



UNIVERSITY OF ALASKA FAIRBANKS BRISTOL BAY CAMPUS

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BRISTOL BAY ENVIRONMENTAL SCIENCE NEWS BRISTOL BAY ENVIRONMENTAL SCIENCE LABORATORY

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BBESL OUTREACH: CONFERENCES, CLASSES, AND INTENSIVES

Since August 2013, BBESL faculty and staff have been attending important science Conferences. We were invited by Dr. Duffy (UAF Chem) to present our poster "Arctic Environmental Science and Biology Education" August 28-30 in Washington DC at the *National Planning Workshop, AAAS Vision and Change in Undergraduate Biology Education*.



In October Todd attended the Geological Society of America Conference and the National Association of Geoscience Teachers (NAGT) *Science at Two-Year Colleges* short course. His paper *Sustaining Science Programs in Western Alaska* stressed how UAF community campuses provide logistics and resources to promote science education and research in western Alaska.

The next big event was the Arctic Division of the American Association for the

Advancement of Science, September 25-28, 2013 in Kodiak. At this conference three BBESL personal presented (pg 2).



In January we were invited to San Antonio, TX at the National Science Foundation Tribal College and University Program Leaders Forum. Its theme was "Broadening Participation: Moving from Capacity Building to Research" and BBESL discussed our NUNAPUT Program and presented: "Culturally Based Research in Western Alaska."

UAF BBC's partnership in the Orca Project saw progress with courses in whale skeleton cleaning and skeletal articulation (see pg2).

Machines stripped to their bones were

used to make electrical snow-gos for a national competition and have helped students learn about energy (pg 3).



Two lab intensives were taught in the Spring 2014 semester: BIOL104: Natural History of Alaska in Juneau and PHYS102: Energy and Society in Fairbanks.

BBESL had four students present at WAISC in Kotzebue in April (pg 3). Additional presentations were made at SWIM, WAISC , AFE, and SWASH (pg 3).

FIELD NOTES By Dan Dunaway



Longhead Dab

Limanda proboscidea

Environmental Sciences Lab students often conduct sampling trawls in Nushagak Bay. In August of 2013, eight specimens

of the Longhead Dab, *Limanda proboscidea*, were captured. The species is common on shallow, soft bottoms of Bristol Bay, Bering, Beaufort and Chukchi Seas as far north as Barrow . The Longhead Dab has a unique appearance compared to other flatfishes with a projecting head and "upturned" mouth or snout. These "right eyed" flatfish are usually small, at most reaching 16 inches (41cm) long. They are a mottled olive gray to brown on the upper side and yellowish to "lemon yellow" on their blind side. Subsequent surveys in the species' range have never found them in high abundance compared to its commercially important relative the Yellowfin Sole, *Limanda aspera*. The Longhead Dab has little commercial and subsistence value but it's still exciting to add new species to our fish collection from Nushagak Bay.

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Orca Articulation Project Coming Together By Clint Reigh

The whale project has seen exciting progress over the past semester. A group of over 15 high school students participated in a class that covered mammal anatomy, bone chemistry, bone cleaning and cataloging techniques. Students gained hands-on experience by working to clean and catalog the bones of the fetal orca. Roughly half of the bones



from the orca fetus have been cleaned and cataloged to date as a result of the student's efforts. The course was designed to prepare the fetal orca bones to be scanned on the UAF BBC 3D scanner for archiving purposes as well as to facilitate 3D printing of the bones.

Nunaput Stewardship Scholarship Applications Now Being Accepted

Students interested in environmental studies, sustainable energy or rural development should apply for a scholarship through the UAF Bristol Bay Campus that will allow them to become better stewards of their region. Full time scholars can earn as much as \$2400 per semester, which combined with other financial aid, could be used for anything the scholar needs. Students can apply for full time or part time scholarships. The deadline for the next round of applications is September 4, 2014.

**For more information call:
907-842-5109.**

WOOD RIVER ISOPOD HUNT

Three students in the Summer 2013 ENVI 260 class conducted a survey of benthic animals in Wood River and Nushagak Bay. Included in the survey was an attempt to further define the range of the Isopod *Saduria entomon* within the estuary. It is known that the isopods are present in the freshwater lakes and estuaries of the Ugashik and Egegik Rivers. Isopods



and provide further research opportunities for future BBESL students to examine the extent of the isopod.



have not been reported in Lake Aleknagik, raising a question about their range in the Wood River.

Students also conducted benthic trawls in near the mouth of the Muklung River, 12 miles (20 km) from the mouth of the Wood River. Isopods were captured in trawls Mouths of both Rivers. The new trawls expand the known range of *S. entomon*



BBESL Papers at Arctic AAAS

- Plenary Talk—Dr. Todd Radenbaugh: *A Field Guide to the Age of Ecological Innocence: Lessons from Martha Brae, Palliser's Triangle, and Bristol Bay.*
- Sustainability Session—Dr. Tom Marsik and Kristin Donaldson: *Net Zero Energy—Ready Home in Dillingham, AK.*
- Poster Presentation—Clint Reigh: *Orca Skeletal Articulation: A STEM Collaboration for Southwest Alaska.*

Energy Efficient Construction

Summer Students/Interns Learn Energy Efficient Construction

An energy efficient cabin was built in 2013. It was done by students of the Construction Trades Technology program, four of which also became interns at the Bristol Bay Environmental Science Lab. The energy efficient structure was built using a modern technique called REMOTE (Residential Exterior Membrane Outside insulation Technique).

Interested in becoming a student and/or intern this summer and learn about energy efficient construction?

Please contact us to register.

ENVI CERTIFICATE TO ASSOCIATES OF SCIENCE By Clint Reigh

One interest in the Environmental Studies Program is to provide a pathway for student success. Beginning with a few classes of interest or an occupational endorsement, a student can progress through an Associate's degree and move onto pursuing a Bachelor's degree. The Certificate in Environmental Studies is an excellent choice for students wishing to pursue a science degree while taking classes through the Bristol Bay Campus.

Completing the Certificate in Environmental Studies could potentially place a student within 21 credits of an Associates of Science. Carefully selecting courses to complete the Environmental Studies Certificate could eliminate the Mathematics, Natural Sciences, and Concentration Specialty requirements of the Associates of science degree. Completion of the Associate of Science degree positions a student well to continue on in earning a Bachelor's of Science Degree from the University of Alaska Fairbanks.

ELECTRIC SNOWMOBILE CHALLENGE

BY Michael Golub

In Fall 2013 and Spring 2014 semesters, an energy efficient Snowmachine was designed to run on battery power by students enrolled in UAF BBC's Sustainable Energy Occupational Endorsement. Students learned by modifying a small 250cc snowmachine with the gasoline engine removed. More fabrication is currently underway. Students competed in the 14th Annual SAE International Clean Snowmobile Challenge in March in Michigan, where they won fourth place. Congratulations to these UAF BBC Sustainable Energy students.



ENVIRONMENTAL STUDIES STUDENTS PRESENT AT WAISC 2014—KOTZEBUE



Tim Ellis Alternative Energy and Conservation Session
LED Street Lighting Case Study

Hank Boggs Ecology, Environment and Climate Change Session
Winter Aquatic Fauna in the Dillingham Alaska Region

Richard Kemper Alternative Energy and Conservation Session
A Feasibility Study Concerning Retro-

fitting of Tok Public School with LED Lights

Frank Nicholson Poster Session
Rural Electric Snowmobile Project

Faculty and students also presented at Southwest Alaska Interagency meeting (SWIM), Southwest Alaska Salmon Habitat Partnership (SWASH) and Alaska Forum on the Environment (AFE). Visit the BBESL webpage for more details.

Edward Anger Ecology, Environment and Climate Change Session
Biodiversity of the Epibentic organisms of Nushagak Bay.



Bristol Bay Environmental Science Laboratory

University of Alaska Fairbanks
 Bristol Bay Campus
 P.O. Box 1070
 Dillingham, AK 99576
 Phone: 907-842-5109
 Toll Free: 1-800-478-5109
 Email: bb-esl@alaska.edu

WWW.UAF.EDU/BBESL



Upcoming Science Courses

Summer 2014

- ENVI 160—Internship in Environmental Science
- ENVI 260 —Intro to Methods in Envi Studies Reporting
- CTT 100, 106, 111, 112, 113, 114, 199 —Construction courses

Fall 2014

- ENVI 265—Intro to Methods in Envi Studies Reporting
- GEOG 111 —Field Techniques for Environmental Technicians
- ENVI 120—Home Energy Basics
- ENVI 220—Intro to Sustainable Energy

Fall 2014 Registration is now open!

Register at the Bristol Bay Campus or Online at Uaonline.alaska.edu

Call The Bristol Bay Campus To Register Now!
 842-5109
 1-800-478-5109

Stories For Our Next Issue...



LETTERS FROM THE PROFESSORS



Dr. Tomas Marsik
 Assistant Professor
 Sustainable Energy

From an academic viewpoint, academic year 2013-2014 was very exciting for the Bristol Bay Environmental Science Lab's Sustainable Energy program. 13 students graduated with an Occupational Endorsement in Sustainable Energy, and two students graduated with and Interdisciplinary Associate of Applied Science (AAS) in Sustainable Energy. For a new program, those are good numbers.

But the ultimate goal is not to produce graduation numbers, the ultimate goal is to promote energy sustainability. How are we doing in meeting that goal? Is the Sustainable Energy program effectively providing education that is usable by program participants to promote energy sustainability? Or does the program need some adjustments or further growth? We want your feed-

back. We are not building the program for us, we are building it for you.

There are many directions to take. Do we keep the current Occupational Endorsement in Sustainable Energy as is, or do we make changes? Do we develop a higher level program, such as AAS? Or maybe the demand isn't high enough to justify a new program and those interested should simply use interdisciplinary studies? How about a minor in Sustainable Energy, would there be an interest? If you have ideas on what the Sustainable Energy program should look like, please let us know. Remember, it is your program!



Dr. Todd Radenbaugh
 Associate Professor
 Environmental Science

How can we better serve Bristol Bay's higher educational needs? This question is one we continually ask ourselves and our partners. One answer relates to the educational programs offered. It has been apparent that although student enrollment has continued to increase the number of graduates has remained relatively flat. There are many reasons for this, and one of the most compelling may be that students want the specialized information offered in a specific class but don't necessarily want all the coursework required for a certificate or degree. In discussions with educational partners, we identified a few core courses that students avoid taking and therefore are not able to get degrees.

This led us to consider offering more Occupational Endorsements (OE) in our curriculum. OEs are programs designed to give students training for employment in a specific trade. OEs are not degrees but short programs of 9 to 30 credits that offer the basic job skills necessary to enter the workforce. In 2012, UAF BBC's first OE in Sustainable Energy was established with much success.

Two OEs are currently in development: Surface Water Quality and Rural Waste Management and Spill Response Technician. Students may earn more than one OE by completing requirements of other programs and OE credits can be used towards undergraduate Certificates and degrees. So OEs are an excellent step into specialized higher education programs while preparing individuals to enter a fulfilling career.

Bristol Bay Environmental Science Laboratory was established in 2007 to serve the sustainable energy and environmental science needs in the region. Our mission is to increase science literacy and to provide the knowledge and skills necessary for individuals to take an active role in the management of the natural resources in and around Bristol Bay. We are your neighborhood science lab!