INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION
I.M.A.T.A.

SOUNDINGS

NEWSLETTER OF THE INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION

Volume 19, Number 3 Summer 1994

The Harbor Seal

(Phoca vitulina)

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INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION

I.M.A.T.A.

IMATA

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

Front Cover: Born at Sea Land of Cape Cod, this female harbor seal named Buoy now resides at the National Aquarium in Baltimore. *Photograph by George Grall.*

Inset: It's not too late, pack your bags, make your reservations, and meet us in Tacoma. A special focus at this year's IMATA conference will be papers and presentations on the walrus. *Photograph courtesy of the Point Defiance Zoo and Aquarium.*

Back Cover: This photo of 18-month-old Buoy clearly shows the seal's ear opening as well as the vibrissae. *Photograph by George Grall.*

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Soundings is published four times a year by the International Marine Animal Trainers Association (IMATA) as a service to its members. Opinions expressed in **Soundings** are those of the authors and do not necessarily represent those of the Editorial Advisory Board or of IMATA.

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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INTERNATIONAL MARINE ANIMAL TRAINERS ASSOCIATION I.M.A.T.A.

SOUNDINGS

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PRESIDENT'S Corner

As we head into the third quarter of the year, I look forward to our upcoming conference in Tacoma. I hope that the turnout is as strong as recent conferences and look forward to sharing thoughts and ideas with fellow trainers.

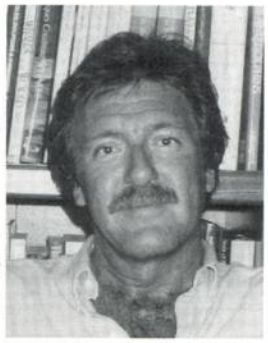
It is interesting that most everyone has something to say, but not everyone is willing to talk. It is a shame that "barriers of intimidation" have somehow been created within our organization. I know from personal experience that these hurdles exist, but I also now know that they were just a perception on my part all those years before I became involved. At the recent mid-year Board of Directors meetings the topic of involvement once again surfaced. I challenged each committee member to increase their committee by at least one individual this year, and to include a new face in their activities at this year's conference. I therefore invite each of you who have always wanted to get involved but were never quite sure how to go about it, to take advantage of this "recruitment."

IMATA is dependent upon people willing to participate; we are only as strong as the team of individuals contributing to its continued progress. IMATA was not conceived to be a "club" for trainers. I implore you to read Jeff Haun's keynote address from the Bahamas conference and recognize the merits of this association of which you are an integral part. We (meaning you and your fellow members) are a collection of professional people who are *dedicated* to the advancement of marine mammal training. That dedication can best be exemplified through active participation. Please consider being a contributor to IMATA's success. I look forward to seeing more of you becoming a viable part of the team.

There are many great articles in this issue. Please take the time to read them all, but make it a priority to read Bob Jenkins' article on the reauthorization of the Marine Mammal Protection Act. Bob has done an outstanding job of clarifying the results of a complex issue which directly affects each and every one of us in the United States, as well as a significant number of you in other countries. On this same issue, I would also like to convey my personal gratitude to those IMATA members who were an inherent component of this critical endeavor.

-Dave Force

FROM THE EDITOR



With this issue of **Soundings** we are more or less getting back on a quarterly schedule. You can expect to receive the Fall issue in early October, a few weeks before the annual conference.

As I explained in the last issue, there were a number of factors that really conspired to make the first two issues of 1994 exceptionally late, and that, in turn, pushed back this issue slightly. Once again, we apologize for any inconvenience this may have caused anyone.

Equally important, if you are a Professional or Active member, by now you should have received your copy of the first issue of IMATA's new peer-reviewed journal, **Marine Mammals: Public Display and Research**. A lot of work went into the production of this journal, both on the part of the authors, the Editorial Advisory Board, and the Publication Committee. As this was a first-time endeavor for us, I'm not sure that any of us really knew what we were getting into. I, for one, can tell you that it turned out to be a lot more work than was anticipated. Regardless, I think this inagural issue is very impressive and I would like to extend my congratulations and personal thanks to all the individuals who contributed their time and effort to this task.

I would also like to draw your attention to the ISSN number that appears in the upper right corner of the journal. For those of you who are not familiar with the ISSN, this is a procedure whereby our publication is registered with the Library of Congress in Washington, D.C., thereby making it much easier to be referenced world-wide. While registration is initiated at the national level, the coordination of the ISSN is international (a very important consideration for an international organization such as ours). The Library of Congress is the U.S. center that coordinates with an international center in Paris.

The advantages to having an ISSN

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The Harbor Seal

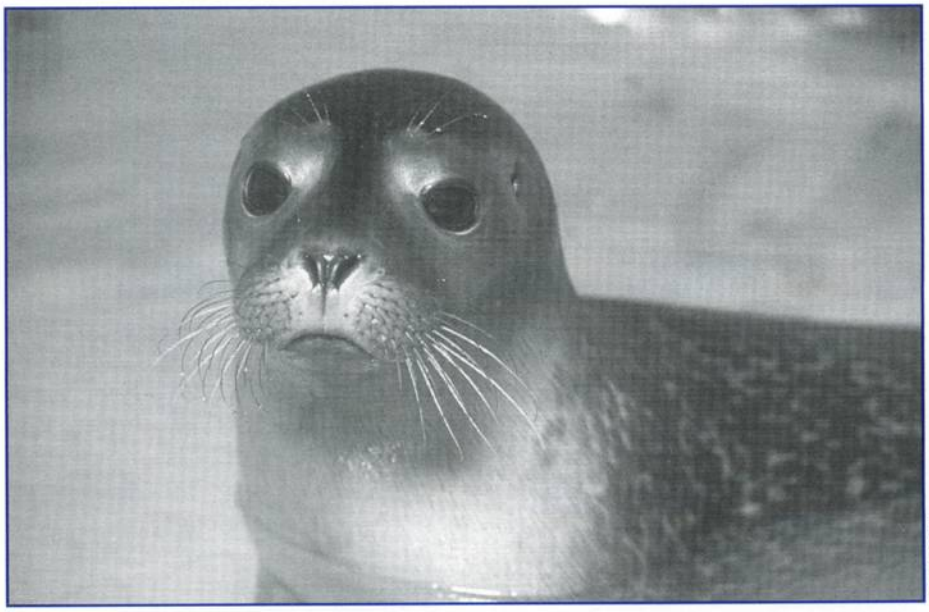
(Phoca vitulina Linnaeus, 1758)

by
Nedra Hecker
National Aquarium in Baltimore
Baltimore, Maryland

EDITOR'S NOTE: The following article is the fourth 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 harbor seal is displayed in many zoos and institutions throughout the world. Harbor seals do well in these environments as they live congenially in small groups, are highly adaptable, and are capable of being trained to a number of complex tasks. Thus they create an interesting, active exhibit.

Educators often face the fact that the general public commonly mistakes the harbor seal for other seals or sea lions. The following paper is designed to provide the reader with accurate and current information about the harbor seal (and phocids in general), to possibly make the task of education a bit easier.



George Grall

With their large luminous eyes and sleek coats, baby harbor seals are the favorites of both trainers and visitors at many aquariums and oceanariums around the world.

CLASSIFICATION AND ORIGIN

Harbor seals are one of three main divisions (seals, sea lions, and walruses) of the order Pinnipedia. Specifically, harbor seals are classified as follows: Class—Mammalia, Order—Pinnipedia, superfamily—Phocoidea, family—Phocidae, subfamily—Phocinae, genus—*Phoca,* species—*vitulina* (Harrison & King, 1980) and *largha* (suggested as a full specific rank, King, 1983).

Over the years there has been difficulty distinguishing the various populations of harbor seals, thus a final division is based primarily upon geographic location. There are four recognized subspecies: *P. v. vitulina* (eastern Atlantic), *P. v. concolor* (western Atlantic), *P. v. richardsi* (eastern Pacific), and *P. v. stejnegeri* (western Pacific) (Scheffer, 1958; King, 1983).

The derivation of the scientific name comes from the Greek *phoce* (seal) and the Latin *vitulus* (a calf). The literal translation means sea calf or sea dog. There are over 80 local names of which harbor, spotted, earless, and common seal are the best known (Bigg, 1981).

Phocids were thought to have originated in the northern Atlantic, at the start of the Miocene, around 20 million years ago. Not much is known about their evolution, but teeth and carpal bone characters imply a link with the Carnivora, with phocids showing similar structures (the ear region) to early mustelids

Habor Seal - continued on page 8

CONFERENCE COUNTDOWN '94

Plans and efforts continue in preparation for the 1994 IMATA conference, and everything is shaping up for yet another memorable week. We are continuing the "Countdown Column" to help you prepare for the conference and to provide you with helpful information and answers to any questions you may have. We are looking forward to seeing everyone and hope that the updates in this and future ***Soundings*** *will keep you informed as we get ever closer to the conference. The 1994 conference in Tacoma promises to be exciting; you won't want to miss it!*

JOIN US IN THE BEAUTIFUL PACIFIC NORTHWEST!

by
Kathy Sdao
IMATA First Vice President

It is hard to believe that our 22nd Annual Conference is only a few short months away! All of us at Point Defiance Zoo and Aquarium would like to extend to you our warmest invitation to join us here in Tacoma this November. Washington State is an ideal location, both for the actual conference and for a wide variety of pre- and post-conference excursions. While we expect a large number of our U.S. members to attend this year's conference, we are equally hopeful that many of our non-U.S. colleagues will consider Tacoma a convenient and attractive destination.

Registration materials have already been mailed to each IMATA member. Included in these mailings were forms for conference registration, abstract submission, and hotel registration, as well as information about travel arrangements, conference activities, and local attractions. Highlights of that information include:

DATES: 06-11 November 1994

HOST: Point Defiance Zoo and Aquarium, 5400 N. Pearl Street, Tacoma, Washington 98407 USA

HOTEL: The conference will be held at the Sheraton Tacoma Hotel and the adjoining Tacoma Convention Center. The 26-story Sheraton Tacoma, the largest hotel in Tacoma, just celebrated its 10th anniversary. Located downtown, just off Tacoma's scenic waterfront, its list of amenities includes a spa, sauna, business center, gift shop, room service, and access to a state-of-the-art health facility and pool (located across the street). The hotel also has two restaurants (Altezzo Ristorante, serving fine Italian food with a panoramic view from the top floor, and the Wintergarden Cafe) and three bars (one with a cozy fireplace). The Tacoma Convention Center has reserved over 8200 square feet of space for us, providing a spacious and comfortable meeting facility.

Discounted hotel room rates have been negotiated for IMATA at $67 U.S. per night for single or double occupancy, $77 U.S. per night for triple or quad (please note that these rates are lower than those quoted in the April information packet that you received in the mail). These rates are in effect 03-14 November (three days prior to and three days after the actual conference). To make reservations, please call 1-800-845-9466 from the United States or Canada or 206-572-3200 from elsewhere (FAX: 206-591-4105), or use the hotel registration card provided in the June mailing.

WEATHER: Because of the warming influence of the Pacific Ocean and the protection of the Cascade Mountains, Tacoma experiences very mild climate patterns. The average temperature during November is 47°F, with low temperatures at night dropping to an average of 40°F. Contrary to popular belief, it does *not* constantly rain in the Pacific Northwest, but some damp weather during the week should be expected.

TRAVEL: In order to make your

travel arrangements as simple as possible, an official travel agency was selected for this conference. Carlson Travel Network/Gateway Travel has agreed to negotiate discounted airfares with several major carriers. Please call Ms Dorie Blake, travel coordinator for IMATA, at 1-800-888-8836 for further information.

The airport nearest to Tacoma is the Seattle-Tacoma International Airport ("Sea-Tac"). Serving as a gateway to all major metropolitan areas in North America and beyond, it is one of the most modern and efficient airports in the United States. Our conference hotel is just 30 minutes (16 miles) from the Sea-Tac airport. Shuttle service to and from the airport is available from Capitol Aeroporter, call them at 1-800-962-3579 or 1-206-927-6179 to make reservations. The one-way fare is $11 U.S. for one adult, or $20 U.S. for two adults.

For those of you planning to drive to the conference, U.S. Interstate 5 (I-5) runs directly through Tacoma, and U.S. Interstate 90 (I-90) connects with I-5 just north of Tacoma. Also, Amtrak (passenger rail system) provides daily service from its station in downtown Tacoma to cities throughout the U.S. (call 1-800-872-7245 for details).

It is suggested that you consider renting a car during your stay in Tacoma in order to fully take advantage of all that the area has to offer. All the major rental agencies are located at Sea-Tac airport, but Budget Rent-A-Car and Thompson

Pat Miller

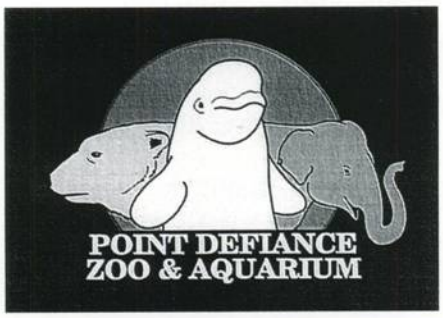
Beluga whale Mauyak will be one of the many marine mammals on exhibit when IMATA members visit the Point Defiance Zoo and Aquarium during this year's conference.

Travel are offering special discounted rates for conference attendees. The following rates are good from 30 October through 18 November and are available at all Budget locations in the Seattle/Tacoma area:

Type	Day	Week	Weekend
Economy	$30	$113	$20
Compact	$32	$134	$24
Intermediate	$34	$150	$25
Fullsize	$36	$163	$27
Luxury	$49	$249	$44

All prices are in U.S. currency and include unlimited mileage. Refueling, taxes, surcharges, and optional protection are additional. To guarantee a car at these special rates, call 1-800-772-3773 in the United States or 1-800-268-8900 in Canada and identify yourself as an attendee of the IMATA conference. The rate code is VNR2IMATA.

Couwntdown - continued on page 32



Harbor Seal – continued from page 5

(Harrison & King, 1980).

DISTRIBUTION AND POPULATION

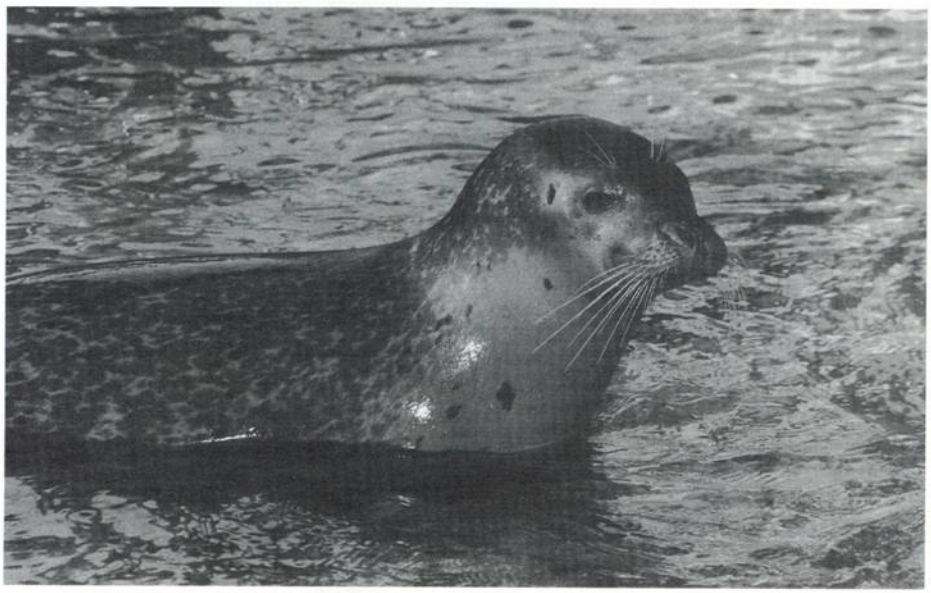
Numbering world-wide from 500,000 to 600,000 (King, 1983), harbor seals are found in the temperate, sub-arctic, and some Arctic waters of the North Atlantic and the North Pacific oceans, making them one of the most abundant pinnipeds in the Northern Hemisphere. The harbor seal is non-migratory and coastal in distribution. They can be found occupying beaches, bays, estuaries, freshwater lakes, and even the Pacific ice pack.

DESCRIPTION

There is little sexual dimorphism in the harbor seal. Females range in length from 1.2 to 1.5 m (3.9 to 4.9 ft) and in weight from 50 to 150 kg (110 to 330 lb). Males range in length from 1.5 to 2 m (4.9 to 6.5 ft) and in weight from 70 to 170 kg (154 to 374 lbs) (Nowak, 1991). Harbor seals can be described as having a fusiform fish- or torpedo-like shape with a rounded head which slightly resembles a canid or a felid in appearance. The head is distinguished by the lack of external ear pinna, hence the name "earless seal." Harbor seals have small fore-flippers with five claws, large webbed hind-flippers, and a small visible tail. There is a large variation in the harbor seal coat color which is predominantly black or dark. While some coats can be a light tan, most have various degrees of spotting or leopard markings on them, thereby giving rise to the common name "spotted seal."

NATURAL HISTORY

Behavior and Longevity. Harbor seals are solitary in the water, but generally haul out in mixed groups of varying sizes; groups may average from two to several thousand (Bigg, 1981). There is no real social structure or need for hauling out in groupings aside from breeding needs. It is speculated that grouping may serve as a strategy against predators (see **Senses**) (Renouf, 1991). Harbor seal predators include sharks, killer whales, and Steller sea lions. Polar bears, coyotes, and eagles prey on young seals as well. Storms, abandonment, disease, parasites, and man also take their toll, with nearly 20% of each pup generation and 30% of mature males dying yearly (Katona, 1977). While the average life span for most species of seals is estimated between 15 and 25 years, Phocoidea appear to live longer than Otarioidea, with an average life span of 30 years and a maximum in the 40's. Females generally live longer (Riedman, 1990). One female harbor seal at the Brookfield Zoo, (near Chicago, Illinois, USA) lived to 43.



George Grall

Now 5 1/2-years-old, this female harbor seal named Marmalade was the first seal to be born at the National Aquarium in Baltimore.

Locomotion, Feeding, and Thermoregulation. On land, the locomotion of a harbor seal can be described as resembling the hunching motion of a caterpillar. The harbor seal's rear moves forward, which then seems to push the front forward. The fore-flippers are of little use in locomotion except to provide purchase or some pull. The hind-flippers are of no use on land as they extend straight out behind the animal. For all of their apparent awkward appearance, however, harbor seals can be quite agile on land. In water, the webbed hind-flippers provide swimming power in a side-to-side movement. During swimming, the fore-flippers are generally tucked alongside the body (for streamlining) or used in steering. Harbor seals are thought to be able to reach swimming speeds of 12 to 20 knots, but they generally cruise at 5 knots or less (Riedman, 1990).

Newly weaned pups eat crustacea (especially shrimp) for the first 1 1/2 to 3 months. Older animals are more opportunistic feeders, eating cephalopods, crustaceans, and fish. The fish diet may include herring, anchovy, trout, smelt, codfish, scorpionfish, rockfish, prickleback, greenling, sculpin, sandlance, and flounder.

Like other marine mammals, the harbor seal helps to control a body core temperature of 37-38°C (≈100°F) with the aid of a fairly thin blubber layer (5-6 cm, 2-2.4 in) for insulation. Harbor seals also aid in heat conservation by letting the skin temperatures fall to approximately one degree above the ambient temperature (Anderson, 1969; Harrison & King, 1980). This feat is accomplished by control of the vascular vessels found at the skin's surface (Harrison & King, 1980).

Aggressive Displays. Aggression usually occurs when one animal gets

Harbor Seal – continued to page 19

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

Sea Life Park - Waimanalo, HAWAII

Sea Life Park reports the arrival at the beginning of June of the first monk seal pup (*Monachus schauinslandi*) of the season. This female is one of the youngest ever received at the park and, at just 62 pounds, she looked more like a stuffed toy. Since the seal still had her birth coat and was just starting to get teeth, she was estimated to be about three weeks old upon arrival. It is believed that she was the mother's first pup, which could explain the premature weaning.

Testing continues with Po'okela, the park's three-year-old California sea lion (*Zalophus californianus*), on her ability to use information provided by two humans, one who has seen where a reward has been concealed and one who does not know where the reward is. The question is whether Po'okela will use the visual perspective of a human to obtain a food reward.

The park's Assistant Curator of Mammals and Birds recently participated in the "table top exercises" conducted by the Clean Islands Council in the event of a major oil spill in Hawaiian waters. A complete detailed scenario was acted upon involving not only the party responsible for the mishap, but also representatives from the military, government agencies, and the private sector, including Sea Life Park. Everyone seemed to do their part, leading to a very successful drill—which hopefully will never have to be done for real.

New in the park's training department are training classes complete with chickens! Junior staff are being taught operant conditioning fundamentals and then have the chance to utilize these techniques with their chickens. Home-made operant chambers, food delivery magazines, and targets have been constructed to improve the skills of budding young trainers.

Dolphin Quest - Waikoloa, HAWAII

The staff at Dolphin Quest is experiencing a very busy and exciting summer. With all four of their nine-year-old female bottlenose dolphins (*Tursiops truncatus*) currently going through their first pregnancies, the staff has been busy preparing themselves for multiple births. Because the dolphins are all within the same stage of gestation, it has provided a unique opportunity for study, and Dr. Rae Stone has been gathering valuable ultrasound information on a monthly basis. Along with sonograms, husbandry training has expanded into nursing behaviors and breast pump introduction.

During the last year, the Dolphin Quest staff has been able to share these behaviors with the guests on their programs. The guests have actually been able to take part in the training which has had an increased impact on their interest and learning. The staff has also added another area separate from the main lagoon which will serve as a nursery area. Although the staff has kept in communication with other facilities over the past year and have prepared themselves as best they can for any possible scenario, they would still appreciate any information that anyone else might be willing to share.

The Dolphin Quest Hawaii staff would also like to announce the opening of the new Dolphin Quest Moorea in French Polynesia. Located at the Moorea Beachcomber Parkroyal on the island of Moorea (11 miles off Tahiti), the new facility will further the Dolphin Quest goal of providing education about, and sharing the beauty of, marine mammals with other parts of the world. Currently, the Moorea facility houses a male and female rough-toothed dolphin (*Steno bredanensis*) and both are participating in interactive education programs with the public. Dolphin Quest is looking forward to sharing the progress of this new facility with IMATA members as their programs expand.

U.S. CALIFORNIA REGION

Jeff Andrews
Sea World of California
San Diego, California

Marine World Africa USA - Vallejo, CALIFORNIA

The Marine Research Center is the first new marine mammal exhibit to be added to Marine World Africa USA since the park moved to Vallejo in 1986. The new research center will be home to the park's breeding and research programs for cetaceans, as well as rehabilitation efforts for both cetaceans and pinnipeds.

Opened to the public this past February, the four-pool, 750,000 gallon complex is highlighted by a 230,000 gallon observation pool that offers above and below water viewing through a 24 by 8 foot acrylic panel. The pool also has four hydrophone ports to monitor vocalization and echolocation patterns. This main pool is connected via swim-through channels to two 50-foot-diameter, 220,000 gallon pools forming a triangular circuit. The center also features a redesigned 45,000 gallon rehabilitation pool, complete with an isolated filtration system. The park has constructed new classrooms next to the center, enabling it to double its education program capacity.

The new Marine Research Center already has some new residents. On 23 April, Jasmine, an 8-year-old bottlenose dolphin, gave birth to her first calf, a male. On 11 May, Chelsea, a 15-year-old *Tursiops*, gave birth to her second calf, also a male. As of this issue, both mom/calf pairs are doing very well.

As if two new baby dolphins weren't enough to keep everyone busy, on 21 May the center became home to four (1.3) orphaned Pacific walrus pups (*Odobenus rosmarus divergens*). Upon arrival, the pups ranged in age from two to three weeks and weighed between 124 and 151 pounds. The pups are currently quite cozy in the center's rehabilitation facility, however they will soon have a new home in 1995 following completion of Marine World's new pinniped exhibit. The new exhibit will feature all three families of pinnipeds—seals, sea lions, and walruses.

Moorpark College - Moorpark, CALIFORNIA

Moorpark College reports that things are great at "America's Teaching Zoo." The second-year EATM class, many of whom attended last year's Hawaii conference, has graduated and the college would like to say thank you to any IMATA members who may have helped these students in their job search.

In animal news, Moorpark has just acquired three new lion-tailed macaques (*Macaca silenus*) from the Fresno Zoo. The college is attempting to become part of the lion-tailed macaque SSP (Species Survival Plan). Additionally, the staff is happy to be working with Gail Laule of Active Environments. Both Gail and Tim Desmond have been spending time at the school's zoo offering training tips and starting some projects of their own.

U.S. PACIFIC NORTHWEST REGION

Cinthia Alia
Oregon Coast Aquarium
Newport, Oregon

Oregon Coast Aquarium - Newport, OREGON

On 06 April, the Oregon Coast Aquarium received a young female southern sea otter (*Enhydra lutris nereis*) from the Aquarium for Wildlife Conservation in New York City. Shortly after her arrival, the otter was introduced to the aquarium's three northern sea otters (*E. l. kenyonaii*) and within a short time was interacting and eating with the others. The Oregon Coast Aquarium is now North America's first aquarium to exhibit both subspecies of sea otters in the same exhibit.

Ironically, shortly after the staff had gotten back to a normal schedule and everyone was enjoying watching the otters through the newly installed large viewing window, the unthinkable happened. Somehow, in the night or early morning, one of the otters had gotten a hold of something strong enough to once again shatter the window! The window was quickly stabilized and will be replaced over the summer.

In the aquarium's sea bird aviary, the tufted puffins (*Fratercula cirrhata*) are once again laying eggs and the rhinoceros auklets (*Cerorhinca monocerata*) and pigeon guillemots (*Cepphus columba*) have finally reached breeding age and have been seen displaying courtship behavior. The staff is hoping to have a successful breeding season with these birds this year.

The Oregon Coast Aquarium recently premiered a major traveling exhibit designed by the Oakland Museum entitled "To See the Sea: The Underwater Vision of Al Giddings." This exhibit focuses on the deep ocean, the ways we see and explore it, the hazards explorers face, and some of the animals that live there. The exhibit also offers a thought-provoking look at the future of ocean exploration and conservation.

Point Defiance Zoo & Aquarium - Tacoma, WASHINGTON

Nearly the entire staff of the Point Defiance Zoo and Aquarium is involved in preparations for the 22nd Annual IMATA Conference scheduled to be held in Tacoma 06-11 November 1994. Kathy Sdao, IMATA First Vice President, and the rest of the marine mammal staff (Jeff Foster, Nolan Harvey, and Kari Snelgrove) are working especially hard to ensure that this conference will be fun and stimulating for everyone who attends.

The PDZA staff is also eagerly awaiting another special event this year—the birth of beluga whale (*Delphinapterus leucas*) Mauyak's second calf. Recent ultrasound examinations have indicated that the calf is healthy and developing normally. Mauyak has gained more

than 300 pounds since the beginning of this pregnancy and an August delivery date is anticipated.

Lastly, in order to facilitate the Northern fur seal (*Callorhinus ursinus*) breeding program at Mystic Marinelife Aquarium in Connecticut, PDZA will be transporting two fur seals (one male and one female) there sometime this summer.

Seattle Aquarium - Seattle, WASHINGTON

The staff at the Seattle Aquarium is busy setting up "in-nest-box cameras." These small cameras, utilizing infra-red light, are being installed in the tufted puffin and rhinoceros auklet nest boxes. The staff hopes to get footage of the puffins and auklets laying eggs, the chicks hatching, and the parents feeding and raising the chicks.

Vancouver Public Aquarium - Vancouver, British Columbia, CANADA

Aquarium staff have been monitoring elevated serum progesterone levels in Bjossa, a 17-year-old killer whale (*Orcinus orca*), for approximately nine months. Bjossa has previously exhibited elevated serum progesterone levels for over nine months without being pregnant. Ultrasound, urine hormone tests, and EKG are all being used in an attempt to confirm pregnancy.

A new exhibit, "Solving the Puzzle of the Disappearing Steller Sea Lions," opened at the aquarium in July. Five Steller sea lions (*Eumetopias jubatus*) have been at the aquarium since July 1993 as part of a large-scale research project. The new display will allow the bulk of the research, involving metabolic chamber work and feeding studies, to still take place off-exhibit.

The aquarium's Marine Mammal Rescue and Rehabilitation Program is moving off-site once again. An animal exhibit at the Stanley Park Zoo is being renovated to accommodate the dozens of newborn harbor seals (*P. v. richardsi*) that will require rehabilitative support through the summer. Last summer, seventy-four harbor seals and two northern elephant seals (*Mirounga angustirostris*) were rescued from the waters of British Columbia and treated at the aquarium.

U.S. ROCKY MOUNTAIN REGION
Jim Blankenship
Denver Zoo
Denver, Colorado

Denver Zoological Gardens - Denver, COLORADO

Jim Blankenship reports that the Denver Zoo has recently received two female harbor seals (*Phoca vitulina*) from the Hogle Zoo in Salt Lake City, Utah. Eleven-year-old Maude and two-year-old Slug both arrived in good health and, after a 30 day quarantine period, will be introduced to the zoo's other five harbor seals.

U.S. MIDWEST REGION
Faith Dunham
John G. Shedd Aquarium
Chicago, Illinois

Brookfield Zoo - Brookfield, ILLINOIS

Two male *Tursiops* from the Dolphin Connection arrived at the Brookfield Zoo on 16 January. Lucky and Hastings (20- and 18-years-old respectively) are doing wonderfully and are expected to be a big part of a new summer presentation at the Seven Seas Pavilion.

Kaylee, the zoo's female baby dolphin is fast approaching her first birthday and she is growing by leaps and bounds (literally). Kaylee is eating 8 to 10 pounds of fish a day in addition to mom's milk. She loves to follow targets, understands a whistle bridge, and thrives on interaction with the staff.

Glen Oak Zoo - Peoria, ILLINOIS

Following extensive rehearsals, the Glen Oak Zoo has added a public presentation to their pinniped exhibit. Roz Wolfram formatted the show which includes 1.2 California sea lions and highlights their natural behaviors and adaptations, as well as explains the differences between seals and sea lions. Roz invites all IMATA members to stop by and say hello if they are in Peoria. The zoo is open seven days a week, 10:00 AM to 6:00 PM, May through September.

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.

Miller Park Zoo - Bloomington, ILLINOIS

The staff at the Miller Park Zoo began training their two female California sea lions and one female harbor seal around the beginning of 1993. They now have a limited public program twice-a-day for the duration of the summer.

Jan Outlaw attended the 1994 Midwest Marine Mammal Meeting in Indianapolis and reported that everyone was very helpful and that several of the ideas that were proposed to her are working quite well with the zoo's pinnipeds. Jan

and her staff are hoping that many IMATA members might be able to visit the Miller Park Zoo this year.

Minnesota Zoological Garden - Apple Valley, MINNESOTA

The 1994 Minnesota State Legislature recently approved the Minnesota Zoo's request for a $20.5 million bonding bill for the construction of a new marine education facility. This project will include a new dolphin exhibit, diverse marine aquariums, a shark exhibit, classrooms, and interpretive areas. Construction is estimated to be completed by the spring of 1997.

St. Paul's Como Zoo - St. Paul, MINNESOTA

There has been a lot of activity in recent months at St. Paul's Como Zoo. The six tufted puffins (*Fratercula cirrhata*) recently received from the Point Defiance Zoo and Aquarium are now in full color and are displaying a good deal of breeding activity. The zoo's Seal Island has been renovated, including a change in the color of paint used on the habitat. It is hoped that a change from white to tan will cut down on glare and decrease the incidence of pinniped eye problems. Also newly renovated, the polar bear (*Ursus maritimus*) exhibit is now providing summer fun for the zoo's bears and their guests.

Earlier this spring, the zoo saw slightly more excitement than they wanted. Casey, a 12_-year-old lowland silverback gorilla (*Gorilla gorilla*), escaped from the enclosure where he had resided for the previous 12 years. Evidently, Casey had decided to simply jump out of his outdoor exhibit and take a leisurely stroll through the zoo. Due to the quick response of zoo personnel, the zoo's outdoor areas were cleared of visitors in less than five minutes and fortunately no one was injured during the brief incident. Casey was darted, but long before the tranquilizer took effect, he had journeyed back to his enclosure and hopped back in. Needless to say, Casey is now spending his time indoors until the necessary renovations can be made to secure his outdoor compound.

Oceans of Fun - Milwaukee, WISCONSIN

Oceans of Fun began their busy summer hours on 30 April and they have several big summer events planned, including the Milwaukee Ala Carte and a birthday celebration extravaganza for their baby sea lion, Makaia. The staff would also like to congratulate and welcome all of their new volunteers and interns for the 1994 summer season.

Soundings would like to join the Oceans of Fun staff in congratulating Shelley Ballman on the birth of her son, Austin John, on 27 April. Both mom and baby are healthy and happy.

U.S. SOUTHEAST REGION

Shara Tarule
Dolphin Research Center
Grassy Key, Florida

The Living Seas, EPCOT Center - Orlando, FLORIDA

The staff at The Living Seas remains busy with their "dolphin communication keyboard", as well as with other on-going research projects. Besides visiting research staff Dr. Gordon Bauer, John Gory, and Mark Xitco, The Living Seas is pleased to announce their new association with Dr. Heidi Harley. Heidi is in the early phase of a sound-categorization study at The Living Seas.

The Living Seas proudly announces the birth of a female *Tursiops* calf on 07 May. The calf was born to eighteen-year-old Koriko, and mom and baby are doing well.

The Living Seas' manatee population has undergone some recent changes with the transfer of Lorelei back to her former home at Homosassa Springs Wildlife Park. Her calf, Chester, is now joined by two other males, Gene and Hurricane. Although Gene and Hurricane have been at the EPCOT Center facility for over a year, this is the first time they have been visible to guests.

Clearwater Marine Science Center - Clearwater, FLORIDA

In the first five months of 1994, Clearwater Marine Science Center responded to eleven strandings,

Clearwater Marine Science Center

Melissa Harmon, head trainer at the Clearwater Marine Science Center, examines Sunset Sam's mouth and tongue as part of a routine husbandry program.

Clearwater Marine Science Center

Trainer Joyce Decker and veterinarian Dr. Terry Clekis listen to Sunset Sam's heart rate during a typical husbandry examination at the Clearwater Marine Science Center.

including ten dead *Tursiops* and a live-stranded rough-toothed dolphin. Of the *Tursiops*, two appeared to be an off-shore species.

CMSC's new outdoor marine mammal rehabilitation tank is up and running and will be used to keep stranded animals separate from resident animals in hopes of preventing the spread of morbillivirus and other disease. Additional precautions are also being installed, such as footbaths at food prep and animal care entrances. CMSC has also renovated Sunset Sam's area, providing him with 25% more swimming area. As soon as Sam is acclimated to his new environment, CMSC hopes to bring in a companion for him.

CMSC has begun offering a one-day class, "Day with a Dolphin." The class, taught by head trainer Melissa Harman and trainer Joyce Decker, focuses on training techniques, communication, and husbandry behaviors. The animal care staff is busy caring for an orphaned otter pup which was rescued by CMSC in April. The pup was bottle-fed and weaned at Lowry Park Zoo in Tampa; it was then returned to CMSC for long-term rehabilitation and care.

Congratulations to Head Trainer Melissa Harman on her new position as CMSC Education Coordinator. In addition to leading the training team, Melissa will create educational programs and materials for the center.

Audubon Zoo - New Orleans, LOUISIANA

Carolyn Boling and Tyrene Fayard report a successful spring opening at the Audubon Zoo's sea lion pool. For the first time they are doing three to four self-narrated shows a day with sea lions Lilly and Sushi.

The winter was spent integrating sea lion Katie and her pup Josie into the zoo's main population. Katie had a long history of aggression prior to coming to Audubon; at feeding time she would often attack the other animals as well as trainers. After giving birth, mom and pup spent time nursing in a 90,000 gallon exhibit separated from, but adjoined to, the pool housing the other three animals. Once Josie was weaned, all the animals were allowed access to one another but were separated at feeding time. After a few months of concentrated effort, Carolyn and Tyrene are very proud of the progress Katie has shown and are happy to say that all the animals can now work and eat free of fear.

The sea lion staff also spent the winter working with the primate department in successfully conditioning a diabetic, red-capped mangabey (*Cercocebus torquatus*) named Ivan to accept insulin injections twice a day. Ivan was separated from his troop for six months to undergo training and is now ready for the possibility of re-introduction.

Carolyn and Tyrene would like to say good-bye and thank-you to Wendi Brown for the hard work she put in while interning over the past year and a half. Wendi has graduated from Tulane University and is off to continue her life in California where she will be looking for a career in the marine mammal field. Good luck Wendi!

Last but not least, Tyrene would like to congratulate Carolyn on her recent engagement to Will Shepherd, a pilot for American Airlines. Will proposed to Carolyn by interrupting her show on her birthday, supposedly to have the audience sing her Happy Birthday. After completely embarrassing Carolyn, Will then popped the question and threw a cup containing the ring into the pool for sea lion Lilly to present to Carolyn. Lilly will be the maid of honor at their wedding sometime next year.

Chicago Zoological Society's Dolphin Connection - Duck Key, FLORIDA

The Dolphin Connection staff is proud to announce the birth of a *Tursiops* calf in April 1994. The calf, born to 18-year-old Schooner, is the seventh successful birth for the facility. Both mother and calf are doing well.

The staff would also like to extend a fond farewell to Gina Wood. She will be greatly missed!

Gulf World - Panama City Beach, FLORIDA

The staff and management at Gulf World are welcoming a new friend. Sushi, or Fawn as she was known previously, has taken up residence

with Gulf World's other performing sea lions. She made a trans-continental flight from California without a hitch and, after a brief adjustment period, has become a charming part of the park's sea lion presentation. Many thanks to Jennifer Zeligs and her excellent staff at Long Marine Lab for the love and effort which obviously went into this wonderful animal.

A warm welcome is also extended to Christine Beaulieu who joined the staff in April and is already contributing greatly to the program.

Strandings in the northeast part of the Gulf of Mexico have fortunately been a little slow this spring, but Gulf World's rescue team did respond to a live dwarf sperm whale (*Kogia simus*) stranding. The whale lived for three days before succumbing to a severe respiratory infection. Nevertheless, this was a valuable experience with a rare animal.

The Dolphin Research Center - Grassy Key, FLORIDA

The Dolphin Research Center expects a busy summer with their week-long DolphinLab classes filling up and the addition of both an intermediate and advanced DolphinLab to the schedule. Additionally, Kate Cole, from the University of Aberdeen, will be starting a basal metabolic rate study with seven of the DRC dolphins. She is hoping to shed some light on the energy expenditure during echolocation. To do this, the dolphins have been trained to station under a hood which is connected to a devise measuring the oxygen in the exhalate. The dolphins will have their exhalate evaluated in a resting and active phase, with and without eyecups. The staff at DRC will provide more details as the research is carried out. At this point, all the dolphins are comfortable going under the hood and exhaling with and without eyecups on.

The staff enjoyed participating in a recent Fantasy of the Stars television special. The segment featured comedian/actor Sinbad, and included scenes with Cheryl Messenger from The Dolphin Connection and DRC's Director of Training Linda Erb. The DRC staff report that it was great fun to participate with their neighbors from across U.S. 1!

On a sadder note, the staff is recuperating after an unsuccessful 2 1/2 week, 24-hours-a-day, rehabilitation of a young male beaked whale named Magic. They are waiting confirmation of the whale's exact species; since Magic was so young that his teeth hadn't erupted, it made identification very difficult.

U.S. EASTERN REGION

Jennifer Lawson
National Aquarium in Baltimore
Baltimore, Maryland

New Jersey State Aquarium - Camden, NEW JERSEY

The New Jersey State Aquarium would like to announce the arrival of three new trainers: Nancy Burdash, Cyndy Phillips, and Kathy Wassel. Their combined prior experience and training background will be an added plus to the aquarium's seal program.

In animal news, Echo, the aquarium's blind harbor seal, has been temporarily taken off exhibit due to a recent minor injury; she should be returning soon. Additionally, all the grey seals have finished their molts.

National Aquarium in Baltimore - Baltimore, MARYLAND

The mammalogists at the National Aquarium in Baltimore are experiencing a very hot and busy summer. They have started a volunteer narrator program for their seal exhibit which will be a welcome and pleasant addition for the crowded summer. The aquarium's grey seals have both completed their molts and are looking well. The staff is beginning a training program with their harbor seals in which the seals will come off exhibit, climb in a cart, and ride through the aquarium building and into a classroom. This will enable visitors to get a closer look and learn more about the seals, and it will offer more variety in the animals' day. The seals are also being trained to station under a radiograph machine so that voluntary x-rays may be taken.

In the dolphin pavilion, plans are underway to allow the mothers and calves access to the main exhibit pool. This will allow the staff to begin incorporating these animals into their daily shows. The first priority is, of course, teaching the youngsters to gate.

The Marine Mammal Stranding Network reports a very busy spring. The stranded sea turtle (*Carretta carretta*) now in NAIB's care is eating well and underwent cataract surgery in June. Additionally, the aquarium's stranding staff has responded to several seal strandings.

On 05 May, NAIB transported a pygmy sperm whale (*Kogia breviceps*) to Marineland in St. Augustine, Florida. The little whale originally stranded last Thanksgiving Day and the rescue team removed large amounts of ingested plastic from the animal's stomach before it recovered. The whale was released off the east coast of Florida on 31 May and a small group of staff and volunteers are tracking the animal from a NOAA boat. The aquarium would like to thank everyone who helped make this a smooth and successful release.

EUROPE REGION III

Géraldine Lacave
Boudewijnpark
Brugge, Belgium

Dolphinarium Brugge - Brugge, BELGIUM

Dolphinarium Brugge began their summer season with the addition of three new trainers: Sebastien Flandrin, formerly of Park Asterix in Paris, and Olivia Hooft and Nele

Algoet.

The dolphinarium has also welcomed two new baby harbor seals. A female, Lisa, and a male, Jasper, were born in May and June respectively, are doing just fine. The mothers were kept separated from the rest of the seal population during and after their pregnancy to prevent any aggression from the adult males towards the pups. The females and pups will be integrated into the remainder of the population at the end of the summer.

Antwerp Zoo and Dolphinarium - Antwerp, BELGIUM

Jacques Smolders reports that the two babies born at the Antwerp Zoo and Dolphinarium last year are both healthy and playful. Ulla, a female California sea lion, and Uta, a female South African fur seal (*Arctocephalus pusillus pusillus*), are delighting staff and visitors alike.

The zoo continues to enlarge their California sea lion population through a successful breeding program. They have had three births in three years and are expecting another by the time that you read this. Their collection now stands at six.

Zeedierenpark Harderwijk - Harderwijk, HOLLAND

Jenny Hardeman writes that the staff at Harderwijk is still very busy working with stranded animals in the park's rehabilitation center. Since last November, they have been caring for three white-beaked dolphins (*Lagenorhynchus albirostris*); fortunately, one of these animals was able to be released this past April after being treated for a lung condition.

In addition, the center is still housing six harbor porpoises (*Phocoena phocoena*), two that were rescued last summer, one last fall, and three this spring. All of these animals are being monitored closely and hopefully they will be able to be released sometime soon.

Lastly, a conference on marine mammal sensory systems was recently held at Harderwijk and was a resounding success. Ron Kastelein reports that a book on the findings of the conference will shortly be published and anyone interested should contact him.

Tiergarten Nürnberg - Nürnberg, GERMANY

German dolphinaria continue to be having problems with animal rights extremists, according to Hans-Jürgen Klinckert. In early June, German television aired a very vindictive program accusing dolphinaria and marine parks of all the usual nonsense. Hans reports that this was the most biased show that he has ever seen. Despite this, and despite the fact that extremists have actually demonstrated inside the Nürnberg dolphinarium, Hans says that their attendance has been very good.

On a more pleasant note, Hans writes that their two baby dolphins, both six-months-old, are both doing fine.

Dolphinarium Münster - Münster, GERMANY

Martin Huigen writes that the reporters from the previously mentioned television program also contacted the Dolphinarium Münster, but that they were denied permission to film inside the facility. This was partly due to the fact that an earlier film crew had filmed a segment of the park's research programs and then used the footage out of context in a misleading manner. Martin reports that currently everything is quiet at his facility, at least for the moment.

Theo, a California sea lion born at the park last year, recently celebrated his first birthday. He continues to do well and he is always charming his trainers.

Tierpark Dortmund - Dortmund, GERMANY

Volker Gatz is pleased to announce that Najade, one of Dortmund's sea lions, celebrated her 30th birthday on 27 May. Volker also writes that the park has just opened a new naturalistic exhibit for their Humboldt penguins (*Spheniscus humboldti*). The new exhibit is complete with underwater viewing that enables the public to get a much more thorough and enjoyable look at these engaging birds.

EUROPE REGION V

Simon Ede
Park Asterix
Paris, France

Park Asterix - Paris, FRANCE

Park Asterix opened its doors to the public on 09 April for the start of their sixth season. So far, the season has been going well and attendance is up by 30%. The park's dolphins and sea lions quickly settled into the show routine, performing three to five shows daily. Athena, the dolphin calf born last July, often steals the limelight by copying the adult's at all the wrong moments. She started eating fish at nine months and now consumes around two to three kilos of capelin and sprat daily.

Marineland Antibes - Côte d'Azure, FRANCE

Unlike Park Asterix, Marineland is open every day of the year which means that the Marineland trainers get to do shows in the cold and rain (yes, it does rain even in the South of France).

Marineland reports that all of their animals are fine and they are now well into the summer season. The trainers were kept busy this spring hand-rearing King penguin chicks (*Aptenodytes patagonicus*) which are now fully grown and on exhibit in the Antarctic penguin exhibit.

EUROPE REGION VI

Renato Lenzi
Aquatic World
Cattolica, Italy

Adriatic Sea World - Riccione, ITALY

Adriatic Sea World in Riccione was built in 1962 and is currently home to four bottlenose dolphins. Recently, the Riccione delphinarium entered into a joint venture with Aquatic World in Cattolica, and the two parks are now being run by the same company under the direction of head trainer Steve Walton. The park is open from March till November and during the spring months it offers an intensive educational program for students of varying levels. In the summer, the program continues with guided visits through the facility where biologists from the Cetacean Foundation provide lessons and panel discussions about sea life. The biologists also explain the function and practical operation of a rescue team involved with the strandings of live cetaceans or sea turtles. In addition to the park's aquariums, it also exhibits a full whale skeleton.

Aquatic World - Cattolica, ITALY

Aquatic World is open from May to October and is home to two females bottlenose dolphins and their calves which were recently transferred to the park from Adriatic World. The two calves have both started eating fish and the staff is now working diligently on their training. A portion of Aquatic World's dolphin show takes place underwater, but thanks to two large video screens connected to underwater camcorders, the public can experience what it is like to be diving with the dolphins.

Aquatic World is also a rehabilitation center for sea turtles; last year 18 loggerhead turtles (*Carretta carretta*) were rehabilitated and released. The rehabilitation program is run with the cooperation of WWF Italy and La Sapienza Rome University.

Acquario di Genova - Genova, ITALY

Although there were problems along the way and construction was halted several times, the largest aquarium in Europe is finally open. At the present time, Acquario di Genova is home to two bottlenose dolphins and two harbor seals, as well as a number of penguins, sharks, and other fish. The aquarium is open year-round and all IMATA members are invited to stop by and visit.

Delfinario di Rimini - Rimini, ITALY

Built in 1964, Delfinario di Rimini currently exhibits five bottlenose dolphins consisting of one adult male, two adult females, and two calves. The two calves were both born at the park and are now one and four-years-old.

AUSTRALIA REGION

Steve Romer
Sea World Enterprises
Gold Coast, Australia

Tangalooma Dolphin Program - Tangalooma, QUEENSLAND

Tangalooma is located on the western shores of Moreton Island, which is approximately 25 miles offshore from the city of Brisbane in Queensland. About 98% of Moreton Island is a national park, and the surrounding waters form part of Moreton Bay Marine Park. From 1952 until 1962, Tangalooma was actually a commercial whaling station which harvested humpback whales (*Megaptera novaeangliae*) during their annual migration past nearby Cape Moreton. Today, Tangalooma is a tourist resort which can accommodate up to 400 guests.

In early 1992, a program which was based upon the hand-feeding of wild *Tursiops* began. There are currently eight dolphins of various ages which arrive at the beach area adjacent to the resort during the early evening hours to be hand-fed. This pod of bottlenose dolphins appears to be a stable group and consists of two adult males, two adult females, and four juveniles. The number of dolphins actually feeding each night varies, and appears to be determined by such things as weather, tide, and the number of fish in the bay.

The program has established a number of strict guidelines which apply during the feeding sessions. A briefing is held before the feeding so that guests are aware of the procedures which are to be used when feeding dolphins. These procedures include such things as disinfecting hands before handling fish, removal of hand jewelry, and walking out to a sufficient depth before feeding. Additionally, no touching or patting of the dolphins is permitted.

Staff are careful to restrict the amount of fish given each night to no more than a third or a half of the estimated daily food requirements of the dolphins attending a particular session.

The program has established a close relationship with the School of Marine Science at the University of Queensland. Researchers from the university are studying such things as the behavior of the dolphins during the feeding sessions, the impact that the feeding has on the dolphins, the educational benefit that the program has on visitors, the fish intake of individual dolphins, and the presence of visible parasites. Additional scientists are likely to begin research projects later this year.

A dolphin education and research center that is open to the public has been established at the resort and features displays, books, magazines, videos, and presentations. Guests who wish to feed the dolphins are channelled through this center prior to any interaction with the animals.

Due to the sensitive nature of a program such as this, the resort has taken a responsible attitude and employed Ross Deakin, a qualified marine mammal expert, to coordinate all husbandry and appropriate scientific research.

Pet Porpoise Pool - Coffs Harbour, NEW SOUTH WALES

The Pet Porpoise Pool recently celebrated its second successful birth of an Australian sea lion (*Neophoca cinerea*). The female pup was born on 23 March; the pup's mother, Nikki, was herself born at Marineland of South Australia. Both mother and pup are doing fine.

Seiichiro Wakisaka and Hisoka Hirunda, General Manager and Senior Curator respectively of Marine World Uminokamichi Japan, visited the Pet Porpoise Pool. Assistance and advice between both oceanariums resulted in

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number are many. The ISSN is used in libraries for identifying titles, ordering and checking in, and claiming serials, and it simplifies inter-library loan systems and catalog reporting and listing. The ISSN also provides an accurate citing of serials by scholars, researchers, abstracters, and librarians. As a standard numeric identification code, the ISSN is suitable for computer use in fulfilling the need for file update and linkage, retrieval, and transmittal of data. Most importantly, all ISSN registrations are maintained in an international data base and are made available in the *International Serials Data System Register*. It is the belief of the Publications Committee and IMATA's Board of Directors that the ISSN number will help, in time, make **Marine Mammals: Public Display and Research** one of the preeminent journals dealing with marine mammals and marine mammal issues.

For those of you who are not Professional or Active members, copies of this first issue are available for purchase through IMATA's Merchandise Committee. Anyone interested in obtaining a copy should contact the Merchandise Committee Chair Jackie Ott at IMATA's San Diego address.

Lastly, the Publications Committee would like to welcome Renato Lenzi to the **Soundings** staff. Renato, who works at Aquatic World in Cattolica, Italy, has volunteered to serve as the Regional Reporter for the Italian area. Thanks to Renato's efforts, **Soundings is** publishing a thorough report from Italy for the first time, and I'm sure we can now look forward to being kept up-to-date on what is happening at the marine parks in Italy in future issues.

Until then—Aloha!

-John Kirtland

Report on the 1994 Mid-Year IMATA Board of Directors and Committee Meetings

by
Nedra Hecker • IMATA Secretary

On 19 and 20 May, the members of IMATA's Board of Directors, as well as its committee chairs, met in Aurora, Ohio for the annual mid-year Board of Directors/Committee meeting. The following article highlights some of the issues and business the Board and the committee chairs discussed at this meeting.

During two days of meetings, members of IMATA's Board of Directors and its committee chairs met to discuss current activities, plans for future action, and several items regarding the near future (the upcoming conference).

Committee activity and actions included the following:

°Determination of the 1994 Tacoma conference logo (used by both the conference and the merchandise committees).

°The IMATA poster mailed last November to schools and universities within the United States and to ten countries have produced over 700 membership requests. This is twice the total number of requests during all of last year. Work is being completed on the career brochure.

°So far two sites have offered to host the 1997 conference.

°Letters were sent by the Legislation, Information, and Policy committee to various places, including the Governor of South Carolina (arguing against the law regarding the legality of displaying marine mammals in that state), the *Freeport News*, the *Nassau Guardian*, the *Nassau Tribune,* and *The* [Florida Keys] *Reporter*. The latter four were in response to other letters concerning dolphins in marine facilities or containing misinformation. Representatives of IMATA attended hearings in the U.S. House of Representatives concerning reauthorization of the Marine Mammal Protection Act (which passed with the revisions that IMATA, the Alliance of Marine Mammal Parks and Aquariums, and the American Association of Zoological Parks and Aquariums sought). IMATA was represented at the International Whaling Commission (IWC) meetings in Mexico in late May, the annual meeting of the Alliance in June, and will attend the meeting of CITIES (Convention on International Trade in Endangered Species) in November.

°Due to a combination of circumstances, the first two issues of **Soundings** for 1994 were delayed. All outstanding volumes of the conference *Proceedings* have been published, with the 1993 volume to be ready for press within a few weeks. The first issue of the new journal, **Marine Mammals: Public**

IMATA

IMATA Board members and Sea World employees got together for a barbecue following the recent mid-year Board of Directors meeting in May. Pictured here are [back row] *Ted Turner (partially hidden), Dave Force, John Kirtland, and Ken Ramirez;* [middle row] *Vic Charfauros, Nedra Hecker, Cheryl Messinger, Shawna Roberts, and Al Kelley;* [front row] *Randy Brill, Kathy Sdao, Sonny Allen, and Thad Lacinak.*

Display and Research, is being printed and should be mailed shortly.

°Two applicants have been found for each of the three slots coming up for election on the Board of Directors this summer.

Items discussed by the Board included:

°The Treasurer reported the completion of the fiscal year and the first year of IMATA as a non-profit organization.

°A vote accepting the minutes of the prior business meeting in November, 1993 in Hawaii was taken. The membership roster was closed for the 1994 year. The 1994 roster contains 24% of the membership residing outside of the USA, had 76% of the 1993 membership renew for 1994, and has 17% comprised of new members.

°Planning progress of the 1994 and the 1995 conferences were discussed.

°A review of the 1991 Strategic Objectives indicated eight of the ten goals the Board had then set for itself have been completed or are currently being addressed. Plans were made to have another strategic planning session prior to the 1994 conference in Tacoma.

This mid-year meeting was quite busy with each of the individuals and committees evident in their efforts to promote and help IMATA plan and grow for the future. It is only through the volunteer work of IMATA's members that we continue to be a strong and healthy organization. I hope that each of our members will indicate their desires and needs to the officers of IMATA and will continue to volunteer their efforts and time to accomplish these same.

IMATA

IMATA Board members [left to right] *Nedra Hecker, Ken Ramirez, Cheryl Messinger, and Shawna Roberts, and Sea World of Ohio trainer Michelle Telford enjoy a moment with Shamu. IMATA's Board of Directors were guests of Sea World on their opening day this past May.*

Harbor Seal- continued from page 8

too close to another. Aggressive signals (in descending order of frequency of occurrence) include a fore-flipper scratching motion, a head thrust with the mouth closed, a fore-flipper wave, a head thrust with the mouth opened, a stare with the head up, an erect fore-flipper, or a growl. Thirty percent of the time there are two or more aggressive signs given in response to a threat (Renouf, 1991). The last resorts are for the animal to fight or to leave the area.

Breeding, Gestation, and Pupping. Both sexes feed during breeding season, with mating occurring during late lactation or soon after weaning. Female harbor seals mature at the age of four or five; males mature around their fifth year. Either sex can breed earlier, females as early as their second year and males by their third year. When it comes time for breeding and pupping, harbor seals use the same areas yearly. They can be found in groups ranging in size from isolated monogamous "families" to large colonies comprising thousands of females. Breeding usually happens in the water. Males create water territories with typical displays such as loud vocalizations, spinning, and bubbling.

Ovulation occurs at the end of lactation. Once fertilized, there is a delayed implantation of the blastocyst stage between 11/2 to 3 months (usually two). Placentation is in fact from 8 to 8 1/2 months in length, with the mean implantation occurring in November. Delayed implantation allows pupping to be postponed until the next breeding season the following year.

Harbor seals pup from February to September, determined by location and latitude (this might mean a winter, spring, or fall birth). Pupping (usually only one pup) is generally very fast (20-30 seconds). Once the pup is born, the mother immediately sniffs and touches her pup; the pup immediately vocalizes, whereas mothers rarely do. Females establish a small territory of 1.8 to 2.4 meters (six to eight feet) around themselves and their pup and lactation varies from four to six weeks. The pup's weight is roughly 13% of the maternal weight at birth, 10 to 12 kg (22 to 26 lb), reaching 30% of the maternal weight by weaning (21 to 42 days) (Renouf, 1991). Harbor seal pups are relatively active, can swim at birth, and can dive for up to two minutes when only two or three days old (Bigg, 1981). Harbor seals are the only phocid that nurse and care for their pups in both water and on land. Females are quite attentive and can be seen carrying pups, interacting, playing, and protecting pups while in the water, and mothers have been seen clasping a pup or diving with it during times of danger. Care only lasts during the nursing period; after weaning the mother will completely abandon the pup.

Molts. Unlike the other pinnipeds, 95% of harbor seal pups molt the lanugo or natal coat in the womb, with the result that the first visual

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Harbor Seal- continued from page 19

pelage has a grey color. Annual molts occur at the breeding grounds after pupping. For most harbor seals the peak of molting and hair replacement occurs in July and August. Males change their behavior to hauling out more frequently, while females will stay at sea more during this time, possibly for the purpose of replenishing body supplies after pupping and nursing. Yearlings are seen to molt first, then females, immature males, and lastly the mature males. Hair loss starts around the lips, then travels to the eyes, the distal edge of the flippers, neck and shoulders, abdomen, flanks, sides, and finally the back. Molting is accompanied by major changes in haul out behavior (conductive to hair growth), activity levels (metabolic rates are lowered an average of 18.6%), and behavioral dispositions. Even though the external signs are limited to a few weeks, the entire molt, involving all the histological, metabolic, and hormonal changes, takes a total of four to six months. (Renouf, 1991.)

SENSES

Sleep. Harbor seals are among the most easily frightened and alert of the pinnipeds. Sleeping periods while on land increase as the number of seals that haul out rises; this pattern appears due to less of a need for the individual to be as alert. This increase is seen to level out as the number of animals hauled out reaches ten (Renouf, 1991). *P. vitulina* are not thigmotactic (i.e.: they rarely touch each other during rest). Harbor seals sleep on land (with the head and flippers arched), in the water (known as "bottling"), and even completely underwater (where they surface occasionally for air).

Diving. Harbor seals, like other marine mammals, also show the typical diving physiological responses: shunting blood only to the critical organs and muscles, an increased tolerance to lactic acid in the muscles, a higher carbon dioxide tolerance, a lowered heart rate, larger red blood cells, and a larger lung volume. While experimental tests show *P. vitulina* achieving dives to 206 m (675 ft) for as long as 30 minutes, the mean diving depth is 3 m (9.8 ft) for 3.2 minutes, as seen in a wild animal (Riedman, 1990).

Vision. Harbor seals can see well both on land and in the water; they have very large orbits and eyes in relation to their body size. In the air, harbor seals are thought to be nearsighted and even astigmatic with eyesight deteriorating in low light conditions. Underwater, their eye acuity may be comparable to that of a cat or similar nocturnal land mammal. They are thought to see best underwater, recognizing objects best under light that falls nearest to the green spectrum (500 to 530 nm). This allows a calculation that the harbor seal eye's sensitivity should allow the detection of a moving object at depths of 466 m (1529 ft) on a cloudless, moonlit night if the water was extremely clear (Renouf, 1991). Research has not confirmed whether the harbor seal sees in color or black and white (rod photoreceptors are prevalent, while the presence of cones has not yet been shown, so color vision remains unproven).

Tactile, Smell, Vocalization, and Hearing. Vision is used along with tactile senses to locate prey. Tactile senses in the harbor seal are well developed; aside from touch to the body, the main source for tactile sensing are the vibrissae. Located near the eyes, nose, and mouth, these whiskers are beaded in structure and may help detect vibration of prey in the water. Blind or partially blind (but otherwise healthy) seals are often found in both ocean and aquarium environments.

The sense of smell is acute out of the water and often used by the mother to identify her pup.

Harbor seals are probably the least vocal of the pinnipeds. Sounds are made during breeding (males), pupping (there is a pup attraction call by the mother and an individually distinctive call by the pup), threat aggression, and may even be part of a sonar system. Vocalizations may include any of the following: grunts, burps, snorts, loud belches, growling, yelping, snarling, and bubble blowing.

Harbor seals, like all the phocids, may have a higher sensitivity to underwater sounds than otariids, probably hearing best in the higher ranges, about the same as man in air. Lacking external ear pinna, the harbor seal ear is internally modified to aid in directionality and sensitivity for underwater sounds. Underwater, harbor seals have their best sensitivity at 32 kHz. Testing of sound loss in the air for the harbor seal shows a 15 to 40 Db loss in sound thresholds as compared to values from underwater hearing tests. On land, harbor seals hear between 1 and 22.5 kHz, with their best sensitivity at 11.25 kHz (Renouf, 1991).

SUMMARY

Twenty-eight percent of the 116 species of marine mammals are pinnipeds (estimated at 50 million animals). Of these, 90% are phocids (Riedman, 1990). The most common phocid, the harbor seal, is worthy of display, and with recent medical advances and increased success in treatment, a large number of harbor seals are easily rehabilitated by stranding facilities. These rehabilitated animals carry a message to the public of man's potentially harmful impact on the oceans and the subsequent efforts taken by stranding centers to care for injured and rehabilitated animals. Facilities should be encouraged to use non-releasable harbor seals in their public education programs and displays. Educational concerns within these facilities should include correct facts about the harbor seal, as well as using these rehabilitated animals to strengthen the lesson to be learned from the impact of humans on and in the harbor seals' ocean environment.

Harbor Seal- continued on page 29

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IMATA
1720 SOUTH SHORES ROAD
SAN DIEGO, CALIFORNIA 92109

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[ ] STUDENT — Anyone who is interested in the objectives of the Association, wishes to support them and is enrolled in an accredited academic institution on a full-time basis. Proof of current student status MUST be included. ANNUAL DUES $40.00

[ ] ORGANIZATIONAL — Any group or institution interested in supporting the objectives of the Association. ANNUAL DUES $200.00

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Work Phone _____ **Work Fax** _____

Home Address _____
(complete only if you want IMATA mail sent to your home)

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_____

List previous work experience in the marine animal field

ZOO/AQUARIUM	JOB TITLE	YEARS

Total Years of experience in the marine animal field _____

List papers/posters presented, published articles, awards/honors

_____

_____

_____

( ) NEW ( ) RENEWAL

I hereby make application for membership in IMATA. If accepted, I will abide by its Code of Ethics, Constitution, Bylaws, and resolutions and support its objectives. I understand that any conduct in violation of these organizational guidelines will be cause for revocation of my membership.

_____

(Applicant's Signature) (Date)

Initial dues are required with application and thereafter dues are to be paid each November. Any member delinquent with dues on the 1st of April will be dropped from IMATA membership.

ALL PAYMENTS MUST BE MADE IN U.S. FUNDS DRAWN ON A U.S. BANK.

Mail application, annual dues, letters of endorsement, and proof of student status to:

Secretary IMATA
1720 South Shores Road
San Diego, CA 92109-7995 USA

Reauthorization of the Marine Mammal Protection Act

by
Robert L. Jenkins
Past-President, Alliance of Marine Mammal Parks and Aquariums

This year, the United States Marine Mammal Protection Act (MMPA) was reauthorized. The Alliance of Marine Mammal Parks and Aquariums (Alliance) and the American Zoo and Aquarium Association (AZA, formerly AAZPA), played a significant role in formulating reauthorization language that restructured how marine mammals held for public display and scientific research purposes in the United States will be regulated. The following will summarize how these changes were made.

Background

The MMPA was first passed in 1972 in response to public concern over the large numbers of marine mammals that were being killed in commercial fishing operations (i.e., the tuna/dolphin controversy), the clubbing of baby seals in Canada, and the growing worldwide concern over the apparent destruction of the world's great whale populations by commercial whaling. Included in the original language were specific provisions excluding public display and scientific research from the overall moratorium created by the MMPA. These exclusions were in recognition of the important role that public display institutions would play in furthering the goals of the MMPA through scientific research and public education.

The MMPA essentially set up a triad that provided for the management of human interactions with marine mammals. It was originally envisioned that the National Marine Fisheries Service (NMFS) in the United States Department of Commerce would regulate the more open ocean species (dolphins, porpoise, whales, seals, and sea lions), the Fish and Wildlife Service (FWS) in the Department of the Interior would regulate the more indigenous species (walrus, manatees, polar bears, and sea otters), and the Animal and Plant Health Inspection Service (APHIS) in the Department of Agriculture would regulate captive marine mammals. APHIS was chosen to regulate the public display activities as they were already regulating other zoo animals under the public display provisions of the Animal Welfare Act (AWA).

For the most part, this triad essentially worked well, and the MMPA was reauthorized every four or five years since its original passage with little or no impact on public display provisions. However, largely due to the concerns raised by animal welfare groups, several provisions were added in the 1988 reauthorization that were later interpreted by the NMFS to expand their role to cover all marine mammals, particularly in the areas being administered by APHIS. This potential expansion and duplication of regulatory effort continued with a review of the MMPA permit application process undertaken by NMFS in 1989. That review culminated some five years later in the publication of a Proposed Rule by NMFS in October 1993, proposing to amend their permit application and approval process. The previous permit application procedure was about 20-25 pages in length. The Proposed Rule amending those regulations was some 230 pages in length and, if passed, would extend NMFS' authority to all aspects involving marine mammals in the United States.

Inherent in the NMFS Proposed Rule were several major actions by NMFS that would have amended the MMPA by agency regulation rather than Congressional action. First, they would have redefined "take" to include any and all activities involving all marine mammals. Up to this point, "take" typically referred to actions that affected animals in the wild and not in public display facilities. The new definition would have meant that exchanging, moving, and potentially *even feeding* a marine mammal would be a type of "take" and hence, would require a permit. This rationale allowed NMFS to reach the conclusion that they needed to require a **blanket facility permit** covering all aspects of an organization's operation involving marine mammals in addition to the other permissions already required to display marine mammals. NMFS also granted itself the authority to establish **additional standards for captive care** that would be supplemental to the APHIS Standards under the AWA, as well as the authority to approve the **message and manner** of the educational programs used at display facilities. There were an additional ten or so items of a similar nature that would have greatly supported and expanded NMFS' role in managing captive marine mammals.

Action

About three years ago, an informal committee was formed of institutions and organizations with representatives in the Washington, D.C. area to deal with the reauthorization of the MMPA. Due to my proximity to the D.C. area, I had the very good fortune of being invited to sit on this Committee. The Committee was responsible for establishing a coordinated agenda that included the production of materials outlining the role of public display and its contributions to the conservation of

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the positive exchange of information related to mutual goals and objectives.

Greg Pickering, Coffs Harbour's Senior Marine Life Curator, is currently working in conjunction with the Solitary Island's Marine Underwater Research Group conducting a survey grey nurse sharks (*Carcharias taurus*) involving the identification of habitat areas and behavior patterns. Greg also reports that the oceanarium's resident dolphins, seals, and sea lions are all in fine health and enjoying the cooler weather.

Oceanworld - Sydney, NEW SOUTH WALES

During the past few months, Oceanworld staff have been busy building new exhibits and re-designing old ones. One of these exhibits includes a giant cuttlefish display, which has seen a successful breeding pair lay a number of eggs. Staff have also been involved in the rehabilitation of two green turtles (*Chelonia mydas*), one of which has been successfully treated and recently released. The pinniped department has been continuing the training of several younger animals which they report is progressing well.

Shane Austin of Oceanworld reports that all other animals are doing fine and that the staff believes that one of their Australian fur seals (*Arctocephalus pusillus doriferus*) may be pregnant. The Oceanworld staff would also like to say farewell to Sue Sargent and wish her all the best for the future.

Underwater World - Mooloolaba, QUEENSLAND

Underwater World's marine mammals and staff are all very happy at the moment due to the birth of a male Australian sea lion on 27 April. The pup weighed 8.5 kgs (18 3/4 lbs) at birth and has already doubled in size. Both mother and son are healthy and are progressing satisfactorily.

The park is adding some minor extensions to their seal habitat in the form of a new enclosure for an adult male Australian sea lion. This enclosure is adjoining the present primary pool for pinnipeds and will provide another display for the public as well as improve the management capability, particularly with a view to future mating seasons.

Marineland of New Zealand - Napier, NEW ZEALAND

Gary Macdonald of Marineland reports that Loukas, the male California sea lion pup born last December, is doing very well and has moved from the maternity pool to an exhibit with three- and four-year-old sea lions.

Marineland's male leopard seal (*Hydrurga leptonyx*), Cooper, who has been at the park for eleven years, had a real struggle pulling through his annual molt. Cooper was originally a beached animal with quite severe injuries that was rehabilitated at Marineland. Gary reports that each year Cooper's molt period gets longer and more difficult and that this year it was a struggle to keep him alive. Blood tests revealed nothing, and fortunately the seal responded to careful handling and long feeding periods when trainers would just sit with him and coax him along.

The rest of Marineland's dolphins, seals, sea lions, and sea birds are all well and coping with the winter in the Southern Hemisphere. Phase two of a feasibility study for a new complex for Marineland began in early May; however, any new development—if approved—would still be two years away.

Underwater World - Perth, WESTERN AUSTRALIA

Mark Whitfield of Underwater World reports that the west Australian winter has so far been pleasant and mild and that all of the park's dolphins are in good health. Myla gave birth to a healthy female calf on 09 March, and both mother and calf are now integrated with the larger dolphin group.

Underwater World's educational shows and various interaction programs are running smoothly. Final drawings, plans, and costings are just about complete for the new facility addition to the existing enclosures. New and exciting programs which have been in the planning stage for the past year will be offered to the public upon completion of the new facilities.

Lastly, congratulations to Jamie Copeman on his promotion to Senior Trainer in charge of the Marine Mammal Department.

Sea World Enterprises - Gold Coast, QUEENSLAND

Sea World's pinniped department is busy working on a script for a new sea lion show to be debuted in December. All the staff are excited about the theme "Seal Rock Cafe" which will be set in the classic 1950s.

The pinniped quarantine/nursery facilities are currently vacant due to major refurbishing and the installation of a new water treatment plant. All other pinniped show and display facilities will also be refurbished over the coming months.

The Little penguin (*Eudyptula minor*) breeding season commenced unusually early this year, with two successful hatchings in mid-May. Sea World intends to breed another four penguins this breeding season which should increase their population to 40 birds.

Planning is underway for the future marine mammal facility development with construction and animal relocations timetabled right through until late 1997. A new dolphin and whale stadium is due to open in late 1995, followed by a new pinniped stadium to be opened just prior to the 1996 Australian IMATA conference. Species management programs are already in place and will be done in conjunction with other Australian

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NATIONAL AQUARIUM IN BALTIMORE'S GUIDELINES FOR MAINTENANCE OF A HARBOR SEAL COLONY

by
Nedra Hecker and Sue Hunter
National Aquarium in Baltimore
Baltimore, Maryland

FOOD INTAKE

One of the primary concerns in keeping animals in good health at the National Aquarium in Baltimore (NAIB) relates to the animal's food intake levels. It has been found that food intake is closely associated with a harbor seal's condition, weight, and behavior. For this reason it is always important to analyze each new batch of fish for caloric content, just prior to use. NAIB sets food intake levels according to several considerations (not necessarily limited to): (1) the animal's target weight, (2) the animal's current status (pregnant or not), age, behavior (breeding or not), and weight, and (3) the caloric analysis of the fish being fed.

TARGET WEIGHTS

The generic target weights noted in Table 1 are based upon animals in the wild (see Riedman, 1990) and our own existing collection. We use these weights as the NAIB internal guidelines against which to measure each animal's status and progress. The authors prefer fat, roly-poly seals, as the veterinarian and the authors feel that this visual sign of good body condition helps to protect the seals against disease and other problems associated with normal fluctuations during the yearly cycle.

GROWTH

Chart 1 (solid line with black circles) shows the weight gains of nine females from our colony. This chart uses the data for animals ranging in age from birth to twenty-one years. The weight in pounds was averaged for each half year, grouping each animal's weights during that particular age. Where there was data in a growth year of more than one animal, the data was averaged. Female seals reach a mature (or steady) level of weight during their fourth or fifth year. This weight then fluctuates seasonally during the remainder of the animal's adult life. For this chart the authors did a three parameter least squares fit of an exponential expression to the measured average weights (dotted line with squares). The standard deviation (dotted lines with triangles) was then calculated of those results. As can be seen, a rather simple curve describes the average weight of a number of animals of the same sex fairly well over a number of years, providing the reader a rough range within which an animal's weight might fall. Data concerning the NAIB colony males is forthcoming in another, more complete, paper being

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Chart 1

GROWTH IN AVERAGE WEIGHT OF COLONY FEMALE HARBOR SEALS AT THE NATIONAL AQUARIUM IN BALTIMORE WITH BEST FIT APPROXIMATIONS

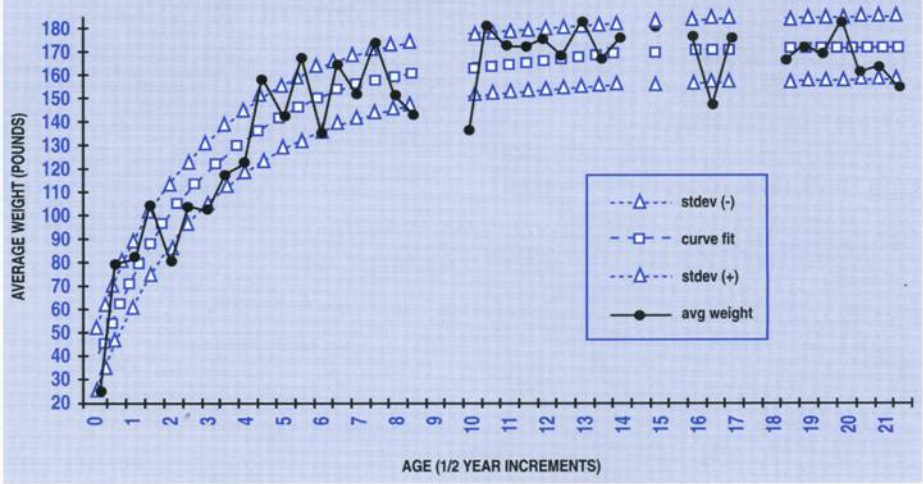

Table 1

GENERIC WEIGHTS

SEX	AGE	KG WEIGHT	LB WT
for a young harbor seal	(at birth)	9 to 11 Kg	(20-25 lb)
	(weaning)	23 to 27 Kg	(50-60 lb)
	(one year)	45 to 54 Kg	(100-120 lb)
	(second or third year)	54 to 68 Kg	(120-150 lb)
	(third or fourth year)	68 to 113 Kg	(150-250 lb)
for an adult female harbor seal	(> age four)	68 to 91 Kg	(150-200 lb)
for an adult male harbor seal	(> age four)	104 to 113 Kg	(230-250 lb)

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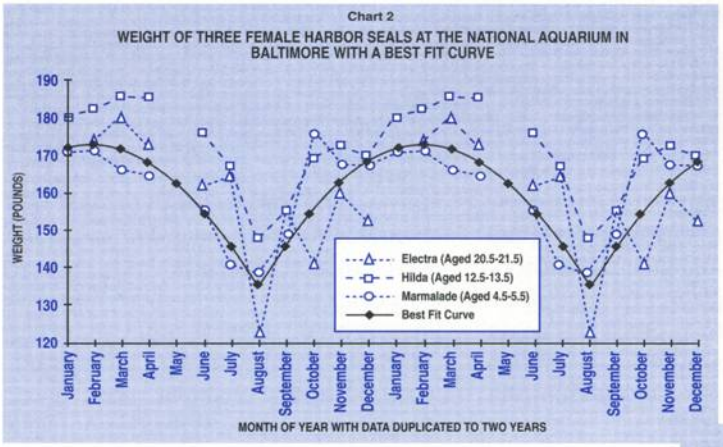
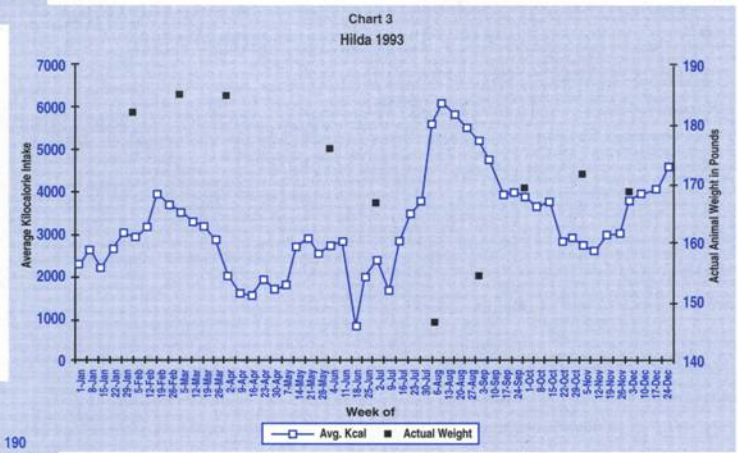
currently compiled by Sue Hunter.

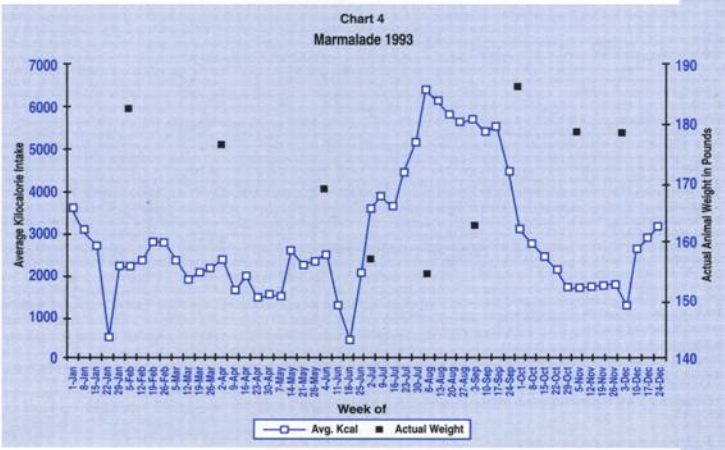
CYCLICAL WEIGHT

Animal weight patterns cycle normally over the period of a year (see Chart 2). This chart shows three females of varying ages (5, 13, and 21) during one year's collected monthly weights. Data for this chart was repeated to represent a theoretical second year to provide a clearer example of the simple curve (solid line with black diamonds) that demonstrates the yearly weight cycling. Even though the animals are of different ages, it can be easily seen (dotted lines with circle, triangle, and square) that they follow the same type of curve even if the weight ranges differ for each individual. Data is currently being collected to provide this chart in real time with both sexes of harbor seals. The NAIB staff can easily train animals year round, even through the cycles, by constantly watching and adjusting the diet to meet an animal's needs.

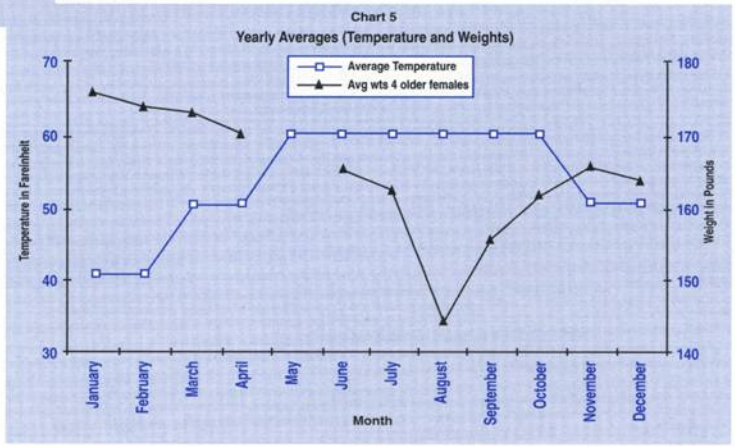


Monthly weights are taken on all of the colony animals, providing a close watch of an animal's condition. Charts 3 and 4 show the weights of Hilda (13 years old) and Marmalade (5 years old) in comparison to their weekly kilocalorie intakes. It will be noted that the two females (the same pattern is seen in the males) enter their molt with a drop in food intake around June. This is reflected in a drastic weight loss at this time (reference Chart 2). After the molt is completed the animals' diet demands increase, and shortly thereafter so does their weight. Diet and weight both fluctuate no matter what temperature the system water is. The NAIB keeps its water temperature constant all summer and yet still sees weight losses and gains (see Chart 5).





The NAIB divides the year into quarters: Winter (January through March), Spring (April through June), Summer (July through September), and Fall (October through December). The same patterns are consistently observed during those seasons. Beginning in January, the seals' food intakes and weights are high due to the winter temperatures. From April until June, the food intakes and weights gradually drop. During June and July, the seals' weights and food intake are low due to breeding season and the beginning of the molt. In September, food intakes dramatically increase (at the end of the molt). Shortly thereafter, the weight will increase over the next few months. Food intakes and weights stabilize around November and remain stable until the following spring. This cycle repeats itself annually for adult non-pregnant seals. The seasonal cycle differs slightly with pregnant and



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marine mammals, semiannual visits by representatives of the display community to both their Congressional representatives and the Congressional staff involved in the reauthorization process, repeated visits to regulatory offices, formulating responses to the propaganda distributed by the animal welfare community, and assisting various institutions in dealing with site-specific issues. The legislative agenda for the reauthorization developed by the Committee contained the following specific points:

1. Clearly define "take" to apply only to activities involving animals in the wild.

2. Codify directly in the MMPA that only APHIS was responsible for the captive care of marine mammals, and limit NMFS and F&WS to regulation of marine mammal "takes" from the wild.

3. Eliminate the potential for requiring a facility permit for public display institutions.

4. Eliminate the need for additional permissions for the transfer of already permitted marine mammals between institutions.

5. Prevent the regulation of the content of our educational programs by a federal agency but maintain the requirement that such programs meet professionally recognized standards.

6. Ensure that marine mammals held by public display facilities are adequately tracked and that proper notification prior to any shipment is maintained.

7. Establish the provision that if a marine mammal rescued through the stranding network is deemed unreleasable, a permit will be granted by NMFS to the holder to provide for the maintenance of that animal in an expedited manner.

8. Provide that no marine mammal may be exported by a U.S. facility to a foreign facility if the foreign facility does not meet the U.S. standards for captive care.

9. Establish that interactive exhibitry (petting pools and swim programs) were a legitimate form of public display as defined by the MMPA.

The entire agenda was opposed by the animal welfare/rights groups, which formed their own "Marine Mammal Coalition" to lobby their agenda on Capitol Hill.

Accomplishments

Through a consistent, coordinated, and unrelenting approach to Capitol Hill and the Congressional staff responsible for the MMPA reauthorization, the public display community was able to achieve virtually all of the agenda noted above. Of the items listed, we were not able to get the actual words "in the wild" limiting the definition of "take" in the bill. However, we were able to get the various sections having language on which NMFS based its claim that it was responsible for all marine mammals removed from the MMPA. In addition, we were not able to have interactive exhibits included directly in the definition of public display due to the somewhat volatile nature of the issue. However, interactive exhibitry will be included in a review of the AWA Standards, thus eliminating it from NMFS' regulatory scheme. Some of the more significant amendments affecting public display made the following specific changes.

1. A marine mammal permit applicant must: (a) offer an education or conservation program based on professionally recognized standards of the public display community, (b) is registered or hold a license to maintain the animals under the Animal Welfare Act, and (c) maintains facilities that are open to the public on a regularly scheduled basis. These are the sole conditions under which a permit may be issued.

2. A public display permit grants the permittee the right to take, import, purchase, offer to purchase, possess, or transport the marine mammals covered by the permit and to sell, export, or otherwise transfer possession of the marine mammals to another person who meets the requirements for a public display, scientific research, or species enhancement permit. Recipients of transferred marine mammals will have the same rights and responsibilities as the original permittee. No additional permits save the one the marine mammal was originally obtained under are required for transfers to take place between qualifying institutions.

3. Anyone selling, purchasing, exporting, or transporting a marine mammal must notify the Secretary (NMFS) at least 15 days before taking such action. This is the only requirement now for transfers of marine mammals providing that the recipient meets the conditions of (1) above.

The success of this effort was due to two crucial aspects of the committee's strategy. The first was to coordinate all legislative responses through the legal counsels for the Alliance and the AZA. Centralizing legislative responses in two individuals allowed for consistency in the interactions with committee staff. Secondly, and perhaps more importantly, this effort represents the first time the often disparate members of the public display community worked in concert towards a common set of legislative goals. Member representatives from zoos and aquariums met in

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Notices and Announcements

NEW ADDRESS FOR IMATA

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

IMATA
1720 South Shores Road
San Diego, California 92109-7995
USA
FAX: (619) 226-3964

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.

DUES PAYMENT

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

1997 IMATA SITE SELECTION CANDIDATES

At the conference in Tacoma, the voting membership of IMATA will choose between the National Aquarium in Baltimore or Sea World of Ohio to host the 1997 IMATA conference. IMATA has not held its conference in either the Baltimore or Cleveland area, so we will have a choice between the Chesapeake Bay or Lake Erie.

POSITION AVAILABLE

The Minnesota Zoo is generating an eligibility list for a marine mammal keeper position. Minimum requirements include one year of training experience with small cetaceans and SCUBA certification. If interested, please contact:

Laura Simoneau
Human Resources
13000 Zoo Blvd.
Apple Valley, Minnesota 55124
USA
Tel: (612) 431-9219 ■

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zoos and aquaria. Sea World's curatorial unit is currently working on a new data base and computer program which will hopefully have all animal records on line by the end of the year.

In April, Show and Entertainment Coordinator Steve Romer and Senior Trainer Matt Lowe attended the annual combined conference of the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) and the Australasian Society of Zoo Keepers (ASZK) which was held in tropical Darwin. Sea World presented a paper and video entitled *The Benefits of Conditioning Animal Husbandry Procedures* which was well received.

In July, Assistant Curator Kerrie Haynes-Lovell will be attending a marine mammal symposium which is being held during the annual scientific conference of the Australian Mammal Society in Hobart, Tasmania. Kerrie will be presenting a paper on the incidence of pinniped strandings in southeast Queensland.

Taronga Zoo - Taronga, NEW SOUTH WALES

The staff at the Taronga Zoo concentrated heavily on breeding programs this past summer. They are still waiting to learn if attempts to breed their New Zealand fur seals (*Arctocephalus fosteri*) and their Australian sea lions will prove successful.

Breeding of Australian sea lions can be difficult because of their unusual breeding cycle—17 months, as opposed to the normal 12 month cycle for other sea lion species. Additionally, initial attempts to place the male with the females resulted in aggression. Tensions were eased by allowing the male access to the females only during the daytime and separating them at night. The animals are now able to remain together around the clock and this is hoped to increase the possibilities of successful breeding.

The zoo staff is working on training their female elephant seal (*Mirounga leonina*) to urinate on cue in order to help determine pregnancy. They welcome any advice from IMATA members that might help them easily condition this behavior.

As it is now winter in Australia, it is expected that increased numbers of leopard seals will once again strand or beach on the shores around Sydney. The Taronga stranding program is ready and waiting to rescue and rehabilitate some of these Antarctic visitors.

CARIBBEAN REGION

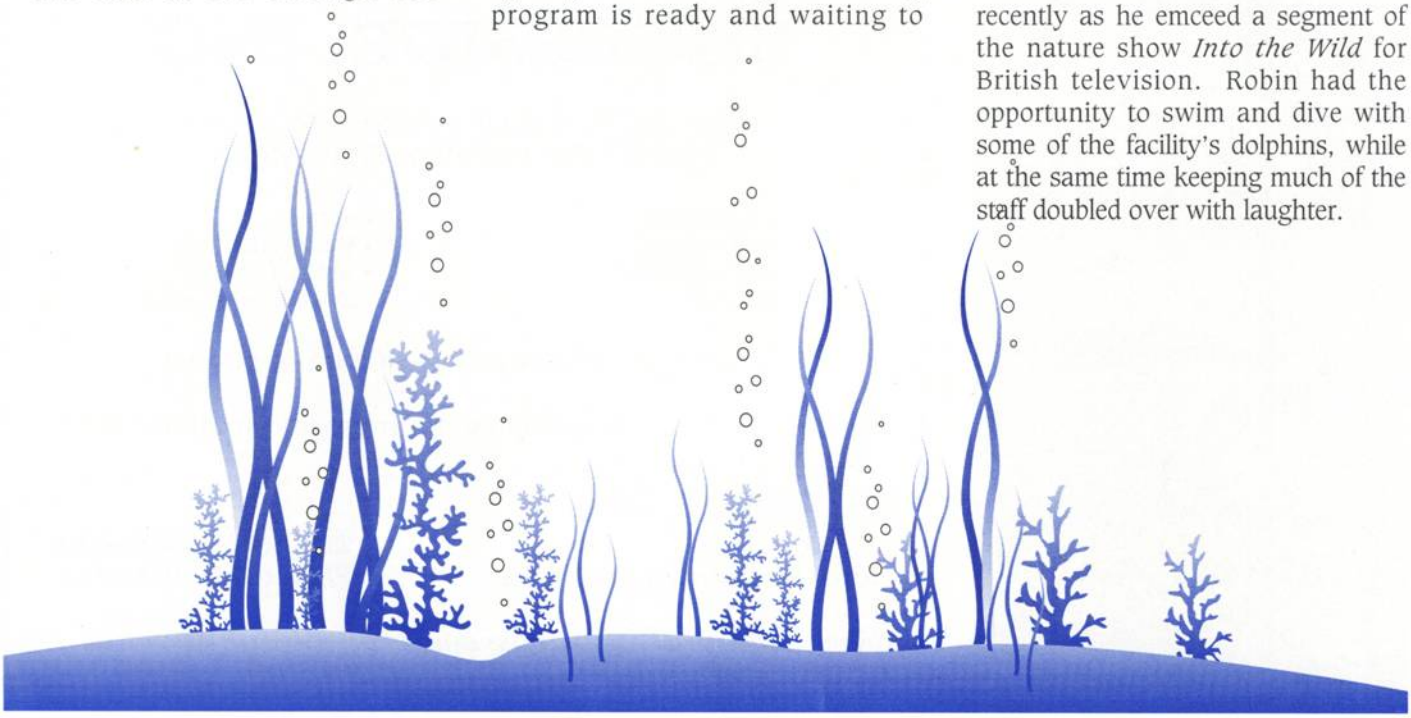
Burnette Rolle
The Dolphin Experience
Freeport, Bahamas

The Dolphin Experience - Freeport, BAHAMAS

The Dolphin Experience family continues to grow with the recent addition of three new trainers. Kurt Butkiewicz, Patrick Berry, and Laura Urian, formerly of Sea World of Ohio, the Indianapolis Zoo, and the Dolphin Research Center respectively, have all joined the training staff. In addition to her training responsibilities, Laura will also serve as The Dolphin Experience's new Education Coordinator.

So far it has been a very successful summer at The Dolphin Experience, with their "Close Encounter" programs and their "Dive-with-the-Dolphins" sold out almost every day. Plans are now underway to begin some facility improvements that will benefit both the dolphins and the guests.

The Dolphin Experience also played host to comedian Robin Williams recently as he emceed a segment of the nature show *Into the Wild* for British television. Robin had the opportunity to swim and dive with some of the facility's dolphins, while at the same time keeping much of the staff doubled over with laughter.



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Washington, D.C. prior to each foray onto Capitol Hill and agreed upon the central message that would be conveyed at that time. Written materials, drafts, and revisions were reviewed and approved by representatives of all the groups. Time and time again the entire group was complimented by Congressional representatives on the consistency of its message and the measured manner by which it was delivered. This strategy was a significant contrast to the rather bombastic methods that were employed by the animal welfare community in delivering its position. In short, both by design and with a little good luck, we were able to achieve virtually all of our goals on what was once an extremely hostile playing field.

Additional Provisions

In addition to the changes made in the public display sections of the MMPA, the reauthorization also made significant changes to other areas. Intentional killing of marine mammals by commercial fishing is now outlawed and a "zero mortality rate" goal is now required to be achieved within seven years. States may apply for the intentional lethal take of individual pinnipeds in certain situations. Provisions to help conserve habitats critical to some marine mammal populations were enhanced. The provisions for scientific research were also rewritten to now provide for two types of research projects: those that will likely affect marine mammals directly and those that have little direct impact on individuals or populations. One controversial provision will allow for importation of polar bear trophies from a limited Canadian hunt normally allocated to native Canadians. That provision does contain the requirement that the U.S. Fish and Wildlife Service conduct a two-year study on the effect of the import permits on the health of the Canadian population. These and the other numerous amendments contained in the reauthorization are described in greater detail in *Analysis of the 1994 Amendments to the Marine Mammal Protection Act of 1972* by the Marine Mammal Commission.

Current Status

Needless to say, the changes that we were able to make in the MMPA will require NMFS and the FWS to re-examine their regulations and revise them where necessary. New forms, procedures, and processes are currently being discussed and developed by both agencies. APHIS is presently undergoing a review of the marine mammal care standards in the AWA under a negotiated rulemaking that, if accepted, will involve members of the public display community, the animal welfare community, and the various regulatory bodies.

On one important note, individuals or institutions that now hold marine mammals and are contemplating transferring a marine mammal to another institution are asked to contact a facility that has already done so under the new rules. This will help ensure that such transfers are done consistently throughout the community.

Conclusion

At one point early on in the process, one of us stated that "we will be lucky if we can maintain the *status quo* we have now." Another felt our agenda too broad and ambitious. Despite these apprehensions, we were successful. I believe we were successful because of three essential things. First, we developed our position and stuck with it, compromising only when we had to compromise. Second, we got the jump on the opposition and kept the lead. Third, and most importantly, we were right. Public display facilities do good things for their communities, they do good things for the animals in their care, and they do good things for the environment. And all of that was seen and noted by the

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growing animals. This information is summed up in the following table.

MOLT AND REPRODUCTION

Molting and reproduction activities are closely tied to weight losses, as shown in the Seasonal Changes Table (Table 2). To prepare the seals for the physical changes that occur during the molt, the staff will provide a larger diet enabling the animals to fatten up during the fall and winter season, replicating the cycles found in the ocean. Typical molt and reproductive behavior as seen in NAIB colony animals are represented in Table 3.

Table 2

SEASONAL CHANGES

SEASON	*BEHAVIOR*	*WEIGHT*	*INTAKE*
Winter (Jan to Mar)	normal	maintain high weight	stable
Spring (Apr to June)	breeding & pupping	gradual drop in weight	slow decrease
Summer (July to Sept.)	moulting	often major weight loss	low
Fall (Oct. to Dec.)	normal	gradual gain in weight	dramatic rise

Note: These factors are light and temperature dependent. They may vary from year to year and may differ from the norm found in the open ocean environment.

Table 3

TYPICAL BEHAVIORS ASSOCIATED WITH NAIB'S COLONY

MOULT

NAIB harbor seals when moulting tend to:
- turn a very dirty brown
- start to lose hair in areas of high abrasion (belly, flippers)
- may lose some or all of hair looking bald (especially yearlings)
- grow in a new coat of cream with black spots

REPRODUCTION

NAIB harbor seals during breeding tend to:

males exhibit dramatic behavior to attract females
- they stake out a water territory
- they arch the head back
- blow bubbles
- spin in space and/or sink
- make gargling sounds

females in estrous
- spend time near or rubbing on males
- refuse to eat for one to two days

FEEDING PATTERNS

Food bases are monitored daily, and changed as needed, to maintain the animals' weights and to follow the seasonal changes. That is, the staff will find an optimum kcal value for each individual animal, change the quantity of fish fed based on that value, and constantly adjust the diet up or down. For example, a seal as it enters the molt, with all the physical changes that occur during this time, commonly shows a decline in appetite, sometimes even stops eating, for a period of time. We lower the diet (by a few pounds at a time or, as a rough guide, by 10%) as the animal begins to either play with food or refuse it altogether, indicating a decreased interest. If an animal goes completely off its feed, the diet in the prior few weeks probably did not truly reflect the animal's needs and may have been too high. We continue to offer food during the molt and increase the diet according to the animal's interest in fish. Another factor to consider is that young animals need a high kilocalorie intake as they develop and grow, whereas an older, less active animal needs less calories (Dr. Joseph Geraci has some very basic kilocalorie guidelines to follow in his booklet **Marine Mammal Care**).

Table 4

ANALYSIS OF VARYING LOTS OF FISH

Fish	*Lot A*	*Lot B*	*Lot C*
Herring	580.21	826.28	947.13
Capelin	479.87	317.80	369.55
Squid	339.59	408.64	277.66

VARIATIONS IN FOOD CALORIC VALUES

As noted above, <u>all</u> food fish are <u>always</u> analyzed for caloric content because it has been found that there is a large range in caloric values from fish lot to lot and from fish species to species. This is a significant factor in determining the diet levels. By minute adjustments, the staff can meet an animal's dietary needs, maintaining a "constant" caloric content. In this manner one can avoid overfeeding a diet of fattier fish or conversely underfeeding a diet of leaner fish.

Examples of the difference in caloric values of the types of recent fish NAIB has fed (Kcal content/pound of fish fed) are shown in Table 4.

Table 5

FISH DIETS CONVERTED FROM WEIGHT TO KILOCALORIES

Actual Diet	*(3/94)*	*Lot A*	*Lot B*	*Lot C*
Herring	1.3 Kg (3 lb)	1.3 Kg (3 lb)	1.3 Kg (3 lb)	1.3 Kg (3 lb)
Capelin	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)
Squid	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)
Kilocalories	2497	2560	3205	3489

If one continued to feed the same pounds of food to the animals while

changing lots, then the caloric intakes for the seal would change drastically as shown in Table 5 using the diet of Hilda, a 13-year-old seal. Her diet at one point in March (with a water temperature of 40° to 50°F) illustrates how the kilocalorie content would be affected by the different lots shown in Table 4.

Following that same example, to keep the kilocalories the same one would have to change the pounds of fish consumed. As shown in Table 6, the herring amounts have changed and the capelin and squid left the same. Any amount of the three types of fish could be altered in any proportion. Note that all fish lots in this table happen to be of a higher kilocalorie content than the fish lot that was eaten in the actual diet.

Table 6 demonstrates the effect of changing a diet by lowering the poundage of new fish fed to match a current kilocalorie intake. The reverse tabulation would be used to increase the weight of food fed if the kilocaloric content of the new fish lot was lower than that which was previously fed. NAIB staff does not attempt to feed partial pounds of fish to an animal; realizing there can be some flexibility, food quantities are usually rounded off to the nearest one-half pound.

The first thing NAIB does on receiving a new lot of fish is to send it out for analysis, the second is to change diets where appropriate to maintain the animal's prior caloric consumption. Thirdly, staff at the NAIB closely watch the animal's behavior and change the diet amounts or Kcals as needed.

DIET ADJUSTED TO SAME KILOCALORIC CONTENT

Actual Diet	*(3/94)*	*Lot A*	*Lot B*	*Lot C*
Herring	1.3 Kg (3 lb)	1.3 Kg (2.8 lb)	0.9 Kg (2.1 lb)	0.8 Kg (1.9 lb)
Capelin	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)
Squid	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)	0.5 Kg (1 lb)
Kilocalories	2497	2497	2497	2497

Table 6

WATER QUALITY

Every system lends itself to individual characteristics, but staff at the NAIB have found some basics to be common to the maintenance of a healthy harbor seal colony.

Ozonation and Chlorine

The NAIB uses ozonation and minute amounts of chlorine for disinfection. Several years ago the NAIB changed the exhibit water from a brine solution to a mix of salts (up to twelve, NAIB's own recipe). This is the same water used in the aquarium's fish exhibits. In an effort to conserve and recycle water, marine mammal exhibits, including those for seals, often use cleansed fish water from those system changes. In a facility that has no access to real saltwater, the closer that a match can be made to those ocean conditions, the better it has to be for the animals. The NAIB does not have to supplement their seal's diets with salt tablets, nor provide salt-water baths. The water quality goals for NAIB's seal pool are indicated in Table 7.

SEA POOL WATER QUALITY GUIDELINES

Ozone residual	zero
Salinity (ppt)	26 - 32
Temperature (C)	<15.5° (60°F)
Free Chlorine (mg/l)	>0.2
Total Chlorine (mg/l)	<0.8
Combined Chlorine (diff. of free and total)	<0.6
pH	7.6 - 7.8
Coliforms/100 ml	<3
Nitrite	<0.1

Table 7

Note: Each system is different, these parameters work in this facility.

Temperature

The NAIB seal exhibit has a pool temperature between 4.4° and 15.5°C (40° and 60°F) throughout the year. A chiller ensures that water temperatures do not exceed a maximum of 15.5°C (60°F) year round. In winter, the temperature fluctuates between 4.4° and 10°C (40° and 50°F), dependent on weather conditions.

LIGHT EXPOSURE

Sunshine

NAIB's seal display pool is outdoors and receives full sunlight about three-quarters of the day. A few years ago an analysis of the seal environment resulted in a number of changes being made. Because NAIB is somewhat south of the normal ranges of the seals displayed, a shade structure was added to screen out 95% of sunlight over 30% of the pool at any one time. This has significantly improved the seals' living conditions, reflecting more accurately the type of environment where harbor seals occur in the ocean (for further information see Hecker, 1990).

Indoor Lights

In the seal holding room other problems were encountered due

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people "on the Hill." And sometimes, when dealing with the weight of the detractions of the animal activists, it is all too easy to forget who we are and all the good that we do.

IMATA 1994 BOARD OF DIRECTORS

CONFERENCE EVENTS: A detailed schedule of events for the week of the conference will be included in the next *Conference Countdown* column, but a few highlights are:

- an icebreaker reception at the hotel on Sunday evening
- opening ceremonies on Monday morning, keynote speaker will be Dr. Debbie Duffield from Portland State University
- a trainer's forum, with "experts" to answer all of your training questions on Monday morning
- poster and audio/visual presentations with hors d'oeuvres and no-host bar on Monday night
- a tour of Point Defiance Zoo and Aquarium, followed by a scenic boat trip (with dinner, music, and no-host bar) to downtown Seattle for a tour of the Seattle aquarium and a dessert reception on Wednesday afternoon and evening
- dozens of stimulating formal presentations throughout the week
- several discussion groups on Friday morning
- scheduled time for committee chairpersons to hold meetings on Friday afternoon
- semi-formal banquet and awards ceremony on Friday evening followed by dancing to both a live band and a DJ
- and **LOTS MORE!**

SPECIAL REQUESTS: (1) Because they were so successful at the 1993 Hawaii conference, we will again hold raffles throughout the week this year. Nearly $1500 was raised from this event last year and the proceeds were donated to the Waikoloa Marine Life Fund. This year, proceeds will be donated to the "Magic Fund." Many of you are familiar with the story of Magic, a newborn harbor porpoise found stranded on a beach in Oregon in 1989. He was successfully rehabilitated and hand-raised at Point Defiance Zoo and Aquarium, and this work paved the way for subsequent successful rehabilitations of neonate cetaceans at other facilities. In Magic's memory, a fund has been established to support marine mammal research and rehabilitation at Point Defiance. This fund is managed by the Point Defiance Zoological Society and decisions regarding the use of these funds are made at the discretion of the zoo's general curator and senior marine mammal biologist.

Our special request is that each of you help us to make the raffle a success. We ask that when you come to Tacoma, you bring with you some small item from your facility, school, or business to be donated to the raffle. Examples would be tee-shirts (staff uniform shirts would be real collector's items!), sweatshirts, hats, posters, books, mugs, or canvas bags. Be creative; bring anything that you think your fellow trainers might want. The more people that contribute items, the more fun this raffle will be. Who knows, it might even become a conference tradition.

(2) It seems that every year, intended or not, many of the formal and poster presentations at the conference center on a particular theme. At the 1993 conference, several presentations dealt with the care and training of beluga whales. This year, the marine mammal staff at Point Defiance Zoo and Aquarium would especially like to solicit papers and posters on walruses (e.g.: their training and husbandry, research projects involving walruses as subjects, etc.). If you happen to be lucky enough to work with these giant pinnipeds, please submit an abstract

by the 15 August deadline and we will try to devote one entire paper session to this topic.

THINGS TO DO: Within just a couple of miles of the Sheraton Tacoma Hotel is the Ruston Way waterfront, along the south shore of Commencement Bay. This waterway has some of the most beautiful scenery anywhere; the wide expanse of the saltwater bay is framed by steep-cliffed islands and snowcapped mountains—the Olympic and Cascade Ranges and magnificent Mount Rainier tower on the horizon. The parks, trails, piers, and restaurants hugging the two-mile-long shoreline draw both residents and visitors alike.

Literally dozens of other attractions will be within your easy access. These include the 700 acre Point Defiance Park (which contains Point Defiance Zoo and Aquarium), the Tacoma Art Museum, the Washington State Historical Society museum, the Pantages Theater, the Seymour Botanical Gardens, scenic Gig Harbor and Vashon Island, Northwest Trek (a 600 acre wildlife park), the Port of Tacoma, Nisqually Wildlife Refuge, shopping at Antique Row, and, of course, Mount Rainier itself (over 14,000 feet high, it is the fourth highest peak in the United States, with 400 square miles of stunning views, hiking trails, glaciers, rivers, and forests).

It is virtually impossible for me to provide information on all there is to do in Tacoma. Fortunately, the Tacoma/Pierce County Visitor and Convention Bureau is available to do just that. Please feel free to call them at 1-800-272-2662 or write to them at P.O. Box 1754, Tacoma, Washington 98401-1754 with any questions that you might have about local attractions.

As always, the success of this conference depends on YOU! Find that envelope containing the conference registration materials, fill out the forms, and SEND THEM NOW. And while you're at it, why not send in an abstract this year? **Everyone**, including you and all the animals in our care, will benefit if you do.

Please direct questions or suggestions regarding the 1994 Annual Conference to:

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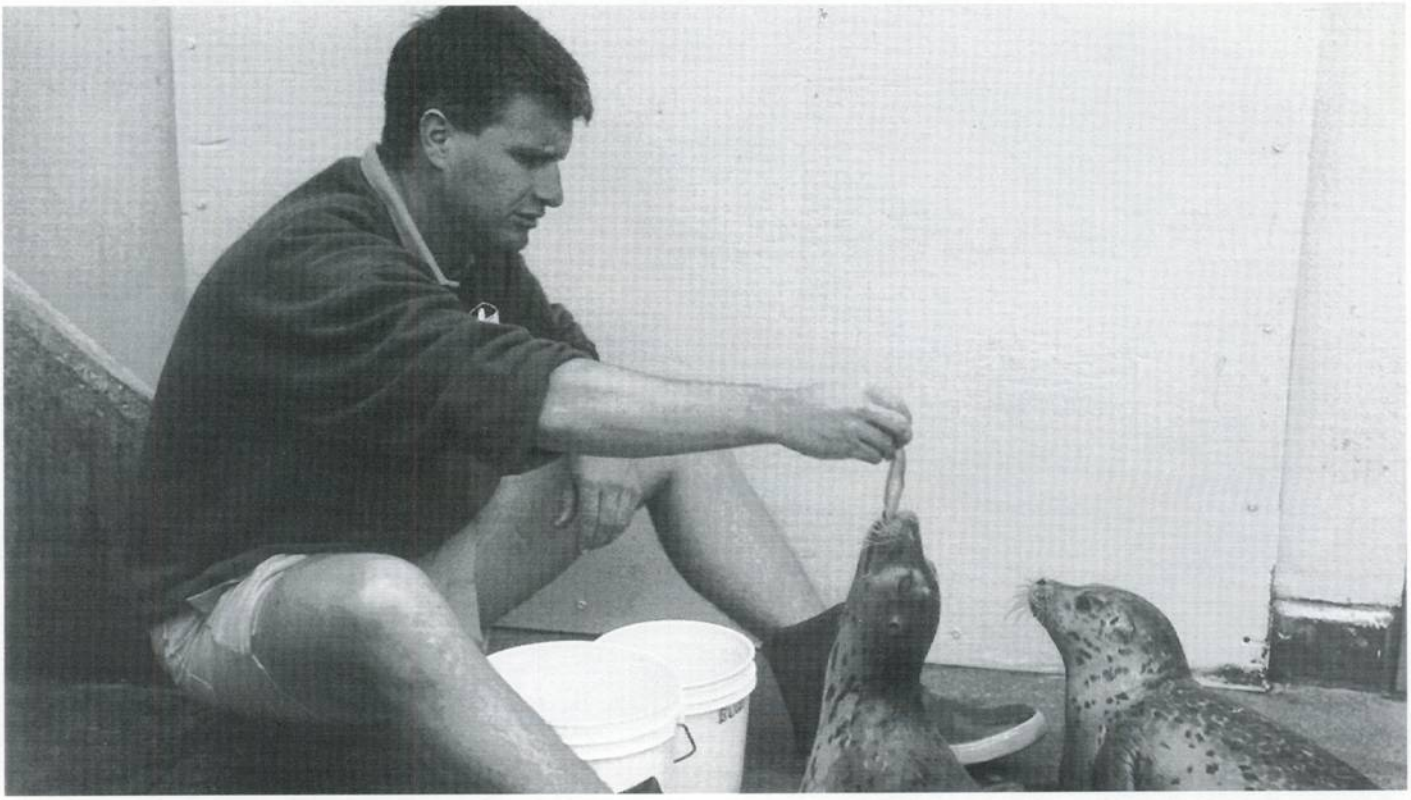

Pat Miller

Point Defiance trainer Nolan Harvey has been lending IMATA First Vice President Kathy Sdao a hand in planning the menu for the conference banquet.

primarily to the lighting. During renovation of the outside exhibit in 1988-89, the seals were kept off display in this holding room where it was noticed by staff that animals had difficulty starting and completing their molts. Fluorescent office-type ceiling lighting was replaced with halogen/halide lights and (natural) full-spectrum Vitalights®. Simultaneously, a timer was added to the lights and set to match the local seasonal light changes. Shortly thereafter the animals began their molts. The authors think that the lights made an enormous difference and these are now maintained as a standard. This was expensive and if the exhibit was done over again the staff would suggest the addition of a photocell (like those used in street lamps) matching the holding room lights to the outside light without any fancy electronics. Any animal in holding needs to stay on the same cycle and light conditions as they would find in the connecting outdoor facility.

SUMMARY

It is hoped by the authors that this companion article to the generic information article on harbor seals will increase the knowledge of the readers, lead to better care and exhibitry of the animals, and provide accurate information about harbor seals to the general public through the educational efforts of all facilities displaying this common phocid.

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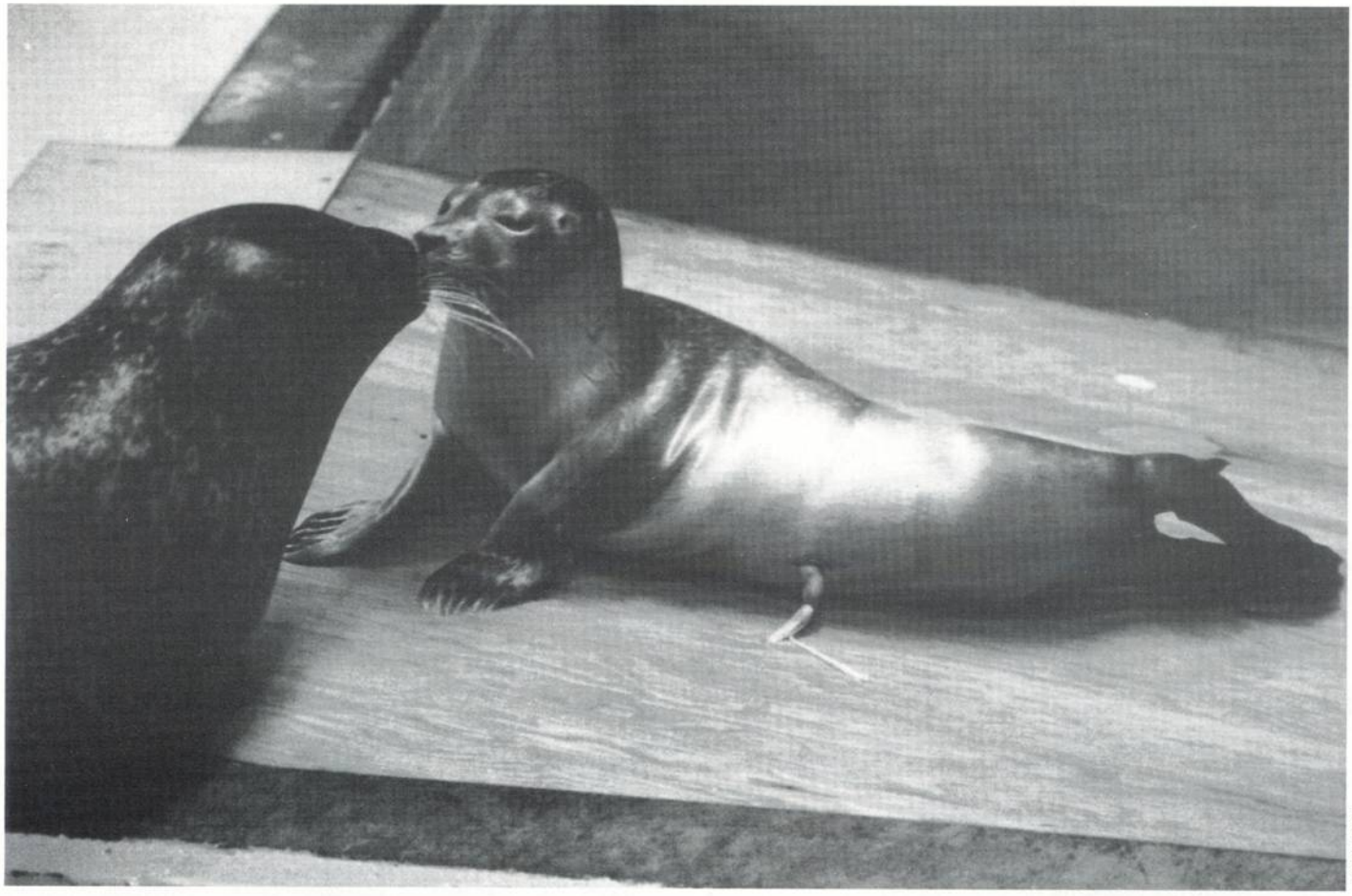
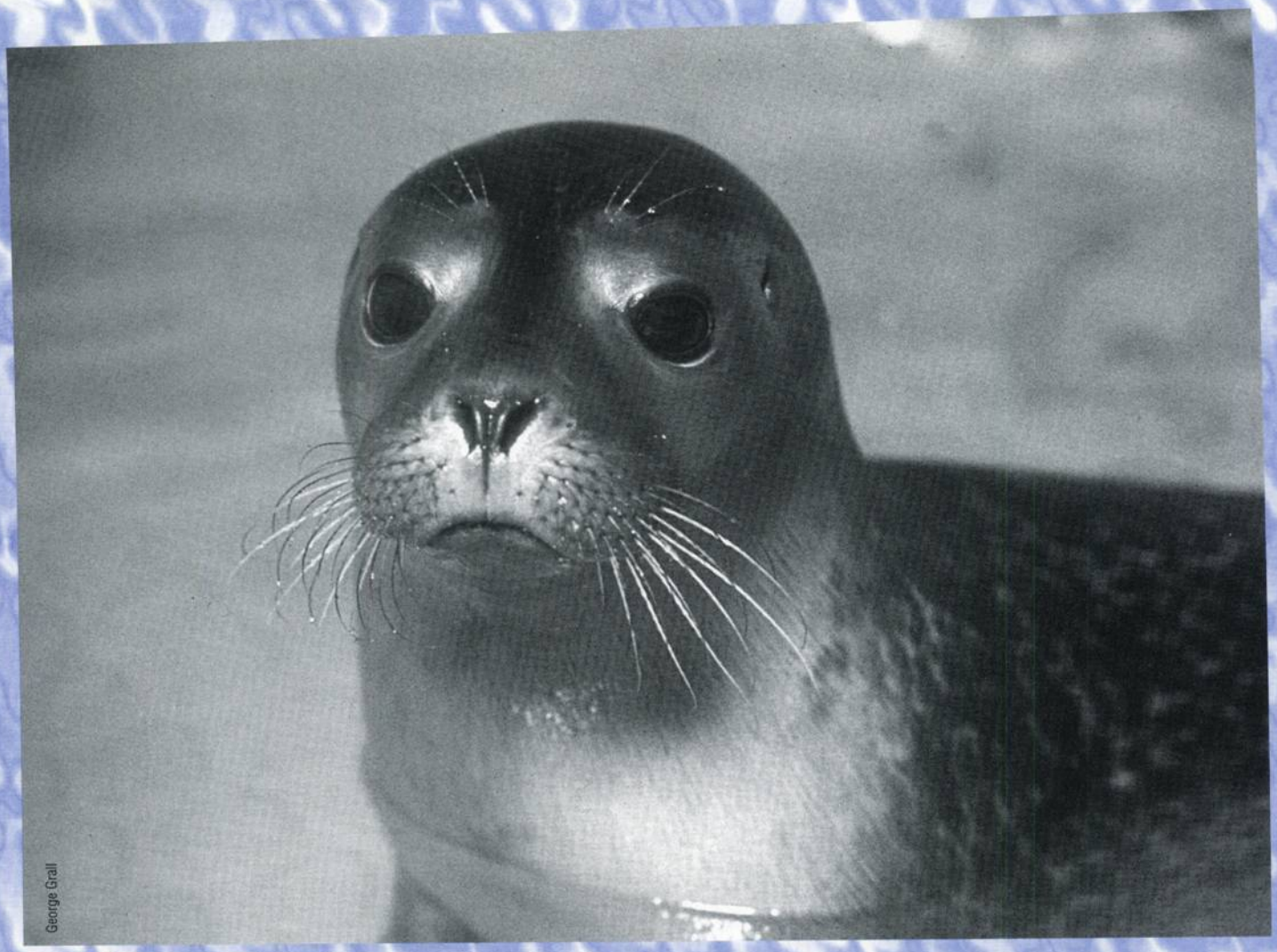


George Grall

Mother seal Hilda nuzzles her newborn pup, Esther, just moments after birth. The umbilical cord is still attached to the pup's abdomen. Because she spent over five hours in the water on her first day of life, this pup was named after Esther Williams, the famous Olympic swimmer and movie star.



George Grall

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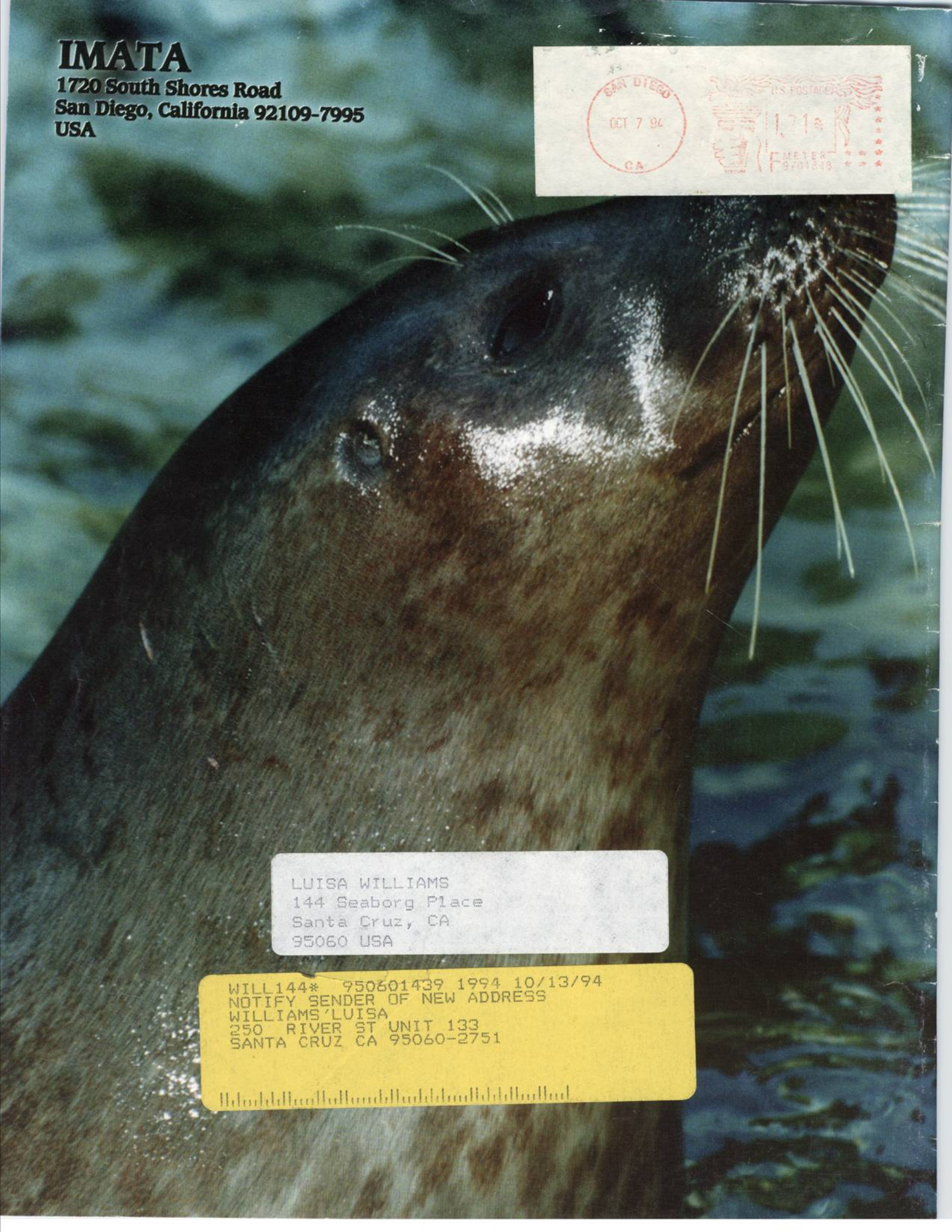

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