



UNIVERSITY OF ALASKA FAIRBANKS BRISTOL BAY CAMPUS

WWW.UAF.EDU/BBESL



BRISTOL BAY ENVIRONMENTAL SCIENCE NEWS BRISTOL BAY ENVIRONMENTAL SCIENCE LABORATORY

VOLUME 6 , ISSUE 1 SPRING, 2013

BBESL CONTINUES TO DEVELOP RESEARCH AND PROGRAMS

In the past 6 months BBESL faculty and staff have been busy setting world records (pg. 2) winning community leadership awards, conducting educational surveys (pg 3), attending conferences (pg. 1 &2), and conducting research. On top of this, pushing forward on a new ENVI Occupational Endorsement (pg. 3). Students in the UAF BBC ENVI program are continuing to



Adam Kane displays the Leadership for Sustainable Communities Award presented to BBESL for work done in Western Alaska



Jennifer Robinette presents her ENVI 265 capstone research project at the AISES National Conference

amaze with the work they are doing both in classes and as interns at a number of tribes, non-profits and other organizations around the state (pg. 3). The NSF Nunaput Stewardship program is continuing with many new students enrolled in the fields of science and rural development. Applications are now being accepted for this pro

gram for the 2013-14 semesters. We are especially proud of one of the Nunaput Scholars, Kristina Ramirez who was the UAF Bristol Bay Campus Student of the Year for 2013 (pg. 3).



Biology 104 students at Juneau Lab.

In the Spring 2013 semester UAF BBC held three science lab inten-

sives including BIOL 104X at the NOAA's Ted Stevens Marine Research Institute in Juneau, CHEM 103X at the new science teaching lab in Dillingham, and PHYS 102X at the Reichardt Building in Fairbanks.



CHEM103 students travelled into DLG for their lab intensive

BBESL recently acquired some new educational and research tools including a 100 gal. refrigerated aquarium and a submersible ROV, allowing us to learn more about the environmentally, culturally and economically important waters of the region. Beginning this summer, the renovation of the Bristol Bay Campus Science center should be underway. When it's completed, it will give us the necessary space to continue delivering high quality education in the Bristol Bay region.

BBESL Outreach Since Fall 2012

- Alaskan Ocean Film Festival, DLG
- BBNC Annual Meeting, ANC
- Mt Edgecombe College Fair, Sitka
- American Indian Science and Engineering Society National Conference (AISES), ANC
- Alaska Tribal Conference on Environmental Management, ANC
- New Stuyahok High School
- Energy Tour for DLG High School
- Togiak High School Science Workshop
- Alaska Forum on the Envi., ANC
- Tsunami Bowl (NOAA), Seward
- Science Challenger, DLG
- Science Club Elem. School, DLG
- BBEDC Career Fair, DLG
- SW Alaska Municipal Conference, ANC
- Science Sleuths and Electric Car, Beaver Round-up, DLG
- SW Interagency Meeting (SWIM), DLG
- Net Zero Energy Case Studies in Alaska: Center for Appropriate Technology, Palmer
- Supporting and Advancing Geoscience Education in 2 Year Colleges, Nome
- Western Alaska Interdisciplinary Science Conference, Nome
- 28th Lowell Wakefield Fisheries Symposium Responses of Arctic Marine Ecosystems to Climate Change, ANC

FIELD NOTES By Dan Dunaway



Bright Belly Sculpin
Microcottus sellaris

The bright belly sculpin generally live in marine and estuarine waters 50m deep or less. It is found from the Aleutian Islands to Sea of Japan and the Bering to the Chukchi Sea. Body shape is classic sculpin with a large mouth, a wide blunt head with flared gillplates and body that tapers to a small rounded tail. Length is less than 125 mm. Their backs are mottled dark

browns, greens, even purplish, sometimes showing thin black bands bordering lighter bands. Most distinctive is their namesake bright yellow to orange belly patch. They are important ecologically but not to commercial, sport or subsistence users. Knowledge of their life history is minimal. Like several sculpin species, *M. sellaris* may buzz vigorously when threatened.

INSIDE THIS ISSUE:

| | |
|-----------------------------|---|
| FIELD NOTES | 1 |
| BBESL WORLD RECORD | 2 |
| WAISC 2013 AND SAGE 2YC | 2 |
| NUNAPUT SCHOLARSHIP | 2 |
| ENVI OCCUP. ENDORSEMENT | 3 |
| BBESL INTERNS | 3 |
| STUDENT OF THE YEAR | 3 |
| LETTERS FROM THE PROFESSORS | 4 |

BBESL CONTRIBUTES TO WORLD RECORD By Tom Marsik

Tom Marsik and Kristin Donaldson designed and built an extremely energy efficient house with the air-tightness of 0.05 Air Changes per Hour (ACH) at the differential pressure of 50 Pascal's – setting the new world record for the Tightest Residential Building. The official blower door test was performed on March 6, 2013 and few days later the record was made official by the World Record Academy. Despite its airtightness, the house maintains good indoor air quality thanks to a heat recovery ventilation (HRV) system.



World Record Setting house built by BBESL Sustainable Energy professor Tom Marsik

The extreme air tightness, superinsulation (28" thick walls), small size, and other ener-

gy efficiency features result in very low energy use. The main purpose of this world record is to help bring more attention to energy efficient buildings and efficiency in general. The world's tightest known residential building was modeled after the Passive Office, a student-built experimental structure developed by the UAF Bristol Bay Campus Sustainable Energy Program.

To learn more, visit <http://www.uaf.edu/bbesl/sustainable-energy/record/>

WAISC 2013 & SAGE AT NORTHWEST CAMPUS

By Adam Kane and Todd Radenbaugh

WAISC

Faculty and staff from the BBESL contributed significantly to the 2013 Western Alaska Interdisciplinary Science Conference: *Rural Science in Action*. This year WAISC was hosted by the UAF Northwest Campus in Nome. BBESL was represented in a number of sessions including Energy and Conservation led by Chet Chambers and Tom Marsik. Dan Dunaway and Todd Radenbaugh shared new data about Nushagak Bay. Clint Reigh discussed the distribution of Isopods (*Saduria entomon*) in Wood River. Adam Kane dis-

sustainable communities, the environment and sustainable energies.

Web link: seagrant.uaf.edu/conferences/waisc/



SAGE participants discuss the future of distance science education

Western Alaska SAGE 2YC

New to WAISC was the Western Alaska Engagement in Geoscience for Two Year Colleges (SAGE 2YC) Workshop. The workshop brought together educators, scientists, rural leaders, students, and community members to discuss regional science and math educational issues.

This one-day workshop focused on how the Science Department at UAF's College of Rural and Community Development can improve integration of curriculum and programs.

Some of the key discussion points at the workshop included the role of non-degree one credit classes, how to promote cooperation between urban and rural faculty, how to hold more science core courses, and cost of tuition. The workshop was a good start in addressing the many science educational issues faced by rural community campuses.

Web link: <https://serc.carleton.edu/sage2yc/workforce/local2013alaska/index.html>



Alaskan scientists met to share their most recent research in Nome.

cussed Dillingham dendrochronology. BBESL Students who also presented include Triena Slatter, Charlene Dubay and Jennifer Robinette. Led by Summer Graber and Clint Reigh, Dillingham High School Tsunami Bowl students Connor Ito, Kenneth Ramsey and Brian Venua also presented at WAISC. At the keynote address and awards dinner, BBESL was awarded for its work regarding

Nunaput Stewardship Scholarship Applications Now Being Accepted

Students interested in environmental studies, sustainable energy or rural development have the opportunity to 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 August 15, 2013.

For more information call:

907-842-5109.

Spring 2013 Science Lab Intensives

Three lab intensives were conducted through the BBESL in Spring 2013:

Instructor: Todd Radenbaugh

Biology 104x:

Natural History of Alaska

Location: Juneau

April 6-10, 2013

Instructor: Brian Rasley

Chemistry 103x:

Basic General Chemistry

Location: Dillingham

April 9-12, 2013

Instructor: Tom Marsik

Physics 102x:

Energy and Society

Location: Fairbanks

April 27-30, 2013



PROPOSED OCCUPATIONAL ENDORSEMENT IN ENVIRONMENTAL STUDIES

By Todd Radenbaugh

UAF BBC is proposing an Environmental Studies Occupational Endorsement (ENVI OE). OEs are entry level educational pathways designed to provide specific work-force skills. They require between 9 and 30 credit hours. These hours may also be applied to other undergraduate degree programs. Currently UAF BBC offers an OE in Sustainable Energy.

The proposed ENVI OE will be taught entirely through distance education techniques using many eLearning models and appropriate technologies. The ENVI OE has many partners across Alaska and currently include Alaska Forum on the Environment (AFE), Bristol Bay Native Association (BBNA),

the Kuskokwim Watershed Council (KWC), Rural Alaska Community Action Program (RurAL CAP), and Southwest Alaska Municipal Conference (SWAMC).

Using survey data and consultation with partners, ENVI OE goals include: 1) a distance delivered curriculum in environmental issues and ethics that promotes behaviors that benefit the environment, 2) engage students in environmental stewardship by emphasizing the importance of the ecosystem services that to protect human health, support economic and recreational activities and provide healthy habitat for biota, and 3) develop environmental workforce that are employed in rural Alaska.

Skeletal Puzzles

By Adam Kane

In preparation for articulating the Orca mother with fetus that swam up the Nushagak in 2011, UAF BBC has been holding Small Mammal Skeleton Articulation classes.



Students learning to articulate a Red Fox

During fall semester, instructor Lee Post held two classes. Many students attended the weekend long classes and successfully re-assembled a fox and an otter skeleton. The Orca fetus was thawed out and the bones were cleaned in April. The next step for the students is to re-assemble the skeleton, which is thought to be the only (soon to be) articulated Orca fetus in the world.

Meet the 2013 BBESL Interns

By Adam Kane

BBESL interns actively work with local and statewide organizations that focus on environmental and energy issues.

The Spring 2013 interns are:



Katrina Lockuk

Title: Collaborative Research: Building Capacity for Community-Based Marine Mammals Conservation in Bristol Bay

Sponsor Agency: Bristol Bay Native Association



Triena Slatter

Title: Community Outreach with Alaska Center for the Environment
Sponsor Agency: Alaska Center for the Environment



Michael Golub

Title: Environmental Film Production
Sponsor Agency: UAF Dept. of Theatre and Film

Spotlight Intern:



Charlene Dubay is the Environmental Director for Telida Native Village and has worked with the EPA Indian General Assistance Program for 11 years. She has a B.S. in Wildlife Biology from the University of Massachusetts. The Environmental Department is doing a 2-year water quality assessment in the Upper Kuskokwim River. Through the BBESL Charlene is learning to help her tribe build capacity for water quality testing and analysis. She is re-teaching the tribal members what she learns in her classes.

STUDENT OF THE YEAR, KRISTINA RAMIREZ

By Adam Kane



Kristina Ramirez, an NSF Nunaput Scholar, is the UAF BBC 2012-13 Student of the Year. She is graduating with an Associate of Arts degree and still working to complete a Rural Development Bachelor degree. She states "one of the biggest challenges towards

obtaining her AA degree was trying not to go out snow machining every weekend because she had to stay home and work on homework."

Kristina is from Dillingham and would like to work for one of the Bristol Bay region corporations or organizations.



Pictures from: Blower Door Test, BIOL 104 Intensive, Orca Fetus Dissection, Home Energy Basics, Small Mammal Articulation, Videoray ROV

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

- ENVI 260: Field Techniques for Environmental Technicians (2 credits) (Summer 2013)
- ENVI 265: Intro to Methods in Environmental Studies Reporting (2 credit) (Fall 2013)
- ENVI 220: Intro to Sustainable Energy (3 credits) (Fall 2013)
- GEOG 111X: Earth & Environment (4 credits) (Fall 2013)
- CHEM 103X: Basic General Chemistry (4 credits) (Fall 2013)
- BIOL 103X: Biology and Society (4 credits) (Fall 2013)

Fall 2013 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

It is another busy spring at the Bristol Bay Environmental Science Lab. One thing we definitely cannot complain about is a shortage of things to do. Looking at our sustainable energy projects, here is a brief summary of what we have been up to since the last newsletter: Besides teaching classes, we have continued our sustainability movie series, given tours of our energy tools (Passive Office, etc.), hosted an energy workshop for high school students, presented at numerous conferences, meetings, and workshops (AISES, AFE, ACAT, SWIM, WAISC, Beaver Roundup), performed energy demonstrations at schools, participated in career fairs, made significant updates to our website (check it out: <http://www.uaf.edu/bbesl/>), and collected a lot of data. The data collection and analysis was done for two ultra-efficient buildings, a solar hot water system, air-source heat pump, photovoltaic system, wind turbine, and local

weather.

One thing that I am very excited about is that the revisions to our Occupational Endorsement in Sustainable Energy were approved. The revised version has electives that allow students to specialize in specific areas of sustainable energy. Now there are also options for 100% distance delivery, which means anyone with internet access can complete this occupational endorsement regardless of location. As always, we are interested to hear from you. If you have suggestions, want to get involved, or simply just seek more information, let us know!



Dr. Todd Radenbaugh
Assistant Professor
Environmental Science

Educational efforts at BBESL are broad and ambitious. Our place-based activities are efforts to promote undergraduate science education. They consider how our local activities are linked natural resource use, climate change, sustainable economic development, and community resilience. As we continue to improve our programs, we must remember that the education we provide should lead to local jobs. Our teaching and science programs must include rural workforce development. We need to identify the evolving professional skills needed to do the science that can address the local complex issues. Such cur-

riculum includes science field course, workshops, and undergraduate research focusing on the changing socio-ecological landscape.

In rural Alaska, preparing individuals for local employment in the environmental field requires more than the traditional university stepping stones of certificate, associate to baccalaureate programs. It also requires a broad array of specialized tools. Education should start with the necessary skills needed by individuals to conduct themselves as an environmental professional. The training for specific discipline comes next. Such skills will serve the many who are wishing to start a career in environmental fields and build professional resume.

Bristol Bay Environmental Science Laboratory was established in 2007 to serve the sustainable energy and environmental science needs for the Bristol Bay 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!