



# UNIVERSITY OF HAWAI'I

## TESTIMONY

**UOH-881 Aquaria**

Testimony Presented Before the  
Senate Committee on Education and House Committee on Higher Education

January 5, 2007

by

Andrew Rossiter  
Director, Waikiki Aquarium

House Committee on Finance  
Budget Requests for Biennium Budget 2007 – 2009  
January 2007

Program I.D. and Title: UOH-881, Aquaria

**I. INTRODUCTION:**

**A. Summary of Program Objectives**

Act 184 (SLH 1995) designates the Waikiki Aquarium as the State Aquarium, and further provides that the objective of the UOH-881 program is to enrich the lives of people of all ages by providing public programs, education, research, and exhibits of the aquatic life of Hawaii and the Pacific. The Aquarium is administered through the Office of the Vice Chancellor for Research and Graduate Education at the University of Hawaii-Manoa.

**B. Description of Program Objectives**

The Aquarium's mission is 'To inspire and promote, understanding, appreciation and conservation of Pacific marine life'. It achieves this through a set of diverse activities and programs relating to education, exhibitry and research.

**1. Education Programs**

Marine science education is a vital component of the Waikiki Aquarium. Education programs emphasize scientific literacy and conservation education, and reach a large target audience. In FY06, over 33,000 school students, teachers, families, and individuals utilized Aquarium education programs, where they received marine science instruction from three full-time education staff, five University of Hawaii student workers, eight affiliate staff from Hawaii's research, education and environmental communities, and more than 30 trained volunteers.

Additionally, the majority of our 326,800 visitors were reached through on-site interpretation at our outdoor reef touch pool staffed by approximately 70 volunteers and one staff educator. The Aquarium is a recognized education leader statewide, consulting and collaborating with State and Federal agencies and schools, and providing expertise and in-service teacher training for neighbor island educators. The Aquarium also educates nationally through environmental news coverage and contributions to natural history programs (e.g. Animal Planet), and internationally through our web site.

In FY06, over 100 program offerings were available, including:

- Docent-assisted school visits and outreach programs – 8,000 schoolchildren and teachers took part
- Self-guided school and community tours – over 18,000 participants
- Classes and activities for early learners – over 250 1-3 year olds with their care givers
- Outreach to Community Fairs and Events – Over 2,000 children and adults
- Marine science classes and field trips – 1,500 participants of all ages

- Public information services—on-site and website inquiries – over 1,800 requests
- Other programs include: Laboratory experiences and workshops for students and teachers; Snorkel ecotours; Shoreline fieldtrip planning services; Educational video programs; In-service teacher workshops, and more.

The most-recent accreditation team from the American Zoo and Aquarium Association reported that our “*education program is particularly good: Waikiki dedicates more staff with many more programs than many larger facilities....(and) the University acts as a resource in providing students, forums, and consulting staff that many zoos and aquariums can only hope to acquire.*” The Aquarium’s designated status as a national Coastal Ecosystem Learning Center promises greater access to national education resources for Hawaii residents.

For most Aquarium programs a modest tuition fees is applied, but for Hawaii school students with accompanying teachers Aquarium admission remains free.

Over the coming biennium we will continue to provide our quality education programs to the local community and to visitors and, although already extremely successful and comprehensive, will continue to seek ways of further improving and diversifying our education program offerings.

## 2. Exhibits

The Aquarium exhibits and graphics emphasize ecology, natural history, biological diversity, and conservation, and complement the contents of our education programs such that education takes place in tandem with entertainment. To achieve this goal, exhibit concepts and design are meticulously researched and facilitated entirely by Aquarium staff. Their success is evident in them having received several prestigious national awards for excellence.

For example, a major renovation of the Aquarium’s signature ***South Pacific Marine Communities*** exhibits opened in June 2002. The entire \$500,000 cost associated with this renovation project was covered by sponsorships from local and mainland contributors. This new gallery incorporates computer-based graphics with state-of-the-art life support for marine life, including corals, the largest giant clams on display anywhere, as well as over 140 other species displayed nowhere else in Hawaii and in very few other aquariums worldwide. In 2003 this gallery was awarded first prize for aquarium and zoo exhibitry by the American Zoo and Aquarium Association.

The Aquarium pioneered the display and propagation of living corals, and is world renowned for its research and expertise in this area. It was recently was awarded a prestigious national prize for its long term coral conservation program, and it’s exhibits include one of the largest and most diverse collections of living corals in any aquarium worldwide. It also houses; endangered Hawaiian monk seals; several species exhibited nowhere else in the world (e.g. a newly discovered Hawaiian butterflyfish, Rose Island Cardinalfish, Nahackyi Angelfish, Masked Angelfish, Yellow Anthias, among others), and many species exhibited nowhere else in the United States, including bearded armorheads, Hawaiian freshwater fishes and endemic fishes

from throughout the Hawaiian islands. The Aquarium continues to display weedy and leafy seadragons, and is continuously expanding the diversity of its collection through additions of new and interesting fishes and invertebrates from around the Pacific.

The Aquarium is striving constantly to renovate and revitalize its exhibits, using the latest technologies and state of the art husbandry techniques, many devised in-house. In FY06 we opened a new *Jellyfish Gallery*, made possible by a generous donation from a mainland family. We created a new giant clam exhibit highlighting their precarious conservation status and urgent need for their captive propagation – a research program we are actively involved in. We also opened two new exhibits, *Responsible Fishkeeping* and *Food Gone Wild*, to educate the public about the ecological consequences to Hawaii of releasing of alien species into our waters. In these displays we have closely coordinated our message with the State- and Federally sponsored **Habitattitude** environmental program, in which we are participating.

Activities and efforts over the coming biennium will continue along these lines of constant improvement. Ultimately, subject to the conclusions of our ongoing Master Planning process, we will seek to expand the Aquarium on our current site. Already a world-class facility, our aim is to become one of the premiere aquariums in the world, a major resource to the local community, and a source of international recognition and pride for Hawaii.

### **3. Research Programs**

The Hawaii Revised Statutes stipulate that the University maintains a research laboratory at the State Aquarium. The proximity of the Aquarium to the Manoa campus provides easy accessibility for UH researchers in need of running seawater, holding tanks, and life support for unique species. Regrettably, the laboratory is wholly inadequate, and hence the request for a new structure at the Aquarium that will enable us to achieve our goals of research, husbandry and conservation efforts that benefit Hawaii's marine fauna.

In 2005 we deaccessed our library, with most scientific volumes being donated to the Hamilton Library to assist with restocking efforts following the 2004 flood. Our remaining reference collection includes still images of marine life, underwater digital video footage, archives of the Waikiki Aquarium's entire history, replicas of Hawaiian fishing artifacts, and numerous marine life artifacts and preserved specimens. These are available for consultation or loan to schoolteachers and educators.

Undergraduate and graduate students and staff from UH-Manoa and community colleges utilize Aquarium facilities for individual research projects. Our public filtered seawater supply is used by a number of university programs on a weekly basis for their research projects on campus. The seawater is also dispensed freely to hundreds of home aquarists on Oahu who reserve pick up times each week.

Ongoing research conducted by aquarium staff includes:

- **Stingray Ecology (through several programs at the Hawaii Institute of Marine Biology)**
- **Plankton Culture for Research Feeds and Community Supply**

- **Propagation of Chambered Nautilus and other Cephalopods**
- **Jellyfish Husbandry**
- **Propagation of endangered and rare Hawaiian corals**
- **Effects of trampling on coral reefs**

Externally funded research projects include:

- **Coral propagation - South Pacific stony corals.** Internationally acknowledged as the leader in coral husbandry and propagation, the Waikiki Aquarium has received several grants to develop culture methods for stony corals in order to promote conservation. This program has been immensely successful: for example, over a six-week period in spring 2006, the Aquarium shipped out almost 3,000 South Pacific coral propagules to numerous major aquariums and research facilities around the world, thereby reducing collecting pressures on natural populations.
- **Coral propagation – Hawaiian stony corals:** We have recently begun a project to propagate the rare Hawaiian coral *Montipora dilitata*. Formerly found only in Kaneohe Bay, where it was abundant, and in the NWHI at Midway Atoll and Maro Reef, over the past five years it appears to have disappeared from Kaneohe Bay. Funded by the Protected Resources Division of the National Marine Fisheries Service, this project aims at reproducing sufficient stock to prevent extinction, and ultimately, to allow for reintroduction into Kaneohe Bay.
- **Hawaiian monk seal research program:** This comprehensive and diverse effort involves us, and researchers at UH and at provincial, private sector and federal organizations. Aspects investigated include seasonal variation in metabolic rate, and a study of oral and nasal bacteria. The Aquarium's objective is that the results can be applied to conservation of Hawaiian monk seals.
- **Pacific giant clam propagation:** Owing to overharvesting, Pacific clams are now threatened throughout most of their natural range. This joint effort with the Oceanic Institute is investigating aquaculture and aquatic propagation techniques, with a conservation/ reintroduction goal. The function and inheritance of color in clams is also being investigated.
- **Survey of gelatinous plankton at Ke`ehi Lagoon, and at Ma`alaea Harbor, Maui:** Funded by EPA and the State Department of Health, this study is examining species composition and seasonal population changes of gelatinous plankton at these sites, including the stinging species that caused a public nuisance at Ke`ehi Lagoon.
- **Husbandry and propagation of the rare Hawaiian shellfish *Lingula reevii*:** Funded by the Protected Resources Division of the National Marine Fisheries Service, this program aims at maintaining and reproducing in captivity a rare, little known shellfish found only in Kaneohe Bay, and nowhere else in the world, with a view to saving the species from extinction and potential restocking into the wild.

**C. Meeting our objectives in the upcoming fiscal year**

Education programs, exhibit development, and maintenance are funded mainly through earned revenue sources, supplemented by a State appropriation. Earned income sources include

admission fees, membership dues, class tuition fees, gift shop proceeds, special events and fundraisers, gifts and donations, and rental of the Aquarium facilities for evening functions. All general operating expenses are now paid from earned revenue sources. State general funds cover the salaries of 13 state employees including the education staff and the building maintenance department. An additional 24 employees are hired through the Aquarium's S-fund (17 staff) and the University Research Corporation (seven staff) and are paid from earned revenues.

## II. PROGRAM PERFORMANCE RESULTS

### A. Program performance results achieved

Program effectiveness is measured by visitor satisfaction, total admission numbers, earned revenues, and effectiveness in achieving educational goals.

#### Visitor ratings:

	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>
Excellent:	67%	69%	56%	51%
Good:	23%	19%	23%	30%
Average:	6%	9%	13%	15%
Poor:	4%	3%	8%	4%
TOTAL	n =1,314	n=1,521	n=1,254	n=1,310

#### Attendance:

	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>
General	267,736	299,804	342,237	326,856
Education	<u>34,532</u>	<u>36,106</u>	<u>38,785</u>	<u>33,742</u>
TOTAL	<b>302,268</b>	<b>335,919</b>	<b>381,022</b>	<b>360,598</b>

#### Revenues:

	<u>FY03</u>	<u>FY04</u>	<u>FY05</u>	<u>FY06</u>
Revenues	\$1,839,835	\$2,142,960	\$1,993,386	\$1,956,723
G-funds	<u>513,716</u>	<u>506,604</u>	<u>569,610</u>	<u>586,935</u>
TOTAL	<b>\$2,353,551</b>	<b>\$2,649,564</b>	<b>\$2,562,996</b>	<b>\$2,543,658</b>

### **B&C. How these results relate to objectives and how effectiveness is measured**

#### **Attendance and revenue:**

The Aquarium's attendance and revenue peaked during its 100<sup>th</sup> anniversary year in 2004. Data for FY05 and FY 06 are below this peak, but they remain stable at a level significantly higher than FY03. Although 2005 tourism numbers increased by 9.6% and exceeded the 7 million mark, Aquarium attendance has lagged behind. One of the factors impacting this is the increase of return visitors to Hawaii, who comprised 63% of total arrivals and usually do not make repeat visits to attractions.

According to the DBEDT 2006 Databook, the Aquarium retained its rank as the #4 paid attraction on Oahu, behind the Polynesian Cultural Center, Atlantis Submarines and the Honolulu Zoo, but ahead of Sea Life Park, Waimea Falls Park, the Honolulu Academy of Arts

and other local attractions and museums.

**Exhibits:**

Visitor satisfaction has been consistently favorable, with 81% of visitors reporting “good” to “excellent” on voluntary exit surveys in FY06, very close to the 79% rating of FY05. It is important to note that this approval rating would have been much higher but for the large number of negative evaluations that specifically referred to the “poor or non-existent air conditioning” in the galleries.

**Education:**

Attendance in the Education Program remains strong with over 33,000 students, adults, families, and other participants in FY2006. Many classes are fully booked weeks in advance, and most are oversubscribed.

**Research:**

Aquarium staff published or presented five papers during FY2006 based on studies done in the field and at the Waikiki Aquarium. The Aquarium continues to perform research in the following areas: plankton culture; coral propagation and conservation; shark research and husbandry; Chambered Nautilus and other Pacific cephalopods; Monk Seal research and husbandry; and reef fish aquaculture.

**D. Actions taken to improve performance:**

1. The Waikiki Aquarium operates a gift shop as part of the Hanauma Bay Educational Center, with is run by the City and County of Honolulu. The shop generates an important revenue stream for joint educational endeavors.
2. Recent new exhibits, renovations, and other improvements have enhanced the Aquarium as a destination, as evidenced by favorable comments from visitors. In FY 2006 we were featured in a nationally televised documentary as one of the top four US aquariums, as evaluated by our peers. Plans for a new NWHI exhibit are nearing completion, and a master planning process is underway, which will plot the development of the Aquarium over the coming decade.
3. A new audio tour wand system has been installed, and is included with each paid admission. Visitors have overwhelmingly approved this addition, which has significantly increased the educational component of a visit to the Aquarium. In early 2007 a diverse array of new commentaries will be installed, including English, Japanese, German, French and Spanish. A Hawaiian language commentary and children’s version are also planned.
4. Request for a research deck – The existing laboratory is wholly inadequate, both for normal Aquarium use and for use by University and visiting scientists. Our burgeoning research, husbandry and conservation efforts focusing on the marine life of Hawaii and the Pacific also require more room.

To resolve these issues and set the research and conservation direction and agenda of the Aquarium over the coming decades, we have requested funding for a new, environmentally friendly and energy efficient building on our existing site, to replace the dilapidated wooden structure that is now there. Programs to be done there include coral propagation, fish husbandry, captive breeding of various fishes and invertebrates, with the aims of research,

conservation and reintroduction of rare or threatened Hawaiian species. The presence of a viable research laboratory will also be a major positive development.

5. In 1996, Governor Cayetano proposed the creation of a new world-class aquarium to be built in Kakaako. Therefore, since 1996, the Waikiki Aquarium was in limbo until a decision was made as to whether its future would be in Kakaako or in Kapiolani Park. In October 2004 the negotiations between the state and the developer were abandoned. With this issue now resolved, we have recently begun a master planning process that will chart our development and expansion on our current site over the next 10 years.

Additionally, now that our future here is assured, it is expected that the level of awareness and commitment from the legislature will improve, that revenue flow via public and corporate donations will show a significant increase, and that these factors will combine to allow the Aquarium to achieve its targets for renewal, improvement and expansion of its facilities.

### **III. Problems and Issues**

#### **A&B Discussion of problems and issues encountered, and recommendations to remedy problems**

##### **Issue #1: Compliance issues and aging facilities**

The Waikiki Aquarium building opened in 1955. Extensive renovations to the public side of the building in 1994 brought the Aquarium into compliance with new regulations regarding access for persons with disabilities, and corrected other deficiencies. However, significant deficiencies remain unresolved in this 52-year old building, including several potentially dangerous structural and systemic conditions. The 2006 legislative session awarded the Aquarium funding to rectify some of these problems (electric system upgrade and repair of roof leaks), for which we are extremely grateful. However, significant issues remain unresolved. Foremost among these is the Central Air Conditioning System. Last updated in 1992, it needs to be replaced due to extensive corrosion of existing system. Performance is so poor that it is a constant source of complaints from visitors; several persons have fainted in our galleries, and parents and children have cancelled attending classes here because of uncomfortable temperatures.

A front reception desk which is termite-ridden and structurally unsound and whose design provides reception staff with minimal to no protection from potential robbery, and whose design is extremely energy inefficient as regards providing a comfortable working temperature. Of most concern is the advice we have received regarding Hawaii being in the front line of potential disease epidemics (SARS, bird flu, etc.) originating in Asia and elsewhere. State Health Officers recommended that, as a visitor-related industry, we should be proactive in taking measures to minimize the potential for transmission of airborne viruses to our staff by providing a barrier between them and visitors, while maintaining an open and welcoming environment.

For all the above reasons a new enclosed, secure reception desk that is energy efficient (cooled by energy from solar powered galvanic cells), is seen a priority need for the Aquarium, such that the excellent service presently provided to visitors can be furthered.



Since they impact high profile public areas, these essential renovations and emergency repairs to our air conditioning system and reception desk should be funded by State funds. Any further deterioration or failure of these systems will significantly impact the viability of the Aquarium's public access, safety and comfort levels.

It is inevitable that further significant repair work will be required in coming years as the Aquarium ages. It is an old building, located in a physically hostile seaside environment doused in salt spray. Conditions are critical: concrete structural pillars are spalling, and in many areas the building no longer meets current building code requirements. In a State that depends on tourism and quality visitor attractions this situation should be unacceptable.

### **Issue #2: Support of Aquarium research:**

Building research capacity is vital to the Aquarium, yet the existing 'laboratory' is wholly inadequate. Facilities for maintaining live animals are also limiting. For example, the recent wastewater renovations resulted in the construction of two large (20'x20') concrete pads in the Aquarium's back area (as covers for two deep freshwater holding tanks). Owing to space restrictions on site, even these covers have been utilized as a marine microcosm research facility.

The success of research and propagation projects in this microcosm facility, coupled with the Aquarium's increasing successful research and conservation activities and the dire need for an acceptable laboratory, makes the construction of a new research and husbandry facility integral to the Aquarium's advancement. To address this shortcoming, a plan to build a two-story research deck will be presented to the legislature in the current session. This energy efficient, aesthetically pleasing structure situated on the Aquarium grounds will be dedicated to research, aquaculture and conservation projects on corals, other marine invertebrates and reef fish; activities that are currently undertaken in very cramped spaces.

### **Issue #3: Remaining viable:**

Despite its small size, productivity of the Waikiki Aquarium is very high, even when compared to larger institutions on the mainland U.S. The Aquarium now offers more kinds of programs to more people on a per capita basis than any of the mainland U.S. Aquariums. There is no other aquarium in the U.S. with the same diversity of educational programs and offerings, none with the same impact in the development of unique new displays of marine life, and few which can boast the same degree of success in research programs or publications.

A master and strategic planning process is now underway. Although still in the early stages, one unifying and strong vision to have emerged is that the Waikiki Aquarium will remain open to serve visitors, residents, students, and school groups through the next century, if not beyond. Therefore, we need to continue marketing to target audiences and raising funds for new exhibits, exhibit renovations, and programs.

Perhaps the biggest contradiction is the fact that, despite the decrepit physical structure of the building, despite the substandard and dated infrastructure, and despite the relative lack of

investment afforded to it, in 2005 the Waikiki Aquarium was selected by its aquarium peers as being among the top four US aquariums, and was featured nationally as part of a PBS television documentary to this effect, bringing distinction to UH and to Hawaii.

While our education achievements and awards, our exhibitry awards, and our solid and increasing research base are important positives, in reality they are a veneer of success over a core of major challenges. The positives achieved are testimony to the commitment, the ingenuity and the talent of the Aquarium staff. If the Aquarium can achieve this despite all its hardships and hurdles, imagine what heights it might reach were the Aquarium to be afforded appropriate investment and attention.

To conclude, we strongly urge the Legislature to approve funding to address these CIP issues, and to approve funding for a research deck. Do not let the Aquarium's 100-year old international reputation for excellence in education, research and exhibitry become tarnished, but instead support us in our quest for even greater achievements for Hawaii's State Aquarium over the coming decades.

**IV. Expenditures for Fiscal Year 2006-2007**

	Appropriation FY 2007	Collective Bargaining	Transfers In/Out	Restriction	Estimated Total Expenditures
	20.00				20.00
Personnel Services	867,300	36,643	24,481		928,424
Current Expenses	3,892,716				3,892,716
Equipment	0				0
Motor Vehicles	0				0
<b>Total</b>	<b>4,760,016</b>	<b>36,643</b>	<b>24,481</b>		<b>4,821,140</b>
By MOF:					
	13.00				13.00
General Funds	2,041,327	36,643	24,481		2,102,451
	7.00				7.00
Special Funds	1,718,689				1,718,689
Revolving Funds	1,000,000				1,000,000

**A. Transfers within the Program I.D.**

None.

**B. Transfers between Program I.D.**

Transfer of CB from UOH 900

**C. Executive restriction**

None

**V. Biennium Budget Requests for Fiscal Year 2007-2008 and Fiscal Year 2008-2009:**

	FY 2008		FY 2009
	20.00		20.00
Personal Services	1,823,513		1,859,524
Current Expenses	2,808,680		2,761,418
Equipment	75,000		125,000
Motor Vehicles	50,000		0
Total Request	20.00		20.00
	4,757,193	0	4,745,942
By MOF:			
	13.00		13.00
General Funds	613,504		614,753
	7.00		7.00
Special Funds	3,143,689		3,131,189
	0.00		0.00
Revolving Funds	1,000,000		1,000,000

**The biennium budget includes the following request:**

Item/Description	Cost Category	FY 2008	FY 2009
Increase the special fund expenditure ceiling to allow for the expenditure of additional revenue due to increased attendance and increase in admission fee	A. Personnel Services	884,036	918,798
	B. Current Expenses	415,964	368,702
	C. Equipment	75,000	125,000
	M. Motor Vehicles	50,000	0
	Total	1,425,000	1,412,500

**VI. Restrictions/Reductions:**

None

**VII. and VIII. Capital Improvements Request/Lapsing of CIP:**

The CIP is discussed in a separate part of the testimony.

**Attachment 8**  
**All Positions Vacant As of 12/1/06**

**LEVEL V PROGRAM: UOH 881 AQUARIA**

Date of Vacancy	Position Title	Position Number	Exempt (Y/N)	Budgeted Amount	Actual Salary Last Employee Paid	MOF	Program ID	Authority to Hire (Y/N)
11/21/03	Research Support	0081754	N	33,888	39,696	A	UOH 881	N/A
11/11/05	Building & Ground Utility Worker	09643	N	33,396	31,500	A	UOH 881	N/A