

Final Report
Communicating Marine Science to Alaskan Communities through Discovery Labs
Kachemak Bay Research Reserve
September 3, 2014



Homer Elementary students learn about the effects of El Nino and La Nina during a December, 2013 *"The Ways We Measure Weather and Climate"* Discovery Lab

OASLC Funding Summary:

Kachemak Bay Research Reserve (KBRR) received funding for two months of educational programming from the OASLC. This funding was for programming that took place in December of 2013, May of 2014, and July of 2014. This serves as the final report.

Method and Delivery:

A Lab description was developed (see below) and advertising was conducted via electronic calendars, through radio PSAs, in the newspapers and with flyers. The NPS was listed as a sponsor of the lab in all advertising, and a banner stating “this Discovery Lab was funded by the NPS” was on display at each lab.

A total of 299 people participated in the following 14 coastal science programs:

Dates	Program Title	Audience	Attendance
Dec 4, 2013	<i>“The Ways We Measure Weather and Climate”</i> public Discovery Lab	Local public	44
Dec 6 - 18	<i>“The Ways We Measure Weather and Climate”</i> student Discovery Labs (4 programs)	Grades K - 8	90
April 24	<i>“The Ways We Measure Weather and Climate”</i> student Discovery Labs in Port Graham (2 programs)	Grades K - 12	10
May 13	<i>“The Ways We Measure Weather and Climate”</i> student Discovery Labs in Nanwalek (3 programs)	Grades K - 12	60
June 2 – Aug 14	Summer intern Haley Dunleavy trained and helped with delivery of all summer programming	UAA student	30 hours/wk
July 2, 4 and 5	<i>“Predicting Weather, Considering Climate”</i> public Discovery Labs (3 programs)	Visiting public	95
August 13	“Excavating Fungal Roots – characterization of a forest-health ecotone in Northern Sweden” Brown bag lecture by PNW-funded intern, Haley Dunleavy	Local public	17

Deliverables Overview:➤ **Discovery Labs in General:**

The Education department at KBRR offers environmental education programs for students in grades K – 12, and for adults and area visitors. All KBRR education programs follow our highly successful Discovery Lab format, and utilize our fully equipped laboratory classroom. Programs were delivered by KBRR education staff in two villages that are off the road system; Port Graham and Nanwalek.

KBRR's Discovery Lab programs are subdivided into eight different tables. Each table contains interesting factual information, and scientific investigations presented in multiple ways to appeal to a variety of ages and learning styles. Most tables include hands-on activities, and incorporate the use of dissecting scopes, close-up examination of live marine invertebrates, experiments that learners can conduct, and craft activities. Research Reserve education staff draw upon the expertise of area scientists and current research findings as they develop these learning labs. Partnering agencies and organizations like the Center for Alaskan Coastal Studies, the US Fish and Wildlife Service, and Homer's Pratt Museum often provide staff to assist with the design and presentation of these informative labs.

During the school year we feature one research topic per month, and build our Discovery Labs around this topic. On the first Wednesday of each month, October – May, we open the lab to the public and provide staffing to inform our visitors on a diversity of topics from salmon biology to invasive species. Over the following days these topics are modified to meet the learning objectives of K-12 students who come into the lab with their teachers and classmates during the rest of the month. When funding allows we package up the lab activities and fly KBRR education staff across Kachemak Bay to deliver these labs to the village schools in Port Graham, Nanwalek, and Seldovia.

In the summer we offer three days of public programming per week (Wednesdays, Fridays and Saturdays) for six weeks, and cover a new research topic each week. These summer programs are well attended and appeal to the visiting public, families with children, and area residents who have family visiting from out of town. All Discovery Lab programs are free to the public.

➤ **OASLC Discovery Labs:**

Through the generous funding support provided by OASLC we were able to offer educational programming during the 2013/2014 school year, one lunch-time lecture, and a week of public programming during July of 2014. Total participation for these programs was 299 people.

The December 4th, 2013 public "*The Ways We Measure Weather and Climate*" Discovery Lab was presented at Islands and Ocean Visitor Center was attended by 44 Homer residence. It was then reorganized to prepare for visiting school groups. Students in grades K- 8 came for two-hour programs over the next two weeks, with a total of 90 students participating in the labs. This lab was then packed up and staff flew over to Port Graham and Nanwalek and KBRR education staff presented the program to all students in grades K-12 with 70 students participating. This lab was repeated for Homer area visitors and locals on July 2 - 5 as a two-hour lab on Wednesday, Friday, and Saturday of that week. A total of 95 people attended these labs.

It is worth noting that this lab topic appeared to be less popular than other OASLC labs we've conducted. Educating the public and K-12 on issues related to climate change is a challenge, as many visitors don't know how to evaluate the scientific evidence and aren't actively looking for programming that contains climate information. Programs on glaciers, wildlife and estuaries are more in keeping with the kind of educational programs being sought by the general public and by school teachers who book programs for their students.



Students learn about diminishing polar ice during a December, 2013

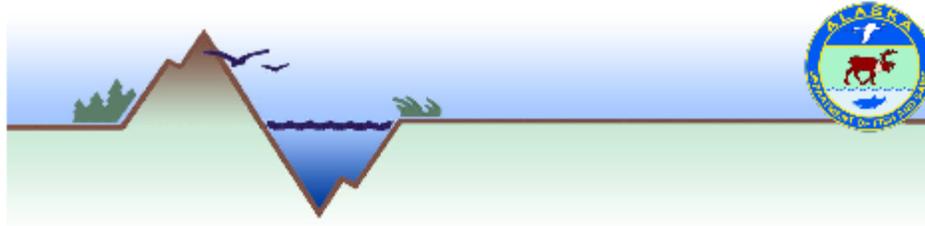
"The Ways We Measure Weather and Climate" Discovery Lab

With Kenai Fjords National Park Service funding, KBRR also brought on a summer intern to assist with the public labs. Haley Dunleavy, a recent graduate from UAA, began her internship on June 2nd and remained with the Reserve throughout the summer programming season, concluding her internship on August 14th. She was provided with housing and a food stipend during the 11 weeks she was in Homer.



Haley Dunleavy, summer intern

- Flyer of Public Discovery Lab:



Kachemak Bay Research Reserve



Public Discovery Lab

December 4th 3:00 - 5:00

In the Islands and Ocean Visitor Center's Lab Classroom

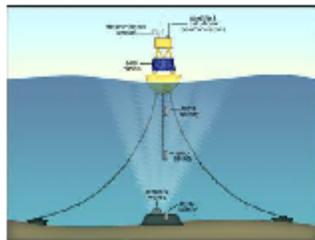


The Ways we Measure Weather and Climate



Explore the science behind weather and climate predictions; including local SNOTEL weather station data, annual Bering Sea ice extent, climate-induced vegetation shifts, and changing glacier mass at this hands-on, family-friendly program. Funded by the Kenai Fjords National Park.

All programs are free and open to the public.



➤ **Outline of *Predicting Weather, Considering Climate***

Table 1: Weather and Climate Basics

Table 2: Weather Forecasting with Clouds and Atmospheric Pressure

Table 3: NPS Weather Stations

Table 4: Clear Sailing through the Northwest Passage

Table 5: El Nino, La Nina and the Decadal Oscillation

Table 6: Glacier Mass Balance

Table 7: A Changing Landscape

Table 8: snowflake Craft table

➤ **Evaluations**

KBRRR conducts teacher evaluations for each Discovery Lab program, and the results from these provided the following insights:

All participating teachers gave top ratings to the following questions:

- The presenter was well-prepared
- The presenter engaged the students and provided content appropriate for the grade level/abilities of my students
- The program's atmosphere was positive, i.e. participatory and interactive.

Teacher comments included:

- Dec 18, 2013
Mrs. Worsfold 4th grade West Homer Elem.
"My students will use what they learned in this program by making connections with global issues and animals/living things based on changes in the weather."
"All the stations were tremendous.
- Dec 12, 2013
Emily Putney, 5th grade West Homer Elem.
"Thank you so much! I was very impressed by the ways you made the content hands-on and interesting to my students."
- Dec 11, 2013
Catie Bynagle, 5/6 grade West Homer Elem.
"This will be very helpful as we finish our unit on light and start our unit on weather. Great for building background knowledge. "

Students from West Homer Elementary sent the following thank you letters after our visit:

Our field trip to Islands & Oceans was great, this is why. Climate change is one of the activities we did at islands and oceans. We studied how climate changes called La Niña. I'd like to know different weather changes that are most likely to occur in December. Then we studied temperature patterns and sea level routes. It is very interesting and teaches me about ship routes. After that we learned about clouds and weather patterns. We measured water, water and wind patterns. Then we predicted what the weather would be the next day. That is why I love Islands & Oceans. You should go there you could learn a thing or two.

Carmen,

Here are some sample essays my students wrote after our last field trip to Islands and Oceans. I made copies for you in case they were helpful samples of student learning to continue funding. Thanks!

West Homer
5th Grade Emily Putney



Thank You!

Dear Catic and Carol

Thank you! I enjoyed learning about Marine animals. My favorite part was when I did the Clicker. Also the blubber bag was fun. The 1 hand in the blubber bag and the other in the water. The 2 hand in the blubber bag was warm. And the other in the water was cold. I learned how to tell how old an Eagle is. I am watching a crow eat it's food. It eats dead fish. Thank you for teaching me about Marine animals. I hope you can come next year!!!

Your friend,
Malachi





Thank You!

Thank you cadie & Carol for coming
to Port Graham and showing us the
cool animals. It is pretty neat that a
sea otter can eat an octopus, sea otters
rock and so do you. I loved when we
tried the whale game. The bowhead whale is
super long. ESPECIALLY the blue whale
is super long. I also learned that eagles
can live five years or longer. It must be hard
for them to fly. I hope you come
next year.

Your friend,
James



➤ **Final Expenditures for OASLC funded Discovery Lab programming:**

Education staff salary and benefits	\$17,162
Travel to rural village schools (2 staff per visit to 3 schools)	\$465
Funding for summer intern food stipend	\$390
Program materials	\$70
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Subtotal:	\$18,086
14% State of Alaska overhead	\$2,532
TOTAL	\$20,618
Total funding request:	\$19,152
Carry-over from last funding cycle:	\$2,144
Balance unspent	\$678

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