



UNIVERSITY OF HAWAI'I SYSTEM

TESTIMONY

HB 3159: Relating to the College of Natural Sciences

Testimony Presented Before the
House Committee on Higher Education

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by

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Committee on Higher Education

House Bill #3159

Relating to the Lyon Arboretum

Tuesday, February 2, 2006

1:30 p.m.

Chairperson Waters and members of the Higher Education Committee, thank you for the opportunity to come before you today to discuss the House Bill 3159.

As emphasized in the opening of the Legislature it is important to Hawai'i to strengthen math and science in the State. The College of Natural Sciences at the University of Hawai'i at Mānoa is the leading unit in the State of Hawai'i for education of science and mathematics. Children in grades K-12 have teachers who have gained their knowledge for these fields from the College. The State of Hawai'i is developing productivity in biotechnology. The basis of the opportunity for State's citizens to go into this field is from studying the life sciences in the College. There are a wide variety of needs in the State for upgrading education in math and science. An increased allocation to the College of Natural Sciences is appropriate.

The faculty in the College are internationally known for their expertise. The faculty in the College bring in much more federal research funding each year than the State expends in their salaries. Last year the extramural awards the College brought in was \$25M which is significantly larger than the \$14M the State funds for salaries of the faculty and staff. The College is a wise investment for the State.

The students at the University of Hawai'i have shown the success of the College by flooding into the College for their chosen field of study. As stated in the bill over one in ten students at Mānoa are majoring in the College. Whereas Mānoa has increased in enrollment by about 3% since 1993, the College of Natural Sciences has increased 66%.

	Mānoa Enrollment	College of Natural Science Enrollment
Fall 1993	20090	1296
Fall 2005	20644	2154

The number of faculty and the amount of State funds allocated to the College has not increased by 66%, however. The total amount of funding to the College in the last ten years has decreased, taking inflation into account. In FY 1995 the amount allocated to the College was \$14.2M that becomes \$17.7M taking inflation into account. The allocation for FY 2005 was \$16.0M. A decrease in over \$1M in such funding has major impacts for Hawai'i students.

With the increase in number of students coupled with the decrease in funding, the College has been able to accommodate as many students as possible by increasing class

size. The average class size in the College at the lower division is 43 students, an increase of 16% in the last ten years. The average class size at the graduate level is 10, an increase of 43% in the last ten years. Only Travel Industry Management has an average larger class size.

Due to lack of funding, the Department of Chemistry has decreased from 22 faculty to 14 faculty. They also have 30 graduate teaching assistants compared to 39 they had ten years ago. The Department in the last ten years has dropped Chem 253, has cut Chem 161 to two sections for over 500 students, only offers Chem 274 and Chem 274L in the spring rather than both fall and spring as previously, only offers Chem 152 and 152L in the spring rather than both fall and spring as previously and has dropped Chem 171 and 171L.

The Department of Mathematics has decreased from 38 to 27 faculty. Math 100 has increased from class sizes of 200 to over 350. The average class size of Calculus I has increased from 24 to 40, but due to room size limitations, the change is handled by doubling the size of individual sections. Math 420, 421, 444, 455, and 475 are now not taught every year. Starting in Fall 2006, the College of Education will require Math 111 and Math 112 of all elementary education major requiring 100 students going through this sequence. The need is for two faculty positions to merely handle this load.

The life sciences have increased in number of majors and cost of instruction. The cost of teaching life science laboratories has significantly increased in the past decade. The laboratory work on microorganisms for example has shifted from analyses of chemical physiology of whole organisms to the molecular analyses of DNA and proteins. This shift from the cellular level to the molecular level requires the use of rather expensive reagents: restriction enzymes, DNA isolation kits, and PCR reagents and kits. Individual kits, enzymes and reagent cost up to \$1000 per item per class. Sophisticated instrumentation is now required for such instruction: PCR machines, DNA sequencers, densitometers, plate readers. PCR machines cost about \$4000. Densitometers and plate readers cost about \$15,000 each. DNA sequencers can cost upward of \$100,000. Maintaining these instruments is also expensive. If we are to prepare our students for the real world then we need to expose them to current technologies. Lastly, although our budget has not increased, the enrollment in several costly laboratory classes has doubled over the past several years.

Facilities in the College are also in need of renovation or replacement. The major problem is with Edmondson and Snyder Halls. These buildings are attached to each other and have been the subject of television coverage of their bad condition. The lack of electrical power has resulted in faculty and students not being able to operate their laboratory equipment. Students cannot enter the ichthyology museum due to its poor conditions including inadequate air flow. The aquarium laboratory is not available for students or faculty due to its non-updated physical status. The Edmondson Snyder Hall complex was built approximately forty years ago. Since the life sciences are in the building, a clean air flow is important but not currently in place. There is no system air conditioning. The plumbing needs replacement with particular problems in the drainage system for biological components. The electrical system is not of sufficient power to

handle the increased laboratory equipment currently needed for use. There is insufficient wiring as well as outlets with often brown outs occurring. The rusting cabinets and termite infested tables and benches have been televised and certainly need replacement.

Each of the items listed in the bill are also included as a part of the University's BOR Supplemental Budget request in the following line items:

“Restoration of Arts and Sciences Budget Base”

“Restore Abolished Positions for Natural Sciences”

“Restoration of Arts and Sciences Tenure Track Positions”

“Facilities Improvement – Edmondson Hall”

The Chancellor has confirmed that she and the Vice Chancellors are in full support of this bill. I believe it is vital to the State that this bill passes.