



NPS/Jim Pfeiffenberger

Ocean Alaska Science and Learning Center

Biennial Report and Accomplishments October 1, 2015 - September 30, 2017



The Ocean Alaska Science and Learning Center promotes stewardship of the marine-influenced ecosystems of Alaska's coastal national parks, through education and research.

Executive Summary and Highlights

This report covers fiscal years 2016 and 2017. It was written in part to evaluate the OASLC's accomplishments against the five year strategic plan signed in March 2016, and to fulfill the intent of annual evaluation described in Objective 4-1.

Some notable changes occurred during this two year period that are reflected in the sum of OASLC efforts. In April 2016 we said goodbye to Erin Kunisch, our first Science Communicator, who left to pursue a Ph.D. in Norway at the University of Tromsø. The position was vacant for almost a year before Deanna Ochs joined our team from Rock Creek Park in Maryland in April of 2017. We also instituted a change in how we partner with the Alaska SeaLife Center (ASLC). Instead of guaranteed funding for ASLC programs, they were invited to apply for money in our funding calls and any other initiatives to fund park supported projects. Therefore 2016 was the last year we funded ASLC research projects without competition. It should be noted that we have continued to fund three well-regarded outreach programs through the ASLC; our Annual Teacher Workshop, Village Outreach and the Marine Science Interns. To date we have not found suitable replacements for these well-regarded programs.

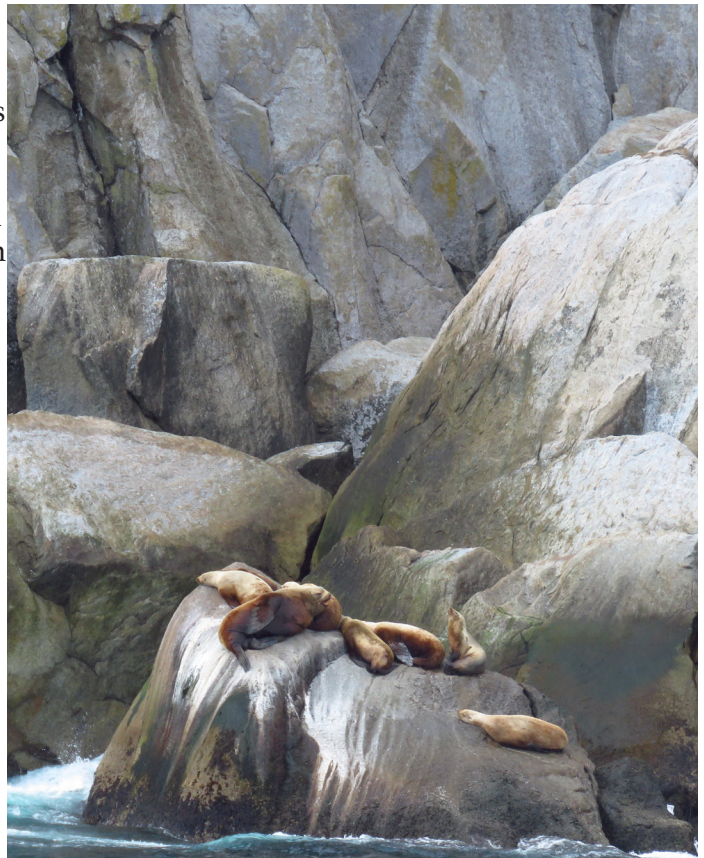
The OASLC is on solid ground financially. Our budget was set at FY12 levels (\$645,000) plus or minus service or region assessments by a Board of Directors decision in 2014. In FY16, due to a programming error in salary, we finished about \$5,000 over spent, a balance that was absorbed by KEFJ. In FY17 we finished the year with about \$2,400 left, in part due to a

last minute trip cancellation ultimately caused by natural disasters in other parts of the country.

Under each strategic goal and objective listed below we have detailed many of our accomplishments over the past two years. There is much to be proud of but a few successes are worth highlighting. Jim Pfeifferberger served as the principal investigator for outreach on the Changing Tides Project. The success of the varied outreach for this project has provided a model for integrating research and outreach within the same projects that we encourage and champion.

The summer media internships we funded have produced some of our best media work in several different parks, and bolster the ever growing portfolio of high quality photos and videos found in many park programs and websites. We collaborated with the regional office to sponsor a high-quality science communication workshop for NPS scientists in conjunction with the Centennial Science Symposium. And the research projects we funded have been well leveraged and are making substantial contributions in the form of peer-reviewed publications, graduate theses and conference presentations.

As we continue supporting scientific outreach and research in the coastal parks of the Alaska region, we will continue to look for ways to improve our programs and projects. We invite readers of this report to provide constructive criticism and suggestions to better meet our goals and objectives.

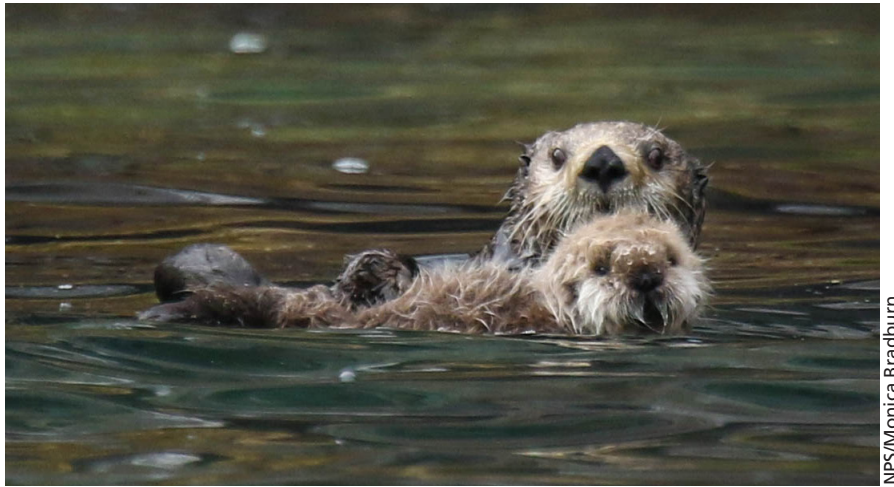


NPS/Deanna Ochs

Goal 1: Increase marine science literacy of NPS personnel and partners in order to communicate marine science to the public.

Objective 1-1: Support NPS and partner capacity to educate the public about marine science.

Five-year target: All Alaska coastal parks recognize OASLC and a major source of marine science information.



NPS/Monica Bradburn

Resource Briefs -

Resource briefs are 1-2 page documents summarizing a research project or resource-based issue, such as marine debris. In the past two years the OASLC has produced at least 13 resource briefs for various parks (listed below). Many have been produced in two formats: as a web article and as a pdf that can be emailed. As we strive to upgrade all our web content to be 508-compliant, we are publishing only the web article formats online.

We contacted the parks below to see if these briefs were being used. Although responses varied our general impression is that they are being tagged in the CMS system and used through park websites.

- Marine Debris for 5 coastal national parks - (CAKR, BELA, KEFJ, WRST, KATM) <http://cms.nps.doi.net/rlc/oceanalaska/trash-collected-off-harris-bay.htm>
- Ocean Acidification - (GLBA, in process)
- Black Oyster Catchers (SWAN, KEFJ, KATM) <https://www.nps.gov/articles/black-oyster-catchers.htm>
- Sea Otters (SWAN, KATM and KEFJ) <https://www.nps.gov/articles/sea-otter-swan-parks.htm>
- Sea Otters in Southeast (GLBA) <https://www.nps.gov/articles/sea-otter-research-in-southeast-alaska.htm>
- Mussel Monitoring (SWAN, KATM, KEFJ) <https://www.nps.gov/articles/mussel-monitoring.htm>
- Prey Pulses (KATM, KEFJ, WRST, GLBA, SITK) <https://www.nps.gov/articles/prey-pulses-in-a-marine-environment.htm>
- Marine Bird and Mammal Surveys (SWAN, KATM, KEFJ) <https://www.nps.gov/articles/winter-seabird-survey-2016.htm>
- Seastar Wasting Disease (SWAN, KEFJ, KATM, GulfWatch) <https://www.nps.gov/articles/seastar-wasting-disease.htm>
- Gull Egg Harvest (GLBA) <https://www.nps.gov/articles/gull-egg-harvest-in-glacier-bay.htm>
- Bald Eagle Monitoring (SWAN, KEFJ, KATM, LACL) <https://www.nps.gov/articles/bald-eagle-monitoring-in-alaska.htm>
- Coastal Forest Monitoring (SWAN, KEFJ) <https://www.nps.gov/articles/kefj-coastal-forest-monitoring.htm>
- Kittlitz's Murrelets (GLBA) <https://www.nps.gov/articles/kimu-abundance-estimates-2015.htm>

Other Written Media

Note: the written media below is focused on the contributions of Deanna Ochs, who started in the Science Communicator position in April 2017. Except for the Alaska Park Science issue, we did not include other written media produced by Erin Kunisch before she left in April 2016.

Newsletters:

- High Latitude Highlights - Ocean Acidification (GLBA)
- High Latitude Highlights - Oceanography (GLBA)
- Annual Service-wide RLC Newsletter - Marine Debris

Web Content:

- Currents, a GLBA blog
 - * Doin' the Float Coat Shuffle; A Three Day Research Odyssey into the Heart of Glacier Bay
<https://www.nps.gov/glba/blogs/doin-the-float-coat-shuffle-a-three-day-research-odyssey-into-the-heart-of-glacier-bay.htm>
 - * Up Close and (Perhaps a Little Too) Personal with Glacier Bay Humpback Whales <https://www.nps.gov/glba/blogs/up-close-and-perhaps-a-little-too-personal-with-glacier-bay-humpback-whales.htm>
 - * Stalking the Smothering Sea Squirt <https://www.nps.gov/glba/blogs/stalking-the-smothering-sea-squirt.htm>
- AK Regional Website: Contributed copy and photos for ocean science subject site
- Service-wide Youth Web Portal: Served on planning team and provided content about marine science for Science section
- OASLC web content: Marine Debris article <https://www.nps.gov/rlc/oceanalaska/trash-collected-off-harris-bay.htm>

Journals:

- **Alaska Park Science:** Co-edited and contributed multiple articles and photos to Volume 15 Issue 1: Coastal Research Science in Alaska's National Parks

Reports:

Biennial Report layout and design



NPS/Jim Pfeiffenberger

Seasonal Training

The OASLC continued to offer training sessions for seasonal staff aimed at increasing their understanding of current marine issues and research taking place in Alaska's coastal parks. In 2016 and 2017, the following sessions were presented:

2016:

Marine Debris - WEAR
Ocean Issues - KEFJ
Changing Tides - LACL
Marine Debris - BELA
Interpretive Questioning
Strategies - BELA
Motorboat Operator
Certification Course - KEFJ

2017:

Ocean Issues - KATM, LACL,
APLIC
Ocean Literacy Principles -
KEFJ, WEAR, BELA
Ocean Issues/Ocean
Acidification - KEFJ
Changing Tides - LACL
Interpretive Questioning
Strategies - BELA
Marine Debris - BELA
Motorboat Operator Certifi-
cation Course - KEFJ, SWAN

Science Communication Workshop/ Training

Coinciding with the Centennial Science Symposium in Fairbanks in October 2016, the OASLC planned and co-sponsored a Science Communication workshop for 20 NPS researchers. The two day workshop was conducted by the Alan Alda Center for Communicating Science at Stony Brook University.

FY17 Cost: \$3,000 (\$13,688 from other sources)



Benefitting Parks:
GLBA, WEAR,
YUGA, ARCN,
DENA, KEFJ,
KLGO, SWAN,
AKRO, BELA,
KLGO, SITK,
MSLC, WRST,
GLBA

Alaska SeaLife Center Marine Science Interns

For several years the OASLC has funded three to four marine science interns that are recruited and trained by the Alaska SeaLife Center. The interns spend roughly half their time on tour boats in conjunction with park rangers with the goal of discussing science conducted at the Alaska SeaLife Center with park visitors. The rest of their time they spend at the Alaska SeaLife Center discussing park resources with the visitors there. Costs primarily cover expenses and salaries of Alaska SeaLife Center staff to manage the interns, and are obligated through a CESU agreement.

FY16 Cost: \$9,442

FY17 Cost: \$8,314

Gulf Watch Alaska

Most of the outreach products the OASLC has created in support of the marine vital signs for the SWAN I&M program are also used by the Gulf Watch Alaska partnership, including some of the resource briefs above and the ideas mentioned under Objective 1-2. They can be found on the Gulf Watch Alaska website: <http://www.gulfwatchalaska.org/resources/resources-photo-gallery/>

Gulf Watch Alaska consists of 27 principal investigators from several agencies, including NPS, USGS, NOAA, ASLC, UAF and the Prince William Sound Science Center.



Objective 1-2: Develop interpretation and education (I&E) products about marine science, with focus on effective products relevant to multiple parks.

Five-year Target: All Alaska coastal parks are using marine science material provided by OASLC in I&E materials, products and programs.

Videos

The OASLC produced and published the following videos during 2016 and 2017:

Gulf Watch in Kenai Fjords (KEFJ)

<https://youtu.be/0JwZclfu5OQ>

Seeking Silver: Investigating Coho Salmon in the Resurrection River (KEFJ)

<https://youtu.be/zGC5K3VCcRg>

Changing Tides: Collecting Clams and the Ocean Connection (KATM, LACL)

<https://youtu.be/3u0i3G9UXOo>

Changing Tide: Clam Lab Work (KATM, LACL)

<https://youtu.be/2dkLqydzhxE>

Clam Collecting Katmai (KATM)

<https://youtu.be/gJYqSdnCKvY>

Barwell Island Camera Retrieval (KEFJ)

<https://youtu.be/Sn3qoD7rpos>



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The OASLC provided video footage or other assistance for the following videos:

Lagoons of the Arctic: Getting A Baseline (BELA, CAKR)

<https://youtu.be/Fb5yo2vxvNw>

Responding to Alaska's Largest Seabird Dieoff at Katmai National Park and Preserve (KATM)

<https://youtu.be/Nhji4H5u65M>

Exit Glacier 5 Year Dissolve, 2011-2016 (KEFJ)

<https://youtu.be/u4mTNOD5Pps>

In addition, the OASLC coordinated the delivery of 54 short videos from around the region to KTOO TV's 360 North station in Juneau for statewide broadcast. These videos have been in rotation as filler since late July 2017 and continue to receive repeated play. Benefitting parks: GAAR, KATM, LACL, KEFJ

NPS Media Internships

The OASLC sponsored four media interns in 2016 (GLBA, WEAR, KLGO and OASLC) and two in 2017 (KLGO and OASLC). The interns produced videos on subjects such as bivolave research in KATM and LACL, Ocean Acidification at GLBA, and Eulachon Fish monitoring at KLGO. They also provided photo documentation of several research projects and park events. They cost roughly \$7,000 for 12 weeks, through an SCA agreement, and represent some excellent value for the quality of the work. The OASLC recruits and pays for interns at parks who request them and can provide housing space (at OASLC expense) and local supervision.

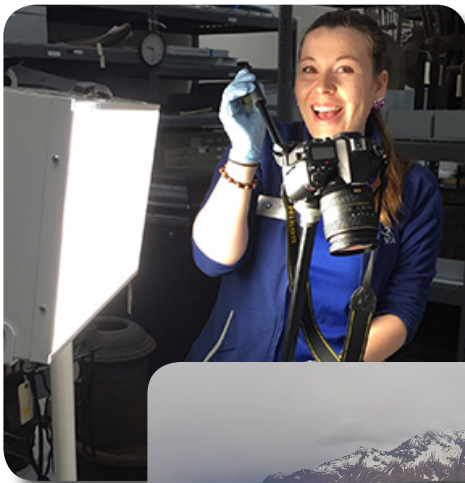
Videos produced by the OASLC media intern are mentioned in the video section above. Below are links to the videos produced by Shay Spatz, the KLGO media intern in 2017.

- Eulachon Study <https://www.nps.gov/media/video/view.htm?id=69730800-1DD8-B71B-0B82AA423DD>
[EF181](#)
- Boreal Toads <https://www.nps.gov/media/video/view.htm?id=3C2459F8-1DD8-B71B-0BA8EE3EE0C6E792>
- Museum Artifact Spotlight <https://www.nps.gov/media/video/view.htm?id=3FF97888-1DD8-B71B-0B223E916C02012C>

FY16 Cost: \$20,396 (4 interns)

FY17 Cost: \$7,000 (the OASLC intern was covered by the Changing Tides Project Outreach budget)

Benefitting parks: WEAR, KLGO, GLBA KATM, LACL



Story Map - Changing Tides

In spring of 2016, a multi-media Story Map was published highlighting information and data from the Changing Tides project. The Story Map incorporates video from collared bears, GPS locations of coastal bears, and images from the field. The OASLC contributed text and images, and coordinated the effort with the Alaska Region GIS office.

<https://www.nps.gov/gis/story-maps/mapjournal/v1/?appid=e0b-1c5fe2f64476b8ad278e61e16a598>
Benefitting park: KATM

A Bear's-Eye view of the Katmai Coast

Ever wonder what the world looks like through the eyes of a brown bear? Researchers at Katmai National Park wonder, too! To learn more, they initiated a collaborative, multi-year study examining the relationship between intertidal resources, coastal brown bear behavior, and human influences. As a part of this study, nine brown bears along the Katmai coast were outfitted with GPS location collars during the summer of 2015 to help better understand how they use intertidal resources like clams and mussels. Two of the collars were equipped with video cameras that captured a bear's-



Oceanography research, GLBA - NPS/Deanna Ochs

Document Field/Research Projects

In addition to work completed by the media interns described above, Education Coordinator Jim Pfeiffer provided extensive photo documentation of the SWAN I&M Nearshore Monitoring field work in KATM in both 2016 and 2017.

- SWAN I&M Nearshore Monitoring field work in KATM in both 2016 and 2017 - Jim Pfeiffer
- Winter Bird Survey in KATM in 2016 - Erin Kunisch
- Oceanography vital signs in 2017 GLBA - Deanna Ochs

Developing or assisting in Interpretive Media

Provided multiple images for AKR Flickr site
Provided multiple images for AKR's High Latitude Highlights
Provided video footage to FAPLIC for BELA Lagoons video
Provided video footage to ARCN for Murre Die-Off video
Provided video footage to KEFJ for VC exhibit project

Changing Tides Outreach

Jim Pfeifferberger served as the Principal Investigator for the outreach efforts on the Changing Tides project. This project was funded by the Coastal Settlement Funds in 2014 and the outreach budget for the project was approximately \$100,000. Several products have been generated from this project with coordination and oversight by Jim. For example:

- <https://www.nps.gov/katm/blogs/notes-from-the-field-the-eye-of-the-wolf.htm>
- <https://www.nps.gov/katm/blogs/notes-from-the-field-the-ethics-of-science.htm>
- <https://www.nps.gov/katm/blogs/notes-from-the-field-a-tale-of-two-bears.htm>
- <https://www.nps.gov/katm/blogs/in-the-eye-of-the-camera.htm>
- <https://www.nps.gov/katm/blogs/the-second-x-chromosome.htm>
- <https://www.nps.gov/katm/blogs/changing-tides-more-questions-than-answers.htm>

NPS photo/Monica Bradburn



NPS/Benjamin Pister

Objective 1-3 – Provide information and support park education specialists in educating school students about marine science.

Five-year Target: Transition from OASLC providing direct instruction to students in classrooms, to providing marine science literacy and techniques to park education specialists to implement instruction.

Teacher Workshop

In October of both 2016 and 2017, the OASLC hosted a Teacher Workshop in Seward in collaboration with the Alaska Sealife Center.

In 2016, the workshop was aimed at grades K-6 and was entitled “Urchin Hugs and Otter Paws: Building the Foundations of Marine Stewardship with the Next Generation.” There were 33 teachers in attendance representing the Anchorage School District, Mat-Su Borough School District, and Kenai Peninsula Borough School District. OASLC funds were used to provide travel for one teacher from Port Graham, a bush village most closely associated with Kenai Fjords National Park. Content presented in this workshop included sea otter work from Glacier Bay and Kenai Fjords, and bivalve research from Katmai and Lake Clark National Parks.

In 2017, the workshop was aimed at grades 6-12 and was entitled “Changing Tides: The Convergence of Bears, Intertidal Invertebrates, and Humans.” There were 23 teachers in attendance representing the Anchorage School District, Mat-Su Borough School District, and Kenai Peninsula School District. OASLC Funds were set aside to bring teachers in from bush villages associated with Lake Clark and Katmai National Parks, but the workshop conflicted with an unforeseen in-service for Lake and Peninsula School District teachers. The funds will be redirected toward classroom visits later in the school year to these communities. Content presented in this workshop focused on a three-year study taking place at Katmai and Lake Clark National Parks, and presenters included Megan Richotte, Chief of Interpretation at Lake Clark, Grant Hilderbrand, former NPS bear biologist (now with USGS) and Benjamin Pister, OASLC Director.

FY16 Cost = \$16,437
FY17 Cost = \$ 20,133

Village Outreach

The OASLC sponsors Village Outreach trip by the Alaska SeaLife Center in order to bring high quality, hands-on marine science lessons to bush communities that are off the road system. When possible, these trips include an NPS educator from the local benefiting park as well. These trips are funded through a CESU agreement with the Alaska SeaLife Center.

FY16 Cost = \$20,000

FY17 Cost = \$20,456

2016: Sixteen schools were visited in 14 different communities, resulting in 1,406 student contacts. See details below:



NPS/Jim Pfeiffenberger

Benefiting Park, GLBA, 11/18/15
Juneau Riverbend Elementary, 26 student contacts
Programs presented:
• Watching Walrus
• Ocean Literacy Principles/Ocean Acidification

Benefiting Park, SITK, between 10/5/15-11/18/15
Kake School, 54 student contacts
Sitka-Keet Gooshi Heen Elementary,
202 student contacts
Ketchikan Tongass School of Arts and Science,
84 student contacts

Petersburg-Stedman Elementary, 22 student contacts
Mitkof Middle School, 48 student contacts
Petersburg High School, 18 student contacts
Programs presented:
• Watching Walrus
• Ocean Literacy Principles/Ocean Acidification

Benefiting Park, BELA,
2/16/16-2/19/16 and 3/22/16-3/24/16
Nome Elementary, 326 student contacts
Programs presented:
• Marine Mammal Adaptations
• Bioluminescence
• Beaks Bubble and Burrows
• The Scoop on Poop
• Cephalopod Dissection

Wales School, 69 students
Programs presented:
• Marine Mammal Adaptations
• Bioluminescence
• Beaks Bubble and Burrows
• Cephalopod Dissection

Shishmaref School, 192 student contacts
Programs presented:
• Marine Mammal Adaptations

Benefiting Park, KATM, 3/23/16-3/34/16
Pilot Point School, 60 student contacts
Programs presented:
• Marine Mammal Adaptations
• Bioluminescence
• Watching Walrus
• The Scoop on Poop
Benefiting Park, LACL, 4/19/16-4/21/16
Port Alsworth School, 128 student contacts
Nondalton School, 44 student contacts
Newhalen School, 66 student contacts

Programs presented:
• Marine Mammal Adaptations
• Bioluminescence
• Beaks, Bubbles and Burrows
• The Scoop on Poop
• Cephalopod Dissection
• Ocean Animal Perceptions
• SIA Veterinarian

2017: Seven schools were visited in seven different communities, resulting in 907 student contacts. See details below.

Benefiting Park, BELA 2/27/17-3/3/17
Nome Elementary, 372 student contacts
Programs presented:
• Marine Mammal Adaptations
• Watching Walrus
• Ocean Animal Perceptions
• SIA Veterinarian

Tukurngailnguq School, Stebbins, 193 student contacts
Programs presented:
• Marine Mammal Adaptations
• Watching Walrus
• Ocean Animal Perceptions
• SIA Veterinarian
• Cephalopod dissection

Benefiting Park: LACL, 3/27/17-3/31/17
Igiug School, 36 student contacts
Levelock School, 43 student contacts
Kokhanok School, 77 student contacts
Programs presented:
• Marine Mammal Adaptations
• Beaks, Bubbles and Burrows
• Ocean Animal Perceptions
• Bioluminescence
• Cephalopod dissection
• The Scoop on Poop

Benefiting Park, KEFJ, 4/24/17-4/28/17
Port Graham School, 62 student contacts
Nanwalek School, 124 student contacts
Programs presented:
• Marine Mammal Adaptations
• Beaks, Bubbles and Burrows
• Ocean Animal Perceptions
• SIA Veterinarian
• Cephalopod dissection
• The Scoop on Poop



Discovery Lab

Discovery Labs are hands-on science based activities on a central theme presented to the public or school children. They are designed by the Kachemak Bay Research Reserve in Homer (KBRR). The OASLC has partnered with KBRR to design Discovery Labs for the last five years.

In 2016, the OASLC sponsored a Discovery Lab on the Seven Ocean Literacy Principles in collaboration with the Kachemak Bay Research Reserve. The lab was developed and presented with assistance from LACL Education Specialist Rebekah Jones. The Discovery Lab was presented for Homer area schools in February, 2016, taken to several villages in the Lake Clark region in May of 2016, and presented for the public during August 2016.

Homer Schools, 229 student contacts, 23 teacher contacts
Newhalen School, 35 student contacts
Port Alsworth School 49 student contacts
Homer public lab, 238 contacts

Benefiting park: LACL

In 2017, the OASLC sponsored a Discovery Lab on the Changing Tides Project in collaboration with the Kachemak Bay Research Reserve. The lab was developed with assistance from OASLC Education Coordinator Jim Pfeiffenberger. The lab was presented for the public in August of 2017, will be presented to Homer schools in November of 2017, and will be presented to bush communities in spring of 2018.

Homer public lab, 322 contacts; Benefiting parks: LACL, KATM

Seward Elementary Outreach

In spring of 2016 Jim Pfeiffenberger collaborated with KEFJ Education Specialists on an “Arts in the Parks” program at Seward Elementary School that culminated in a school-wide concert and dance performance interpreting Gulf of Alaska marine resources and celebrating the NPS Centennial. This resulted in 1025 student contacts.

National Ocean Science Bowl

The [National Ocean Science Bowl](#) (NOSB) is an academic competition and program that addresses a national gap in environmental and earth sciences in public education by introducing high school students to and engaging them in ocean science, preparing them for ocean science-related and other STEM careers, and helping them become knowledgeable citizens and environmental stewards.

The [Tsunami Bowl](#) is the regional round of NOSB for Alaska, held in Seward each February. The winning team goes on to a national competition. Each year the OASLC sponsors the Tsunami Bowl and participates in the event as judges. Our money has been used for prizes and other aspects of running the event.

FY16 Cost = \$1500

FY17 Cost = \$1500





NPS photo/Benjamin Pister

Goal 2: Support and increase the use of marine science in park management decisions

Objective 2-1: Provide parks with, or facilitate access to, marine science information to support management and policy decisions.

Five-year Target: Every substantial decision in Alaska coastal parks regarding marine management has the best science available.

We continue to search for ways for the OASLC to meet this objective.

Objective 2-2: Increase the marine science literacy of Alaska coastal park managers, to support park management.

Five-year Target: The OASLC is recognized as a source of marine science information and training to support park management decisions.

Centennial Science and Stewardship Symposium

The region-wide Centennial Science and Stewardship Symposium occurred in Fairbanks during October 2017. The OASLC (Benjamin) helped to organize this event as part of the core planning team. In addition to the time put into planning the event, the OASLC co-sponsored a science communication workshop (mentioned above under Objective 1-1).

We also organized an extracurricular storytelling event in the mold of Arctic Entries called Data Derring-Do: Stories of Mettle, Moxie, and Misadventures in the Name of Science.

FY16 Cost = \$2,425 (storytelling coaching services)

FY17 Cost = \$600 (venue)

Alaska Park Science

The OASLC (Benjamin and Erin Kunisch) co-edited issue 15-1 of Alaska Park Science with Nina Chambers. Published in December of 2016 the issue largely focused on the Coastal Settlement Fund Projects. We also authored an article, co-authored two more articles, and contributed several photos to this issue.

Alaska Marine Science Symposium

Each year the OASLC sponsors the Alaska Marine Science Symposium (AMSS) on behalf of the National Park Service. Sponsorship includes exhibit space during poster sessions; recognition in the printed program, website, in-program slideshows and displayed on screen during break times; and free registration for one attendee, per thousand dollars. The exhibit venue provides the greatest opportunity for NPS to engage with the marine science and technical audience in Alaska. We have been using the exhibit space to share all the region's scientific publications and accomplishments for the year with the scientists attending the meeting. One or two OASLC staff usually attend and the event provides the single best chance to keep abreast of the latest marine science relevant to the parks, as well as networking and partnership opportunities with the scientific community. In 2017 we began summarizing information from the symposium of relevance to coastal parks and presenting that to park staff.

FY16 Cost = \$2,000

FY17 Cost = \$2,000

Alaska Forum on the Environment

The OASLC occasionally attends the Alaska Forum for the Environment (AFE) which occurs in Anchorage in February. The event attracts a different, broader and more diverse audience than AMSS. Although many sessions and issues are relevant to NPS, we have focused most of our participation on marine debris and oil spill planning and response. We last attended in 2016.

NPS photo/Benjamin Pister



Goal 3: Promote and facilitate marine scientific research in Alaska's coastal parks.

Objective 3-1: Support marine scientific research in coastal parks, with priority given to projects that leverage park capacity

Five-year Target: All Alaska coastal parks recognize the OASLC as a source of support for marine science projects.

Five-year Target: Science that is supported by OASLC is used for park management

Annual Funding Call

The OASLC committed to an annual funding call in the 2016-2020 Strategic Plan, with an emphasis on funding fewer, larger projects that address cross-cutting issues in multiple parks.

The funding call is evolving. Beginning in FY17 the OASLC devoted two years of funding to projects in an effort to fund larger multi-year proposals. A secondary purpose included reducing the administrative workload on OASLC staff and technical committee. In both FY16 and FY17 we solicited proposals emphasizing both research and outreach/education. However, it has been a struggle to attract outreach/education proposals in general, and to compare those proposals with research oriented proposals fairly and objectively using the same criteria. Moving forward we plan to integrate research and education proposals. Each research proposal must have a strong outreach/education component. It must be funded in the proposed budget. Knowledgeable and capable staff must be identified. And it will be evaluated and rated as part of the criteria, by outreach

experts. This will place projects on an even playing field and increase the quality of the communication of the project results.

FY16 Funds used for Funding Call = \$187,460

Collaborative investigation of the October 2015 Icy Bay landslide and tsunami - \$28,950

This project investigated a landslide in the Taan Fjord in Icy Bay, that produced one of the largest tsunamis of modern history. OASLC funds were used to map the landslide and tsunami deposits, for logistical support of the field work, and for outreach material collection and production.

Parks: WRST

Products to Date/Highlights:

- OASLC was the first to fund the project, with the hope of additional leveraged funds from other sources. Eventually the National Science Foundation (\$128,807) and the NPS Geological Resources Division (\$15,000) contributed funds. Five universities, USGS and the park itself contributed in-kind support.
- 150 km² of orthophotos/Digital Elevation Models generated by Structure From Motion (sfm) photography, and 175 km² of Digital Elevation Models generated by lidar.
- Two peer reviewed publications with more likely on the way:
 - * Dufresne A, Geertsma M, Shugar DH, Koppes M, Hignman B, Haeussler PJ, Stark C, Venditti JG, Bonno D, Larsen C, Gulick SP, McCall N, Walton MA, Loso MG. In press. Sedimentology and geomorphology of a large tsunami-genic landslide, Taan Fiord,

Alaska. Accepted in Sedimentary Geology.

- * Hignman et al. In Review. Glacier retreat drives the largest landslide-triggered marine tsunami since 1958

- A completed Masters thesis (Catastrophic Landscape Modification from Massive Landslide Tsunamis: An

Example from Taan Fjord, Alaska, by Colin Bloom at Central Washington University), and another in progress

- Outreach products included:

- * A 16 minute video
- * A featured article in the We Alaskans section of Alaska Dispatch News
- * A public presentation in Selkovia, Alaska
- * Scientific talk at the American Geophysical Union meeting in San Francisco
- * Scientific talk at the Centennial Science Symposium (and likely several more in the future)
- * Several social media posts

Developing Standards of Care for Cruise Tourism in the Bering Strait Region - \$84,710

This project partners with the Wildlife Conservation Society to develop a voluntary Standards of Care for cruise ship operation in Arctic waterways. The guidelines will be developed with industry stakeholders through the Arctic Waterways Safety Committee. This ensures Arctic cruise practices will be consistent with protecting NPS resources and values that may be impacted by air and water pollution, oil spills, invasive species, disturbance to marine mammals and seabirds, and subsistence users.

Parks: CAKR, NOAT, BELA

Products to Date/Highlights:

- The project schedule was pushed back a year due to the length of time needed to get an agreement with WCS signed.
- The Arctic Waterways Safety Committee endorsed the effort in March 2017
- A workshop to begin the work with industry stakeholders present will convene November 15-16, 2017.
- Leveraged resources include \$89,593 in non-federal funds.

Obtain Digital Surface Models and Aerial Orthophotos Along LACL and KATM Coast in Cook Inlet and Kamishak Bay - \$50,000

This project is aimed at obtaining three dimensional surface data using Structure for Motion which can be used for many things, including understanding the physical dynamics of tides and sea level change to aid in boundary identification and interpreting nearshore ecological data.

Parks: KATM, LACL
Products to Date/Highlights:

- Scheduled work was delayed a year in order to apply for matching funds from USGS, which was unsuccessful. Then another year when new data to emerged to compare the two possible techniques to use to map salt marshes.

This will help determine the most efficient path forward (i.e. Lidar or Structure for Motion). Field work is scheduled to begin in FY18.

- Leveraged funds include approximately \$50,000 from SWAN and AKRO which will be used to expand the scope of the project to include more of the KATM and LACL shorelines. Some of this money has been used already to collect data.

Assessing the Influence of Cruise Ships on Harbor Seal Activity Budgets in Wrangell-St. Elias National Park and Preserve, Alaska - \$19,400

This project uses satellite tagged harbor seals in Disenchantment Bay to examine the impacts of cruise ships on harbor seal activity budgets (e.g. how much time they spend in the water). OASLC funds were used to purchase the proper number of tags after the price increased between when the original SCC project was funded and the funding was received (four years).

Parks: WRST

Products to Date/Highlights:

- Tags were deployed in June of 2016 and tracked some surprisingly far ranging seal pups.
- Outreach efforts included presentations to the Yakutat Tlingit Tribe, Yakutat City Council, Yakutat schools, and the public in Yakutat.
- Field work for this project is planned to continue through FY18
- Leveraged funds included \$373,044 from PMIS Project #196384. Substantial in-kind support was also contributed by the National Marine Mammal Laboratory in both personnel and vessel time. In-kind support was also provided by WRST park staff.

FY17 Funds used in Funding Call = \$239,907 (with an additional \$140,270 in FY18)



NPS/Monica Bradburn

Changing Tides: A Virtual Field Trip - \$47,343

This project creates an online curriculum-based outreach tool that will focus on research conducted along the KATM and LACL coasts. A draft of the virtual field trip was presented to the participants of the annual teacher workshop in October of 2017.

Parks: KATM and LACL

Paleo-Sea Level and Glacier Extent as Related to Human Occupation of the Outer Coast of Glacier Bay National Park and Preserve - \$61,742 (\$36,328 in FY18)

This project is attempting to untangle the timing of glaciation, sea level change, and tectonic uplift to determine when the Northwest Coast Route (along the outer coast of Glacier Bay) may have been passable by humans migrating from Alaska to the rest of the Americas. Originally a different project was funded through the OASLC funding call. However, when the principal investigator abruptly resigned the project fell apart. This ongoing project had been funded by CRAC using SCC funds (PMIS#154137), but was not slated to be funded again until FY19. We deemed it a suitable replacement since it had been peer reviewed at the regional level, fit the OASLC funding call requirements, and was a similar dollar amount. Funding it in FY17

allowed the project to be completed much sooner, and CRAC to devote their funds to another ocean related project (yet to be determined).

Parks: GLBA

Products to Date/Highlights:

- Work funded with OASLC dollars commenced in the summer of 2017.
- This work is anticipated to significantly inform future archaeological work in the region
- At least three peer reviewed manuscripts are planned
- Additional outreach includes a video, multiple conference presentations, and several public talks including in Hoonah to tribal members there.

Near-term biological consequences of ocean acidification in the Arctic coastal parks - \$59,500 (\$38,500 in FY18)

This project attempts to document community composition of plankton in arctic lagoons; look for structural anomalies over time due to acidification; document changes in size structure within the plankton community over time; and develop outreach focused on a key but out-of-site component of a food web supporting subsistence.

Subsistence harvester interview NPS/Hannah Atkinson

Parks: CAKR, BELA

Products to Date/Highlights:

- The total cost of this project is estimated at \$290,000 of which OASLC contributed \$95,000 for a single piece of equipment called a FlowCam, and the software to run it.
- The FlowCam was purchased in August of 2017.
- The FlowCam can be used for other projects around the region

Climate change impacts on access to coastal resources by subsistence harvesters in Arctic National Parks: Implications for NPS management - \$33,583 (\$35,330 in FY18)

This project takes a sociological approach to documenting changes in access to subsistence resources due to climate change and attempts to reconcile the perceptions of NPS staff, the public, NPS policies and a changing environment. Coastal sites in both BELA and CAKR will be ranked according to their historical and contemporary importance and the vulnerability of access to them from climate change.

Parks: CAKR, BELA

Products to Date/Highlights:

- OASLC funds were combined with approximately \$173,000 from other sources and additional in-kind support.
- OASLC funds were not used to conduct interviews of non-NPS staff to avoid a lengthy OMB approval process (leveraged funds were).



- Literature searches and background information gathering commenced in summer 2017.
- Multiple trips to Kotzebue and Sisaulik with dozens of interviews conducted, including 9 with NPS staff
- Outreach efforts includes a growing collection of images and video, a broadcast about the project on public radio in Kotzebue in June 2017, and an oral presentation at AMSS in 2018.

Observing climate change in Bering Land Bridge National Preserve and Klondike Gold Rush National Historical Park - \$37,739 (\$30,112 in FY18)

This project is using oral histories from two different parks to highlight changes due to climate change on resources and the cultural impacts of those changes. The end result will be a project hosted on the Project Jukebox website of UAF, and will allow viewers to draw comparisons between two distinct regions of Alaska.

Parks: BELA, KLGO

Products to Date/Highlights:

- UAF staff has met with reps from both parks to kick-off the project
- The group is working on a document to expand on the climate change themes to be pursued
- UAF staff has been assigned for each location and trip planning as early as fall 2017 is underway
- Finished products will include (among others):
 - * an educational based product, entitled, ‘Observing Climate Change in Alaska’s National Parks Project Jukebox’ which will become part of the Project Jukebox suite hosted by the UAF (www.jukebox.uaf.edu)
 - * A journal publication on unique ways to engage youth in climate change education will be written and submitted to an open source peer reviewed journal through the National Science Teachers Association
 - * Two lesson plans designed to further engage audiences in exploring how climate change is affecting two distinct coastal regions of Alaska.



NPS/Deanna Ochs

SWAN Winter Bird Survey

In 2016 the OASLC supported a winter seabird survey in Katmai. These surveys are conducted periodically by SWAN, and this one was also motivated by the massive murre die-off in the Gulf of Alaska. OASLC funds went towards a vessel charter. Erin Kunisch participated in the trip. A video from the trip was mentioned above under Objective 1-2.

Technical Support/Assistance

OASLC staff time and technical support/expertise is available for research based field work or outreach, education and interpretation related projects. Below is a brief summary of how we provided this support in 2016 and 2017.

Changing Tides: Benjamin twice lead field crews on multi-day trips to conduct work on the invertebrate portion of the project along the LACL coast. He continues to be involved in the project. Jim joined the KATM Changing Tides/Nearshore I&M trip in 2016 as both a field hand and videographer/photographer. Parks: KATM and LACL

- Changing Tides: Jim Pfeiffenberger served as the Principal Investigator for the outreach efforts on the Changing Tides project. This project was funded by the Coastal Settlement Funds in 2014 and the outreach budget for the project was approximately \$100,000. Several outreach products have been generated by this project. (Also mentioned Objective 1-2) Parks: KATM and LACL
- Nearshore Monitoring: Jim joined the KATM Nearshore I&M trip in 2017 as both a field hand and videographer/photographer. Parks: KATM
- Snug Harbor Tide Gauge: Benjamin got involved in this project as part of a detail to the regional office, but remained involved after the detail completed. His efforts included two site visits to locate benchmarks and liaising with property owners. Parks: LACL
- BOEM/CIRCAC Intertidal Work: Benjamin got involved in this project as part of a detail to the regional office, but remained involved after the detail completed. This work involves documenting remote rocky intertidal reefs in western Cook Inlet, including KATM and LACL
- Winter Bird Survey: Erin Kunisch joined the 2016 winter bird survey in KATM which also focused on documenting the massive the common murre die-off in the Gulf of Alaska. The OASLC also contributed \$5,700 for a vessel charter. Parks: KATM



Objective 3-2: Through beneficial partnerships with academia and other research entities, increase marine science research important to parks.

Five-year Target: All Alaska coastal parks will utilize assistance by the OASLC to increase capacity and partnership as a means to conduct marine scientific research to address park needs.

Some efforts that meet this objective, to date, have already been described above. Specifically, our presence at scientific meetings (Objective 2-2) and through funding of projects involving external researchers (Objective 3-1).

In addition to sponsoring and sharing results at meetings like the Alaska Marine Science Symposium, networking with academic scientists at such events lays the groundwork for future partnerships. When feasible, the OASLC has also attended partner-rich meetings such as the Annual ShoreZone Partner meeting or the Kenai Peninsula Watershed Forum. We continue to look for park-driven needs and opportunities for beneficial research partnerships.

The OASLC has co-authored the following presentations with academic partners at scientific meetings:

2016

- Multi-agency efforts to monitor sea star wasting disease in Alaska: Results and recommendations for future efforts (poster, AMSS)
- Marine Debris in Five National Parks in Alaska (poster, AMSS)
- Marine Debris in Five National Parks in Alaska (oral, AFE)

2017

- Nearshore assessments of complex rocky reefs and platforms in lower Cook Inlet: A patchwork of marine assemblages (poster, AMSS)
- Trends in Intertidal Seastar Abundance and Diversity across the Gulf of Alaska: Looking for Impacts of Seastar Wasting (poster, AMSS)

Peer-Reviewed Publications

Polasek L., J. Bering, H. Kim, P. Neitlich, B. Pister, M. Terwilliger, K. Nicolato, C. Turner, T. Jones (2017) Marine Debris in Five National Parks in Alaska, *Marine Pollution Bulletin* 117 pp. 371-379
International Union for the Conservation of Nature (IUCN) Meeting-

In 2017 the Alaska Region's chief scientist hosted a working meeting for the Protected Areas Climate Change Specialists Group of the International Union for the Conservation of Nature. The OASLC supported the meeting with through their partnership with the

Alaska SeaLife Center, some funding for logistics, and staff time.
FY17 Cost = \$6,000

Alaska SeaLife Center Seabird Research-
In 2016 the OASLC funded the final year of a five plus year project called Seabirds as Indicators of Coastal Ecosystem Condition and Change. This project was proposed by the Alaska Sealife Center and was a project we had solicited and agreed to fund before the OASLC Strategic Plan was developed. The objective was to investigate whether seabirds in Resurrection Bay could be monitored to indicate changes in the larger coastal ecosystem. Some of the methods used in this project are compatible with the methods used by SWAN to monitor seabirds

in KEFJ and KATM. Data are still being analyzed by the ASLC.

FY16 Cost = \$55,296
Parks = KEFJ

Products to Date:

- A Master's thesis
- A video focused on the research on Barwell Island, mentioned under Objective 1-2
- Fine scale year round monitoring of the Gulf of Alaska common murre die-off as it unfolded in Resurrection Bay, an important data set in understanding this event
- Likely multiple peer reviewed journal articles and conference presentations



Goal 4: Assess and evaluate OASLC activities and adapt as necessary to achieve the Mission

Objective 4-1: Implement an annual process to evaluate if OASLC is meeting targets.

Five-year Target: Annual evaluation has occurred each year.

This report serves to meet this objective for FY2016 and FY2017.

Objective 4-2: Implement a process to evaluate the effectiveness and nimbleness of OASLC activities to reach objectives under each goal. (“Are we taking the right actions and adapting as needed?”)

Five-year Target: All OASLC activities are evaluated (at an appropriate level of detail) and adapted as necessary to achieve the objective.

NPS/Benjamin Pister

In FY17 an evaluation process was built into both the Teacher Workshop and the Village Outreach programs in conjunction with the Alaska SeaLife Center. Those evaluation processes are still running their course, and results will be compiled over the 2017-2018 school year. Evaluation of teacher workshop and village outreach.

This report also serves to meet this objective.

Objective 4-3: The OASLC Board operates as a forum, in consultation with the coastal park superintendents and the TAC, to evaluate emerging marine resource threats and develop shared solutions.

Five-year Target: Board meets annually to address this objective and provides a report on emerging threats to the ALC and to park staff.

We continue to search for ways for the OASLC to meet the spirit, if not the letter of this objective.

