lastly, due to a typographical error in the last issue of **Soundings**, the number of my new post office box was reversed. My new address here in the Bahamas is:

c/o The Dolphin Experience  
P.O. Box F42433  
Freeport, Grand Bahama Island  
BAHAMAS  
Tel: (809) 373-1250

FAX: (809) 373-8956

There is certainly some intriguing and fascinating information in this issue of **Soundings** which I hope that you will all enjoy. I am particularly excited about the letter from the facility in Russia. After all these years, we may finally be on the threshold of openly meeting our counterparts in a region of the world that was previously so totally closed off. Although we don't normally print addresses in our *Letters to the Editor* section, we have made an exception in this case in the hopes that many of you will take the time to respond to Ludmila Lukina's request and begin a dialogue—after all, sharing information is what IMATA is all about. Hopefully we will see further correspondence and, who knows, perhaps one day in the not-too-distant future Ms Lukina and/or some of her colleagues will be able to attend our conference.

That's it for this issue; as I said, be looking for the Summer issue very shortly.

Until next time—Aloha.

—John Kirtland



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# IMATA'S GROWTH AND DEVELOPMENT:

## Meeting Our Goals and Planning for the Future

by  
Cheryl Messinger  
IMATA President-Elect

The year was 1990. Our conference was held in Chicago with record-breaking attendance. Our membership roster had almost tripled in size in one year, but our manpower pool had not. Our constitution was antiquated and no longer served our needs. We were neither non-profit nor incorporated. It was time to get down to business! So the Executive Board scheduled the first IMATA Strategic Planning Session in 1991. Mediated by a facilitator, the group spent two full days defining IMATA's purpose and direction, identified IMATA's resources, strengths and weaknesses, and determined both short- and long-term goals which were felt to be both realistic and achievable. Through these exercises the Board hoped to access IMATA's current situation, visualize what IMATA would be in the

future, and lay a framework that would bring us from where we were to where we wanted to be.

Those involved in that first planning session began by defining IMATA's existing organizational values, then listed aspects they visualized for the future of the organization and the marine mammal community as a whole. This allowed the Board to draft a new mission statement that would better reflect IMATA's goals and purposes:

The International Marine Animal Trainers Association (IMATA) was founded to foster communication, professionalism, and cooperation among those individuals who serve marine animal science through training, public display, research, husbandry, conservation, and education. As such, IMATA is



dedicated to providing and advancing the most professional, effective, and humane care and handling of all marine animals in all habitats.

Then, from a list of 19 goals and objectives, the planners identified the nine they felt to be top priority. These nine tasks were assigned action plans which named both dates of completion and individuals responsible.

So at this point you're saying to yourself: "This ancient history lesson is great Cheryl, but what does it have to do with us now?" As your current Board of Directors has just concluded its 1994 IMATA mid-year meetings, we are pleased to report that eight of our nine original goals for the organization have been met over the past two years:

1. Increase "person pool" - Secretary marks computer files of those members seeking further involvement in the organization and distributes list of names to

Directors and Committee Chairs biannually.

2. Improve administration - Administrative Support Committee was created to produce and update a business manual for all Directors.
3. Develop an effective Editorial Advisory Board - Publications Committee was created including an Editor, Editorial Director, Associate Editor, and a five-person Editorial Advisory Board to review articles prior to publication. An Editorial Policy and Procedures protocol is also now in place.
4. Investigate creation of an IMATA central office -Committee was formed to investigate the cost. Although not feasible at this time, Sea World of California is

currently providing the basic services of a temporary central mailing address.

5. Create Policies for Action - A Code of Professional Ethics was developed as well as a protocol for handling violations and/or charges of violations. Both are now in place.
6. Provide pro-active input - IMATA now plays an active role in government policy making through our involvement with the Alliance of Marine Mammal Parks and Aquariums (AMMPA), provides pro-active responses to negative publicity, and has developed reciprocal policies with like organizations and responsible conservation organizations.
7. Modify *Proceedings* and create a

peer-reviewed journal -The *Proceedings* format has been changed and the first journal will be published this year.

8. Develop an Animal Training Technical Advisory Committee - Committee is in place and responsible for *Trainer's Forum*.

When you pair these accomplishments with the creation of our new constitution and bylaws, our achievement of non-profit status, and our incorporation, I hope you'll agree they make an impressive list of accomplishments for the past two years. And as we are on the eve of defining new goals and objectives for IMATA, we should all look back with pride while continuing to look forward with hope.

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*Inia* - continued from page 8

species' apparent solitary nature is the fact that much aggression has been exhibited by captive *Inia* when housed together (Caldwell, Caldwell, & Brill, 1989). One exception to their solitary tendencies is an apparent long term relationship between mothers and calves (Gewalt, 1978).

Sexual maturity is evident in the male *Inia* at approximately 198 cm (6-1/2 ft.) in length, and in the female at approximately 160-175 cm (5-1/4-5-3/4 ft.). No ages for sexual maturity have yet been determined. Gestation lasts 10 to 12 months, with the young born between July and September as the flooded water is receding and fish are in a more confined range. Females can simultaneously gestate and lactate (Best & da Silva, 1989), and calves have continued to nurse for one year after capture (Gewalt, 1978).

In captivity, homosexual behavior between males has been observed (Spotte, 1967; Sylvestre, 1985), as well as masturbation (Spotte, 1967; Sylvestre, 1985; Schreib & Burrows, 1988). A great deal of sexual

aggression by males toward females has also been observed in captivity, to the point that animals have had to be separated, and some have died due to injuries and stress related to sexual aggression (Caldwell et al. 1989).

While other dolphins use their flippers mostly as "rudders," *Inia* frequently use their large, wide pectoral flippers to assist in locomotion with "oar-like" movements (Klima, Oelschlager, & Wunsch, 1980; Smith, Mooney, Siegel, Taylor, & Burrows, 1994). Their swimming speed is slow, usually between 1.6 and 3.2 km (1-2 mph) per hour, and reaching 12 to 16 km (7.5-10 mph) per hour if necessary (Leatherwood & Reeves, 1983). "Porpoising" and leaping are not reported as commonly observed behaviors.

*Inia* is an exceptionally flexible cetacean, able to touch its rostrum to its tail with ease. This ability is due in part to seven unfused cervical vertebrae in their necks. In a training setting it is important to remember that an *Inia* can turn its head (and thus its teeth) nearly 90 degrees to either side. The flexibility

of the *Inia's* neck and body is useful while hunting fish amidst the trees and debris of the flooded forest, where water rises as much as 10 meters (32.8 ft.) between November and July. *Inia* may also use the hairs on their rostrum as a tactile device in searching for food.

*Inia* are known to feed on over 50 species of fish, however less than half of these species have any commercial value, so there is little competition between *Inia* and the local fishermen (Best & da Silva, 1989). Turtles have also been found in the stomach contents of *Inia* (da Silva & Best, 1982). Daily food consumption by *Inia* is notably less than most other dolphin species (0.5% of their body weight compared to 6-10%), which is another important factor when training *Inia*, since they satiate more rapidly than other species (Krieger, 1986; Schreib & Burrows, 1988). It has sometimes been more effective to rely heavily or even exclusively on non-food reinforcements when training this species (Burrows, Schreib, & Smith, 1990). Best and da Silva (1989) suggest that *Inia* may have a low metabolic rate owing to their warm

*Inia* - continued on page 20

water environment, which may in turn contribute to their low food consumption and to their slow moving habits.

Like other dolphins, *Inia* use their conical teeth to capture and position fish for swallowing, but they also use their unique molariform teeth to chew. This causes an additional factor in training, since there can be long pauses between behaviors while the *Inia* consume fish rewards (Krieger, 1986; Schreib & Burrows, 1988).

Living in close proximity to human beings, yet being difficult to observe, *Inia* have become the focus of many folklore stories in South America. One is that *Inia* can turn into men, particularly during festivals, and wear hats to hide the blowhole on top of their heads. Children born to unwed women after festivals are then said to have been fathered by a boto. Best (personal communication, 1986) reported that "Boto" is still sometimes put on the birth certificates of children whose father is unknown. Another folklore story describes *Inia* turning into women and luring men into the water to drown. Fishermen also consider it very bad luck to kill an *Inia*, a fact which benefits the dolphins.

**RESPIRATION AND SLEEP.** Owing to relatively limited space in the river environment, *Inia* do not dive to extensive depths as do marine cetaceans, and may have less need to hold their breath for long periods. Most breaths appear to be taken within a two minute span of the previous breath. A normal respiration rate was recorded by Layne (1958) at 5 to 112 seconds. The dolphin at the Pittsburgh Zoo, has had occasional respiration intervals noted at a little over three minutes.

Resting behavior in *Inia* has not been studied extensively; however, Russian investigators have described unihemispheric slow-wave sleep (resting half of the brain at a time) similar to that found with *Tursiops* (Mukhametov, 1987). Many captive *Inia* have been observed resting upside down on the bottom of their pools (Herald, 1969; Caldwell et al. 1989), or with the rostrum or tail touching the pool bottom (Schreib & Burrows, 1988). Whether

this resting behavior also occurs in the wild is yet to be investigated.

**VISION.** The visual capabilities of *Inia* have been an issue of speculation for many years, although little research has actually focused on this question. *Inia* have been described to have excellent eyesight, and also described as nearly blind.

When *Inia's* eyesight has been described as poor, usually there is a reference made either to environmental factors or to eye size. It has been suggested that the turbidity of riverwater makes it less likely that *Inia* (or any other river-dwelling platanistoid) would depend on eyesight. The eyesight of another platanistoid dolphin (*Platanista*, or the "susu") definitely is reduced, possibly to the point of only distinguishing light and dark (Perrin et al. 1989), which may cause confusion or assumptions regarding *Inia's* abilities. Like the susu, whose eye openings are reduced to the size of pin holes, *Inia* eye openings are also reduced, though not so drastically.

Waller (1982), suggests that any reduction in the eye size of *Inia* is a visual adaptation rather than a structural regression. That study found that the ultrastructure of the *Inia* retina, containing both rods and cones, reveals

a complex cellular organization that indicates well-developed visual ability. Phillips and McCain (1964) reported that an *Inia* they studied was able to discriminate between black and white stimuli above the water surface.

In training settings, the comparatively passive nature of *Inia* (in contrast to marine species) has led observers to initially question their visual capabilities, and opt to train with auditory or tactile signals (Schreib & Burrows, 1988). However, the *Inia* at the Pittsburgh Zoo has recently been trained to perform behaviors using visual hand signals (given approximately two feet above the water surface), and wild *Inia* have been trained to respond to visual stimuli (Krieger, 1986). It is important to note, however, that the literature does not report "spy-hopping" as a commonly observed behavior in the wild.

**ACOUSTICS.** Jacobs and Hall (1972) observed responses indicating hearing thresholds of a solitary, captive male *Inia* to range between 1 and 105 Khz, with the greatest sensitivity noted for tones between 75 and 90 Khz. However, they also assumed a greater range likely to exist since wild *Inia* have been recorded to produce sounds ranging between 25-200 Khz (Norris,

*Inia* - continued on page 29



Due to seven unfused vertebrae in its neck, the Amazon River dolphin can turn its head over 90 degrees to either side. This can be useful when hunting fish amidst the trees and debris of the flooded forest.

Tim Smith

# OFF THE SHELF



*As trainers, we sometimes find ourselves so busy that we barely have the time to find a good book, let alone actually read one. This column, which appears occasionally in **Soundings**, will try to keep you abreast of new books, articles, and other interesting items you might have missed related to our field. This column is written and edited by Jeff Fasick; however, reviews by members are welcome. Please send them to the attention of either Jeff Fasick or John Kirtland at:*

IMATA  
1720 South Shores Road  
San Diego, California 92109 USA

## MARINE MAMMAL VISION IN REVIEW

In my experiences at aquaria, the sensory system of cetaceans most often talked about is their echolocation capabilities, due mainly to the novelty of this form of perception in the animal kingdom. Every now and then, though, there is a perceptive person who asks the question: "How can dolphins see underwater and also in air, while we cannot?" Answers to this question were first documented over a century ago when Matthiessen found that the cetacean eye was able to focus properly in water, but was strongly myopic (near-sighted) in air. Today, any competent marine mammal trainer can refute Matthiessen's latter observation with a subtle hand discriminatory stimulus followed by a correct response by the dolphin. But what makes the dolphin's amphibious eye different from ours, and how do they see well in both water and air? This issue of *Off The Shelf* consists of some reviews and papers that can be

found at your local library to help answer these questions.

The structure of an organ (the eye in this case) often influences how that organ will function. With this in mind, a good paper to begin this review with is by Dawson et al. (1972) entitled *Gross anatomy and optics of the dolphin eye*. The anatomy, function, and optical characteristics of the dolphin eye are covered in this review. A discussion of aerial vision is also found here with a hypothesis stating that aerial vision is accomplished by contraction of the pupil, thus forming an aperture capable of focusing light perfectly on the retina.

*The cetacean eye*, also by Dawson (1980), is a fine review including sections on anatomy, optics, and environmental adaptations for vision. This paper is well written, easy to understand, and will give the reader a thorough understanding on dolphin vision and the problems the eye must overcome in order to be useful in both air and water.

The way an eye is designed and refined is directly related to the environment it needs to see and perceive. A review by Madsen and Herman (1980), *Social and ecological correlates of cetacean vision and visual appearance*, discusses the photic properties of water and the adaptations needed for underwater vision, as well as the visual appearance of cetaceans and the functions of vision in cetacean social life. This is a good paper mainly for its broad scope by addressing vision from the anatomical to the behavioral level, but also because it is not so technical as to be difficult to read. A similar paper is *Visual ecology and cognition in cetaceans* by Mobley and Helweg (1990). Along with a morphological discussion, this review

also examines the function of vision in cetacean foraging strategies and social interactions.

Seals and sea otters may pose even more interesting questions pertaining to amphibious vision than do the cetaceans. Although all marine mammals appear to possess both aquatic and aerial vision, they seem to do this in very different ways. A somewhat technical paper by Murphy et al. (1990) entitled *Refractive state, ocular anatomy, and accommodative range of the sea otter* offers insight into how the sea otter lens is utilized to focus both above and below the water. Murphy observes that in order for the sea otter to focus on objects underwater, the lens of the eye must be greatly accommodated by actually squeezing part of the lens through the iris aperture. *The eye of the hooded seal in air and water*, by Sivak et al. (1989), discusses the method by which the seal eye adapts to an amphibious environment. Unlike the cetaceans, the seal's cornea is almost completely flat, offering no accommodative power with which to focus the eye. Although it is still not clear how the seals accommodate, Sivak proposes that the entire lens may move forward and back rather than alter its shape while focusing.

The last three papers deal solely with answering the questions of amphibious vision in cetaceans and offer some of the most recent information in this area. *On the optics of the dolphin eye* by Dral (1987) is quick and easy reading about the problems with aquatic and aerial vision in cetaceans. This paper delves into the pupillary contraction hypothesis of aerial accommodation as well as optical properties of the dolphin lens. *The cornea as an optical element in the cetacean eye* and *Optics of the harbor porpoise eye in water* by Kröger and Kirschfeld (1992 and 1993) probably offer the best hypothesis to answering the question of dolphin amphibious vision. These papers explain the effect of a diverging cornea and a converging lens in the porpoise eye resulting in a

*Off the Shelf - continued on page 25*

# Trainers Forum

All of us, whether experienced or just beginning in the training field, have run into situations in which we find ourselves at a loss for solutions. Training problems arise that we've either never seen before or just never had the need to tackle. The mental struggles begin as we find ourselves wondering where to begin and what some other trainer might do in our shoes. TRAINER'S FORUM was introduced in *SOUNDINGS* several years ago in an effort to help us through those moments.

Through this column we hope to continue to provide a place where problems and solutions, questions and answers, and new ideas can be shared. We want to deal with anything and everything, from the obvious to the not-so-obvious, from the standard methods to the new ones. This column will continue to provide the space, but you will have to provide the input. If you have questions about training, or problems with a specific behavior or animal, or are interested in getting another viewpoint to an animal related issue, please write to TRAINER'S FORUM. We will get a variety of responses to your questions and publish them here. Additionally, if you have alternative answers or responses to answers printed, write to us as well. All questions will remain anonymous. Send your questions to the attention of Jim Clarke at:

IMATA 1720 South Shores Road San Diego, California 92109 USA

TRAINER'S FORUM is compiled by Jim Clarke, Greg Dye, and Pete Davey in cooperation with the Animal Training Advisory Committee.

**QUESTION 1):** Our training staff would like to learn more about using alternative reinforcers other than food (e.g.: toys, scratching, etc.) with California sea lions. We are also interested in knowing whether using a bridge during a play session (when no food is present) will undermine the effect of the bridge during regular sessions.

**ANSWER 1A):** Secondary reinforcers can be very effective with all pinnipeds, especially California sea lions. Like most new situations with animals, it is probably most effective to train secondary reinforcers just as you would any new behavior. Secondaries are often based on something we as trainers perceive to be positive for the animal, but there is no way we can be sure of that. Assuming that a secondary is already positive can lead to undesirable behaviors and even aggression. So by initially always pairing the new secondaries with primaries, you can desensitize the animal to those secondaries and assure that they end up as positive reinforcers, regardless of whether the animal is already favorably predisposed towards them.

When starting out with new secondaries, keep in mind that all animals are individuals and may like or dislike different stimuli. Secondary reinforcers are also part of a relationship developed between a trainer and an animal, so different trainers can make the same secondary appear differently to the animal each time. This is all the more reason to train secondary reinforcers consistently before trying them in a variable schedule of reinforcement. Desensitize the animals slowly, watching for signals such as backing away, tensing up, avoiding tactile interaction, or ignoring a toy. Once you feel that the animal is positively reinforced by a secondary reinforcer, it is a good idea to strengthen the reinforcer for a period of time before assuming that it is ready to be used on its own. Periodic strengthening with primary reinforcers is a good idea, no matter how long the animals have been conditioned to the secondaries. Be flexible, some animals will never like secondaries, which kind of defeats the purpose. Some commonly used secondary reinforcers are verbal praise, ice, tactile interaction, toys, and water spray. You'll find that sea lions are responsive to all sorts of new stimuli.

We can't think of a single good reason for using a bridge during the play session (although as one committee member put it, "the world probably won't explode"). Without a connection to a reinforcer, however,

the bridge can be diluted over very little time. There is also a very good chance (especially with bucket conscious sea lions) that the bridge won't solicit the desired response anyway. Depending on how your facility defines a "play session," the use of a bridge will turn it into a training session and the animal may not consider it play at all (and at this point, sea lions tend to wonder where that bucket is and why there is no reinforcement for the bridge—a good formula for irritating those 750 pound bulls!).

This also brings up a point regarding verbal bridges. If the word "good" is utilized as a bridge, and new trainers or volunteers are participating in play and using "good" frequently (as in "good girl," etc.), they may be inadvertently extinguishing that bridge.

Animal Technical Training  
Advisory Committee  
International Marine Animal  
Trainers Association

**ANSWER 1B):** The training staff at Sea World of Australia works with eight species of pinnipeds. Our trainers have effectively used alternative reinforcers such as tactile interaction, toys, play sessions, social interaction, chained behaviors, and innovative training sessions. The trainers have found two elements key in the use of secondary (or

*Trainers - continued on page 28*

# MEMBERSHIP UPDATE

*IMATA would like to welcome the following new members who have joined the Association since the last issue of Soundings.*

- CECILA KARINA ALVAREZ (As)  
(Mundo Marino S.A.)  
CRISTINE M. AMES (P)  
(Mystic Marinellife Aquarium)  
MARLENE ANSCHULTZ (S)  
(Magic Mountain)  
KIM ASHDOWN (As)  
(Breda Rose Stable)  
WILLIAM AST (S)  
(West Edmonton Mall Dolphin Lagoon)  
CAROL AUDETTE (P)  
(South Florida Museum/Bishop Planatarium)  
SHANE AUSTIN (A)  
(Oceanworld)  
DAVID BAIN (P)  
(Marine World Foundation)  
JULIO CABRERA BATISTA (As)  
(Zoo de la Casa de Campo)  
BRYAN BLAKE (As)  
(Gulfarium)  
CAROLYN J. BOLING (P)  
(Audubon Zoo)  
CORINNE BORUS (S)  
(Iowa State University)  
LAURA BOTTARO-LAMY (P)  
(Sea Life Park)  
KRISTI LEE BREWER (P)  
(San Diego Zoo)  
CATHERINE BROWN (S)  
(Florida State University)  
GINA PAULETTE BROWN (S)  
(No affiliation listed)  
WENDI BROWN (S)  
(Audubon Zoological Institute)  
WOLFGANG BRUNNER (A)  
(Delphinarium Münster)  
LISA BUCKHOLTZ (S)  
(EATM/Moorpark College)  
SUZANNE BURBANK (As)  
(Cheyenne Mountain Zoo)  
EDEN BUTLER (A)  
(The Dolphin Experience)  
DIANE CAHILL (As)  
(Wild One Animal Health Library)  
LUDMILA KAMAIEVA (As)  
(Delphinarium Opo)  
MARK CARLILE (As)  
(Sea World of California)  
DEBORAH CASS (A)  
(Sea World of California)  
JULIE CLARKE (S)  
(National Aquarium in Baltimore)  
HEIDI SEEDORF DE COLOMBRES (A)  
(Oceanis Fundacion)  
JAMIE IAN COPEMAN (P)  
(Underwater World)  
CANDY COTHERN (S)  
(EATM/Moorpark College)  
BETHANY DALTON (S)  
(Long Marine Laboratory)  
KIMBERLY J. DANVELO (P)  
(Mystic Marinellife Aquarium)  
ROSS DEAKIN (P)  
(Tangalooma Resort)  
JOYCE M. DECKER (A)  
(Clearwater Marine Science Center)  
ROBIN DEWIT (S)  
(Defense Logistics Agency)  
JULIE DUTCHER (As)  
(Center for Marine Science Research)  
CHUCK EICHOLZ (As)  
(Sea World of Ohio)
- JENNIFER MICHELLE ELLER (S)  
(Eckerd College)  
KENNETH ENGELS (As)  
(Dolphin Encounters)  
TODD FAIRLEY (As)  
(No affiliation listed)  
JENNIFER L. FRITZSCHING (S)  
(University of Wisconsin-Whitewater)  
MARY FEDERICI (S)  
(University of San Diego)  
GRAZIA GALINDO (A)  
(Via Delphi S.A.)  
VOLKER GATZ (A)  
(Dortmund Zoological Garden)  
AMY GIANNOBILE (A)  
(Minnesota Zoological Garden)  
ALEJANDRO GOMEZ-RUBIO (P)  
(Via Delphi S.A.)  
JACK GONZALES (As)  
(SAIC)  
JOHN D. GORY (As)  
(The Living Seas)  
DEBORAH GRASHEL (S)  
(Oceana)  
ROBIN HAAK (S)  
(Magic Mountain)  
PETER NORRESO HAASE (As)  
(Copenhagen Zoo)  
RICHARD HALL (P)  
(NCCOSC/NRaD)  
JILL HARDY (As)  
(Sea World of Texas)  
LINDA HAVENS (S)  
(No affiliation listed)  
HIRAM HENDERSON, JR. (S)  
(University of Wisconsin)  
TIMOTHY T. HOFFLAND (A)  
(Marine Animal Productions)  
NICOLE HUNTER (S)  
(Eckerd College)  
JENNIFER L. HUTSON (S)  
(No affiliation listed)  
MELAMED INBAL (As)  
(Dolphin Reef-Eilat)  
M. DIMITRE IVANOV (As)  
(Zoo Faune Tropicale)  
LUCY JONES (As)  
(Mickey Grove Zoo)  
LUDMILA KAMAIEVA (A)  
(Delphinarium "Opo")  
PATRICIA KAMOLNICK (P)  
(SAIC)  
VINCE KELLY (S)  
(John G. Shedd Aquarium)  
STEPHANIE KERR (As)  
(Ocean World)  
LYNN KLEIN (P)  
(Houston Zoological Gardens)  
CHIEN WU KONG (As)  
(Ocean World Taipei, Inc.)  
TINA KOVAR (As)  
(Ocean World)  
DEBORAH LOEBKER (P)  
(Cincinnati Zoo and Botanical Gardens)  
MICHELE LOSEY (As)  
(Ocean World)  
TOINNY LUKKEN (As)  
(Harderwijk Zeedierenpark)  
TANIA MAATOUK (S)  
(EATM/Moorpark College)  
SANDRA MARKS (S)  
(EATM/Moorpark College)
- ELIZABETH MASSA (S)  
(Park College)  
LISA MCDANIEL (As)  
(No affiliation listed)  
FEDERICO MEO (As)  
(No affiliation listed)  
KRISTIE MILLER (P)  
(Sea World of California)  
LINDA MOORE (P)  
(National Zoological Garden)  
MONICA POMARICO MORAES (S)  
(Instituto de Biociencias)  
SHAWNA MORGAN (S)  
(Colorado State University)  
JESSICA MORSE (S)  
(Magic Mountain)  
KENZO MATSUZAKI (As)  
(Shingawa Aquarium)  
C.J. MCKINNIE-SANDERSON (S)  
(Kewalo Basin Marine Mammal Laboratory)  
WILLIAM PATRICK MCLAIN, JR. (As)  
(Treasure Cove Scuba)  
BOB MCMAINS (A)  
(Sea World of California)  
JOHN NEWELL (P)  
(The Dolphin Experience)  
LISA NORDONE (As)  
(Aquarium for Wildlife Conservation)  
JIM O'DONNELL (As)  
(Sea Life Park)  
CHERYL ONDEKA (A)  
(The Maritime Center at Norwalk)  
ADRIAN PENNY (As)  
(Ocean World)  
KIMBERLY PEREZ (S)  
(Seattle Aquarium)  
KENNETH PETERS (A)  
(Sea World of California)  
MARK POWELL (As)  
(Underwater World)  
EYDIE PROFFITT (P)  
(Marine Animal Productions)  
DINA RAICHEL (S)  
(No affiliation listed)  
SUSANNAH RAMSEY (As)  
(Ocean World)  
DON RED FOX (As)  
(Toledo Zoological Society)  
DEBORAH REDISH (S)  
(Woods Hole Oceanographic Institution)  
CHERISH ROBINSON (As)  
(Dankos Enterprises)  
GEORGE ROBINSON (As)  
(No affiliation listed)  
BURNETTE ROLLE (A)  
(The Dolphin Experience)  
VICTORIA G. ROOSE (As)  
(Jackson Zoological Park)  
JOY ROSS (P)  
(SAIC)  
MARIA ROSSILLI (S)  
(EATM/Moorpark College)  
VALERIA RUOPPOLO (S)  
(Universidade Paulista)  
SAMANTHA SANFORD (S)  
(EATM/Moorpark College)  
HOLLY SARGEANT-GREEN (As)  
(Kula Naia Wild Dolphin Project)  
BRYAN SCHMIDT (S)  
(No affiliation listed)  
MICHAEL STRUGHOLZ (A)  
(Dortmund Zoological Garden)
- HIROSHI SHIMURA (As)  
(Izu-Mito Sea Paradise Aquarium)  
DANNY SHINDER (P)  
(NCCOSC/NRaD)  
MARK SHURILLA (As)  
(John G. Shedd Aquarium)  
ROBERT SILVA (S)  
(University of New Hampshire)  
DEBBIE SILVERMAN (S)  
(EATM/Moorpark College)  
SUZANNE SMITH (As)  
(Zooquarium)  
JAVIER AEDO SORDO (P)  
(Via Delphi S.A.)  
MICHELE SOUSA (A)  
(Long Marine Laboratory)  
ROSANA RODRIGUES DE SOUZA (P)  
(Mundo Aquatico Zoomarine)  
GRAIG ANDREW SOWDEN (As)  
(Sydney Aquarium)  
JUDSON STANDARD (S)  
(University of Hawaii)  
JAMES SCOTT STRINGER (A)  
(The Dolphin Experience)  
JAY STUTZ (As)  
(Ocean World)  
WENDY SUDIK (A)  
(Sea World of California)  
CRAIG SWEPSTON (P)  
(SAIC)  
KELLY TARANTINO (As)  
(New England Aquarium)  
MIKE TONG (As)  
(Woodland Park Zoological Garden)  
CHRISTIANA THIÈRE (A)  
(Tiergarten Nürnberg)  
KATHLEEN THOMPSON (As)  
(SAIC)  
KRISTINA TONKIN (S)  
(Marine Animal Productions)  
PAUL J. TRIBLES (S)  
(University of Maryland)  
KARI TROMP (As)  
(Utica Zoo)  
SARAH TROPEANO (P)  
(Colchester Zoo)  
CHRISTINE TETA (S)  
(University of California at Santa Cruz)  
GENEVIEVE MARIE WARD (S)  
(Ocean World)  
CHRIS WEATHERUP (As)  
(SAIC)  
CHARLOTTE V. WHITE (As)  
(No affiliation listed)  
DONNA WHITE (As)  
(No affiliation listed)  
NICHOLAS S. WICKETT (S)  
(Santa Fe Community College)  
LELA WILLIS (As)  
(Sea World of Florida)  
BRYAN WIMBER (S)  
(Magic Mountain)  
AIMEE WOOLFORD (As)  
(Ocean World)  
STEVE WYNN (P)  
(Mirage Resorts, Inc.)  
GARY ZALOGA (As)  
(Utica Zoo)

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# LETTERS TO THE EDITOR

*Soundings* welcomes and encourages letters and articles on any topic relating to marine mammals or zoological issues and meeting standards of reasonable taste. All correspondence must include the writer's name as well as address and telephone number for our verification. *Soundings* reserves the right to edit letters or articles for length, but care will be taken to preserve the writer's point.

TO THE EDITOR:

I am writing to inform you that OKEANARIUM in Sevastopol is looking for new contacts. We are interested in exchanging experience and knowledge.

We carry out research with sea animals working on the development and application of biotechnical systems which may help man at sea, and are investigating how the unique features of sea mammals can assist in the fields of ship building, hydroacoustics, physiology, medicine, and other spheres.

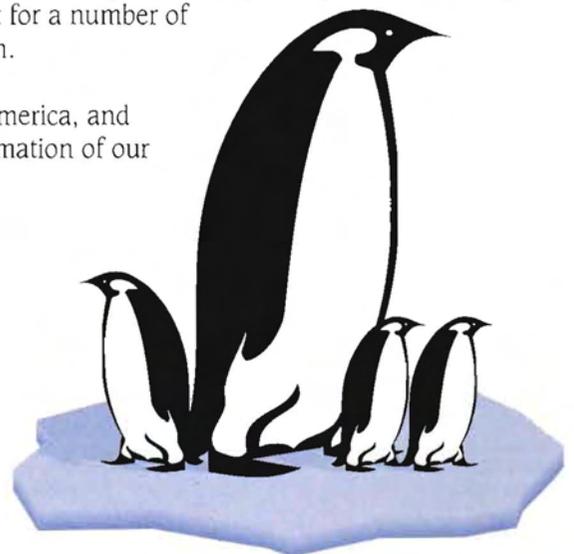
Our research covers three main areas:

1. We are involved in ecological studies and nature conservation, and are widening our knowledge of diving, bionics, embryology, morphology, biocybernetics, etc..
2. We also study how cetaceans have developed and adapted their environment and how this can be used to assist man. By looking at how the windpipes and cardiovascular systems of cetaceans have adapted, we are devising new methods of training divers, particularly in respect to the problems of pressurization.
3. Research is carried out on developing new methods for diagnosing and treating illnesses by using the acoustic signals from specially trained dolphins [which provide] a therapeutical effect for a number of diseases, particularly those related to disorders of the nervous system.

We would be grateful if you help us contact institutions in Europe, America, and Asia carrying out similar work. Should you require more detailed information of our research, please do not hesitate to contact us.

Yours faithfully,

Ludmila Lukina  
Dolphinarium "Opo"  
Navorossiyskaya st 45  
Anapa  
Krasnodar Region Russia



well focused image on the retina. They also discuss the slit pupil for focusing in air, and the observation of two distinct foveal regions in the retina where images can be focused.

There still remain many unanswered questions in the field of marine mammal vision and more research is needed in the area of marine mammal accommodation and color vision before these questions can be answered. Some of these reviews (cited below) may easily be found at your workplace, while others may require some searching at your local library. These papers may help you become more familiar with marine mammal vision science and give you a better understanding and appreciation for the animals we work with and are asked about by the public.

#### Literature Cited

Dawson, W.W. (1980). The cetacean eye. In L.M. Herman (ed.), **Cetacean Behavior: Mechanisms and Processes** (pp. 53-100). Wiley Interscience: New York.

Dawson, W.W., L.A. Birndorf, and J.M. Perz (1972). Gross anatomy and optics of the dolphin eye (*Tursiops truncatus*). *Cetology* 11:1-12.

Dral, A.D.G. (1987). On the optics of the dolphin eye. *Aquatic Mammals*

13(2):61-64.

Kröger, R.H.H. and K. Kirschfeld (1992). The cornea as an optical element in the cetacean eye. In J. Thomas (ed.), **Marine Mammal Sensory Systems** (pp. 97-106). Plenum Press: New York.

Kröger, R.H.H. and K. Kirschfeld (1993). Optics of the harbor porpoise eye in water. *Jour. Opt. Soc. Am. A* 10(7):1481-1489.

Madsen, C.J. and L.M. Herman (1980). Social and ecological correlates of cetacean vision and visual appearance. In L.M. Herman (ed.), **Cetacean Behavior: Mechanisms and Processes** (pp. 101-147). Wiley Interscience: New York.

Mobley, J.R. and D.A. Helweg (1990). Visual ecology and cognition in cetaceans. In J. Thomas and R. Kastelein (eds.), **Sensory Abilities of Cetaceans** (pp. 519-536). Plenum Press: New York.

Murphy, C.J., R.W. Bellhorn, T. Williams, M.S. Burns, F. Schaeffel, and H.C. Howland (1990). Refractive state, ocular anatomy, and accommodative range of the sea otter (*Enhydra lutris*). *Vision Research* 30(1):23-32.

Sivak, J.G., H.C. Howland, J. West, and J. Weerheim (1989). The eye of the hooded seal, *Cystophora cristata*, in air and water. *J. Comp. Physiol. A* 165:771-777.

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*Soundings* offers its congratulations to Renato Lenzi and Claudia Acquarelli who took their wedding vows on the beach in Kona, Hawaii on 10 November during the 1993 annual conference. We wish them all the best!

# Notices and Announcements

## NEW ADDRESS FOR IMATA

Please be aware that IMATA now has a new, centralized mailing address. This new address is:

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All correspondence, including submissions to **Soundings** or the Publications Committee, changes of address, dues payments, and membership applications, should be sent to this address where it will be routed to the appropriate Board member or committee chair.

Please make note of this new address to avoid any delay and to insure that your correspondence reaches us in a timely manner.

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IMATA would like to request of all our non-U.S. members to please send only *International Bank Drafts*, made payable to IMATA, when paying your dues. This will help facilitate the processing of your membership. Your cooperation is greatly appreciated in this matter.

## CHANGE OF ADDRESS

Despite IMATA's best attempts to keep track of all of its members, this is not always possible. If you have recently moved and would like to continue receiving your copies of **Soundings**, as well as other important IMATA mailings, you must notify the IMATA Secretary of your change of address. Send a change of address notification to Secretary/IMATA, 1720 South Shores Road, San Diego, California

92109-7995 USA. Please do not send address changes to the President or other officers as this only delays the necessary paperwork.

## POSITION AVAILABLE

Dolphin Quest has an immediate opening for a Head Trainer position at our facility in Tahiti. Applicants must have five years of experience training marine mammals, primarily cetaceans, an understanding of the French language, a commitment to international travel, and be SCUBA certified. Duties entail managing interactive programs, conditioning of naive animals, open water behavior, all aspects of marine mammal care, supervising a foreign staff, and communication with the Dolphin Quest management team. Please send résumé to:

Hilton Waikoloa Village  
Dolphin Quest/Bud Krames  
69-425 Waikoloa Beach Drive  
Kamuela, Hawaii 96743-9791  
USA

## APPRENTICESHIP AVAILABLE

The Dolphin Connection is pleased to announce the implementation of a one- to four-week apprenticeship program. Designed for college students only, the program goal is to provide work experience for individuals with a serious interest in a career with marine mammals and the marine environment. For information and an application, write to:

Cheryl Messinger  
The Dolphin Connection  
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*A mother sea lion and her pup bask in the sunshine at the Rocky Point Preserve at Sea World of Florida.*

John Kirtland



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alternative) reinforcers:

1. Some species of pinnipeds are naturally more receptive to alternative reinforcers than other species.
2. Some individuals will be more receptive, even within the same species.

Pinnipeds of the genus *Arctocephalus* seem to be naturally more receptive than other species with regard to tactile reinforcement. It appears that fur seals spend significantly more time grooming, and perhaps this is why they seem to enjoy and respond to tactile interaction more than California sea lions. Also, certain species of fur seals react differently than others; the New Zealand fur seal (*Arctocephalus forsteri*) is more responsive than the Australian fur seal (*A. doriferus*). Australian sea lions (and other pinnipeds of the *Neophoca* genus) also respond well to tactile reinforcement.

Toys have been successfully used, in varying degrees, as reinforcements with a number of species. Access to the toys is limited, however, in order to prevent boredom in a specific toy and to maintain its interest value. Age, species, and individuals may again factor in the success of this form of reinforcement. Australian sea lions are extremely receptive to toys, even when fully mature. In fact, they seem more inquisitive of their environment compared to other species of pinnipeds. We find that the California sea lion responds more to toys during adolescence. Favorite toys have been used as reinforcements for gating and separation procedures. One particularly successful toy that we use here at Sea World is a PVC pipe attached to a rope that is hung from the roof of the exhibit. An adolescent female California sea lion derived much enjoyment from swinging the pipe back and forth over the pool.

Social interaction with other species

of pinnipeds and cetaceans has also been a successful reinforcer. This can, however, sometimes produce a negative effect in that the participants may like the experience so much that they may refuse to leave each other's company.

Favorite activities have also been used on occasion. One classic example of this is the use of a motorized inflatable boat with our cetacean collection. Sea World of Australia's cetaceans have been reinforced for gating into another lagoon by enjoying a vigorous session of bow-riding with the boat. In fact, sometimes the cetaceans can hardly wait to be gated into the lagoon with the boat, presumably hoping for some bow-riding.

It has been Sea World of Australia's experience that the use of a bridging stimulus does not undermine its effectiveness during regular sessions. Our trainers have "floated" back and forth between play and structured training sessions and on occasion, desired behavior was exhibited and bridged during play and/or innovative sessions. These sessions were often achieved with minimal use of primary reinforcers.

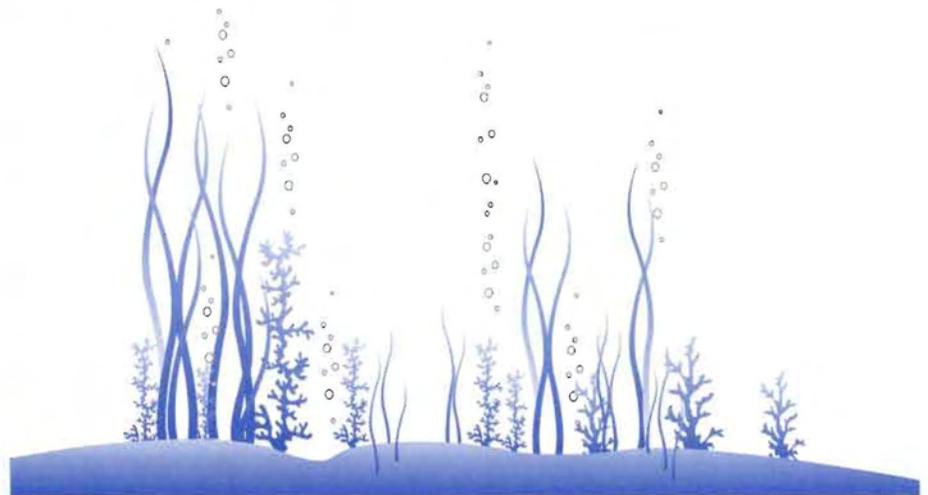
Marine Mammal Training Staff  
Sea World of Australia

**QUESTION 2):** *Our training staff is interested in acquiring information on conditioning*

**pinnipeds to urinate on cue.**

**ANSWER 2):** Training urination on cue is usually accomplished through scanning or capturing the behavior. This simply entails watching for urination and pairing it with reinforcement. Since you probably can't spare someone to watch a sea lion all day, try observations to determine when they tend to urinate most often (many facilities have found the early morning as the animals wake up to be a likely time). Once you have determined a good time to have a scanning session, bridge and reinforce the behavior each time you see it. Once urination is consistent with reinforcement, try putting it under stimulus control. One common SD is pressing the fingers near the genitals (we are assuming that tactile desensitization is already trained). You could always try a verbal SD, but imagine the unsuspecting public seeing a trainer literally telling a sea lion to urinate! Following successful scanning of the behavior, you might need to approximate the animal's position so that you can actually collect a sample. You might want to be prepared yourself so that you don't drop the collecting tube—sea lions don't aim! Good luck.

Animal Technical Training  
Advisory Committee  
International Marine Animal  
Trainers Association



Harvey, Burzell, & Krishna Kartha, 1972), or entirely within an ultrasonic range (Evans, 1973).

According to Popov and Supin (1990), *Inia* seem to receive acoustical information through the auditory bulla unlike marine dolphins, which have been thought to receive auditory information through the lower jaw (Brill, Sevenich, Sullivan, Sustman, & Witt, 1988). This may lend support to the primitive phylogenetic position of *Inia* (as well as other Platanistoids).

**LEARNING ABILITIES.** The slower movement of *Inia* compared to oceanic dolphins, and their lack of aerial behaviors, has sometimes caused *Inia* to be described as less appealing or less "intelligent". However, Krieger (1986) described wild *Inia* learning the same behaviors in the same time period as wild *Tursiops*, and a survey on trainability by DeFran and Pryor (1980) rated *Inia* as very trainable animals. The male dolphin currently at the Pittsburgh Zoo has shown long attention spans while learning trained behaviors, has become more spontaneous in exhibiting new behaviors, and has learned behaviors with increasing speed as his training program continues (Schreib & Burrows, 1988). "Paddle-pressing sessions" with the same *Inia* (in which he was able to "request" favorite activities by pressing paddles), indicated initiative on the part of the dolphin and marked preferences (Smith, Burrows, & Schreib, 1990). Little cognitive research has been done with this species.

**LONGEVITY.** Life expectancy for both wild and captive *Inia* is uncertain. The male *Inia* currently housed at the Pittsburgh Zoo has been in captivity for the longest period (23-1/2 years). He was collected and brought to the Pittsburgh Zoo in October 1970, and was then estimated to be 2-3 years old. Caldwell, Caldwell, and Brill (1989) report that other solitary males have survived in captivity for long periods (Aquarium of Niagara Falls-almost 20 years; Shedd Aquarium-16 years; Kamogawa Sea World-17 years). Two males currently housed at the Duisburg

Zoo have been in captivity (and housed together) for 19 years (since March 1975).

During the 1960s and '70s, approximately 70 *Inia* were brought into the U.S., and only one animal currently survives (Caldwell et al. 1989). However, much has been learned about the physical and social needs of captive *Inia* in the past twenty years, and it is likely that their success in captivity could now be greatly increased. Caldwell, Caldwell, and Brill (1989) suggest that the greatest threat to *Inia*'s survival in captivity is housing them in groups. It is therefore preferable that no more than two animals be housed together, and that quick separation be possible. Perrin, Brownell, Zhou, and Liu (1989) suggest that enclosures should be designed to allow the animals to separate themselves if desired, due to their apparent solitary nature.

Captive *Inia* have shown high uric acid levels, sometimes resulting in gout (Garman, Nuzzi, & Geraci, 1983). They have also been prone to serious and sometimes fatal skin diseases (Klocek, 1981; Caldwell et al. 1989), with the most common one known as "golf ball disease." Best and da Silva (1989) and Caldwell, Caldwell, and Brill (1989) cite lung problems as a major cause of death for both wild and captive *Inia*. Many of these health problems have been treated successfully through prompt and thorough veterinary intervention, and Goodlett (1988) placed specific emphasis on a pool design in which male *Inia* in sexual rut could be sequestered.

**SUMMARY.** *Inia* is a challenging and exciting species to work with, both because of its unique characteristics and its threatened status. It is crucial that more research be done with this species before habitat destruction in the Amazon rainforest affects its survival.

Seven South American countries (Brazil, Bolivia, Columbia, Ecuador, Guyana, Peru, and Venezuela) have *Inia* within their borders. In all countries the protection of *Inia* through legislation (and its enforcement) is extremely challenging. Some protective legislation exists, but more is needed, along with cooperative efforts between the seven countries involved (Perrin et al. 1989; Atkins, 1989). Without protection, the

*Inia*'s chances for survival in its natural habitat are seriously threatened.

### Literature Cited

Atkins, N. (1989). Summary of national laws and international agreements affecting river dolphins. In W.F. Perrin, R.L. Brownell, Zhou Kaiya, and Liu Jiankang (Eds.), *Biology and Conservation of the River Dolphins* (pp. 168-173). Occasional Papers of the IUCN Species Survival Commission, Number 3.

Barnes, L.G., D.P. Domning, and C.E. Ray (1985). Status of studies on fossil marine mammals. **Marine Mammal Science**, 1:15-53.

Barnes, L.G. (1990). The fossil record and evolutionary relationships of the genus *Tursiops*. In S. Leatherwood and R.R. Reeves (Eds.), **The Bottlenose Dolphin** (pp. 3-26). San Diego: Academic Press.

Best, R.C. and V.M.F. da Silva (1989). Biology, status, and conservation of *Inia geoffrensis* in the Amazon and Orinoco River basins. In W.F. Perrin, R.L. Brownell, Zhou Kaiya, and Liu Jiankang (Eds.), *Biology and Conservation of the River Dolphins* (pp. 23-34). Occasional Papers of the IUCN Species Survival Commission, Number 3.

Best, R.C. and V.M.F. da Silva (1993). *Inia geoffrensis*. *Mammalian Species*, No. 426, pp. 1-8. Brill, R.L., M.L. Sevenich, T.J. Sullivan, J.D. Sustman, and R.E. Witt (1988). Behavioral evidence for hearing through the lower jaw by an echolocating dolphin (*Tursiops truncatus*). **Marine Mammal Science**, Vol. 4, No.3, pp.223-230.

Burrows, A., S. Schreib, and T. Smith (1990). Sole use of non-food reinforcers in daily training sessions with an Amazon River dolphin. In N. F. Hecker (Ed.), *Proceedings of the 18th Annual Conference of the International Marine Animal Trainers Association* (pp. 206-210). Chicago: Brookfield Zoo and John G. Shedd Aquarium.

Caldwell, M.C. and D.K. Caldwell (1969a). The ugly dolphin. *Sea Frontiers*, 15:308-314.

Caldwell, M.C. and D.K. Caldwell (1969b). More about the ugly dolphin. *Sea Frontiers*, 18:24-30.

*Inia* - continued on page 30

Caldwell, M.C. and D.K. Caldwell (1972). The littles ugly dolphin. *Sea Frontiers*, 18(1):24-29.

Caldwell, M.C., D.K. Caldwell, and R.L. Brill, (1989). *Inia geoffrensis* in captivity in the United States. In W.F. Perrin, R.L. Brownell, Zhou Kaiya, and Liu Jiankang (Eds.), *Biology and Conservation of the River Dolphins* (pp. 35-41). Occasional Papers of the IUCN Species Survival Commission, Number 3.

da Silva, V.M.F. and R.C. Best (1982). Amazon river dolphin (*Inia*) preys on turtle (*Podocnemis*). *Invest. Cetacea*, 8:253-256.

Defran, R.H. and K. Pryor (1980). The behavior and training of cetaceans in captivity. In L.M. Herman (ed.), **Cetacean Behavior: Mechanisms and Functions** (pp. 319-362). New York: John Wiley and Sons.

de Muizon, C. (1985). Nouvelles donnees sur le diphyletisme des Dauphins de riviere (Odontoceti, Cetacea, Mammalia). *Comptes Rendus de l'Academie de Science, Paris* tome 301, serie II, 5:359-362.

Evans, W.E. (1973). Echolocation by marine delphinids and one species of fresh water dolphin. *J. Acoustical Soc. Amer.*, 54(1):191-199.

Garman, R.H., M.J. Nuzzi and J.R. Geraci (1983). Cutaneous gout in an Amazon Dolphin. *J. Am. Vet. Med. Assoc.* 183:1292-1294.

Gewalt, W. (1978). Unsere Tonina (*Inia geoffrensis* Blainville 1817)-Expedition 1975. *Zool. Garten N.F. Jena* 5/6:323-384.

Goodlett, R.O. (1988). Basic husbandry requirements for *Inia geoffrensis*, including spatial needs. In K. Ramirez and N.F. Hecker (Eds.), *Proceedings of the 16th Annual Conference of the International Marine Animal Trainers Association* (pp. 82-92), San Antonio, Sea World of Texas.

Grabert, H. (1984). Migration and speciation of the South American Iniidae (Cetacea: Mammalia). *Z. Saugtierkunde*, 49: 334-341.

Herald, E.S. (1969). Aquatic mammals at Steinhart Aquarium. *Pac. Dis.* 22(6):26-30.

Heyning, J.E. (1989). Comparative

facial anatomy of beaked whales (Ziphiidae) and a systematic revision among the families of extant Odontoceti. *Contributions in Science*, 405:64pp. Natural History Museum of Los Angeles County.

Jacobs, D.W. and J.D. Hall (1972). Auditory threshold of a fresh water dolphin, *Inia geoffrensis* (Blainville). *J. Acoustical Soc. Amer.*, 51(2):530-533.

Klima, M., H.A. Oelschlager, and D. Wunsch (1980). Morphology of the pectoral girdle in the Amazon dolphin *Inia geoffrensis* with special reference to the shoulder joint and movements of the flippers. *Zeitschrift für Saugtierkunde*, 45:288-309.

Klocek, R. (1981). Chico's story: a special dolphin. *Aquaticus* 13(2):1-9.

Krieger, K. (1986). An introduction to the Amazon River dolphin. In B. Stephens (Ed.), *Proceedings of the 14th Annual Conference of the International Marine Animal Trainers Association* (pp. 79-84). Vancouver: Vancouver Public Aquarium.

Layne, J.N. (1958). Observations on the freshwater dolphins in the upper Amazon. *J. Mammalogy*, 39:1-23.

Layne, J.N. and D.K. Caldwell, (1964). Behavior of the Amazon Dolphin, *Inia geoffrensis* (Blainville), in captivity. *Zoologica*, 49:81-111.

Leatherwood, S. and R.R. Reeves, (1983). **The Sierra Club Handbook of Whales and Dolphins**. San Francisco: Sierra Club Books.

Mchedlidze, G.A. (1984). **General Features of the Paleobiological Evolution of Cetacea**. New Delhi: Oxonian Press (translated from Russian).

Mukhametov, L.M. (1987). Unihemispheric slow-wave sleep in the Amazonian dolphin, *Inia geoffrensis*. *Neuroscience Letters*, 79: 128-132.

Norris, K.S., G.W. Harvey, L.A. Burzell, and T.D. Krishna Kartha (1972). Sound production in the freshwater porpoises *Sotalia* cf. *fluviatilis* Gervais and Devaille and *Inia geoffrensis* Blainville, in the Rio Negro, Brazil. *Invest. on Cetacea*, 4:251-263.

Perrin, W.F., R.L. Brownell, K. Zhou, and J. Liu (Eds.) (1989). *Biology and conservation of the river dolphins*. *Proceedings of the Workshop on Biology*

and Conservation of the Platanistoid Dolphins (1986). Occasional Papers of the IUCN Species Survival Union, Number 3.

Phillips, J.D., Jr. and G. McCain (1964). Black-white visual discrimination in the Amazon porpoise: *Inia geoffrensis*. *Amer. Psychologist* 19(7):503.

Popov, V.V. and A.Y. Supin (1990). Location of an acoustic window in dolphins. *Experientia*, 46:53-56.

Schreib, S. and A. Burrows (1988). Behavior of a long-term captive male Amazon River dolphin during training sessions. In K. Ramirez and N.F. Hecker (Eds.), *Proceedings of the 16th Annual Conference of the International Marine Animal Trainers Association* (pp. 77-81). San Antonio: Sea World of Texas.

Smith, T.D., A.M. Burrows, and S.L. Schreib (1990). New stimuli for an Amazon River dolphin at the Pittsburgh Zoo: activity paddles. In N. F. Hecker (Ed.), *Proceedings of the 18th Annual Conference of the International Marine Animal Trainers Association* (pp. 202-205). Chicago: Brookfield Zoo and John G. Shedd Aquarium.

Smith, T.D., M.P. Mooney, M.I. Siegel, A.B. Taylor, and A. Burrows (1994). Scapular fossae shape in freshwater and marine dolphins. *Journal of Mammalogy*, 75:515-519.

Spotte, S.H. (1967). Intergenetic behavior between captive Amazon River dolphins *Inia* and *Sotalia*. *Underwater Nat.* 4(2):9-13.

Sylvestre, J.P. (1985). Some observations on the behavior of two Orinoco dolphins (*Inia geoffrensis humboldtiana*) at Duisburg Zoo. *Aquatic Mamm.* 11:58-65.

Trebbau, P. and P.J.H. van Bree (1974). Notes concerning the freshwater dolphin *Inia geoffrensis* (de Blainville, 1817) in Venezuela. *Z. Saugtierk.* 39:50-57.

Waller, G.N.H. (1982). Retinal ultrastructure of the Amazon River dolphin (*Inia geoffrensis*).

Zhou, K. (1982). Classification and phylogeny of the superfamily Platanistoidea, with notes on evidence of the monophyly of the Cetacea. *Scientific Reports of the Whales Research Institute*, 34:93-108.



John Kirtland



A spotted dolphin (*Stenella frontalis*) displays the underslung lower rostrum that is distinctive of this species. This male was approximately 3-5 months old when it stranded in 1986; not a suitable candidate for release, he now resides at Sea World of Florida.



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