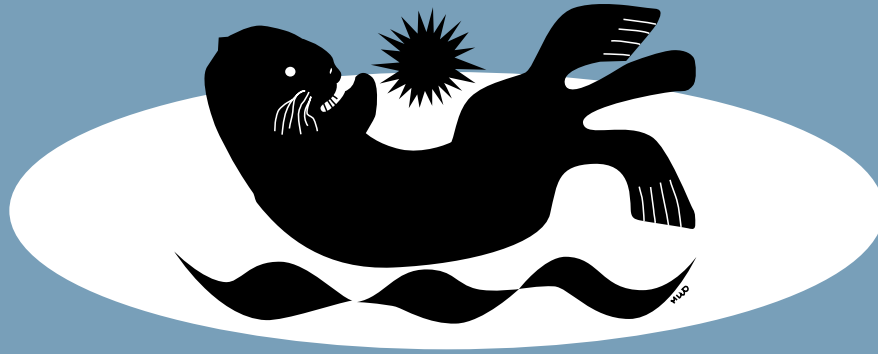


# THE OTTER RAFT



Number 67

FRIENDS OF THE SEA OTTER

Fall/Winter 2002

A Science and Education Periodical Focusing on the Welfare of Sea Otters and Their Habitat

Pre-fur trade sea otters (*Enhydra lutris*):

## **A Comparison of Genetic Diversity and Population Structure Between Extant and Extinct Populations**

By Shawn Larson, Curator of Conservation Research and Animal Health, The Seattle Aquarium

Sea otters (*Enhydra lutris*) once ranged throughout coastal regions of the North Pacific Ocean from the Island of Hokkaido in Japan, north through the Kuril Islands and the Kamchatka Peninsula of Russia, across the Aleutian Islands, and down the west coast of North America to Baja California (Kenyon 1969). In the early 1740's, after the Bering expedition returned with several hundred sea otter pelts, the fur trade for this "soft gold" began (Lensink, 1962). Sea otters were then systematically extirpated from much of their original range during the 18th and 19th centuries until they were eventually protected by international treaty in 1911 (Kenyon 1969). The sizes of remnant populations remaining after the fur trade are unknown, but they may have ranged from a few tens to hundreds of individuals (Bodkin *et al.* 1999 and Rotterman 1992). By the late 1970's, several sea otter populations had recovered to pre-exploitation levels (Bodkin *et al.* 1994). However, they remained absent throughout much of their



historic range along the West Coast of North America (Kenyon 1969). Several translocation efforts were then made in the late 1960's and early 1970's to re-establish sea otters in some of these areas, resulting in three surviving colonies (Southeast Alaska, Vancouver Island BC, and Washington; Jameson *et al.* 1982). To date these populations have remained reproductively isolated from each other and any historic geneflow between adjacent groups has ceased.

The reduction of sea otter populations due to the fur trade in the 18th and 19th centuries resulted in

*continued on page 8*

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*By Jim Mattison, Jr., M.D., Co-founder and President, FSO Board of Trustees*

Over 30 years ago Margaret Owings and I felt that the Southern sea otter, *Enhydra lutris nereis*, was being threatened with legislation in the State of California in the form of Senate Bill 442. Commercial abalone fishermen and some sport divers had complained that the sea otter was destroying the commercial and sport diving resource, the abalone. Friends of the Sea Otter was formed to protect the sea otter and its habitat from damage by this legislation. Our testimony, supported by scientific studies, was helpful in defeating this bill in the California legislature.

By attending hearings and presenting testimony, we won the support of other environmental organizations and the respect of scientists who joined our Advisory Committee. From a handful of dedicated people we grew to an organization of over 4,000 members in the early years of FSO. We worked hard with a small staff and a few volunteers. As our membership grew we were able to support limited research on the sea otter and its habitat along the California coast. We were privileged to have scientists such as Robert Orr and George Lindsey of the California Academy of Sciences, Kenneth Norris of the University of California at Santa Cruz, and Betty and John Davis of the University of California Hastings Laboratory volunteer their services as members of our Advisory Committee.

As our membership grew so did our job. We had Jud Vandevere working as a volunteer biologist, making valuable observations and reporting to the organization on the feeding habits of the sea otter. We performed necropsies on otters that were found on the beach and sent reports on them to the State Department of Fish and Game. We also presented

findings of our necropsies to the Biosonar Laboratory of the Stanford Research Institute. Alan Baldrige, Librarian of the Hopkins Marine Station of Stanford University, joined us and was tremendously helpful in following research work on the sea otter, and served on our original Advisory Committee. Bill Bryan, an attorney interested in sea otters and an avid scuba diver and underwater photographer, produced a short motion picture, "*Clowns of the Sea*," which had an excellent reception by viewers at local meetings and at schools.

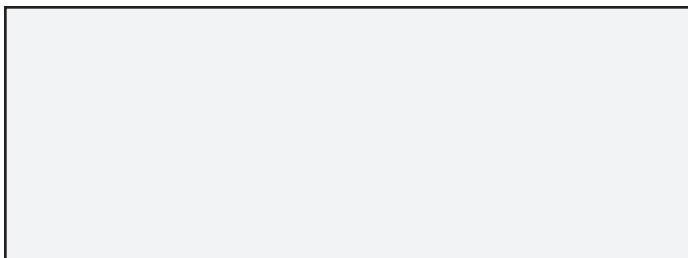
We went a long way with "volunteer power" but soon realized that we needed to increase our staff and needed to raise funds for FSO to support our activities. *THE OTTER RAFT* was begun as an information source for the membership. We recognized that for an organization to be effective it must have good communication, not only with its members but with the general public as well, and with the news media, with our legislators, and with the scientific community.

All of this costs money. Your membership dues and contributions make these functions possible:

1. Funding scientific research into sea otters and their habitat.
2. Maintaining the staff, including teachers, who communicate with the public and the media on a day-to-day basis.
3. Maintaining our office, with its rent, utilities, supplies and equipment.
4. Producing the educational materials that carry our message of the importance of a valued resource, the sea otter, to schools and civic groups.
5. Advocating on behalf of the sea otter by environmental attorneys, for the necessary legislation that will protect the sea otters and their habitat.

We want to thank you for the generous support you have given to FSO, and we hope you will be able to continue your involvement in this important work.

We have two excellent speakers for you to hear at our Annual Meeting on Saturday, October 19th. Please come!



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has recently joined us as Science Director. Caryn's background is in the behavioral ecology of marine mammals. Caryn worked with the Sarasota Dolphin Research Program for five years, monitoring the demography, population dynamics, association and movement patterns, and social structure of free-ranging bottlenose dolphins. For her master's thesis through the University of California, Santa Cruz, she examined the role of parental experience in calf survivorship of bottlenose dolphins under the sponsorship of Dr. Randall Wells. Previous work with Dr. Wells included using photogrammetry to examine life stage structure among aggregations of Florida manatees. Caryn has collaborated with researchers from the Woods Hole Oceanographic Institution in a study of the social development of whistle vocalizations of free-ranging dolphin calves. In addition to working with Friends of the Sea Otter, Caryn is currently a part-time professor of marine biology at Foothill College.

, FSO's Education and Retail Center Director, comes to us with a wealth of retail experience. The highlight of his career to date was owning and operating Teddy Bear Toys in Aptos, California, for 18 years. After working as a store director for several larger companies, including Toys R Us, Ross Dress for Less, and KB Toys, he joined the Museum Company, which confirmed his preference for smaller retail operations. Richard brings a new enthusiasm and a customer service emphasis to FSO. After renegotiating the lease at 381 Cannery Row, he is especially looking forward to the creation of a remodeled Center.

, our Administrative Manager, had recently returned from Alaska when she joined FSO. She had worked for 16 years in numerous positions at Navy Federal Credit Union, a non-profit organization, and she served the last five years as manager of the Monterey Member Service Center. She has over 25 years of financial management and customer service experience. She is pleased to be continuing in the non-profit sector.

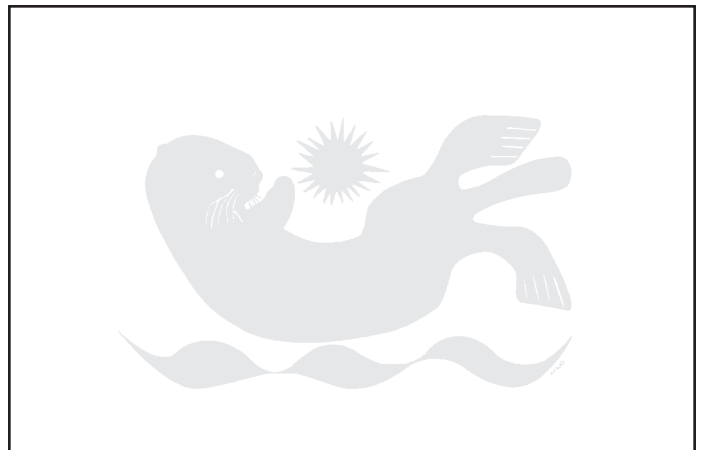
In the last issue of *The Otter Raft* we reported the planned move of our Education and Retail Center to the American Tin Cannery. As we neared the proposed move, Richard Sherer came on board as our new Center Director. He was able to renegotiate the lease at our long-time location at 381 Cannery Row, across from the Monterey Plaza Hotel. We are very pleased to have the Center continuing at this excellent location.

We did move our administrative offices to the American Tin Cannery, where we gained more space at a savings, in a fine location that is across the road from sea otter habitat, a short walk to the Center, and a block from the Monterey Bay Aquarium.

In this edition of *The Otter Raft* we offer a preliminary report from Shawn Larson, a researcher whose work is partially supported by Friends of the Sea Otter. We are pleased to be assisting on valuable studies at this time of numerous suspected threats to the sea otter population.

Science Director Matt Rutishauser has taken a new position at Long Marine Laboratory in Santa Cruz. We miss him a lot, and we are happy to have him continuing with us on our Advisory Committee.

I am looking forward to seeing many of you at our Annual Meeting, my first, on October 19th at the Monterey Bay Aquarium. Drs. Jim Estes and Dave Jessup have fascinating talks planned for us on current sea otter research.





By Caryn Owen, FSO Science Director

The growth rate of the Southern sea otter population has been declining since 1995. Finding the cause or causes for the alarming declines is a challenge for researchers; as with many threatened species, sea otters face a complex combination of factors. Dr. Jim Estes has suggested that the decline of the sea otter population along the California coast may be due to entrapment in fishing gear, starvation, disease and contaminants.

Current research has perhaps added to the complexity of the issue. A recent study published in the journal *Conservation Biology* indicates that non-otter specific diseases transmitted by domestic animals or caused by parasites for which otters are not the natural hosts may account for increased mortality and subsequent decreases in population growth. Furthermore, such increases in disease may be correlated with human activities throughout the Southern sea otter's range.

Drs. Kevin Lafferty and Leah Gerber describe the role of disease transmission in conservation biology in a published study that recommends considering disease transmission when developing current conservation plans. The authors used the case of the Southern sea otter as an example of how an increase in mortality caused by infectious disease could potentially be linked to the anthropogenic factors of habitat alteration, polluted runoff and depleted prey species.

The study reported that approximately half of the sea otter carcasses examined died from infectious disease. An alarming 14% of sea otter mortalities could be attributed to peritonitis caused by an acanthocephalan worm, a parasite that is normally found in the intestines of shorebirds. A shorebird normally will become the final host of this worm after ingesting sand crabs. The parasite is not fatal for the shorebirds but it is for sea otters, which are thought to be acquiring the parasite by eating the sand crabs. Sea otters generally prefer to prey on species other than sand crabs, but researchers believe that depletion of their normal prey species may have resulted in this



switch in prey.

Toxoplasmosis, a disease that causes inflammation of the brain, is transferred in cat feces. A protozoan that causes toxoplasmosis caused a second fatal infectious disease found in sea otters. The authors suggested that sewage and storm drain runoff could be bringing cat feces into the sea otter's habitat. Valley fever was also found to be a cause of mortality in sea otters. (It has also infected humans.) This disease is caused by a soil fungus whose infectious spores become airborne due to agricultural and construction activities. These three infectious diseases may have been introduced unintentionally by humans or by a change in sea otter feeding behavior.

High levels of contaminants have also been found in beach-cast otter carcasses. Contaminants could lead to immunosuppression, making sea otters more susceptible to disease.

While infectious diseases and contaminants may not be the primary causes of negative population growth, they may weaken the population. Individual otters may become more vulnerable to other factors such as interaction with fisheries, habitat degradation, and pollution. In our next issue, we will expand our discussion of this complex relationship and hear more from Dr. Lafferty and other prominent researchers.



**By Kaitilin Gaffney, California Central Coast  
Program Manager, The Ocean Conservancy**

You had to be an early riser to catch a glimpse of the *Star Princess* during her short and ill-fated visit to Monterey Harbor on the morning of May 7, 2002. Faced with choppy seas and a prediction of increasing winds throughout the day, Princess Cruise Lines decided to forgo a planned 10-hour visit to Monterey and head straight to San Francisco. The change in plans resulted in disappointment for local merchants, sighs of relief from environmentalists, and a field day for headline writers (“Monterey Misses the Boat — Big Time,” *San Jose Mercury News*; “Cruise Ship Gone with the Wind,” *Monterey County Herald*).

Carrying nearly 4,000 passengers and crew, the *Star Princess* is the largest cruise ship ever to sail the West Coast. It was the first of three major cruise ships planning visits to Monterey Bay this year, with additional visits expected in the years to come. Cruising is a rapidly growing industry — between 1990 and 1998, the cruise industry grew by 67% in the State of California. A planned \$300 million cruise terminal in San Francisco is expected to draw even more cruise ships to the Central Coast.

With the increase in cruise ship traffic in the Monterey Bay come serious concerns about the many impacts cruise ships have on the marine environment. Modern cruise ships are essentially floating cities, generating enormous volumes of waste, most of which is eventually dumped into the ocean. A typical week-long cruise generates 50 tons of trash and one million gallons of liquid pollutants such as sewage, laundry water, oily bilge water, and toxic chemicals from photo labs and medical offices.

Cruise ships pose grave risks to wildlife. In the past two years, cruise ships in Alaska have killed at least four whales, including a pregnant humpback that was rammed by a cruise ship in Glacier Bay National Park last summer. Monterey area environmentalists are concerned about risks to sea otters posed by the smaller vessels used to ferry passengers from cruise ships to shore. Finally, cruise ships are a

major source of air pollution. According to the Monterey Bay Air Pollution Control Board, the *Star Princess*’ few hours in Monterey Bay were estimated to have generated the same amount of nitrogen oxide (NOx) as 27,000 cars operating on area roads for an entire year. Unfortunately, current environmental regulations for cruise ships are inadequate and poorly enforced — and the cruise line industry has a long history of illegal ocean dumping. In April this year, Carnival Cruise Lines, the largest cruise company on the planet, was fined \$18 million for fraud related to illegally dumping oily discharge into Florida waters. Also in April, a lawsuit was filed against four major cruise lines accusing them of illegally dumping untreated ballast water in California ports. In July, Norwegian Cruise Lines was fined \$1.5 million for lying to the Coast Guard about illegal dumping from two of its ships.

In an effort to protect the Monterey Bay from cruise ship pollution, local environmental organizations including Friends of the Sea Otter, Save our Shores, The Ocean Conservancy, Oceana, and the Sierra Club support making the Monterey Bay National Marine Sanctuary a “zero discharge” area for cruise ships. You can help by writing to California’s Central Coast state legislators (Senator Bruce McPherson, fax: 831-443-3407, and Assemblyman Fred Keeley, fax: 831-425-5124) and the California Cruise Ship Environmental Taskforce (c/o Nancy Kampas, fax: 916-341-5463) voicing support for designating the Monterey Bay Sanctuary a “zero discharge” area for cruise ships.

For more information on cruise ships and their impacts on the marine environment check out The Ocean Conservancy’s Cruise Control report available on the web at: [www.oceanconservancy.org](http://www.oceanconservancy.org) or contact Kaitilin Gaffney at 831-425-1363 or [kgaffney@psinet.com](mailto:kgaffney@psinet.com).



By Tom Kieckhefer, FSO Education Director

For more than 34 years FSO has worked to protect the sea otter and its habitat from a wide range of threats. As part of our ongoing effort to fulfill this mission, we offer the general public and students a variety of opportunities to learn about these fascinating creatures and how to protect them.

We are happy to announce that our new In-School Otter Program has received financial support from the Harden and McMahan Foundations to reach out to more than 2,000 students in the Salinas & Monterey School Districts in the upcoming school year (2002-2003). This program is a multi-media education presentation that describes the natural history, adaptation, and ecology of sea otters. Since the beginning of the year, we have taught over 1,200 students in Santa Cruz and Monterey Counties.

Students gain a thorough understanding of how they can help protect the sea otters and educate others on the importance of recycling and protecting the environment. The program is a fun learning experience with hands-on activities and demonstrations. The grand finale of the presentation features a student or teacher transformed into a sea otter using a wonderful new costume created by Roxann Hinley, a

local biology teacher and costume designer. The program meets science curricula standards and provides a valuable link between the scientific community and student bodies. We also provide extracurricular materials for the students and teachers, as well as online web site support for further questions and a broader understanding of these magnificent animals and their marine habitats.

Students from Garfield Charter School, Santa Rosa, and King Middle School, Seaside, came down to help with our **Otter Spotter Program**, documenting sea otter abundance and behavior, the percentage of available kelp, and potential disturbances off Cannery Row. We are expanding the program, and we are now scheduling student volunteers for fall and winter.

This very rewarding program gets kids outdoors to observe the wild otters that inhabit the kelp forest along our coast — and it helps the otters! We envision generating a spark of environmental knowledge and enthusiasm in the youth we encounter. We encourage the students to serve as trusted stewards enhancing the quality and the future of marine life.

Since publication of the last *The Otter Raft*, we have staffed educational booths at several community events throughout the Monterey Bay area. We attended the California State University Monterey Bay's Welcome Fair on August 23rd. We will be at Oceans Fair, Monterey Bay National Marine Sanctuary's 10th Anniversary Celebrations, Custom House Plaza, Monterey, on September 21st and at the Shark Festival, Santa Cruz, on September 28th. We can often use help at our booth to interpret our displays and to manage our kids' activities, so please give us a call if you are interested in volunteering.

For more information regarding FSO's education programs, please contact Tom Kieckhefer or Josh Cassidy at (831) 373-2747 or email [education@seaotters.org](mailto:education@seaotters.org). Also, if you need any information about sea otters, please send us an email or letter. We really enjoy hearing from students around the world.

*The Otter Raft* is a twice-yearly publication of Friends of the Sea Otter. Its purposes are to educate the public about the Southern sea otter and our mission to protect this threatened species, and to acknowledge the work of many individuals and groups serving the well being of otters and their habitats.

Edited by Don Ingraham and Art Haseltine

We are grateful to Lee and Leora Worthington, who have provided all of the photos in this issue of *The Otter Raft*. They are long-time volunteers for Friends of the Sea Otter, and their photos have appeared in other FSO publications.

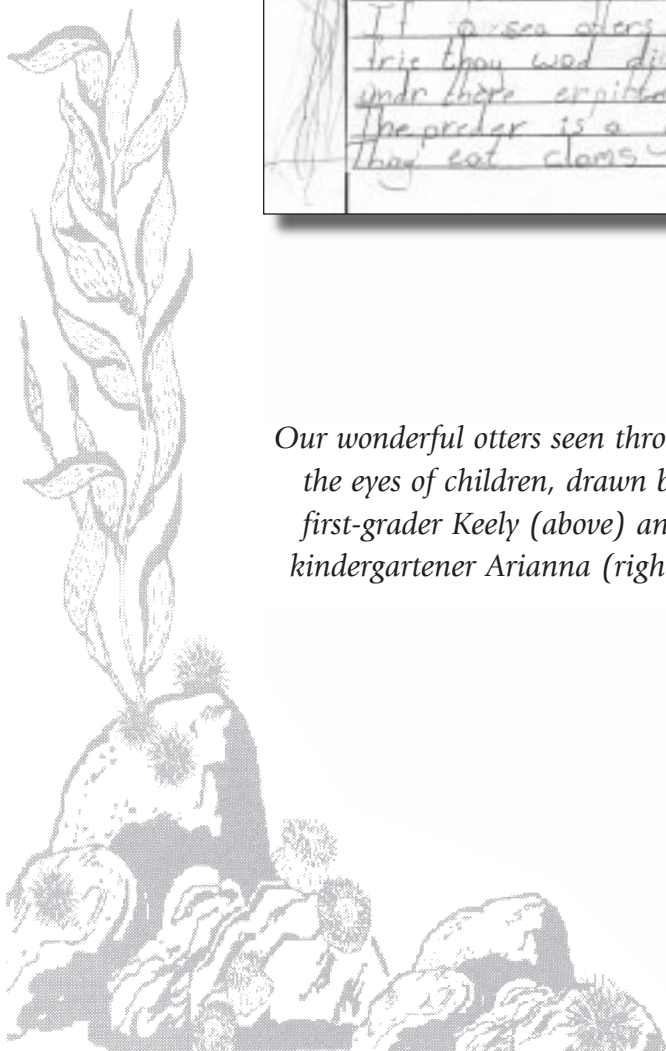
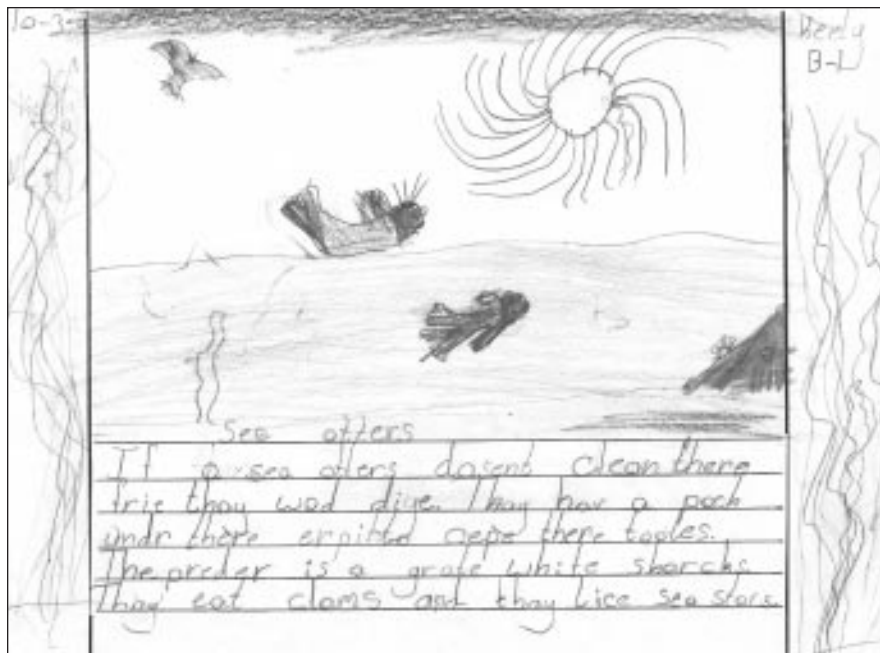
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# Corner

## Bird's



Our wonderful otters seen through  
 the eyes of children, drawn by  
 first-grader Keely (above) and  
 kindergartener Arianna (right).





### **Comparison of Genetic Diversity**

almost all extant populations experiencing at least one population bottleneck of varying severity and duration (Kenyon 1969, Jameson *et al.* 1982, and Riedman and Estes 1990). A recent study of genetic variation within contemporary sea otter populations revealed levels of variation that were relatively low compared to variation in several other species (Bodkin *et al.* 1999 and Larson *et al.* 2002). However, in the absence of data from pre-fur trade sea otters, it was unclear whether the current level of genetic variation in sea otters is a consequence of fur trade related bottlenecks, some other event, or is the norm for sea otters. We examined genetic variation and population structure in the bones and pelts of sea otters that lived prior to and up to the fur trade for comparisons with contemporary sea otters as an attempt to answer this question (Larson *et al.* 2002).

To date genetic samples from one pre-fur trade sea otter population (the extinct Washington coast otters) have been analyzed. Data was obtained from archaeological bone samples from the Makah Indian

village site of Ozette, near Neah Bay, Washington. A small hole was drilled into the bone using a variable speed Dremel™ tool to collect approximately 0.1 grams of bone dust. Variation at four microsatellite loci and within the mtDNA D-loop sequences was then determined in the pre-fur trade samples and compared to data for the same loci in extant sea otter populations.

Results from this initial study were striking. The average expected microsatellite marker heterozygosities or genetic diversity within the pre-fur trade Washington population was double that found within all modern sea otter populations (Larson *et al.*, in press). The levels found within the pre-fur trade population were similar to the genetic variations found in species that have not suffered from population bottlenecks. These results illustrate the amount of genetic diversity apparently lost by modern sea otters due to the fur trade. Other questions such as historic population relatedness and geneflow between adjacent groups can only be answered by analyzing several more pre-fur trade sea otter populations. In June of 2002, thanks to a grant provided by Friends of the Sea Otter, The Seattle Aquarium sampled bones and skins from several other pre-fur trade sea otter populations (Russian, Alaskan, Washington, Oregon and California) housed at the Smithsonian's National Museum of Natural History in Washington, DC. We have begun to extract the historic DNA from these samples and have data from several otters. Final analysis of the genetic diversity and phylogenetic relationships among these ancestral populations should be available by the end of 2002.

The initial data gathered on the Washington pre-fur trade sea otters illustrates that modern sea otter populations have experienced a significant loss of diversity, most likely due to fur trade exploitation (Larson *et al.*, 2002 and Larson *et al.*, in press). The cost of reduced genetic variation and the loss of geneflow among populations to modern sea otters is not known. Population bottlenecks, inbreeding and the associated loss of genetic diversity have been shown to result in inbreeding depression, or a reduction in individual fitness and population viability in many species (Amos and Balmford 2001, Lacy 1997, Ralls, Ballou and Templeton 1988, and Wildt *et al.*

1987). We believe that continued monitoring of wild sea otter populations for potential signs of inbreeding depression is recommended to determine if the loss of historic genetic diversity has had a negative impact on long-term sea otter population survival.

**Literature cited:**

Amos W. and A. Balmford (2001) When does conservation genetics matter? *Heredity* 87, 257-265.

Bodkin J.L., Jameson R.J., Estes J.A. (1994) *Sea otters in the North Pacific Ocean*. In: Our Living Resources 1994. A report to the nation on the distribution, abundance and health of U.S. plants, animals and ecosystems (eds. LaRoe III ET, Farris G.S., Puckett C.E., Doran P.D.), pp. 353-356. National Biological Service. Washington, D.C.

Bodkin, J.L., B.E. Ballachey, M.A. Cronin, and K.T. Scribner. 1999. Population demographics and genetic diversity in remnant and translocated populations of sea otters. *Conservation Biology* 13(6): 1378-1385.

Jameson, R.J., K.W. Kenyon, A.M. Johnson, and H.M. Wright. 1982. History and status of translocated sea otter populations in North America. *Wildlife Society Bulletin* 10:100-107.

Kenyon, K.W. 1969. The sea otter in the eastern Pacific Ocean. *North American Fauna* 68. U.S. Department of the Interior, Washington, D.C.

Lacy, R.C. 1997. Importance of genetic variation to the viability of mammalian populations. *J. Mamm.* 78(2):320-335.

Larson, S.E., R. Jameson, J. Bodkin, M. Staedler and P. Bentzen, in press 2002, Microsatellite DNA and mtDNA variation in remnant and translocated sea otter (*Enhydra lutris*) populations. *Journal of Mammalogy* 83(3).

Larson, S.E., R. Jameson, M. Etnier, M. Fleming and P. Bentzen, 2002 in press, Loss of Genetic Diversity in Sea Otters (*Enhydra lutris*) Associated with the Fur Trade of the 18th and 19th Centuries, *Molecular Ecology*.

Lensink, C.J. 1962. The history and status of sea otters in Alaska. PhD dissertation. Purdue University, New York, 188pp.

Ralls, K., J.D. Ballou, and A. Templeton. 1988. Estimates of lethal equivalents and the cost of inbreeding in mammals. *Conservation Biology* 2 (2): 185-193.

Riedman, M.L. and J.A. Estes. 1990. The sea otter (*Enhydra lutris*): behavior ecology and natural history. Biological report 90(14). U.S. Fish and Wildlife Service, Washington, D.C.

Rotterman L.M. (1992) Patterns of genetic variability in sea otters after severe population subdivision and reduction. PhD thesis, University of Minnesota, Minneapolis, MN.

Wildt, D.E., M. Bush, K.L. Goodrowe, C. Packer, A.E. Pusey, J.L. Brown, P. Joslin, and S.J. O'Brien. 1987. Reproductive and genetic consequences of founding isolated lion populations. *Nature* 329:328-331.

*Friends of the Sea Otter could use replacement computers and printers, either Mac or PC. We could also use copiers and fax machines. Please give us a call if you or your company have equipment you would like to donate to this non-profit organization. Many thanks!*



*In honor of Margaret Wentworth Owings, the late co-founder of Friends of the Sea Otter, highlighting her unique vision and artistic creativity.*

*Compiled by Nancy Weigle.*

**A Moment of Time**

My words shall be few —  
 one, is a word of gratitude for a privilege, the  
 privilege of living in our land — this century,  
 this decade, this year, this moment of time.

A time — when a condor quill can drift down  
 from a great wheeling bird;

A time — when sea otters are rocked in the kelp  
 by the moving tides;

A time — one can follow the soft-padded track of the  
 mountain lion — along the streambeds in the  
 Lucia range;

When one can still hear the circling call of  
 coyotes at nightfall on the Anza-Borrego desert;

A time — when the loveliness of motion of the tule elk  
 can thread itself out into fields of the Owens Valley.

Yes, we can still find an atmosphere of unlimited  
 freedom in a living landscape at this time.

Yet, this privilege has become a target  
 grain soaked in 1080 poison  
 cyanide guns placed by trappers  
 pesticides contaminating the environment  
 and the gun-in-hand.

And the wild, beautiful habitat of wildlife is intruded  
 by ingenuity, by roads and machinery — the agent  
 is man.

Thus to the word 'privilege,' I add the word 'obligation.'

The obligation not alone to shield the target — but to  
 unblock the moral vision. And this alone can be  
 done by the slow, steady, noble courage of the few.

For only then can man define this privilege which  
 rewards him (in the words of Sigurd Olson) "...with  
 a certain feeling of wholeness and fulfillment."

*First presented to the Tule Elk Banquet sponsored by  
 the Committee for the Preservation of Tule Elk in  
 Los Angeles, March, 1967. Reprinted by permission of  
 Nat Owings and the Monterey Bay Aquarium.*

Margaret Owings

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Recognized are contributions received prior to July 31, 2002

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## **NEW Patron**

Stuart Landers, *Monterey, CA*

## **NEW Supporting Members**

Lee Carpenter, *Manama, Bahrain (Persian Gulf)*

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Bert & Alice Katzung, *San Rafael, CA*

Ms. Jacqueline Kaufer, *Ridgewood, NJ*

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## **The Silver Circle**

We associate the widening circles on the water when an otter dives with the growing accomplishments and needs of Friends of the Sea Otter. Many of our Life Members and Benefactors continue to make substantial contributions, expanding the circles. These are members who have added circles to the otter's dive.

Mrs. Leslie Andrews, *Santa Cruz, CA*

Miss Natasha Antonovich, *Montebello, CA*

William Ayer, *Orinda, CA*

Mr. & Mrs. Edward C. Bassett, *Mill Valley, CA*

Mrs. Margaret Beck, *Grosse Pointe, MI*

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M. S. Bordwell, *Walnut Creek, CA*

Amber Bradford, *Claremont, CA*

Bobbie Bradley, *Pacifica, CA*

Gina Capers, *Half Moon Bay, CA*

## **PLANNING YOUR ESTATE *with* FRIENDS OF THE SEA OTTER *in mind***

*Friends of the Sea Otter has been blessed over the years to have received bequests from members and others who want to participate in the on-going mission of this organization. Memorial gifts from friends and families have been important in sustaining the work.*

*We invite you to include Friends of the Sea Otter in your estate planning.*

*Please contact us at 831-373-2747 to discuss your plans with us. You always make the difference.*

### Memorial Gifts

Although the passage of our friends saddens us, our hearts are lighter with the knowledge that their loved ones have chosen to honor their memory with these lasting gifts to Friends of the Sea Otter, protecting the Southern sea otter and its ocean habitat. We proudly acknowledge these gifts in memory of:

**Bunnie Edelman**

*from Laurie Mass*

**Sanford M. Farrer**

*from his Estate*

**Mons Olaf Gregory**

*from Beverly E. Gregory*

**Richard Guadagno**

*from JoAnn Szewczyk*

**Marion Jenks**

*from Olga Kay Kennedy*

**John Karasek**

*from Barbara C. Landt,*

*Owen Leibman,*

*Walter and Deborah Sigg,*

*Kathryn L. Whittington,*

*Robert and Carol Coon,*

*Maryellen Buckley,*

*Anna Mae Landt,*

*Ellie and Don Furry,*

*Donald and Deborah Pelley*

**Melvin Neeb**

*from Stephanie Drexler*

**Margaret Wentworth Owings**

*from Marian Heiskell*

**Waltraub Singer**

*from Dorothy Salvato*

**Nova Spinoza**

*from Rosalind Brown*

**Cindy Stephens**

*from Jan Edmonson*

### The Silver Circle, continued

Olga Kay Kennedy, Lawrence, KS

Hazel M. Koskenlinna, Stevens Point, WI

Christie Kramer, Claremont, CA

Dr. H. Robert Krear, Estes Park, CO

Barbara C. Landt, San Francisco, CA

Amy Lane, Castle Rock, CO

Ms. E. Margaret Lawrence, Port Angeles, WA

Mrs. Elaine O. Leventhal, Los Angeles, CA

Alan C. & Dorothy L. Lisser, Carmel, CA

Colin Ma & Laurie Christensen, Portland, OR

Mr. & Mrs. William Marchiando, Carmel, CA

Mrs. Marian F. McAleenan, Rockport, ME

Bradford D. & Joan McCanna, Shoreview, MN

Dr. & Mrs. Frank M. McCarthy, Pasadena, CA

Ruth McCloud, Palm Beach Gardens, FL

Patrick D. & Shirley McCullough, London, England

Peter & Gillian McDonald, Sherman Oaks, CA

Ruth M. McGee, Los Altos, CA

Margo L. McRice, Castro Valley, CA

David & Holly Mendel, Sunnyvale, CA

Mr. Jacques Meyer, Mendham, NJ

Ellen E. Miller, Healdsburg, CA

Carolyn Moore, Monterey, CA

Wendy Morgan, Washington, DC

Mr. John F. Morthland, Casa Grande, AZ

Patricia Moylan, San Jose, CA

Terence & Linda O'Neill, Ventura, CA

Mary G. Otterson, Church Creek, MD

Bruce & Janie Penslar, Los Angeles, CA

Mark & Sue Perkins, Cupertino, CA

Rick Posten, Los Angeles, CA

Barry D. Reimnitz, St. Paul, MN

Patti Rodgers, Eugene, OR

Ann & Jerry Rogers, Santa Barbara, CA

Mary R. Rosenberg, Murphysboro, IL

Mrs. Gaile B. Russ, Oakland, CA

Lionel B. Sanders, Los Angeles, CA

Susan Sanford, Los Angeles, CA

Marilyn G. Seyler, Mansfield, OH

Thomas J. & Judith A. Sharp, Sherman Oaks, CA

Mr. Shawn M. Shawhan, Seattle, WA

Shirley Sheffer, Coral Springs, FL

Marie L. Sikora, Ben Lomond, CA

Mrs. Margot Sisler, Carmel, CA

Barbara S. Smith, Chappaqua, NY

Mrs. Marian Chase Snow, Santa Clara, CA

Miss Barbara L. Spaulding, Saddle River, NJ

Ms. Donna Sprinkle, Long Beach, CA

Helen M. Sprinkle, Long Beach, CA

Marion D. Sterling, Carmel, CA

Mr. Barry Z. Stone, San Francisco, CA

Lynn Sutherland, Durango, CO

Donna M. Swayze, San Marino, CA

Dudley & Christine Tower, Evergreen, CO

Mme. Patricia M. Trocme, Paris, France

Michael & Beverly Tulper, San Rafael, CA

Susan Turner, CPA, Carmel, CA

Gary Turton & Dolphin Dreaming, Rehoboth Beach, DE

John Verfaillie, Hamilton Square, NJ

Dr. J. Hugh & Mrs. Eleanor Visser, San Francisco, CA

Ms. Hilda Wax, Phoenix, AZ

Ellen J. Westdorp, Kansas City, MO

Gerald D. & Anne Wilson, Covina, CA

Peter J. Wilson, Scarsdale, NY

Carol Lynn Wolf, San Diego, CA

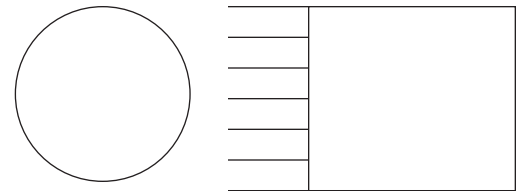
Warren & Leora Worthington, Salinas, CA

Jack & Louise Yeates, Wilmington, DE

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**O U R M I S S I O N**

FRIENDS OF THE SEA OTTER IS A NOT-FOR-PROFIT ORGANIZATION FOUNDED IN 1968 AND DEDICATED TO THE PROTECTION OF A RARE AND THREATENED SPECIES, THE SOUTHERN SEA OTTER, AS WELL AS SEA OTTERS THROUGHOUT THEIR HABITATS.