NOAA EPP/MSI
Environmental Entrepreneurship Program
Environmental Demonstration project

Development of an Initiative to Increase the Participation of Alaska Native Students in NOAA-related Sciences

University of Alaska Fairbanks, Bristol Bay Campus
In partnership with
University of Alaska UAF; UAS; and UAA, College of Rural Alaska, Marine Advisory Program, and School of Fisheries and Ocean Sciences

New/Continuation: New

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Steps to Developing an Initiative to Increase the Participation of Alaska Native Students in NOAA-related Sciences

Abstract

Currently, the University of Alaska carries out a number of programs that are dedicated to increasing minority, and particularly Alaska Native, involvement in various disciplines. One of the more notable programs is the *Alaska Native Science and Engineering Program* (www.engr.uaa.alaska.edu/ansep/), which to date has focused primarily on getting Alaska Natives enrolled in and seeking university degrees in engineering, math, and physics fields Another successful University program with the K-12 programs is the *Alaska Rural Systemic Initiative*. These programs had three main objectives: 1) to systematically document the indigenous knowledge systems, 2) to incorporate indigenous knowledge and ways of knowing into to formal education systems, and 3) fostering connectivity between indigenous and western sciences. In addition to improving rural K-12 education programs, the program has been successful in increasing the Alaska Native enrollment in university programs. *However, there is no comprehensive, state-wide, long-term university program dedicated to increasing participation of Alaska Natives in NOAA-or marine related sciences.*

The University of Alaska has a strong interest in working cooperatively to increase the number of Alaska Natives involved in NOAA-related sciences including marine biology, fisheries, climate and natural resource management. To date, the University of Alaska has participated in two NOAA-funded projects designed to enhance the offerings of its rural campuses in NOAA sciences and related careers.

Both NOAA and the University of Alaska would like to develop a more state-wide, comprehensive and long-term approach to meeting the goal of increasing the number of Alaska Natives working in NOAA-related sciences. The purpose of the initiative is to support Alaska Natives in these sciences such as marine biology, climate, weather, fisheries and natural resource management (not just to increase the number of NOAA employees), whether they ultimately work in state, federal, tribal, educational or other positions.

Seed money is available from NOAA for the University of Alaska Fairbanks College of Rural Alaska (CRA) and the School of Fisheries and Ocean Sciences (SFOS) to develop a collaborative, conceptual approach to this initiative as well as a proposed action plan, budget and timeline for such an effort. This paper describes the steps necessary to develop this design.

Project Description

Background

Alaska's marine environment is critical to its social and economic well being. The coastline of Alaska stretches for 34,000 miles, longer than the coastlines of all other states combined. The continental shelf of the Bering Sea and the Gulf of Alaska annually produce over 2 million metric tons of valuable marine resources. As a result, Alaska is home to the most valuable commercial fishery in the nation, annually worth about $2 billion. Thousands of people are employed in Alaska in careers that encompass marine biology, fisheries management, weather predictions, resource economics, watershed planning and other marine and aquatic work.

The living marine resources of Alaska - fish, shellfish, macro algae, marine mammals and birds are fundamental to the strong subsistence-based Native cultures throughout Alaska. Many of these resources are also valuable to the sport fish and tourism industries in the state.

Approximately 50% of rural Alaskans are Alaska Natives, and much of this population has strong subsistence and cultural connections to the coastline. Many of the villages are thousands of years old. Alaska Natives represent a large percentage of Alaska's commercial fishermen and in the case of communities involved in the Community Development Quota program, are becoming substantial investors in Alaska's billion dollar fisheries.

However, very few marine resource science, management, or business positions are held by Alaska Natives. No statistics are available on the percentage of positions in these disciplines held by Alaska Natives, but it insignificant considering that 16% of the state's population is Alaska Native.

Alaska Native groups and Federal and state natural resource agencies have a strong interest in seeing an increased number of Alaska Natives in marine careers. Alaska Natives know tides and currents, marine mammal distributions, fishery declines, and decadal habitat shifts and can offer substantial insight into the long term changes in Alaska's marine ecosystems. In addition Alaska Natives are more likely to stay in Alaska and seek long term employment opportunities.

Current Education Opportunities at the University of Alaska

The University of Alaska is divided into three major academic units (MAUs) - University of Alaska Southeast - UAS (based in Juneau with a variety of field campuses), University of Alaska Anchorage - UAA, and the University of Alaska Fairbanks - UAF. All three serve both a Native and non-Native population. Developing an initiative at the University of Alaska that would target Native students in NOAA related sciences should involve all three MAUs.

Marine-related programs and degrees that operate from the various MAUs include:

- A University of Alaska Southeast certificate and AA program in Fisheries technology, based in Ketchikan.
- A BS in Marine Biology is offered by the University of Alaska Southeast. The program also offers research experience to undergraduate students interested in the physiology, ecology, and behavior of marine organisms through funding from NSF. Field research projects take place in Glacier Bay National Park and Preserve, the Gulf of Alaska, and the Arctic Ocean.
- University of Alaska Fairbanks School of Fisheries and Ocean Sciences has a BS, MS and PhD in fisheries, marine science and oceanography. The graduate school for fisheries is located in Juneau.
- University of Alaska Fairbanks College of Rural Alaska currently has a) an AA degree in Land and Renewable Resource Management and b) an AA in Tribal Management which may add a fisheries management strand to it (no link to SFOS BS). They are close to completing a new Associate of Science program with anticipated approval by fall 2006.

NOAA's Educational Partnership Program (EPP) has provided a number of first step projects, carried out by the CRA Bristol Bay Campus and Interior Aleutian Campus. These include "Watershed and Community Mapping of the Nushagak Mulchatna Drainage," support for Rural Development seminars, one on "The Bering Sea" and the other on "Comanagement." Currently proposals are under review for a "High School Pipeline Project" and "Coastal Technician Training Program Demonstration Project".

NOAA projects that the CRA/BBC has undertaken have resulted in improved education and outreach with more students involved in local environmental projects. Local environmental and planning needs were addressed through trainings offered and mentoring and career development provided pathway choices and better student retention. Students were provided internships opportunities with organizations involved in environmental and resource management and the Bristol Bay Campus developed a pool of trained fisheries technicians capable of filling federal, state, and local fisheries and related research and monitoring projects. Students were intentionally exposed to employment possibilities in fishery-related professions. For example, some students followed a career pathway beginning with the Bristol Bay Salmon Management course in 8^{th} and $9^{th\ grade}$, advancing to Choggiung Upriver Internship and then being eligible for the Fishery Bio-Technician internship with the National Park Service. This internship is for students interested in careers in resource management. In partnership with the National Park Service, students who complete program requirements are eligible to continue working with the Park Service or other state, federal, or local agencies during summer months. This was a good introduction to the land/renewable resources program and has been a good introduction to the Hutlee science and math program grant sponsored by the National Science Foundation

These pilot projects are very important to the University as first steps to a more comprehensive approach and a beginning partnership with NOAA.

The University of Alaska Fairbanks has two major academic units who will be involved in this initiative.

The College of Rural Alaska (CRA) serves 160 communities and two-thirds of the geographic area of the State of Alaska. The area represents the Inupiat, Yup'ik, Athabascan, Aleut and Tlingit Native people. Many of the people in the CRA communities speak English as a second language and are first generation students. Most of the communities are accessible only by air and have limited or intermittent Internet access. Alaska Natives make up 54 percent of the students in the five rural campuses: Chukchi (Kotzebue area), Northwest (Nome area), Kuskokwim (Bethel area), Bristol Bay (Dillingham area) and Interior-Aleutians (Fairbanks area with campus in Unalaska/Dutch Harbor). All of the rural campuses are federally-recognized as Alaska Native serving institutions and minority serving institutions. Bernice Joseph is the Executive Dean of the College of Rural Alaska.

The School of Fisheries and Ocean Sciences (SFOS) is responsible for statewide programs relating to Alaska's marine and freshwater environments and fisheries. Marine education, research, fishery technology and extension work are conducted through several departments of the school. The Institute of Marine Science, with major laboratory facilities in Fairbanks and at the Seward Marine Center, focuses on oceanographic research and education. Seward is the home port of the National Science Foundation research vessel *Alpha Helix*, and Kasitsna Bay near Homer is the site of a coastal laboratory with spectacular intertidal and subtidal communities. The Global Undersea Research Unit in Fairbanks emphasizes the use of submersibles, remotely operated vehicles, and other undersea observing systems. The Juneau Center is adjacent to the NOAA Fisheries Auke Bay laboratory and near regional laboratories and headquarters of several state and federal agencies. The Fishery Industrial Technology Center at Kodiak houses research in seafood science and sustainable harvest technology. The Marine Advisory Program offers public education and outreach statewide from its nine offices in coastal communities.

The Dean of SFOS is Dr. Denis Wiesenburg. Although based in Fairbanks, Dr. Wiesenburg has been charged by the President of the University with overseeing all marine-related educational activities across all three MAUs. This is positive step that will enable coordination of this initiative.

CRA has a wide range of educational programs that target Alaska Natives such as the Rural Development BA and MA programs, the Tribal Management Program, Education Paraprofessionals and Rural Health Services. The programs share common approaches that have been successful such as the creation of learning communities through intensive courses blended with distance education; bridging programs that encourage high school students to consider further education and stair-stepping all programs to higher educational links.

Justification

This project will be closely coordinate with student training programs and associated project staff funded through NOAA's EEP or other funds so that the experiences of those projects will be considered in this initiative.

CRA is currently close to finalizing a new Associate of Science degree. This initiative could flow into that AAS degree and provide a link to a BS degree.

SFOS has numerous field sites that could be used for intensive programs. The School is beginning a program to revitalize its undergraduate degree program. As a result, the timing is right to begin this initiative.

Technical Plan

Using seed funds from NOAA, Kim Williams, Title 3 Program Development Staff with the College of Rural Alaska and Dr. Dolly Garza, a Professor of Fisheries in the Sea Grant Marine Advisory Program, School of Fisheries and Ocean Sciences will develop this project. Both Kim and Dolly are Alaska Natives and actively involved in natural resource management and marine science education at the University of Alaska.

This staff time will be used to:

- Develop an advisory group of CRA and SFOS faculty, Alaska Native representatives and agency representatives. The group would be small enough to be an effective sounding board on a regular basis by the staff.

- One of the first tasks of the team with assistance by the advisory group will be to develop recommendations on how to assess the current level of involvement of Alaska Natives in NOAA related sciences around the state, both as students and as employees.

- Next, the project will develop tools to determine what roadblocks prevent Alaska Natives from entering NOAA sciences (survey, focus groups, interviews, meetings with regional groups). Possible roadblocks may include poor performance in high school sciences and/or math, no marine sciences offered in school, no role models, no information on marine related careers to entice high school graduates, no job opportunities in the region, etc.

- Assess what types of sciences are being offered in rural schools.

- Assess the employment and internship opportunities during and/or following the program by meeting with state, federal, Native, and NGO groups who may have employees working in NOAA related sciences. Develop background

materials on how many employees they have, what their educational requirements are, and what their level of interest is in supporting a University program such as this through either funding, internships or employment.

- Research similar minority programs in Alaska and the lower 48 which are dedicated to encouraging Natives into science fields such as engineering, nursing or education to learn about bridging programs, innovative delivery methods for distance learners, motivation and student retention and other methods, and models currently in use in successful programs for the proposed target audience. Possible models at the University of Alaska include the Alaska Native Science and Engineering Program (ANSEP http://www.engr.uaa.alaska.edu/ansep/) and the Department of Alaska Native and Rural Development (RD) http://danrd.dist-ed.uaf.edu/index.shtml

- Develop a vision and goal statement for a program that could be effective in Alaska in increasing the number of Alaska Native students receiving degrees in NOAA related sciences. Meet with the advisory group to brainstorm program inputs such as: scholarships, work or life credit, paid internships, sponsored projects, tutoring for math and sciences, developing a marine course for high school, phasing in a program over multiple years, etc.

- Develop a budget and timeline, and objectives and action steps that can be met based on the proposed vision.

Output/Anticipated Benefits:

Two outputs are expected from this project, which may direct the University toward a longer term goal.

1) A report will be created that recommends to the University the following steps toward this initiative:

    - Identifying roadblocks to Alaska Natives in NOAA-related sciences
    - Identifying means and methods for addressing identified roadblocks
    - Strengthen its offerings in science and math via distance education, and make those courses link to higher level degrees.
    - Ensuring that this program can reach Alaska Natives from all over the state.
    - Developing certificate, AA, AAS programs that are relevant and that can link to BS and higher degrees.
    - Supporting science and math faculty teaching those courses.
    - Linking current offerings to higher level degrees in the ocean sciences.
    - Developing of coursework that is relevant to Native students by incorporating traditional ecological knowledge with science.

- Communicating the initiative to Native students including why it marine and other NOAA-related science is a good choice for Native students, and potential for jobs around the state.
- Developing internships and practicums that will attract Native students to the programs by working with agencies and NGOS involved in these disciplines both during the school year and as a means to paid summer employment during the program.
- Recruiting Native students to participate – i.e. the potential to link to high school programs around the state and the possibility of a "bridge program" between high school and college.
- Retaining Native students (faculty mentorships, tutoring, internships, etc.).
- Linking to employment opportunities for Alaska Natives in the sciences

2) A meeting to present these efforts will be convened. The meeting will be the last activity of the program staff person and faculty member until additional funding has been committed. Attendees at the meeting should include at least: CRA campus directors, SFOS unit directors, NOAA representatives, Alaska Native resource groups representatives and representatives from other agencies involved in related sciences. The objectives of this final meeting will be to present the concept, incorporate input, plan for the next step and evaluate the potential for funding.

The University of Alaska greatly appreciates NOAA's interest in the development of this initiative. We have no doubt that a program of this sort, if developed in a step-wise and inclusive manner with the Alaska Native community and the various science-based agencies, can succeed and be an important component in the University's contribution to the nation's management and conservation of Alaska's marine resources.