

# THE OTTER RAFT



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FRIENDS OF THE SEA OTTER

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

## Russian and American Scientists Meet to Discuss Sea Otters

By James A. Mattison Jr., M.D.

The seventh Joint U.S.-Russian Sea Otter Workshop was held November 13-16, 2000 sponsored by the Monterey Bay Aquarium, U.S. Fish & Wildlife Service, Oiled Wildlife Care Network, U.S. Geological Survey, and the Friends of the Sea Otter (FSO) at the Monterey Institute of International Studies (Monterey, California). Papers were presented by scientists from the U.S. and Russia in both languages, with simultaneous translation through headsets. The following is a brief summary of several papers presented at this workshop.

*A State Recovery Plan for Sea Otters in Washington State* was presented by Allen, Jeffries, and Richardson. Sea otters have been listed as *Endangered* by Washington State since 1981, and became part of a recovery plan that began in 1997. This recovery plan is expected to be completed in March 2001. Fifty-nine Amchitka otters were introduced in 1969, with little change in population numbers for the following 20 years. An 11% annual increase occurred during the decade 1989-1999, when the population reached 605 animals. Although future downlisting is being considered, threats due to oil spills and resource conflicts with commercial, recreational, and tribal shellfishermen make downlisting to *State Sensitive Status* unlikely for several years.

*Sea Otter Foraging Behavior in Glacier Bay* is being studied by Bodkin et al. The study looks at the foraging impact on primary prey items at 86 sites. Prey items include green urchins, crabs, and clams.

*Diving Behavior of Sea Otters in SE Alaska* is also being studied by Bodkin et al. The study looks at time of dive, time spent resting, time spent foraging, and grooming time. Observers recorded 250,000 sea otter dives with an average depth of 19.7 meters and an average dive time of 90 seconds. Prey impact studies are also being studied by transect design including crabs, clams, urchins, and mussels.

Burn and Doroff reported on the change in listing status (upgrading) of the Alaskan sea otter population, mainly in the Aleutians, to a *Candidate Species* under the Endangered Species Act. This follows the April 2000 census that showed a 70% decline in the Alaskan population. Maintenance of critical habitat is now a key issue for the sea otter in Alaska.

Comerci et al. reported finding elevated levels of organochlorine compounds (mainly DDT and PCBs) in necropsied sea otters in SE Alaska, Prince William Sound, Cook Inlet, Kodiak Island, the Aleutian Islands, and the Alaskan Peninsula. In other species,

# President's Report

by Kim Beals

I would like to take this opportunity to introduce myself, as well as the new staff members of Friends of the Sea Otter (FSO). During the last few months, FSO has gone through a period of growth and reorganization, which will make us an even stronger advocate for sea otter protection and preservation.

I have been affiliated with FSO in various capacities since 1991. In December 2000, I was nominated as President of the Board of Trustees, a position I hold with immense honor. As President, I have had great pleasure working with several new staff members: our new Science Director—Matt Rutishauser, who is diligent in his efforts to be FSO's liaison to the scientific community; our new Education Director—Mailee Flower, who has undertaken the development of education programs, including the exploration of language translation of FSO information; our new Office Manager—Diana Busman, who makes everything run smoothly and efficiently; and our new Education Retail Center Director—Esther Trosow, who has assisted the Board with her ideas on how the Center could better serve the community. I would also like to acknowledge FSO's Board of Trustees, Advisory Panel, and Staff for their dedication and devotion to FSO and our mission.

On the advocacy front, FSO has retained an expert, Dr. Daniel Goodman, to prepare a technical report on our behalf with regard to the Washington State Recovery Plan for the Sea Otter. Dr. Goodman has addressed concerns regarding the recovery in the draft document. He has provided his opinion about the sufficiency of the draft plan, with a particular emphasis on delisting and recovery criteria. FSO is also involved in the litigation with the State Department of Fish and Game regarding the Santa Barbara conflicts between shellfisheries and relocation of the southern sea otters. FSO would like to sincerely thank Carol Fulton-Yeates as well as our attorneys, Bill Yeates, Stuart Somach, Don Mooney, Sean Flavin, and Don Baur, for all of their endless time and effort in support of our cause.

Additionally, Friends of the Sea Otter is also in the process of upgrading the Education Retail Center,

which will broaden our educational outreach. We are exploring options for education and also promotion of the FSO mission to non-English speaking residents/visitors.

The faces have changed, but FSO is thriving and continues its relentless effort of protection and advocacy for the sea otter. As Margaret Owings, co-founder of FSO, stated in *Voice of the Sea*,

Friends of the Sea Otter finds its symbol in the wave which lifts and falls, gathering momentum despite crosscurrents, despite human intrusions of toxic waste and sewage poured into nearshore waters, despite oil spillage from increasing tanker traffic hugging the coast. Yes, everything is transient where the sea meets the shore.

I would like to thank Dr. James Mattison, co-founder of FSO, for his continued contribution to FSO's efforts, and his wife, Joanne, for her loving support.

FSO also thanks our generous members for their continued support to our mission and would like to invite you all to share our enthusiasm as we look forward to the coming year.



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## FSO Introduces New Staff and Board Member

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The Friends of the Sea Otter is pleased to announce the appointment of three new staff members, and one new board member:

### **Science Director: Matthew Rutishauser**

Matt's background is in marine vertebrate zoology. His master's thesis research at the University of California, Santa Cruz examined the ecological implications of how Antarctic fur seals stay warm in the cold, polar ocean. This research was conducted over several years with Dr. Daniel P. Costa and the U.S. Antarctic Marine Living Resources Program. Recent work with Dr. Terrie M. Williams of UCSC included the pathology of oil contamination in sea otters. In the past, Matt has worked with a variety of species including sea otters, river otters, bottlenose dolphins, Hawaiian monk seals, California sea lions, Steller sea lions, and northern elephant seals. In addition to his work with Friends of the Sea Otter, Matt is currently working with Dr. Williams of UCSC on metabolic regulation in swimming and diving bottlenose dolphins and California sea lions, as well as the diving physiology and behavior of Wedell seals. Matt can be contacted at: [science@seaotters.org](mailto:science@seaotters.org).

### **Education Director: Mailee Flower**

Before joining FSO, Mailee was a water resource assistant with the Monterey Peninsula Water Management District. Her work included seasonal steelhead rescues as well as monitoring of vegetation, groundwater, and surface water along the Carmel River. Mailee has also worked on native plant restoration and education with *Creative Environmental Conservation* and *Return of the Natives*. In addition, Mailee researched and taught students about intertidal invertebrate biology while attaining her B.A. in Biology at UCSC. She was highly recommended by Dr. John Pearse at UCSC. Mailee is a Master diver, and is currently a volunteer diver for the Monterey Bay Aquarium. She can be contacted at: [education@seaotters.org](mailto:education@seaotters.org).

### **Education Retail Center Director: Esther Trosow**

Esther has served as administrator at the Monterey Institute for Research in Astronomy and as gift shop manager at the Pacific Grove Museum of Natural History. She has designed several museum exhibits, including MIRA's *Exploring the Universe from the Central Coast*, *Julia Platt: Pacific Grove's Pioneering Mayor/Neurobiologist*, and *Ed Ricketts: Out of the Tide Pool*. In addition, Esther produced Pacific Grove's widely distributed historical walking tour brochure, and print and web versions of *John Steinbeck's Pacific Grove*. She can be contacted at: [centerdirector@seaotters.org](mailto:centerdirector@seaotters.org).

### **Office Manager: Diana Busman**

Diana brings over 20 years of accounting and office management experience to business operations of Friends of the Sea Otter. She pays the bills, oversees the education retail center operations as well as staff, maintains the membership data base, sends out renewals and new member packets, and is the voice you hear when you call the office. Diana has recently returned to the Monterey area after living in Southern California for the last seven years. She can be reached at: [info@seaotters.org](mailto:info@seaotters.org).

### **Board Member: Judson Vandevere**

FSO's newest board member, Jud Vandevere, has been called "Mr. Sea Otter" with good reason. He was present at the inception of FSO at Monterey's historical Pacific House, and has served on the advisory board since then, has authored or co-authored 19 sea otter papers, and has conducted sea otter research and censused otters since 1969. Jud served as scientific advisor to Jacques-Yves Cousteau, and his footage was used in Cousteau's Emmy Award-winning *The Unsinkable Sea Otter*. He has been affiliated with numerous research facilities, including Stanford's Hopkins Marine Station and the Monterey Bay Aquarium. Jud has served on the boards of local chapters of the California Native Plant Society, the Nature Conservancy, the Sierra Club, the Audubon Society, and the Cetacean Society.

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### Scientists Meet, continued from cover

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these compounds are known to adversely impact reproductive, liver, and immune functions.

Curland reported on the work of Estes, Doak, Tinker, and Jessop, who studied health issues in Alaska, Washington, and California sea otters. This work was supported in part by FSO, and was made possible through a \$500,000 grant obtained by California Congressman Sam Farr.

Doroff et al. presented two papers on declining sea otter populations: one on otters in the Aleutians, and

the other on otters in the Alaskan Peninsula area. Estes et al. also presented a paper on the precipitous decline of sea otters in the Aleutians. Several possibilities for the decline were mentioned, including killer whale predation, decreased immune function from toxins in the food chain, decline in available food, and possible migration to other areas.

A paper by Garza, a member of the Sitka Marine Mammal Commission representing local Native peoples, discussed the local management of sea otters in Alaska. Tribal groups, especially in SE Alaska around Sitka, are allowed to take sea otters.

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## 20 Years from Now: Santa Cruz Biologists Model the Impacts of Otter Translocation

by Matt Rutishauser

Scientists in the laboratory are fortunate: they can conduct experiments to examine the outcome of their manipulations. Conservationists and wildlife managers are not so lucky: they must predict the results of their management schemes. Models are very useful in this regard as they can project the growth or decline of a population far into the future. One of the most simple population models, and an old biological riddle, involves a lily pad and a pond. If a lily reproduces once a day, producing one new lily pad, the population of lilies in our hypothetical pond will increase each day from 1 to 2 to 4 to 8, and so on. When the pond is half full, how long until the pond is full? Answer: one day. Though this is a simple model, it still generates a prediction of population size in the future and illustrates the properties of exponential growth. Under the direction of Friends of the Sea Otter (FSO), a far more complex model of the impacts of translocation on southern sea otters was recently completed. The southern sea otters south of Pt. Conception are at risk of falling victim to a failed management plan instituted in 1987, which will likely jeopardize the recovery of the sea otter.

On November 7, 1986, Congress passed Public Law 99-625, establishing a policy of zonal management and translocation for the southern sea otter. Public Law 99-625 created a "Translocation Zone" around San Nicholas Island for a population of southern sea otters which would likely survive a range-wide threat to the species, such as an infectious disease or an oil spill. In 1987, the U.S. Fish and Wildlife Service (FWS) began moving otters from their continuous range to establish this satellite population. As a compromise to commercial shellfish interests, a "Management Zone" was also established from Pt. Conception to the Mexican border. In the Management Zone, all sea otters must be captured and removed to either San Nicholas Island or their continuous range. This zonal management was contingent on non-lethal translocation methods, the success of the San Nicholas population, and assurance that the policy would not jeopardize the recovery of the southern sea otter.

The range of the southern sea otter has increased since its rediscovery and legal protection early in the 1900s. In March of 1998, sea otters dispersed south into the Management Zone. Sea otters numbered over 100 in the area between Pt. Conception and Santa Barbara, prompting fishing interests to demand their removal. FWS has been

reluctant to do this because of logistical difficulties in moving so many animals, concerns over incidental mortality from capture and relocation, and concerns over possible negative impacts to the already-declining population. On April 21, 2000, the commercial fishermen of Santa Barbara filed a lawsuit to force the FWS to remove otters from the Management Zone. In the early part of 2000, FSO identified a need to supplement the ongoing work of FWS with regards to the nature and magnitude of potential impacts from translocation. FSO requested a technical report from M. Tim Tinker, Dr. James A. Estes, and Dr. Daniel F. Doak containing an explicit and quantitative evaluation of the population-level risks associated with maintaining the Management Zone through translocation.

The authors of the report reviewed the risks and mortality associated with translocation. During capture and release of otters, even with techniques improved drastically from attempts in Alaska during the 1950s, it is quite likely that one out of ten otters will not survive either the capture, transport or immediate post-release period. Moreover, based on the more-recent translocation attempts in California, a 50% mortality during the first year after release is not unusual, and a significant number of translocated animals (20-50%) will probably attempt to return to their original range.

Tinker, Estes, and Doak used this information in a model to forecast future population sizes with and without translocation. The model incorporated data on reproduction and survival rates of otters, using previous work by Dr. Siniff and Dr. Ralls and the available survey data (see article by Jameson and Hatfield in the issue of *The Otter Raft*). Additionally, the model included the disparate rates of growth in various parts of the southern sea otter's range and movement between these areas. In other words, the model was spatially explicit. A common assumption of non-spatially explicit population models is that individuals can interact with *any* member of the population. This simplifying assumption ignores the home range of individuals and local differences in population growth. For example, a male otter off of the Monterey coast will not likely mate with a female otter living in Morro Bay. A spatially explicit model can be subtly or drastically different from a model that does not include spatial information.

Using their spatially explicit model, Tinker and co-authors ran an enormous suite of population simulations, choosing parameters for each simulation from a broad range of values above or below the values estimated from survey data. This approach accounts for the uncertainty, or fuzzy nature, of these values. The “true” values are impossible to determine, but the range within which the “true” value lies can be predicted with greater certainty. The simulations looked 20 years into the future, and allowed for a variety of assumptions about rates of population growth. The general result of translocation was found to be similar for virtually all simulations: detrimental to the southern sea otter.

The results of the model highlight the fact that translocation of otters will not only kill individual otters in transport but also be harmful to the entire population. 98.2% of 20,000 simulations resulted in decreased population size from translocation. Half of the simulations showed populations decreased by 5% or more from populations without translocation. The projected decrease in otter numbers can be explained primarily by curtailment of population growth at the edge of the range and by a negative impact on the animals in the recipient population from increased competition for resources. Four sets of simulations were run with various combinations of capture intensity and population growth.

How good are these predictions? A common way to test a model is to use it to predict the past and compare predicted with observed results. The authors tested the validity of their model by comparing the data of past surveys to predictions of their models. The model matches the observed data quite well and gives us increased confidence in the robustness of the model predictions.

The results of this report reach beyond the realm of sea otters and will be useful to many conservation biologists. Currently, the results of this modeling exercise are being prepared for publication in the primary ecological literature. Furthermore, the research conducted by Tinker, Estes, and Doak exemplifies the future efforts of FSO to improve our understanding of these animals. Their report, *Development of a spatially explicit population model to assess potential population impacts associated with translocation of sea otters from south of Pt. Conception*, was presented to FSO in October of 2000. The report has been provided to FWS for their review of the translocation program and supplemental environmental impact statement due to be completed in December of 2002. In light of the probable mortality caused by transport and the magnitude of population-wide risks, it seems highly likely that FWS will have to end the zonal management and allow southern sea otters to return to their original range.

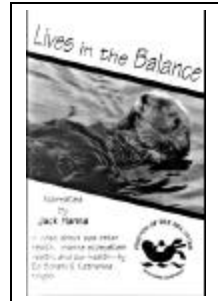
*Matt Rutishauser is the Science Director of Friends of the Sea Otter.*



**Voice from the Sea**  
Written and illustrated by  
Margaret Wentworth Owings

FSO's co-founder weaves essays, poetry, and art into an evocative portrait of nature.

**19.95**



**Lives in the Balance**  
Written by Katherine Knight  
Directed and edited by Ed Schehl  
Narrated by Jack Hanna

An FSO video about sea otter health, marine ecosystem health, and our health.

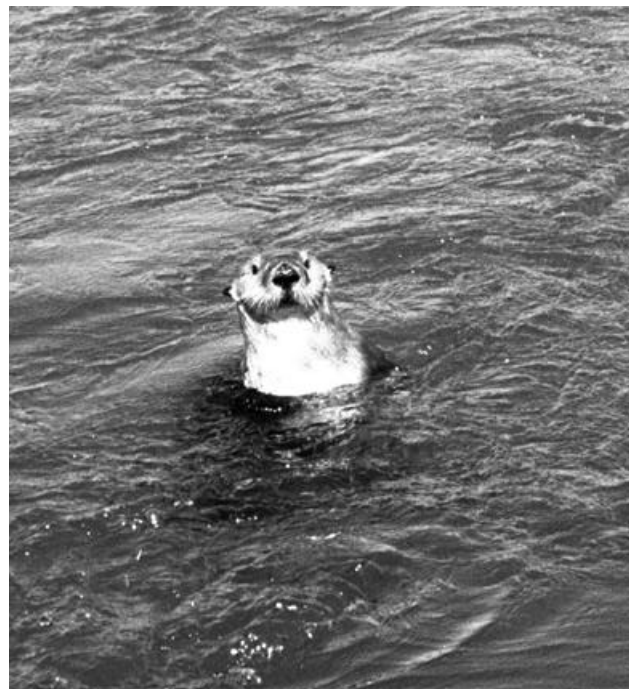
**18.00**

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Or shop our on-line store at [www.seaotters.org](http://www.seaotters.org)

*Photo courtesy of Leora Worthington.*



# Sea Otter Population Surveys: Why and How, an Update

by Ronald J. Jameson and Brian B. Hatfield, U.S. Geological Survey, Western Ecological Research Center

*The original version of this article appeared in the Otter Raft, Spring/Summer 1992*

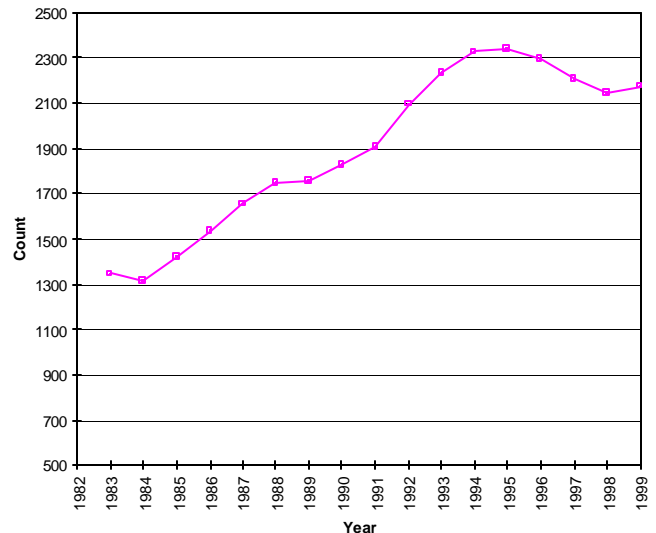
Wildlife biologists spend considerable time assessing the distribution and abundance of wildlife populations. Learning how animals are distributed (when and where they occur) is relatively easy, but determining abundance (how many) is another matter. How biologists assess abundance is often related to how they plan to use the information. For example, if the population is to be manipulated in some manner, a total population estimate may be necessary. Unfortunately, precise population estimates are difficult. Because an accurate total count of any population is nearly impossible, estimates invariably involve a fudge factor that is applied to a sample from the population.

Early estimates of the California sea otter population involved counting the population over its entire range from aircraft. Scattered throughout the survey area were ground truth stations from which skilled or sometimes not-so-skilled observers counted sea otters in small coastal segments. Ground counts were made when the aircraft flew over. By comparing the air/ground ratio, biologists derived a fudge factor for areas where otters were counted from only the air. Ground counts were called *truth* because ground counters generally see more otters (the true number) than do counters in the aircraft. A 1988 study revealed the overall probability of shore-based observers sighting sea otters out to about 1 kilometer is better than 90%. If the ground observer saw 100 otters and the observers in the aircraft simultaneously saw 75 in the same area, the observed proportion is .75, the fudge factor. The ratio is assumed to be the same everywhere, and the figure is then applied to a much larger area. If 250 otters were seen from the air, that number is divided by .75 and the estimate is 333. If the factor had been .5, the estimate would be 500, and so on. These examples are very simple, and actual fudge factor calculations may be more complicated, but are usually variations of the same theme.

More often than not, estimating the total population size is not necessary. Frequently, the salient question is not how many total individuals are in a given population, but what is the trend: is the population increasing, decreasing, or stable?

Early surveys of the California sea otter population were fraught with error because of the imprecise nature of aerial survey data. Several studies revealed highly variable data that make detection of population trends difficult.

Three-Year moving average of Spring surveys of California sea otter population, 1982-2000. A moving average better illustrates overall population trends than do raw counts.



Biologists, therefore, seek to minimize variation in survey methods. This is particularly important when the population is endangered or threatened. An imprecise method may not detect important trends in a population in time to make necessary decisions for changing the trend, and, particularly for small populations, time is often not available.

The 1979 estimate (the air/ground truth method was still in use) indicated the sea otter population in California had declined from ~ 1800 to ~ 1500 individuals (excluding pups) in the three years since the previous survey in 1976. Was this decline real or an artifact of the survey method? Because the flights were flown under less-than-ideal conditions (high wind), many thought that the decline was not real, but variation caused by poor conditions. After the 1979 survey, we contemplated developing another method. Because aerial counts were imprecise, aerial survey areas would be kept to a minimum.

Because ground counts had been considered truth in the past and most of the sea otter range in California could be viewed with relative ease from land-based stations, as much of the population as feasible could be counted from land. Therefore, in spring of 1982, while conducting a range-wide survey for tagged sea otters, Federal biologists also recorded total numbers and locations of all otters observed. However, a timely range-wide survey on the

ground would have required more people.

This first step in developing the current survey technique was important because we became convinced that we could successfully count this population, with the help of others, from ground-based stations throughout most of the sea otter range in California. During the following summer, we began to organize the prototype survey for

the fall of 1982, and solicited the help of the California Department of Fish and Game (CDFG) and other sea otter experts in the state.

The following is a summary of current methods. Segments of coastline are assigned to teams of observers. Team members are usually familiar with their assigned area, but occasionally, when short-handed, they are asked  
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Year	Season	Small Pups a	Large Pups b	Total Pups c (= a+b)	Independents d	Total Otters e (= c+d)	Pup: Independent ratio f (= (c/d) x 100)	Pup Production Index g (Spr.c + Fall.a)
1986	Spring	129	99	228	1358	1586	16.8:100	288
	Fall	60	53	113	1091	1204	10.4:100	
1987	Spring	85	141	226	1435	1661	15.7:100	273
	Fall	47	63	110	1260	1370	8.6:100	
1988	Spring	138	83	221	1504	1726	14.7:100	----
	Fall	----	No	Data	----	----	----	
1989	Spring	139	146	285	1571	1856	18.1:100	337
	Fall	52	63	115	1492	1607	7.7:100	
1990	Spring	130	84	214	1466	1680	14.6:100	281
	Fall	67	53	120	1516	1636	7.9:100	
1991	Spring	114	127	241	1700	1941	14.2:100	309
	Fall	68	70	138	1523	1661	9.1:100	
1992	Spring	145	146	291	1810	2101	16.1:100	344
	Fall	53	81	134	1581	1715	8.5:100	
1993	Spring	117	110	217	2022	2239	10.7:100	288
	Fall	71	72	143	1662	1805	8.6:100	
1994	Spring	134	149	283	2076	2359	13.6:100	343
	Fall	60	55	115	1730	1845	6.6:100	
1995	Spring	106	176	282	2095	2377	13.5:100	331
	Fall	49	88	137	2053	2190	6.7:100	
1996	Spring	136	179	315	1963	2278	16.0:100	385
	Fall	70	91	161	1858	2019	8.7:100	
1997	Spring	140	170	310	1919	2229	16.2:100	378
	Fall	68	129	197	2008	2205	9.8:100	
1998	Spring	74	85	159	1955	2114	8.1:100	250
	Fall	91	120	211	1726	1937	12.2:100	
1999	Spring	98	134	232	1858	2090	12.5:100	287
	Fall	55	107	162	1808	1970	9.0:100	
2000	Spring	119	145	264	2053	2317	12.9:100	
	Fall	N/A	N/A	199	1678	1877	11.9:100	

*The fall sea otter count began on 28 October and was completed on 13 November. Average viewing conditions this past fall were the least favorable conditions since quantifying viewing conditions began. Observers reported that surface canopies of bull kelp, *Nereocystis*, were the most abundant and widespread in many years.*

*The spring 2000 count was 2,317 (2,053 independents, 264 pups), up from the 2,090 count of spring 1999.*

*The total fall sea otter count was 1,877, 4.7% below the fall count of 1999. There was a decrease of 130 independent sea otters, or 7.2% from the previous fall count. The fall 2000 pup count increased by 37 pups, or 22.8%. This fall's sea otter count represents a 14% decrease in the total number of sea otters compared with counts of 1995. (Mailee Flower, Education Director.)*

U.S. Government regulations allow Aboriginal Peoples to take wildlife species not protected under the Endangered Species Act. The Alaskan sea otter is not at present listed as *Threatened* or *Endangered*, but it is being considered for protection due to the precipitous fall in numbers in the Alaskan Peninsula, Kodiak, and Aleutian areas.

*Disease Impacts on California Sea Otters*, by Gerber et al. included necropsy studies by David Jessop, DVM. This paper noted that the recovery rate of southern sea otters (5% per year) is slower than that of Alaskan sea otters (17% per year). The southern sea otter (California) population has declined during four out of the five most recent census years. In 1998, 213 sea otters were found dead in California. Necropsy studies by Jessop reveal new diseases not previously reported. These studies are continuing.

Hanni, Jessop et al. reported *Baseline Health Values and Juvenile Survival* with at least five pathogens involved in mortality statistics. Evidence of a decrease in natural resistance to disease was found in hematology and blood chemistry studies.

Lianna Jack of the Alaska Sea Otter and Stellar Sea Lion Commission reported *Sea Otter Bio-sampling in Alaska*. For this study Native populations assisted in recovery of carcasses, then the results were studied in a Madison, Wisconsin laboratory. Jack emphasized that take of marine mammals under the Marine Mammal Protection Act of 1972 is permitted for trade, barter, and subsistence use.

Jack et al. also reported on the *Quantification of Genetic Variation among Sea Otters (Enhydra lutris)*. Three subspecies are recognized: *E. l. nereis*, *E. l. kenyoni*, and *E. l. lutris*. Continuing genetic studies are being done for Alaskan sea otters including those in the southwest, central, and southeast regions.

Jessop et al. reported on the work done at the California Department of Fish and Game Wildlife Veterinary Care and Research Center in Santa Cruz,

California. Studies attempt to explain the decline in the southern sea otter population over the past five years. The investigators feel that the decline in the sea otter population is not just a matter affecting the sea otter, but probably the entire marine ecosystem. Causes of mortality include disease, parasites, entrapment in gill nets and fish traps, toxins impacting the immune system of sea otters, and mortality from translocation programs.

Hattori et al. reported on the *Survey of Sea Otters in the Southern Kurile Islands of Japan*. There is preliminary evidence that sea otters are expanding their range in the Kurile Islands. The use of nets for fishing in the Kuriles may increase the loss of sea otters by entanglement and drowning.

King et al. reported on *Sea Otter Mortality in Orca Inlet of Prince William Sound, Alaska*. Deaths of 234 sea otters with high parasite levels were reported near Cordova, Alaska. The parasites, previously not recorded in otters, were the result of increased consumption of fish.

Miller et al. reported on the *Protozoal Encephalitis in Harbor Seals and Sea Otters*. Two different parasites have been associated with the deaths of harbor seals and sea otters. Infections in both marine mammal species have been uniformly fatal until recently, when treatment has been successful in a few cases. The source of the infection is still unknown.

Roberts discussed the *Alaska Sea Otter and Stellar Sea Lion Commission History and Involvement in Co-management Activities*. The Commission is a tribal consortium and involves the Native Alaskans in research.

Sanders reported on *Reevaluation of the Southern Sea Otter Translocation Program in California*. The San Nicolas Island translocation is felt to be less successful than translocations in other areas, and the population has not thrived as had been expected.

to count outside their usual area. Teams consist of a principal and secondary observer. The principal observer is usually the most experienced and responsible for counts of groups and scans offshore areas with a high-powered (50X) telescope. The principal observer also records data and decides whether conditions are favorable for counting and when to end the count. The secondary observer helps by constantly scanning the area with binoculars for otters that the principal observer may have missed. Observation sites overlap and are selected so the entire offshore area can be viewed. Surveys are generally made during the mid-morning to early afternoon hours, when the highest proportion of sea otters are resting.

Data are recorded on large-scale maps (1:6000) showing the outline of local kelp beds and prominent geographic features. Each record includes number of independent otters, number of pups (pups are categorized as small [wooly pelage present] and large [wooly pelage absent]), behavior (resting, feeding, other), associated kelp, and group size.

Coastal segments difficult to count from land or inaccessible are counted from aircraft at an altitude of

approximately 200 feet. In recent years, the aerial portion of the survey has been conducted by CDFG with the assistance of Monterey Bay Aquarium personnel. The aerial survey team consists of three observers and the pilot. One team member also records data, and all team members are linked through a radio intercom system. Data previously were recorded on the same kind of maps used by ground counters but now are entered directly into a geographic information system-linked database in the aircraft. Pups are difficult to discern from the air, and, therefore, relatively few are seen during aerial surveys. Generally,  
*Continued on page 11*

## ANNUAL MEETING

### Mark Your Calendars Now!

Friends of the Sea Otter's Annual Meeting will be held at the Monterey Bay Aquarium on Saturday evening, October 13, 2001 at 6:00 p.m. preceded by a private peek at the Aquarium's resident sea otters beginning at approximately 5:30 p.m.

The entire board, and staff, extend an invitation to all members. We hope that you will be able to attend. It will be a pleasure to meet our members.

Detailed announcements will be mailed to our members in September.

## Membership Dues to Increase


We regret having to raise our membership dues for the first time since 1993, but trust our members will understand we are forced to do so due to increased operating costs and the major efforts we have undertaken on the otter's behalf over the past several years.

### Membership Level

Senior Member (65+)	\$ 15.00 yr.
Student Member	15.00 yr.
Classroom	30.00 yr.
General Member	30.00 yr.
Couple	40.00 yr.
Family	50.00 yr.
Foreign (Outside USA)	50.00 yr.
Foreign Family (Outside USA)	60.00 yr.
Contributing	75.00 yr.
Supporting	125.00 yr.
Sponsor	500.00 yr.
Benefactor	600.00 yr.
Lifetime	750.00
Patron	1,000.00 yr.
Philanthropist	5,000.00 yr.
Sustaining support	_____

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Friends of the Sea Otter 

2150 Garden Road, Suite A-3  
Monterey, CA 93940

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## WHAT TO DO FOR AN OTTER IN TROUBLE

The California sea otter is a threatened species, fully protected by both state and federal law. Harming or harassing an otter is punishable by a fine, imprisonment and/or both. Unauthorized people are not allowed to handle otters (and wild otters should never be fed).

Those of us who live near or visit the coast can help supplement the efforts of state and federal wildlife agencies to protect the otters:

**EMERGENCY ONLY - DIAL 911** (i.e. shooting at otters). Fish & Game, Highway Patrol, or Sheriff will respond. Give details (license number of car or boat, description of suspect, location, time, etc.) Leave name and phone number in case you need to be recontacted.

**OTTER IN DISTRESS - DO NOT TOUCH** (It is illegal, you will frighten the otter and may receive a serious bite). Keep bystanders and dogs away. Call number below, have someone stay until help arrives.

**ORPHANED PUP** - If still swimming in water, leave pup alone in case mother returns. If no sign of her after an hour, call number below. If pup is up on shore, do not touch unless absolutely necessary, then place in box in cool, quiet place. Call number below immediately. Never cover an otter - it will overheat.

**DEAD OTTER** - Do not touch unless necessary to keep from washing out to sea. Call number below so otter can be quickly recovered to determine cause of death.



### WHERE TO CALL— LIFELINES FOR SEA OTTERS:

#### **LIVE OTTERS:**

Monterey Bay Aquarium Security Desk:  
(831) 648-4840 — (for otters in distress/injured)

Marine Mammal Center:  
(831) 633-6298 — Moss Landing  
(415) 289-7325 — Sausalito

#### **DEAD OTTERS:**

Monterey Bay Aquarium Security Desk:  
(831) 648-4840

California Dept. of Fish and Game:  
(831) 469-1719

#### **VIOLATIONS:**

National Oceanic and Atmospheric Administration (NOAA):  
1 (877) 466-9155 (Violations — 24-hour #)

Carol Teraoka \* (831) 647-4203

\*Special Agent handling all violations related to enforcement of the MMPA, ESA, and Monterey Bay National Marine Sanctuary regulations.

California Dept. of Fish and Game:  
(888) 334-2258

**For otters being subjected to reported harassment and/or harm; this number is used for enforcement issues.**

National Marine Fisheries Hotline:  
(800) 853-1964  
(831) 647-4220 — Roy Torres (Sea Otter Harassment after the fact)

#### **ALL OTHER LIVE MARINE MAMMALS:**

Marine Mammal Center:  
(831) 633-6218 — Moss Landing  
(415) 289-7325 — Sausalito

## FSO Extends Its Range

Christy Nielson is doing volunteer work for Friends of the Sea Otter in the Los Angeles area. She is making presentations at conservation events to inform the public about sea otters. The presentation is particularly successful because of a comprehensive teacher's pack compiled from *Raft* articles and FSO public handouts. Her first two events of the new year were for "Whale of a Day" at Rancho Palos Verdes and the "International Day of the Seal" at the Marine Mammal Care Center at Fort MacArthur. Her next event is the "Whale Fiesta," Sunday, June 3, from 10:00 a.m. to 4:30 p.m. at Cabrillo Marine Aquarium. If you live in Southern California, you can see FSO in action there.

— Submitted by FSO volunteer Leora Worthington

## Oregon the Land of Oz

*World's first southern sea otter conceived, born and raised by his mother has a new name! Zoo voter's choose Oz by a landslide - February 13, 2001*

Portland, Ore.—The ballots have been counted and the official vote results are in—the Oregon Zoo's sea otter pup will be named Oz (nicknamed Ozzie). At 10 a.m. this morning Oregon Secretary of State Bill Bradbury certified the vote and zoo Director Tony Vecchio made the official announcement of the pup's name in front of the zoo's Steller Cove exhibit.

Marine life keeper Jeremy Goggins championed the new name for the first pup in the world to be conceived, born and raised by his mother in any zoo or aquarium. "It's like a dream that this little pup has done so well—especially since no other zoo-born southern sea otters have survived," said Goggins. "I liked Oz because the initials represents the Oregon Zoo, which will forever link the pup to the place of his birth." Born on January 3, the pup surprised marine life keepers because both his mother Thelma and father Eddie were considered too young to have offspring.

— From Oregon Zoo's website at:  
<http://www.oregonzoo.org/News/news.htm#oz>

## Special Thanks to Donors

We are filled with gratitude for our donors—some have recently joined us as new members, while others who have been generous to us before have continued making liberal donations and renewing memberships. We are very fortunate to have the support of our members.

It is not possible at this time to list each new member and donor individually. We have experienced computer problems and did not want to delay the printing of this issue until the problem was corrected.

We are grateful to all our members, and the otters thank you too!

## Volunteers Needed

We are looking for individuals to work at least two four-hour shifts per month at our Education Retail Center on Cannery Row. Please call Center Director Esther Trosow at (831) 642-9037 if you can help.

less than 30% of the total during any survey of the California sea otter population is counted from the air.

Field methods have changed very little since we began the surveys, but tabulation of data has changed significantly. During the early years of using the ground-count method, results were tabulated and totals calculated by hand. This was time-consuming and subject to errors. Now data are entered directly from field maps into a computer data base. This is done by overlaying maps onto a calibrated digitizing pad and using computer software that recognizes each map and automatically calculates the location of each observation. Once entered, the results are automatically summed by the computer.

In most years, we complete two surveys, one in the spring and one in the fall. Two counts render two independent data sets each year to track population trends and allow calculation of a minimum number of pups produced each year. The calculation is simple: add the number of pups counted during spring (both small and large) to the number of small pups counted the following fall. Because sea otter pups usually have shed their wooly coat by three months of age, it is unlikely that any small pups counted in the spring would be recounted as small pups the following fall. The count is conservative, but still provides a valuable index of yearly pup production.

Since we began our surveys in 1982, the population has increased, based on spring counts, about 81%, or by an average annual rate of about 3.7%. Growth has not been constant since 1982. The population seems to have remained stable from 1982-1985. The increase began between 1985 and 1986 and continued through 1995. In 1996 a decline began that continued through 1999, but the spring 2000 count nearly reached the 1995 level. Examination of counts from the range-wide surveys in the late 1970s and 1980s, suggest the population declined during the period. The decline has been attributed to the increased use of near shore set nets in the sea otter range. The CDFG estimated 80 sea otters were killed in set nets annually. This was more than adequate to account for the stabilization or decline in the population during the period. California lawmakers passed legislation in 1982 restricting the use of set nets in Monterey Bay. By early 1985, set nets were restricted to water deeper than is commonly used by sea otters for foraging through most of the sea otter range in California. By 1986 the sea otter population was again growing. We hope that the 2000 count indicates an end to the recent decline observed from 1995-1999, and the population will resume its pre-1995 rate of increase.

*Ron Jameson is a research biologist with the United States Geological Survey. He began his research in 1970 on the translocated sea otter population in Oregon. Since then, he has accumulated over 30 years of knowledge on the behavior, population biology, and ecology of sea otters, and is a recognized expert in the field. He currently spends most of his time doing surveys of and conducting research on the Washington sea otter population.*

*Brian Hatfield is a wildlife biologist with USGS, stationed at Pt. Piedras Blancas, who began studying sea otters in 1978. He took over coordination of the range-wide surveys in California from Ron in 1995. He also coordinates the Southern Sea Otter Stranding Network. He spends time each summer in Alaska or Washington State conducting field work in support of sea otter projects.*

## From the Otter's Trove

These handcrafted sterling silver earrings measure approximately 3/4" in diameter, and depict two otters frolicking in a circle of kelp.



They are available for \$15.50 at FSO's Education Retail Center 381 Cannery Row #Q Monterey, CA 93940 (831) 642-9037 Toll-free order line: (800) 279-3088

Or shop our on-line store at [www.seaotters.org](http://www.seaotters.org)



*The Otter Raft is a twice-yearly publication designed to educate the public about the mission of Friends of the Sea Otter, increase awareness of the situation and needs of the sea otter, and recognize those who contribute to meeting those needs.*

Co-Editors: Art Haseltine, Esther Trosow

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**The Otter Raft** · Spring/Summer 2001

*Address Correction Requested*

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## Our Mission

Friends of the Sea Otter (FSO) is a not-for-profit organization founded in 1968 dedicated to the protection of a rare and threatened species, the southern sea otter, as well as sea otters throughout their north Pacific range, and all sea otter habitat.

*Photo courtesy of Warren L. Worthington.*

