Written Only

NEIL ABERCROMBIE
GOVERNOR

KATHRYN S. MATAYOSHI
SUPERINTENDENT

STATE OF HAWAI`I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI`I 96804

Date: 04/10/2013

Committee: House Education

Department: Education

Person Testifying: Kathryn S. Matayoshi, Superintendent of Education

Title of Resolution: HCR 098 EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA'AKO MAKAI

Purpose of Resolution: STEM Training Center; Kakaako Makai; Marine Education;

Department's Position:

The Department of Education supports this resolution and ongoing efforts to plan and develop a STEM education and training center with a focus in the marine and environmental science for students in K-12 and university students.

STATE OF HAWAII
DEPARTMENT OF DEFENSE

TESTIMONY ON HOUSE CONCURRENT RESOLUTION 98
EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP
A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM)
EDUCATION AND TRAINING CENTER IN KAKA‘AKO MAKAI

PRESENTATION TO THE
HOUSE COMMITTEE ON EDUCATION

BY

MAJOR GENERAL DARRYLL D. M. WONG
ADJUTANT GENERAL
April 10, 2013

Chair Takumi, Vice Chair Ohno, and Members of the Committee on Education.

I am Major General Darryll D. M. Wong, State Adjutant General. I am testifying in **SUPPORT** of House Concurrent Resolution 98.

A science, technology, engineering and math (STEM) education and training center can only benefit the children of Hawai‘i. STEM education will be an important factor as Hawai‘i diversifies the state’s economy with technology based industries. The education and training center will be a good fit in the planned development of the Kaka‘ako Makai district.

Thank you for the opportunity to provide this testimony.

HAWAII COMMUNITY DEVELOPMENT AUTHORITY

KAKAAKO KALAELOA

Neil Abercrombie
Governor

Brian Lee
Chairperson

Anthony J. H. Ching
Executive Director

461 Cooke Street
Honolulu, Hawaii
96813

Telephone
(808) 594-0300

Facsimile
(808) 594-0299

E-Mail
contact@hcdaweb.org

Web site
www.hcdaweb.org

STATEMENT OF

ANTHONY J. H. CHING, EXECUTIVE DIRECTOR
HAWAII COMMUNITY DEVELOPMENT AUTHORITY

BEFORE THE

HOUSE COMMITTEE ON EDUCATION

April 1, 2013

2:00 P.M.

State Capitol, Conference Room 309

in consideration of

H.C.R. 98 – EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA`AKO MAKAI.

Purpose: Encourages partnerships between the Hawaii Community Development Authority (HCDA), University of Hawaii (UH), Department of Education (DOE), Office of Hawaiian Affairs (OHA), Kamehameha Schools, Department of Land and Natural Resources (DLNR), and Kakaako Makai Community stakeholders (including community organizations and Kewalo Basin businesses) to cooperate in the ongoing efforts to plan and develop a STEM education and training center.

Position: While supporting the intent of this measure, I provide the following comments. It should be noted that this testimony reflects only my viewpoint as the Authority has not yet had an opportunity to review and act as a group on this measure.

The HCDA continues to recognize the importance of developing a STEM education and training center for Hawaii's kindergarten through twelfth-grade students, undergraduate and graduate students. The creation of the center will

support the development of a skilled workforce which will in turn promote educational and economic development. The HCDA notes the center is in line with our vision to create a live, work and play mixed-use community. In addition, the HCDA recognizes that the Kakaako Makai area has existing facilities and supporting infrastructure that complement the development of a marine and environmental sciences center.

The HCDA defers to the DOE and the UH with respect to the particulars of planning and developing appropriate STEM curriculum/education programs for the State, identifying development support and funds, and potentially choosing to site such programs in the Kakaako Makai area. In the event that either the DOE or the UH pursue construction of such a center, the HCDA will work with the appropriate stakeholders to the limits of our capacity to realize that vision.

Thank you for the opportunity to provide comments on this concurrent resolution of the State Legislature.

UNIVERSITY OF HAWAI'I AT MANOA
Kewalo Marine Laboratory
Pacific Biosciences Research Center
41 Ahui Street, Honolulu, HI 96744

Testimony Presented Before the
House Committee on Education
April 10, 2013 at 9:00 AM
by
Robert H. Richmond, Ph.D., Director
Kewalo Marine Laboratory
Pacific Biosciences Research Center
University of Hawai'i at Mānoa

HCR 98 (HSCR 1264) EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA'AKO MAKAI

Chair Takumi, Vice Chair Ohno and members of the committee:

As the director of the University of Hawaii's Kewalo Marine Laboratory, I would like to add my strong support for efforts to develop a Science, Technology, Engineering and Math (STEM) education, research and training center in Kaka'ako Makai. Our economy, culture and quality-of-life are integrally tied to our land and ocean resources, yet we are not doing as well as we should in developing and strengthening our local workforce to address the challenges of the 21st century in the STEM disciplines. Hawaii possesses an incredible natural laboratory, the ocean, for engaging our students (K-12, undergraduate and graduate) and our broader community in the STEM disciplines. While other ocean states have developed facilities to better integrate science education, research, management and policy, at present, no such facilities exist in Hawai'i. Having worked with Kindergarten through post-graduate students from Hawaii and the Pacific Islands for over 30 years, I can say without a doubt, our students match up to the best from any other state or nation in the world. With proper facilities and support, our students can fill the thousands of STEM-related jobs here at home, adding the strength of their cultural connections to addressing the mounting challenges face by our state.

A STEM education facility in Kaka'ako Makai would also serve to further develop and expand partnerships among various stakeholders, such as the University of Hawai'i, the Hawaii State Department of Education, Kamehameha Schools, the Office of Hawaiian Affairs, the Hawai'i Department of Land and Natural Resources, appropriate Federal agencies and community groups, and provide an exceptional opportunity to effectively and practically address the needs of our state and people now and into the future.

The University of Hawai'i's Kewalo Marine Laboratory, located in Kaka'ako Makai, has a world-class seawater system that attracts U.S. Mainland and international scientists to perform research on our ocean's biology and the links between environmental and human health. As the director of this facility, I am committed to supporting this initiative to develop a STEM education, research and training facility nearby and to provide seawater access for our students and community members to promote hands-on learning experiences using Hawai'i's marine life. This is a great idea and a great time to pursue this initiative.

Thank you for this opportunity to provide testimony in support of this resolution.

UNIVERSITY OF HAWAIʻI SYSTEM
Legislative Testimony

Testimony Presented Before the
House Committee on Education
April 10, 2013 at 2:00 PM
by
Alan Lau, Ph.D.
Interim Director
Pacific Biosciences Research Center
University of Hawaiʻi at Mānoa

HCR 98 – EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKAʻAKO MAKAI

Chair Takumi, Vice Chair Ohno and members of the committee:

The University of Hawaiʻi would like to express its strong support for efforts to develop a Science, Technology, Engineering and Math (STEM) education, research and training center in Kakaʻako Makai. As identified in the resolution, the future of our island state depends on having a well-trained workforce in the STEM disciplines. Our economy, culture and quality-of-life are integrally tied to wise stewardship of our land and ocean resources, as reflected by the traditional land divisions, ahupuaʻa, that extend from the land to the sea. Modern science integrated with traditional ecological knowledge is essential to insuring a bright future for Hawaii's people. We possess one of the best natural laboratories, the ocean, for engaging our students (K-12, undergraduate and graduate) and our broader community of stakeholders in the STEM disciplines. At present, no such facilities exist to adequately and effectively address Hawaii's needs in STEM workforce preparation, or the need for bridging locally-relevant science to education, natural resource management and policy development. Hawaii's efforts under such programs as the Department of Education's "race to the top" would clearly be strengthened by having a world class facility to train our students and such a facility would also serve to enhance community understanding of critical issues such as climate change.

The effort to further develop and expand partnerships among various stakeholders, such as the University of Hawaiʻi, the Hawaiʻi State Department of Education, Kamehameha Schools, the Office of Hawaiian Affairs, the Hawaiʻi Department of Land and Natural Resources, appropriate Federal agencies and community groups supports the best opportunity to effectively and practically address the needs of our state and people now and into the future. The proposed STEM center could truly be a gathering place of great value to our communities.

The University of Hawaiʻi already has facilities in Kakaʻako Makai, including the Pacific Biosciences Research Center's Kewalo Marine Laboratory, that has a multimillion dollar

seawater system that could be used to provide unparalleled opportunities for the hands-on study of Hawaii's marine life. Discussions are already underway on how a proposed STEM education, research and training center could partner with a proposed "Obama Presidential Center" to address ocean and island sustainability, including opportunities to bridge science to policy development and implementation regionally and internationally.

In summary, the University of Hawai‘i strongly supports this resolution and would be a willing and fully engaged partner in efforts to improve STEM education for our students, to provide additional opportunities to invest in research relevant to Hawai‘i, and to expand community outreach efforts in putting knowledge to work to insure the brightest future for Hawai‘i and its people.

Thank you for this opportunity to provide testimony in support of this resolution.

OFFICE OF HAWAIIAN AFFAIRS
Legislative Testimony

HCR98
EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKAʻAKO MAKAI
House Committee on Water & Land

April 10, 2013 2:00 p.m. Room 309

The Office of Hawaiian Affairs (OHA) offers the following comments on HCR98, which supports the development of a STEM education and training center in Kakaʻako Makai and urges OHA and other key and community stakeholders to cooperate in ongoing efforts to plan and develop the center.

OHA concurs with this concurrent resolution's support for STEM education and respect for concepts such as the well-being of the people of Hawaiʻi and the health of our ahupuaʻa, ocean, and coastal environments. OHA notes, however, that we are at the early vision and planning stages for our Kakaʻako Makai lands. We have recently awarded a contract to establish the framework for our Kakaʻako Makai planning. This framework will assist OHA in determining how to best utilize its parcels for the benefit of Native Hawaiians and for programs that benefit Native Hawaiians. It will also inform OHA's strategic approach to utilizing its lands in alignment with its Mission.

Mahalo for the opportunity to testify on this measure.

HAWAI'I EDUCATIONAL POLICY CENTER
TESTIMONY

Presented by Jim Shon, Director
Hawaii Educational Policy Center
April 10, 2013

COMMITTEE: House Education
DATE: April 10, 2013
TIME: 2 pm
PLACE: Conference Room 309

RE: HCR 98 EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA'AKO MAKAI.

POSITION: The Hawaii Educational Policy Center *strongly supports this resolution* . The following definitions of S.T.E.M. illustrate the dynamic opportunities - and challenges of implementing S.T.E.M. programs.

Defining S.T.E.M.
A Summary of Selected Definitions

Science, technology, engineering and math are collectively known as S.T.E.M. This term is often defined differently, depending on the context. There are several perspectives or lenses through which agencies define STEM. These include a STEM jobs perspective, a student competency perspective, workforce knowledge and skills perspective, and an integrated curricula perspective.

A Federal Definition – a STEM jobs perspective
In 2011, the U.S. Office of Vocational and Adult Education utilized the following definition:

> Since "STEM" is used in a variety of ways, it is useful to consider what it means in this particular report… the authors note that while the acronym STEM is reasonably precise—referring to science, technology, engineering, and mathematics—there is no standard definition of a STEM job. This Department of Commerce report defines STEM jobs as those including professional and technical support occupations in computer science and mathematics, engineering, and life and physical sciences. The definition also includes three management occupations closely tied to STEM—computer and information systems, engineering, and natural science managers. (Education jobs and social science jobs allied with STEM fields are not included. Future discussions in *OVAE Connection* will look at STEM aspects of education.) (3)

The National Governor's Association Definition – a student competency perspective
In December 2011, The National Governor's Association published *Building A Science, Technology, Engineering and Math Education Agenda: An Update on State Actions* . For the most part, the NGA definition of STEM simply means fields of study or work that are generally labeled science, or technology, or engineering or math. However, the NGA analysis of the problem is instructive and provides some hints at the need for more systemic change. (p.5)

"The reasons the United States lags behind its competitors in producing STEM graduates have been well documented. They include:

- *Lack of rigorous K–12 math and science standards. Standards in math and science have varied greatly across states and, in many cases, do not test students' abilities to utilize concepts and solve problems.*
- *Lack of qualified instructors. A shortfall in the numbers of qualified math and science teachers in the classroom is a chronic problem in the K–12 system; many classrooms are staffed by teachers with neither a certificate nor a degree in their assigned subject area.*
- *Lack of preparation for postsecondary STEM study. A student's ability to enter and complete a STEM postsecondary degree or credential is often jeopardized because the pupil did not take sufficiently challenging courses in high school or spend enough time practicing STEM skills in hands-on activities.*
- *Failure to motivate student interest in math and science. In most K–12 systems, math and science subjects are disconnected from other subject matters and the real world, and students often fail to see the connections between what they are studying and STEM career options.*(4)

A Private University's Definition: a workforce knowledge and skills perspective
The Georgetown University Center on Education and the Workforce breaks the definition of STEM into areas of Knowledge, skills, abilities, interests and work interests and values: (1)

Stem Knowledge	STEM Skills	STEM Abilities	STEM Work Interests
Production and Processing	Mathematics	Problem Sensitivity	Realistic
Computers and Electronics	Science	Deductive Reasoning	Investigative
Engineering and Technology	Critical Thinking	Inductive Reasoning	STEM Work Values
Design	Active Learning	Mathematical Reasoning	Achievement
Building and Construction	Complex Problem Solving	Number Facility	Independence
Mechanical	Operations Analysis	Perceptual Speed	Recognition
	Technology Design	Control Precision	
	Equipment Selection	STEM Work	
	Programming		
	Quality Control Analysis		

Mathematics Physics Chemistry	Operations Monitoring Operation and Control Equipment Maintenance Troubleshooting Repairing Programming Quality Control Analysis Operations Monitoring Operation and Control Equipment Maintenance Troubleshooting Repairing Systems Analysis Systems Evaluation	Interests Realistic Investigative	

The Hawai'i State Department of Education' s Definition – an integrated curricula perspective
According to a 2012 Report to the Hawai'i State Legislature, the Hawai'i Department of Education has a working definition of S.T.E.M.:

> STEM education integrates the study of science, technology, engineering and mathematics by using scientific inquiry and engineering design as unifying processes. STEM emphasizes innovation and the development of problem-solving, critical thinking and collaboration skills through student-focused, rigorous, relevant, and authentic learning. (2)

SOURCES:

(1) Carnevale, Anthony P., Smith, Nicole, Melton, Michelle, *STEM*, Georgetown University Center on Education and the Workforce, October 20, 2011, at http://cew.georgetown.edu/stem/

(2) Hawai'i State Department of Education, *Legislative Report: Relating to the State Budget (HB 200 HD1, SD1 CD1, Section 132*, 2011, at http://doe.k12.hi.us/reports/tolegislature_2012/06_HB0200HB1SD1CD1Section%20132Act%20164(SLH2011).pdf

(3) Langdon, D., McKittrick, G., Beede, D., Khan, B., and Doms, M.: Office of the Chief Economist, *STEM: Good Jobs Now and for the Future*, ESA Issue Brief # 03-11, U.S. Department of Commerce Economics and Statistics Administration, July 2011, at http://www2.ed.gov/news/newsletters/ovaeconnection/2011/07282011.html

(4) Thomasian, John, *Building A Science, Technology, Engineering, and Math Education Agenda: An Update on State Actions*, National Governors Association Center for Best Practices, December 2011, at http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/stem-complete.pdf

House Committee on Education
Wednesday April 10, 2013
Conference Room 309
2:00 p.m.
House Concurrent Resolution 98

Testimony in STRONG SUPPORT for Ongoing Efforts to Plan and Develop a STEM Education and Training Center in Kaka'ako Makai

Aloha Chair Roy M. Takumi, Vice Chair Takashi Ohno and the House Committee on Education:

My name is Wayne Takamine and I am the Chair of the Kaka'ako Makai Community Planning Advisory Council (CPAC). Our working group collaborated with the Hawaii Community Development Authority (HCDA) in the creation of the Kaka'ako Makai Conceptual Master Plan (2011) that was approved by the HCDA board. CPAC continues to interact with Kaka'ako Makai stakeholders, community groups and individuals including those that participated in the Kaka'ako Makai master planning process

During a recent CPAC general meeting, a proposal to develop a STEM Education and Training Center in Kaka'ako Makai was introduced. The Director of the UH Pacific Bioscience Research Center (PBRC) at the Kewalo Marine Laboratory described this concept as a unique educational opportunity for Hawaii's K to 12 students and educators. By using the existing Kaka'ako Makai resources that includes; a highly regarded UH PBRC marine sustainability outreach program, a world class costal research seawater infrastructure and the availability of land at the adjacent Look Lab and Waste Water site, a program that meets the essential requirements for STEM funding featuring marine science, environmental sustainability, research and training is possible.

On February 28th CPAC sponsored a "Marine Education in Kaka'ako Makai" forum at the HCDA conference room. Included at that meeting were representatives from OHA, UH Pacific Bioscience Research Center, UH Center for Conservation and Research, UH Department of Urban and Regional Planning/Political Science/Obama Center, CPAC, Oahu Parks Conservancy, Hawaii Thousand Friends, Friends of Kewalo Basin, Surfrider Foundation (email) and the Kaka'ako Small Business Association. Everyone involved believes an Educational Marine Research Center in Kaka'ako Makai for programs like Race to the Top and STEM for K to 12 is needed and is consistent with the community based Kaka'ako Makai Master Plan and its Vision and Guiding Principles that was adopted by the HCDA Board in May of 2011. For this reason we feel strongly that the larger communities will support this educational proposal on public land in Kaka'ako Makai.

Kaka'ako Makai Vision & Guiding Principles - highlights:

> ** Provide enriching public recreational, cultural and educational opportunities for residents and visitors alike through Kaka'ako Makai's scenic coastal and marine environment, the Native Hawaiian cultural heritage, compatible facilities and activities, and historic sites and settings.*
>
> ** Preserve, restore and maintain Kaka'ako Makai's valuable coastal and marine resources for present and future generations.*
>
> ** Enable the monitoring, protection, restoration, and conservation of natural coastal and ocean resources, including reef and marine life, through responsible stewardship and sustainable practices.*
>
> ** Support Kewalo Marine Laboratory's continued valuable marine biology and ecosystems research and education in the vicinity of Kewalo Basin.*

I have received emails in support of HCR98 including people that are affiliated with President Obama's Marine Sustainability and Research initiatives. Many have sent their well wished for the creation of a K to 12 Marine Education program and some have expressed their desire for a permanent center to be developed to service Hawaii and also the Pacific region.

As reflected in the Kaka'ako Makai Vision and Guiding Principles, many Kaka'ako Makai stakeholders, community groups, park and ocean recreational users have expressed a desire to keep the parks and ocean front areas in Kaka'ako Makai for recreational use as a gathering place and a part of the "Lei of Green" concept. With the numerous development projects in Kaka'ako Mauka, many believe the preservation of shoreline recreational areas as a high priority for Honolulu's future.

The Kaka'ako Makai Master Plan (2011) includes plans for a new Marine Research Facility, a Watersport/Surf Exhibition, Kewalo Keiki Fishing Conservancy and an Ocean Safety Lifeguard Station.

Mahalo nui loa,

Wayne Takamine
Chairman
Kaka'ako Makai Community Planning Advisory Council (CPAC)

FRIENDS OF KEWALOS
PROTECT, PRESERVE, MALAMA

Committee on Education
Rep. Roy M. Takumi, Chair

Wednesday, April 10, 2013
2 pm, Conference room 309, State Capitol

Testimony in support of HCR 98

Aloha Chair Roy M. Takumi and committee members,

I am Ron Iwami, President of Friends of Kewalos, a non profit organization whose mission is to Protect, Preserve, and Malama the Kaka'ako Makai (KM) area. We are part of the Save Our Kaka'ako Coalition who has fought diligently since 2005 in our red shirts to accomplish our mission. We also worked diligently with the community and other stakeholders to develop the Kaka'ako Makai Master plan that was adopted by HCDA in May of 2011.

This proposed plan to develop a Science, Technology, Engineering, and Math (STEM) Education and Training Center in KM is a win - win for all. It is a much needed Marine Science education facility that will excite the minds of the children of Hawaii. It is located in the perfect place near the ocean and will fit in nicely with the Vision and Education Guiding principle of the KM Master Plan mentioned above.
The seawater to be used in the Center is slated to come from the same fresh seawater that is pumped daily into the adjacent UH Kewalo Marine Lab run by Dr. Robert Richmond. His expertise together with his passion to make it happen will be the impetus to see this STEM Center to fruition.

Friends of Kewalos is currently working with Dr. Richmond and the lab in conducting a Water quality project in the waters off Kewalo Basin Park and within the harbor. This joint project is the start toward the ultimate goal of ensuring the health and safety to the public for this heavily used recreational area.

Mahalo for this opportunity to testify and share our manao.

Ron Iwami
President, Friends of Kewalos

The Howard Hughes Corporation
1240 Ala Moana Boulevard
Suite 601
Honolulu, Hawaii 96814

T 808.591.8411
F 808.596.4919
M 213.300.1786
nick.vanderboom@howardhughes.com

Nicholas D. Vanderboom
Senior Vice President
Development

April 10, 2013

Honorable Roy Takumi, Chair
Honorable Takashi Ohno, Vice Chair
House Committee on Education

Wednesday, April 10, 2013; 2:00 p.m.
Hawaii State Capitol; conference room 309

RE: HCR 98 - EXPRESSING SUPPORT FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA'AKO MAKAI – IN SUPPORT

Chair Takumi, Vice Chair Ohno and members of the committee:

My name is Nicholas Vanderboom, Senior Vice President for The Howard Hughes Corporation, testifying in support of HCR 98 which proposes a STEM education and training center in Kaka'ako Makai. In addition to educating Hawaii's youth, this center can provide much needed STEM workforce development.

STEM has become increasingly important with globalization and the information-based economy of today. A STEM center in Kaka'ako Makai would take advantage of existing facilities such as the University of Hawaii's Kewalo Marine Laboratory. A STEM center would also provide additional learning facilities in the redeveloping area of Kakaako.

The Howard Hughes Corporation is supportive of efforts to improve STEM education and bring these facilities into Kakaako.

Thank you for the opportunity to testify. We urge your favorable consideration of HCR 98.

Sincerely,

Nicholas Vanderboom
Senior Vice President
The Howard Hughes Corporation

TESTIMONY OF
Kenneth Y. Kaneshiro

IN SUPPORT OF HCR 98 FOR ONGOING EFFORTS TO PLAN AND DEVELOP A SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) EDUCATION AND TRAINING CENTER IN KAKA'AKO MAKAI

BEFORE THE
HOUSE COMMITTEE ON EDUCATION
Representative Roy Takumi, Chair
Representative Takashi Ohno, Vice Chair

Date: Wednesday, April 10, 2013
Time: 2:00 pm
Pace: Conference Room 309

Aloha Chair Takumi, Vice Chair Ohna, and members of the House Committee on Education. My name is Ken Kaneshiro and I am the Director of the Center for Conservation Research and Training (CCRT) administered by the Pacific Biosciences Research Center (PBRC) at the University of Hawaii at Manoa. However, I am presenting testimony on HCR 98 as a private individual and my comments do not reflect the position of the University of Hawaii.

I have been involved in a particular research project at the University of Hawaii for nearly 50 years now. I started to work on the project as a dishwasher on the Hawaiian Drosophila Project when I was a sophomore at UH Manoa in 1963 and so 2013 marks the 50th Anniversary of the Project. During these 50 years, more than 80 senior scientists from all over the world have come to Hawaii to study the evolution of this group of insects. More than 400 students, undergraduates, graduates, and postdoctoral fellows have participated on this project and more than 500 scientific papers have been published as a result of the research on this group. The work on the Hawaiian Drosophila is cited in a number of textbooks of Biology as a leading example of speciation and evolution.

The reason I wanted to mention the Hawaiian Drosophila Project is to emphasize that it was the opportunity to do research on just about every aspect of the biology of this group of insects that enabled me to better understand evolutionary theory and basic concepts of ecology, behavior, genetics, molecular biology, etc. better than I ever gained from attending classes at UH. This is what we envision for the proposed STEM education and training center at Kaka'ako Makai to integrate research into the K-12 STEM curriculum and to enable the K-12 students an opportunity to experience scientific discovery. This is what will excite them about pursuing a career in the STEM fields.

From 2000 to 2010, I received a National Science Foundation (NSF) GK-12 Grant of nearly $5M to provide graduate students at UH support to serve as research mentors to K-12 teachers and students. The GK-12 Graduate Fellows worked with the K-12 teachers in integrating field-based research activities into the K-12 science curriculum where students

collected valid data which contributed to the scientific data set. Just to describe one of many examples, one of the GK-12 Fellows worked with several of the K-12 schools in the Hilo area and discussed the impact of invasive alien species on Hawaii's urban and native ecosystems. He then focused on a particular alien species which had recently been found in the Hawaiian Islands and was known to be present in the Hilo area but the State Department of Agriculture did not have the resources to survey the distribution of this ant species which is known as the little fire ant. The GK-12 Fellow taught the K-12 students about the biology, the ecology, the behavior of this species and then taught them how to collect them with baits consisting of peanut butter on a chopstick. The grant provided the materials and a couple of thousand students set baits in their backyards, the school ground, the playgrounds, etc. and each bait station was identified on a GIS map with the student's name. After a couple of days, the chopsticks were collected, placed in a plastic ziplock bag and brought back to the classroom where the Graduate Student taught the K-12 students how to identify the ant species that were known from the Hilo area by using a pictorial key. Among the samples collected, two incipient population of the little fire ant were discovered, the data given to the State Department of Agriculture which then set out to eradicate these populations before they had a chance to spread throughout the Hilo area. Along the way, the samples also revealed two species of ants that were previously unrecorded for the area. The NSF did a press release on the story of how K-12 students' research on the little fire ant in Hawaii resulted in the eradication of the species from the Hilo area; that story made the New York Times.

There are many more stories similar to the one described above resulting from the GK-12 project in Hawaii and demonstrates how engaging the community, especially the K-12 community in research relevant to their everyday lives and needs, can lead not only to enhanced learning and awareness but also contribute to the broader scientific database. Pacific Biosciences Research Center (PBRC) in partnership with the Curriculum Research and Development Group (CRDG) in the College of Education at UH Manoa has the capacity and the experience to assist in the initiative to develop a first-class STEM Research and Training Center at the Kaka'ako Makai site. I strongly believe that we will be able to develop a model for STEM education by integrating research into the curriculum and PBRC as an Organized Research Unit at UH, can play a major role in this effort.

I am in strong support of the intent of HCR 98. However, in order to emphasize the integration of research into the STEM curriculum, I suggest an amendment to the current language of the resolution. I suggest inserting the word "research" into the title of the Center; e.g., STEM Research and Education Center.

Thank you for the opportunity to provide testimony.

Jenna Takenouchi

From: mailinglist@capitol.hawaii.gov
Sent: Sunday, April 07, 2013 6:07 PM
To: EDNtestimony
Cc: scoleman@surfrider.org
Subject: Submitted testimony for HCR98 on Apr 10, 2013 14:00PM

HCR98
Submitted on: 4/7/2013
Testimony for EDN on Apr 10, 2013 14:00PM in Conference Room 309

Submitted By	Organization	Testifier Position	Present at Hearing
Stuart Coleman	Individual	Comments Only	No

Comments: My name is Stuart Coleman, and I'm a writer, teacher and environmental coordinator who lives in the McCully area. I'm writing to support HCR98, which would be a great way to support STEM education in Hawaii. The Surfrider Oahu Chapter helped save Kaka'ako from commercial development years ago, and I would love to see this kind of public-centered, educational center, especially with a marine-science focus. With the world-class research being done at the Kewalo Marine Lab and the possible involvement of the O bama Administration, this could be a state of the art facility for STEM education and a marine center. Mahalo for your consideration. Aloha, Stuart

Please note that testimony submitted less than 24 hours prior to the hearing , improperly identified, or directed to the incorrect office, may not be posted online or distributed to the committee prior to the convening of the public hearing.

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House Committee on Education
Wednesday, April 10, 2013
Conference Room 309
2:00 p.m.

House Concurrent Resolution 98

Expressing Support for Ongoing Efforts to Plan and Develop a STEM Education and Training Center in Kaka'ako Makai

Testimony in STRONG SUPPORT

Aloha Chair Takumi, Vice Chair Ohno and Committee Members:

I am pleased to offer strong support for House Concurrent Resolution 98. This commendable Resolution by the House, with the Senate concurring, will help ensure progress by the University of Hawaii in moving forward with a most significant marine and environmental sciences center incorporating advanced technology and educational outreach within the Pacific region.

Merging marine science, technology, engineering and math (STEM) disciplines within this advanced marine and environmental sciences center will be of exceptional value to marine and environmental science education and training. It will benefit Hawaii's present and future generations, including K-12 through graduate programs, expand local professional careers, and will have global importance.

The STEM education and training center is in keeping with the educational and environmental policies of the Kaka'ako Makai master plan, and is consistent and compatible with the plan's community-based Guiding Principles approved and adopted by the Hawaii Community Development Authority in May, 2011, as follows:

- *Provide enriching public recreational, cultural and educational opportunities for residents and visitors alike through Kaka'ako Makai's scenic coastal and marine environment, the Native Hawaiian cultural heritage, compatible facilities and activities, and historic sites and settings.*

- *Preserve, restore and maintain Kaka'ako Makai's valuable coastal and marine resources for present and future generations.*

- *Enable the monitoring, protection, restoration, and conservation of natural coastal and ocean resources, including reef and marine life, through responsible stewardship and sustainable practices.*

- *Support Kewalo Marine Laboratory's continued valuable marine biology and ecosystems research and education in the vicinity of Kewalo Basin.*

The seawater infrastructure investment for the STEM educational and training center is already in place, and has proven its irreplaceable value to the Kewalo Marine Laboratory's highly successful and self-sustaining national grant operations over many years. Hawaii's ecological, cultural and economic future is strongly tied to this work, including sustaining and improving the coastal health of our ahupua'a and their near-shore waters, as well as determining factors of sea-level rise impacts and climate change over time.

Affiliated scientists, educators, and the interested and affected community look forward to this significant accomplishment on behalf of the future of Hawaii's marine and environmental sciences benefitting Hawaii's people in the greater public interest. Mahalo nui loa for your support.

Michelle Spalding Matson