



Healthy Oceans ~ Healthy Planet



ANNUAL REPORT 2009

» A MESSAGE FROM THE PRESIDENT

I am happy to present our 2009 annual report on the activities of Hubbs-SeaWorld Research Institute. As we approach the close of the first decade of the new millennium, we can reflect on how some of the changes in the world have affected the way our scientists conduct their research.

Like everyone else, our Institute has had to adapt to the ongoing pressures caused by the sluggish economy. However, through some expense-reduction measures, along with delaying the strategic initiatives we adopted in our last Five Year Science Plan, we have been able to weather the economic uncertainties.

In spite of these challenges, we have had some great successes over the last year. Our scientists continue to perform amazing research all over the world and maintain an unparalleled track record of results, including a marine finfish replenishment

program, the world's biggest whale shark research program, groundbreaking marine mammal research, and critical breakthroughs in the area of noise impacts on animals. We moved into our newly-renovated marine research facility on the Archie Carr Wildlife Refuge on Florida's East Coast and are planning for expanded growth in Brevard County, Florida. Through these hard times and the transition of ownership of the SeaWorld Parks and Entertainment Company, our cooperative efforts with that company's curatorial, veterinary and education personnel and its leadership team remain strong.

Furthermore, our Science Committee is currently drafting a new Plan to accommodate the escalating need for a greater understanding of the changes at work in the natural world. Only by providing the results of objective scientific studies can we ensure that

human activities today do not limit future animal and human populations from enjoying a rich and diverse natural world. Within this context we find the Institute's mission to be as timely as ever.

With a new administration in Washington, D.C., there are many new initiatives now being undertaken to complement existing resource management goals. Some of these may have very long lasting impacts on how our nation interacts with the marine environment and should therefore be supported by the best available science. Albert Einstein is reported to have said: *Any fool can make things bigger, more complex, and more violent. It takes a touch of genius-and a lot of courage-to move in the opposite direction.* For resource management to be effective it has to be understandable and acceptable and that requires sound science.



As we move forward into the next decade, it is important that the Institute's scientists continue to provide the information needed to allow future generations to enjoy a bountiful and healthy natural world. We thank you for your past support and welcome your interest in moving our scientific research mission forward.

Don Kent
President

» A MESSAGE FROM THE CHAIRMAN

I wish you could have joined me at one of our quarterly Board of Trustees meetings in 2009. You would see just how dedicated the Trustees are to the Institute's mission, "to return to the sea some measure of the benefits derived from it." Perhaps the information contained in this annual report may be the "next best thing" to attending one of our meetings.

Although our Trustees are not "in the field" tagging whale sharks in the Maldives, releasing white seabass to replenish our wild fisheries, or rescuing stranded dolphins, we still share in the vision of people like my father and his colleagues who founded this extraordinary research organization to ensure the continued health of our important ocean resources.

As you read through the pages of this annual report, I hope you feel the same sense of encouragement and optimism we on the Board have felt for years. Granted, there's a fair amount of financial oversight and policy setting involved with being a Trustee. But there are also many intrinsic rewards to the job. There is the tremendous sense of accomplishment we feel when our scientists report to us on the results of their research, and satisfaction in knowing that this research will leave the world a little better for our children and their children. We Trustees take great pride in our Institute especially at any one of our annual social functions.

While I know you will enjoy the information found in this issue of the annual report, please

know this is not the only source of information on the Institute. In fact, if you haven't checked out our Web site lately (www.hswri.org), you may not be aware of the new information that exists at our recently renovated site. I am also very happy to announce that we are now on networking sites like Facebook (www.facebook.com/hswri) and Twitter (www.twitter.com/hswri). I hope you will not only join us on these sites but will also share this good news with your friends.

Over the years Hubbs-SeaWorld Research Institute has solved many scientific problems, made many scientific discoveries and answered many challenging questions concerning our oceans and the animals that inhabit them. I believe that human interactions with ocean



world is becoming increasingly important and the work of the Institute becomes more critical with each passing year.

Thank you for your interest in and involvement with Hubbs-SeaWorld Research Institute.

Bill Shedd
Chairman

» CHAIR EMERITUS

Milton C. Shedd (deceased)

**» CHAIR EMERITUS
SCIENCE COMMITTEE**

Clark Hubbs, Ph.D. (deceased)

» CHAIRMAN OF THE BOARD

William Shedd
AFTCO Manufacturing Company

**» BOARD OF
TRUSTEES**

Bradley F. Andrews
SeaWorld Parks & Entertainment

James Atchison
SeaWorld Parks & Entertainment

William Bieberbach
W.H. Bieberbach and Associates

K.C. Bishop, III, Ph.D.
Chevron Corporation

Dan Brown
*SeaWorld Orlando, Discovery Cove
and Aquatica*

Arthur DeFever
DeFever Marine Enterprises

Andrew Fichthorn
SeaWorld San Diego

Robert C. Fletcher

Harold W. Furman, II
The Furman Group

J. David Gardner, Sr.
Highland Partnership, Inc.

Todd W. Gutschow

William Herzig
Darden Restaurants

Murray Hutchison
TEPPCO Partners

Frank L. Murru
Kerzner International North America, Inc.

Jerry Sansom
JHS Legislative Consultants

Jerry Siegel
Peartrees Catering, Inc.

Kenneth Wright
Shutts & Bowen, LLP

» TRUSTEES EMERITUS

Senator Dede Alpert
Char DeMotte
George Gildred

» OFFICERS

Donald B. Kent, M.S.
President and CEO

Pamela K. Yochem, D.V.M., Ph.D.
Executive Vice President

Bethany Smith, M.B.A.
Chief Financial Officer

» DEVELOPMENT DIRECTORS

J.B. Kump
Karen Terra

Our researchers are the heart of the Hubbs-SeaWorld Research Institute. Individually and collectively, our scientists are the foundation of the Institute's creativity, scientific accomplishments, and world-wide reputation.

They are responsible for:

- developing and implementing the research and conservation initiatives of the Institute.
- mentoring young scientists and students.
- interacting with the public, policy makers and the broader scientific community.
- generating revenues through grants and contracts that are essential to the continued existence of the Institute.

**» SENIOR RESEARCH
SCIENTISTS**

Ann E. Bowles, Ph.D.
Mark Drawbridge, M.S.
Donald B. Kent, M.S.
Brent Stewart, Ph.D., J.D.
Pamela K. Yochem, D.V.M., Ph.D.

» SENIOR RESEARCH FELLOWS

Llewellyn M. Ehrhart, Ph.D.
Richard F. Ford, Ph.D.
Don Hunsaker II, Ph.D.
Daniel K. Odell, Ph.D.

**» SENIOR RESEARCH
ASSOCIATES**

Hendrick Nollens, D.V.M., Ph.D.
Judy St. Leger, D.V.M., DACVP
Graham Worthy, Ph.D.

**» POSTDOCTORAL
RESEARCH ASSOCIATES**

Martha Keller, D.V.M., M.S.
Refugio Robles-Sikisaka, Ph.D.

» RESEARCH SCIENTISTS

Wendy Noke Durden, M.S.
Kristen Gruenthal, Ph.D.
Dave Jirsa, M.A.
Rebecca Rivera, Ph.D.
Michael Shane, M.S.
Jeff Smiley, M.S.
Megan Stolen, M.S.
Paula Sylvia, M.S., M.B.A.

Increasing competition for decreased funding from traditional sources, coupled with new opportunities provided by the American Recovery and Reinvestment Act of 2009, resulted in unprecedented grantsmanship by our principal investigators. With the support of the HSWRI management, administrative, institutional relations, and development teams, our scientists submitted 41 proposals (for over \$10 million) in 2009. This is *four times* the average number and *over five times* the average dollar amount of proposals submitted during the previous three years. Our track record in average years is excellent: grants and contracts typically provide approximately 75% of HSWRI's annual operating budget and our proposals enjoy a funding success rate of 30% (that meets or exceeds national standards). To date, 14 of the 2009 proposals have been funded, 18 have been rejected and nine are still in review

» AQUACULTURE

Hubbs-SeaWorld Research Institute has released more than 1.4 million tagged white seabass under the auspices of the Ocean Resources and Enhancement Hatchery Program (OREHP) since the hatchery was dedicated in 1995. Approximately 136,000 fish were released in 2009.

A review of white seabass mark-recapture data was conducted in collaboration with the Imperial College of London.

- Number of white seabass recaptured to date: 1,822
- Range of time at liberty before capture: 1 – 4,848 days (12.9 years)
- Range of size at recapture: Weight under 1 lb to 33.8 lb, Length 6.42 to 49.45 in
- Number of white seabass recaptured so far this year: 26 (age range 3.7 – 12.1 years)

Research to refine larval rearing techniques for California

yellowtail and white seabass continued in 2009. Recent genetic analyses of broodstock spawning patterns have been very instructive and will lead to revisions in the white seabass broodstock management plan.

Experiments to evaluate the effects of replacing fish meal and oil in the diets of white seabass and California yellowtail continued in 2009 as part of HSWRI's research into alternative feeds for marine finfish.

A commercial-scale offshore aquaculture demonstration project off Islas Los Coronados, Mexico is in final planning stages. Permits are in hand and three species of fish (striped bass, California yellowtail and California halibut) are receiving their final pre-transport health checks at HSWRI.

» BIOACOUSTICS

The HSWRI bioacoustics team participated in the first-ever

hearing test of a short-finned pilot whale in collaboration with the U.S. Navy Marine Mammal Program and SeaWorld San Diego in September 2009. Follow-on research is expected in 2010. The project showed that cutting-edge electrophysiological methods can be used practically to assess the hearing of larger whales in an oceanarium setting.

Other milestones:

- New analytical tools acquired in 2009 resulted in a five-fold increase in the speed of extracting killer whale calls from acoustic recordings in the HSWRI database. The bioacoustics team is now using the new tools to process data from over 300 hours of recordings of killer whales to obtain samples of individual calls and document the social factors that shape adult killer whale communication. HSWRI and engineers from the University of Washington are involved in a ground-breaking

collaborative effort to apply human speech-processing techniques to the largest database of killer whale calls of known identity in the world. When fully developed, the method is expected to improve dramatically the speed and accuracy of individual identification in both oceanarium and wild settings.

» ECOLOGY

The whale shark research program at HSWRI is the largest, geographically broadest and longest running program of its kind in the world. Since 1992, HSWRI has tagged 141 whale sharks worldwide in Baja California (17), Kenya (20), Western Australia (65), the Maldives (29) and the Philippines (10) with tracking devices to determine the geographic and vertical habitats and movements of the world's largest fish. Results from the past several years indicate that most sharks are highly mobile but are not

HSWRI scientists are refining larval rearing techniques for California yellowtail.



The HSWRI bioacoustics team is studying hearing and vocalizations of Sully, the rescued pilot whale.

HSWRI scientists have been studying elephant seals (pictured) and other marine mammals on the California Channel Islands for 30 years.



moving among the tagging sites in the Indian Ocean where seasonal aggregations occur. The studies also indicate that whale sharks are constantly moving up and down in the water column, coming to within a few meters of the sea surface and then diving to depths of about 4,800 feet where water temperature ranges from 31 degrees celsius to 4 degrees celsius.

- Western Australia: 11 sharks tagged; data recovered remotely from 3 of 6 satellite-linked 'pop-up' archival tags (the other 3 are due to detach from sharks in several months); 2 of 6 data storage tags have been recovered (these are not linked to a satellite and must be recovered by hand; the remaining 4 will be recovered in May and June 2010).
- Maldives: 21 sharks tagged; data recovered remotely from 9 of 10 satellite-linked pop-up tags; 7 of 17 data storage tags have been recovered (the remaining 10 will be recovered within the next several months).
- Philippines: 10 sharks tagged; data have been recovered from all 10 and two tags have been physically recovered and the fine resolution data retrieved.

Long term ecological research programs are one of HSWRI's strongest assets: 2008-2009 marked the 30th year of uninterrupted study of marine

mammals at the California Channel Islands. Field research on seal and sea lion population trends and habitat use continued in 2009, as did investigations into factors that may be influencing these trends. Scientists, collaborators and students associated with HSWRI have been studying marine vertebrates in the Indian River Lagoon (IRL), Fla., nearly continuously since the late 1970s. Nine aerial surveys and 22 boat surveys of the IRL and nearby waters were conducted by HSWRI scientists in fiscal year 2009 to evaluate habitat use and movement patterns of bottlenose dolphins. Collaborative research (with the University of Central Florida) continued on sea turtles nesting in the area, adding to a data record dating back several decades.

» PHYSIOLOGY/OCEAN HEALTH

The Center for Marine Veterinary Virology (CMVV) at HSWRI, a partnership among HSWRI, the University of Florida, SeaWorld San Diego and the Navy Marine Mammal Program, was established in 2006. During the past three years, the CMVV has discovered over 28 new marine mammal viruses and developed 675 primers to detect viruses. Previously, only 11 marine mammal viruses had been reported in bottlenose dolphins and sea lions. Tests for these viruses are providing new tools for evaluation of the health of marine

mammals, including free-ranging and stranded animals as well as dolphins and sea lions in managed collections.

The HSWRI marine mammal stranding team responded to 68 strandings along the eastern central Florida coast during 2009, and conducted post-release monitoring of two bottlenose dolphins that were rescued, radio-tagged and tracked in the Indian River Lagoon, Fla. The number of stranded animals recovered in 2009 is: 64 bottlenose dolphins, 2 dwarf sperm whale, 1 pygmy sperm whale, and 1 unidentified delphinid.

» OCEAN SCIENCE LITERACY

The monthly Hubbs Science Lecture series in California celebrated its tenth year in 2009. In 2010, the series will celebrate International Biodiversity Year, a United Nations-sponsored effort to raise public awareness of ongoing threats to the world's biological diversity. In addition to public speaking engagements and scientific presentations, the HSWRI team participated in numerous hands-on educational workshops or experiences (visit hswri.org for a complete listing).

Education and outreach initiatives (including internships, workshops, lectures, ocean-themed curricula) have been developed with the SeaWorld Education Department, university

collaborators (University of Central Florida, Scripps Institution of Oceanography), other science partners (San Diego Natural History Museum, Marine Technology Society, NASA, San Diego Zoo/CRES, National Science Foundation, NOAA) and K-12 partners (individual teachers, schools and districts in California and Florida). A list of graduate students and post-doctoral research associates working with HSWRI scientists can be found at hswri.org.

» FACILITIES EXPANSION

The HSWRI laboratory in Melbourne Beach, Fla. opened for business in September 2009. The property, located on the Indian River Lagoon within the Archie Carr National Wildlife Refuge, contains a dock, a two-story building with offices, meeting rooms and temporary housing for visiting scientists and a one-story building containing a laboratory and storage for field equipment and other materials. SeaWorld Orlando is also providing office space in its 'Places of Learning' education building to support HSWRI scientists working with park animals or responding to marine mammal strandings, and to provide support for administrative and development activities in the Orlando area.



The HSWRI marine mammal stranding team responded to 68 strandings along the eastern central Florida coast in 2009.



Student interns help with a cabezon tagging project



HSWRI's newly renovated laboratory in Melbourne Beach, Florida opened for business in September 2009.

The Milton and Peggie Shedd Endowment Circle recognizes those who have contributed to our endowment fund which is designed to ensure our research programs for generations to come:

Jill and Bill Shedd
Carol Shedd McCarren
Terri and Frank Murru
Peggie Shedd
Terri and Steve Shedd

The Carl L. and Laura C. Hubbs Legacy Circle recognizes contributors who are planning to leave lasting legacies through bequests and trusts:

Anonymous
The David DeMotte Family
Kimberley and Sheldon Fisher
Ronnie Hunter
Carla Laemmle
Caroline McKeon
Myron Noedecker
Linda and Jack Miller
Linda Sue Shelton
Tammy and Dr. Graham Worthy

Thanks to the commitment and generosity of our supporters, Hubbs-SeaWorld Research Institute scientists are able to continue to provide sustainable solutions to complex conservation problems. We are extremely grateful to those individuals, foundations and corporations listed below who have generously provided support since July 2008.

» \$1,000,000+

SeaWorld Parks & Entertainment*
Chevron Corporation*

» \$100,000 TO \$499,999

Catalina Sea Bass Fund*
Darden Restaurants Foundation*
The David DeMotte Family*
Gabooney Foundation
The Todd and Mari Gutschow Family Foundation*
William M. and Catherine H. Horstman Trust
Carol Shedd McCarren*
Jill and Bill Shedd*
Peggie Shedd*
Terri and Steve Shedd*

» \$50,000 TO \$99,999

Anonymous*
Brevard County Tourism
Development Council
Cruise Industry Charitable Foundation
Discovery Cove
Indian River Lagoon Broodstock Management
Kerzner International, Inc.
SeaWorld & Busch Gardens
Conservation Fund
SeaWorld San Diego
SeaWorld Orlando
J.W. Sefton Foundation

» \$25,000 TO \$49,999

AFTCO Manufacturing Company, Inc.
Roberta and Malin Burnham*
Ruth and Arthur DeFever*
Mrs. Hiroko Drogin
Sally and Hal Furman, II*
Carolyn and David Gardner, Sr.
Alison and George Gildred*

Grosvenor Family Foundation*
Victoria and Murray Hutchison*
NRG Energy, Inc.*
The Rivkin Family Foundation
U.S. SCUBA Center*

» \$10,000 TO \$24,999

Appreciation of Earth & Animal Foundation*
The Bob Baker Foundation, Inc.
Jane and Bill Bieberbach
Kids Making a Difference*
Myrt Eller*
Everingham Bros. Bait Co.*
Jane and Thompson Fetter*
Anne and Bob Fletcher
Jeanne Frost*
Mr. and Mrs. Gordon T. Frost, Jr.*
Joy and Jim Furby*
Jo and Tom Hazard*
Chin-Yeh and Ambassador Charles Hostler*
Mrs. Catherine Hubbs*
Drs. Doris and John Hubbs
Jim McEvoy*
Project AWARE Foundation
Dixie and Jerry Sansom*
Tuna Club Foundation
David Wirth
Anne and Tig Wohlford*

» \$5,000 TO \$9,999

Senator Dede and Michael Alpert*
Alice and Brad Andrews*
Jennine and James Antrim*
Elli and James Atchison*
Karen Boudreau and Dr. Thomas Jensen*
Dr. Ann Bowles*
Lou and Dr. Ken Bowles*
Sandy and Dennis Burks

Chefs de Cuisine Association of San Diego
Jinx Ecke
Julie and Pete Ensor*
Kim and Andy Fichthorn*
Eve Heame*
Cara and Don Kent*
Lockheed Martin
Nancy and Tony McCune
Park Plaza Gardens Restaurant*
Saltwater Fly Rodders Pacific 1*
San Diego National Bank
Sandy Sanderson*
Seaforth Sportfishing
W. Kelly Smith*
Karen Terra*
USA Employee's One Fund*
Mr. and Mrs. Warren Williams*
Drs. Pam Yochem and Brent Stewart*

» \$2,500 TO \$4,999

Aqua Logic, Inc.*
Ruth Covo Family Foundation*
Famous Trails/Mantis Knives
Houck Foundation*
Holiday Inn on the Bay
Barb and Dr. Don Hunsaker, II
ITV Group, Inc.*
Ann Marie and David Lambillotte*
Linda and Jack Miller*
Mark Oronoz/Pacific Voyager Sportfishing
Big Mo & The Full Moon Band
Peartrees Catering
SeaGrant California
Bethany Smith*
Bernice Stark and Myron Nodecker*
Sushi on a Roll
Jonnie and Jim Swann*
Ken Wright*

» \$1,000 TO \$2,499

The Abalone Farm
American Bronze Foundry*
The Avalon and the Aurora Hotels
Kathy Awbrey
Rose and Daniel Brown*
Carlsbad Aquafarms
Catalina Offshore
EuroGraphix & EuroPrint *
Nellie and Santana Gonzalez*
Amy Hammer
Hotcha Salsa
IGFA
James & Joseph Chandlery
Vicki and Mohammed Mansouri
Morley Construction Company

National Culinary School
Rey Ochoa
Pezco SA de CV
Ingrid and Bill Poole
Trudy and Michael Pearlman*
Marilyn Quon
Jeanette and Dr. Sam Ridgway
San Diego Fish and Wildlife
Elinor Schmidt
Schultz Family Foundation*
Shirley & J. B. Kump
Sterling Caviar
Wasdin Associates, Inc.
Yellow Dog Café

*indicates current Society Member

» CREATING A LEGACY THAT "RETURNS TO THE SEA FOR AN ETERNITY"

You can play a significant role in assuring the success of our mission through planned giving in the form of a bequest or trust. Even persons of modest means can become donors and enjoy deep personal fulfillment as well as recognition and lifetime benefits. Your remembrance of Hubbs-SeaWorld Research Institute will provide our dedicated scientists with the necessary equipment and capital to continue to conduct vital marine research. Moreover, your bequest can help unlock some of the most mysterious questions of the sea and ensure that we conserve our oceans for future generations to enjoy.

It is important that everyone has a Will and that it is carefully thought out and kept up to date. The Trustees and staff at Hubbs-SeaWorld Research Institute respectfully request that you consider remembering the Institute and its research as you make important decisions. We believe your bequest should be looked upon as an investment in the future. Like other investments, your bequest should bring personal satisfaction.

Additionally, if you have property and/or appreciated securities that could be offered today to support our research projects, our staff would be happy to talk with you. Beyond knowing that you will *"return to the sea some measure of the benefits derived from it,"* you may also receive significant tax benefits.

To discuss your particular interests, please call Karen Terra in California at 619-226-3881 or JB Kump in Florida at 321-327-8970. If you have already included the Institute in your estate plans, please let us know so that we may properly recognize you.

This listing is comprised of donors who supported Hubbs-SeaWorld Research Institute from July 2008 through September 2009 and represents lifetime giving. Though we take every possible step to ensure its accuracy, with a list of this nature it is possible that an oversight has occurred. If your name has been omitted or there is an error in the listing, we apologize and ask that you contact us at 619-226-3871 or solutions@hswri.org.

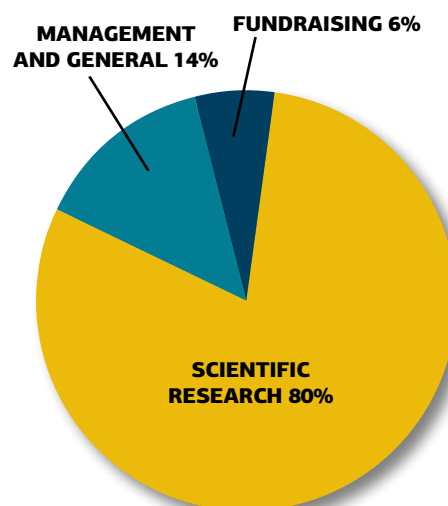
» REVENUE

Research Contracts and Grants	\$5,252,473
Unrestricted Gifts	1,036,126
Restricted Gifts	22,800
Other Revenue	42,910
Total Support Revenue	\$6,354,309

» EXPENDITURES

Scientific Research	\$4,650,412
Management and General	843,128
Fund Raising	328,297
Total Charitable Expenses	\$5,821,837

» CHARITABLE EXPENDITURE BREAKDOWN BY PERCENTAGE



A copy of the audited financial statement is available upon request by calling 619-226-3870



**HUBBS-SEAWORLD
RESEARCH INSTITUTE**

HEADQUARTERS

2595 Ingraham Street
San Diego, CA 92109
Tel: 619-226-3870
Fax: 619-226-3944

**LEON R. HUBBARD, JR.
MARINE FISH HATCHERY**

4200 Garfield Street
Carlsbad, CA 92008
Tel: 760-434-9501
Fax: 760-434-9502

FLORIDA RESEARCH CENTER*

3830 South Highway A1A #4-181
Melbourne Beach, FL 32951
Tel: 321-327-8970
Fax: 321-327-8973

www.hswri.org

www.facebook.com/hswri

www.twitter.com/hswri

This annual report was made
possible by a grant from
Chevron Corporation

*A copy of the official registration
and financial information may be
obtained from the Florida Division
of Consumer Services by calling
toll-free 1-800-help-fla (435-7352)
within the state. The registration
number issued to HSWRI in Florida
is CH10200.