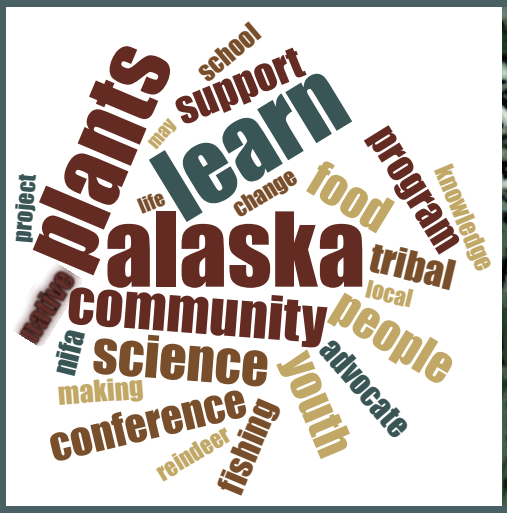

2016-2017 Evaluation Report

Drumbeats Alaska

A Consortium of Seven Alaska Native Serving Institutions

Alaska Native-Serving and Native Hawai'ian-Serving Institutions Competitive Grant Program (ANNH)
U.S. Department of Agriculture National Institute of Food and Agriculture

Evaluation Research Associates

Cover photo: Students participate in Scientists in the School program.

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Introduction

Since 2004, the five rural campuses of the University of Alaska Fairbanks (UAF) College of Rural and Community Development (CRCD) have developed, delivered and established academic/career programs in the food and agricultural Subsistence Sciences through a Consortium grant from U.S. Department of Agriculture (USDA) National Institutes of Food and Agriculture (NIFA). The programs are: **Ethnobotany** (Kuskokwim Campus in Bethel and Chukchi Campus in Kotzebue); **Environmental Sciences** and **Sustainable Energy** (Bristol Bay Campus in Dillingham); **High Latitude Range Management** (Northwest Campus in Nome); **Tribal Natural Resource Management and Stewardship** (Interior Alaska Campus in Fairbanks). Of these campuses, only one, Interior Alaska Campus, is connected to the statewide road system.

In 2014 the rural Ketchikan and Sitka Campuses, located on Alaska's southeastern panhandle and off the road system, joined with CRCD and the statewide *Drumbeats Alaska* Consortium was created. Since that time, the two University of Alaska Southeast (UAS) campuses have embraced the goals and objectives of the larger consortium while following a slightly different path. In general, the rural UAF campus programs primarily focus on for-credit courses and offer various credentials such as Occupational Endorsemenets, Certificate and Associate Degree programs. By contrast, UAS activities are more project-orientated. The **Scientists in the Schools** (SIS) program at Sitka Campus and the **Coastal Resources - Mariculture** program at Ketchikan Campus contribute to the overall Consortium goals and objectives while remaining attuned to the unique cultures and circumstances of Southeast Alaska.

Organization of Report

The report begins with an overview of the **Evaluation Purpose, Process and Terms**.

In **About Project Objectives** two *Community-based Objectives* and two *Project-based Objectives* are summarized under a header with a list of measures for each objective

Next are **Program Outcomes**. Each *Drumbeats Alaska* program is briefly described with program outcomes listed under objective headers.

Student Outputs includes student enrollment and awards earned from the first course offered with USDA funding in 2005 through Spring Semester 2017.

The report ends with **Evaluation Findings and Recommendations**.

Each of the seven programs meet one or more of the four objectives in a wide variety of ways; not all programs meet all objectives.

Evaluation Purpose & Terms

This evaluation report covers the current and the last year of continuation funding for the 2016-2017 ANNH *Drumbeats Alaska* Consortium.

The evaluation has two tasks:

1) to report on outcomes of the four project objectives across the Consortium, and

2) to report on student headcounts, majors, and awards in *Drumbeats,* Sitka and Ketchikan programs and *Drumbeats Alaska* programs since the first course was offered in 2005.

The project worked with two evaluators, Madden and Associates of Juneau, Alaska who conducted the evaluation of the UAS Sitka and Ketchikan programs and Evaluation Research Associates of Fairbanks, Alaska who conducted the evaluation of the five UAF programs – and conducted surveys of the Ethnobotany and Tribal Natural Resource Management programs. The outcomes of both evaluations are integrated into the consortium evaluation report and the UAS and two UAF program evaluation reports are attached as supplemental materials.

Evaluation Terms

Outputs – the products and services which are the result of an intervention's activities. In this report student outcomes of enrollment and awards are reported.

Outcomes – changes or benefits resulting from activities and outputs. Short-term outcomes produce changes in learning, knowledge, attitude, skills or understanding. Medium-term outcomes produce changes in behavior, practice or decisions. Long-term outcomes produce changes in condition. In this report short and medium-term outcomes are reported by program.

Impacts – are long-term outcomes, they can be both positive and negative, primary and secondary effects produced by an intervention, directly or indirectly, intended or unintended.

Evaluation Process & Terms

At the end of Fall Semester 2016, a *Drumbeats Alaska Consortium Evaluation and Planning Survey* was developed that matched Logic Model Measures to Consortium Objectives. Project faculty, staff and administrators ranked the importance of each measure. The results of the ranking with 5 being Very Important and 1 being Somewhat Important are under each project objective. These outcomes are used in the evaluation in conjunction with other data collected to determine if objectives operated optimally (Davidson, 2005[1]). Instructions for survey respondents included the the definition of evaluation terms of outputs, outcomes and impacts, and the terms of formal, informal and Indigenous learning for Objective 1.2 both included in this evaluation section.

Sources of evidence for outcomes include: The *Drumbeats Alaska* Evaluation and Planning survey responses, the Ethnobotany Interior Plants as Food and Medicine gathering participant survey responses; Tribal Management Advocacy for-credit course pre- and post-survey student responses, Tribal Stewardship Planning for-credit course survey responses from Ahtna regional students; the Sitka and Ketchikan Campuses program evaluation report, an end of project year faculty outcome survey; the Drumbeats Alaska Presentation for the 2017 PD meeting and Consortium campus REEports. Sources were coded and analyzed to objective measures, and data was synthesized in NVIVO.

The evidence or outcomes of *Drumbeats Alaska* programs meeting the objectives are primarily detailed by program in the Program Outcome section.

Learning Terms

Formal learning delivered by trained teachers or content experts in a systematic intentional way within a school, academy, college, institute or university. *Output Evidence: Credit and non-credit courses taught at the high school or college level.*

Informal learning takes place naturally as part of some other activity; it is often referred to as learning by experience or learning that organically occurs outside the realm of traditional instructor-led programs. Informal learning occurs in community, where individuals have opportunities to observe and participate in social activities and direct what they learn. *Output Evidence: Programmatic related activities that are not offered as credit, non-credit or as continuing education courses such as workshops, symposiums, public forums, conferences, etc.*

Indigenous learning is the study of Aboriginal history, culture and values, and strives to increase awareness and appreciation of the life experience of Aboriginal Peoples with a view to creating an environment of understanding and trust amongst all peoples. LAKEHEAD UNIVERSITY, CANADA *Outcome Evidence: Recognizing the validity and integrity of traditional knowledge systems, working with Elders and using their expertise, providing time to learn in settings where cultural knowledge and skills are naturally relevant, teaching through hands on learning and observation*[2].

[1]Davidson, E. J. ((2005). *Evaluation methodology basics.* Sage Publications, Thousand Oaks.
[2]*Guide to Implementing the Alaska Cultural Standards for Educators*. Alaska Department of Education & Early Development 2012.

Community-based Objectives

Objective 1.1 - Participant Capacity

Increase capacity for local enhancement of food and energy security.

Objective 1.1 looks to the student or participant's ability to affect a change in their own behavior and ability to apply knowledge on an individual level.

Objective 1.1 Measures

3.58 Increase in rural community food and energy security
3.46 Participants gain knowledge and know how to apply it to themselves and their environment
3.54 Participants demonstrate increased self-sufficiency
3.62 Participants contribute to community sustainability
3.85 Participants understand how to apply knowledge

The highest ranked measure of importance for Objective 1.1 is that participants understand how to apply knowledge learned; this ranking is followed by the ability for participants to contribute to community sustainability. Examples are in each program's section.

Objective 1.2 – Community Application

Increase the application of formal, informal and Indigenous learning in communities.

Objective 1.2 looks to the student or participant's ability to apply what they have learned at a local or regional level.

Objective 1.2 Measures

2.92 Community-based research projects
2.77 Participants gain seats on local or regional boards
2.62 Participants gain seats on statewide boards
3.00 Participants gain leadership positions

The highest ranking of the four measures for Objective 1.2 has to do with participants gaining a leadership position. Alternately stated, leadership could include participants who say they are becoming educators in their community and share knowledge they have learned. This occurs in Tribal Stewardship classes as participants share knowledge with other tribal members, and in Environmental Science and Mariculture when students present what they have learned at a formal conference or in informal settings. While these are not measures in the Drumbeats Alaska logic model, they are two important outcomes that illustrate the application of learning in a broader community context.

Learning

Formal learning takes place both as for-credit university courses, and through the K-12 school system. Other activities are informal and target community members often delivered as workshops, Gatherings and Symposiums. The Ethnobotany Interior Plants as Food and Medicine gathering, the Gardening Symposium, and the Tribal Government Symposium are events that provide informal learning. Further examples and the integration of Indigenous knowledge are in each program's section.

About Project Objectives

Rural campuses are stewards to the communities they serve. Our existence is to serve, therefore, campuses must be involved and engaged with Indigenous knowledge and communities to support successful development. Project Faculty

Project-based Objectives

Objective 2.1 - Integrating Indigenous Knowledge & Innovative Delivery

Develop and deliver formal and informal curriculum founded on Indigenous knowledge and Western science systems.

Objective 2.1 Measures

3.25 Indigenous knowledge integrated into DA curriculum
3.00 Indigenous practices integrated into DA curriculum
3.42 Rural campus programs and activities show influence of Indigenous knowledge
3.00 Innovative delivery methods developed for DA programs

The highest ranked measures of importance to Objective 2.1 is that rural campus programs and activities show the influence of Indigenous knowledge. Reported under this objective are details of how programs integrate Indigenous knowledge into the curriculum and through innovative delivery methods, both formal and informal. The details of specific courses and workshops etc. are available in the annual REEport to USDA NIFA.

Innovative Delivery

Following are examples of innovative methods used to deliver content to community members and to students. Similar methods are used among the programs:

- Mariculture, Environmental Studies, Ethnobotany and Sustainable Energy engage high school teachers to deliver college-level class content to their students for dual-credit.
- Distance courses include blogs, use of Blackboard and asynchronous delivery.
- Informal content is community-based, experiential and open to all to observe and witness instruction.

Objective 2.2– Promotion, Collaboration & Review

Broaden program impacts through promotion, collaboration and review.

Objective 2.2 Measures

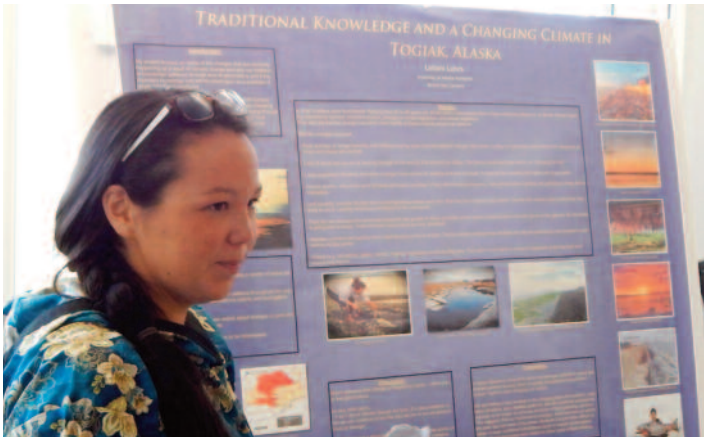
3.27	Promote programs
2.91	Collaborate with other Alaska programs
2.00	Collaborate with Hawai'ian programs
2.18	Attend Consortium teleconferences
2.36	Attend Consortium face-to-face meetings
2.64	Innovative delivery methods developed for DA programs
2.27	Offer joint workshops
1.91	Offer joint courses
2.45	Attend evaluation meetings as called
2.73	Keep a list of partners with a description of partnership activities
2.55	Keep a list of outreach activities pertaining to Drumbeats Alaska curricula

The ten measures above provide a varity of ways that program impacts can be broadened, however, faculty determined the most important measures were to promote programs and projects, and to expand them for use statewide and beyond. In the Program Outcomes section, each program reports on promotion and collaboration efforts. All programs are part of an academic review cycle and conduct end of course evaluations. The review of informal educational activites is less structured and may or may not occur.

Program Review

Some program faculty reported directly on program review: Sustainable Energy courses are reviewed annually and content is updated as a result of that review. As a developing field, there is the need to reflect the newest sustainable energy information because practical sustainable energy solutions often rely on the newest technologies and approaches. As a result of course evaluation comments, the Ethnobotany program was revised this year, two new courses were added, and the program expanded with a minor in Ethnobotany. High Latitude Range Management had academic review two years ago and is up for review in the 2017-18 academic year.

Notable are two awards received by Project faculty: The University of Alaska Fairbanks faculty Todd Radenbaugh received the Environmental Excellence Award at the 2017 Alaska Forum on the Environment; and The University of Alaska Southeast faculty, Barbara Morgan, who taught as part of the Drumbeats program, was awarded Educator of the Year Award for 2017 by the Ketchikan Indian Community.



ENVI student sharing traditional knowledge and subsistence foods at the National Science Foundation Tribal Colleges and Universities Program Research Symposium in Arlington, Virginia.

Environmental Studies

The **Environmental Studies** (ENVI) program aims to improve technical knowledge and skills necessary for individuals to take an active role in the management of the natural resources in their communities. Awards available: Certificate in Environmental Studies; Occupational Endorsements in Rural Surface Water Quality Testing and Rural Waste Management and Spill Response.

Participant Capacity

Application of individual skills are shown in the many directed individual studies that students have completed on topics such as the winter ecology of biota in Nushgak Bay; Traditional Knowledge and climate change in Togiak, and Can a Copper Mine Feed a Subsistence Culture? Since 2010, a Gardening Symposium has been held each year in Dillingham along with courses on gardening. This has increased the number of residents with small gardens, the use of the community garden and the local availability and consumption of fresh produce.

Community Application

Certificate seeking students complete a capstone research project where they collect and analyze real data and give a presentation at a formal science conference such as the *Western Alaska Interdisciplinary Science Conference (WAISC)*, Alaska Forum on the Environment and Amercian Association for Advancement of Science Arctic Division. Further, current topic courses such as the Introduction to the National Environmental Policy Act incorporate civic engagement and community sustainability. Students who earn an Occupational Endorsement show their knowledge through obtaining a job in waste management.

Integrating Indigenous Knowledge

- Indigenous and local knowledge is incorporated in the 4-credit science course through discussing how community values and beliefs incorporate scientific principles.
- Courses are designed to include local knowledge through science and include assignments where students interview elders or compare ways of knowing.
- Innovative delivery of lectures and labs; an interactive online geography science lab; and an intensive biology lab at NOAA in Juneau.

Promotion & Collaboration

- The ENVI program continues to be a partner with WAISC each year.
- In partnership with Zender Environmental and the Environmental Protection Agency, the ENVI program works the Rural Alaska Community Environmental Job Training Program which strengthens the two Occupational Endorsements. Partnerships continue with Bristol Bay Native Association and the University of Alaska Anchorage Natural Heritage Program.

HLRM instructors and stuents evaluating a field slaughter protocol developed for the St Lawrence Island commercial reindeer meat enterprise.

High Latitude Range Management

High Latitude Range Management (HLRM) students learn field-based techniques to inventory and monitor plant and animal populations and sustain yield through management. Students also learn to create reindeer by-products withhides, bone, antler, and hoof. Awards available: Certificate.

Participant Capacity

Community members that have been part of the ongoing courses and learning process, now harvest and process reindeer meat to maximize quality and food hygiene for the commercial market. Previous harvesting methods used have been inconsistent in regard to quality. HLRM works with students to view reindeer in a commercial not a subsistence context and assists communities in the management of reindeer for jobs and for profit. This is an important change in behavior needed to develop a commercial reindeer meat industry.

Students learn to inventory and monitor habitat and reindeer health through field-based instruction with an empahsis on reindeer husbandry to ensure herd sustainability. Reindeer management is essentially ecosystem management. The conservation practices that support reindeer production are good for the entire landscape, including the human landscape.

Community Application

Program students can identify areas of high-quality reindeer range and these skills allow them active participation in reindeer enterprises in their community. The students are also able to provide advocacy for the rural reindeer industry.

Integrating Indigenous Knowledge

In the past, reindeer husbandry was practiced in a subsistence context, but now to be successful it must be practiced in a cash economy. Reindeer production to be successful today must use good business practices which were not used in the past. The following integrations take place:

- Traditional practices are incorporated when slaughtering reindeer.
- Range identification uses indigenous language names of vegetation and locations,

Innovative Delivery

- On-site course and content is delivered at remote St. Lawrence Island.

Promotion & Collaboration

- Collaborations have strengthened with local and regional Native corporations as they


Kotzebue youth at the Chukchi Campus flower garden.

Ethnobotany

In collaboration with the Bethel 4-H Youth Center, the Alaska 4H SPIN program and afterschool programs, the **Ethnobotany** (EBOT) program develops and delivers science-related outreach activities to local students and community members. The footprint of ethnobotany is expanding within and outside of UAF and supports EBOT program course offerings in Southeast and Northwest Alaska regions. Awards available: Certificate, Minor in Ethnobotany.

Participant Capacity

Programming has enabled several villages to access information on Indigenous medicinal and traditional food plants, for local use and economic development possibilities. Participants at the first Fairbanks *Interior Plants as Food and Medicine* gathering state post gathering:

> *Everyone can learn about plants and use that knowledge to improve their lives and create more respect for our land…*
>
> *I see the land not as just a place to live, but a place that provides food naturally without my planting or encouraging…*
>
> *I want to learn more and make use of what plants I have near my home…*
>
> *My learning will influence my cooking, my gathering, and I will share my new knowledge with friends…*
>
> *The book that was given to me will help me to take ownership of my teaching my family more about plants. I am inspired to make it meaningful to them...*

Integrating Indigenous Knowledge

- Ethnobotany curriculum integrates Indigenous knowledge - It's the ethno part of EBOT.
- A new EBOT course that spans two semesters explores the seasonlly-appropriate cultural use of plants in a Native and mainly Alaskan context complimented by scientific principles.
- Local Elders participate in our Introduction to Ethnobotany field course every summer and are also integral to our Interior Plants as Food and Medicine Gathering in May 2017 as they share knowledge of plants through stories.

A participant comments:

> *Really, what is most memorable to me is the depth of Alaskan Native knowledge and relationships to food and medicine and how story-telling is so integral to healing.*

Innovative Delivery

- The Kuskokwim Campus-based EBOT program and Hawai'i Windward and Leeward community colleges continue student exchange. Both Hawai'i campuses sent a student to a summer *Introduction to Ethnobotany* course. A KuC student attended and received a certificate in Ethno-pharmacology from Windward Community College this year.
- Girls Night at Chukchi Campus in Kotzebue offers a place for girls 12-14 to get together, play games, listen to speakers, have discussions, and prepare healthy snacks like smoothies by going into the gardens to harvest spinach and local native plant greens. Discussions include food security, the cost of food, and learning as much about local plants as possible.
- An Ethnobotany minor will be added to the Department of Alaska Native Studies and Rural Development Bachelor Degree programs after Board of Regents approval.
- EBOT instructors organized and co-sponsored the first ever Interior Plants as Food and Medicine conference in Fairbanks. The program provided copies of the Boreal Herbal by Beverly Gray for each registered participant. Gatherings like these are important and support hands-on and storytelling learning styles.

Promotion, Collaboration & Review

- The new 4H collaboration for Ethnobotany at Chukchi Campus has developed a number of collaborations. Coast Guard personnel available for major landscaping to enhance the native plant garden are taught about native plants. Other collaborations include off contact teachers at Northwest Arctic School District, the director and staff at Nikaitchuat Language Immersion School run by the Native Village of Kotzebue, staff from the Diabetes Prevention Program, the Tobacco Cessation Program, the Boys & Girls Club staff, the Behavioral Health program at Maniilaq, the Community Police Officers, the Kotzebue Police Department (for hunter and gun safety), and the City Department of Parks & Recreation.
- EBOT faculty taught the Intro to EBOT course at the Effie Kokrine Early College Charter High School in Fairbanks.
- Program staff collaborated extensively with the Alaska Native Tribal Health Consortium and Tanana Chiefs Conference this spring to co-organize the *Interior Plants as Food and Medicine* Conference.

KuC EBOT student, Gloria Simeon, receiving a Certificate in Ethnopharmacognosy from the University of Hawai'i Windward Community College.


Intertidal foods and coastal resources field trip.

Mariculture

Coastal Resources – Mariculture aims to increase the learning opportunities and the number of people with knowledge of contemporary and traditional uses of coastal resources and potential threats to these resources. The project includes educational materials for K-12 teachers, workshops and field trips, college courses on the anthropology and biology of coastal resources, and public awareness about traditional and contemporary uses of coastal resources.

Participant Capacity

Mariculture is the focus of the Ketchikan Coastal Resources program and it emphasizes doing as well as learning. Participants in the canning work session, for example, not only canned a product but were also certified by the local Cooperative Extension Service agent as able to train others in canning techniques. Perhaps the most unusual application of learning was a Restaurant Night put on for the community by Coastal Resources students in Spring 2017. The students spent an evening preparing, cooking and enjoying tasty dishes made from locally resourced wild food, including seaweed, salmon, gumboots, herring roe, berries, halibut, sea asparagus, venison, sea cucumber and bull kelp.

Community Application

The dual-credit course on traditional preparation of intertidal foods taught at Ketchikan Indian Community (KIC) High School combines Indigenous and Western science. After Tribal students complete the course, each student prepares a poster presentation on one food source that includes traditional and scientific names, nutritional values, traditional uses and a recipe, and presents this information to KIC Elders at a luncheon.

Integrating Indigenous Knowledge

- Tlingit, Haida, and Tsmishian presenters share knowledge and oral traditions regarding the identification, harvesting and uses of coastal resources during classes and workshops.
- Indigenous practices are obtained and cited during curriculum development.

Innovative Delivery

- An annual open house provides information on local foods, food safety and food security.
- UAS students have used program courses to fulfill requirements for the Bachelor of Liberal Arts and Bachelor of Arts Social Sciences.
- At Restaurant Night, students prepare and serve coastal foods.
- An annual archeology field trip conducted by the Ketchikan Campus combines natural science with monitoring of traditional Indigenous sites.

Promotion & Collaboration

Ketchikan's collaboration with the KIC Tribal Scholars program helps broaden impact by introducing a new generation to both traditional and Western knowledge about food resources, and by helping to forge closer links between the scholars and Elders through sharing information about these resources.

Ketchikan also works with the University of Alaska Cooperative Extension Service and with other agencies in the community such as the US Forest Service and the Ketchikan Gateway Borough School District.


Scientists in the Schools activity

Scientists In the Schools

The **Scientists in the Schools** (SIS) program aims to provide a context for communities to develop a younger generation with leadership skills and the knowledge to successfully navigate the challenges ahead through Scientists in the Schools year round from elementary through postsecondary education. The grant also supports Sitka Sound Science Center informal curriculum through the annual WhaleFest symposium with a regional Ocean Bowl for students from Sitka and surrounding school districts.

Participant Capacity

Scientists in the School supports an increased K-12 student awareness of science principles and how western science can inform local and traditional knowledge and vice-versa. An example would be a necropsy demonstration of a harbor seal where local knowledge provides details of the health of the seal (and consequently the health of the subsistence community) and western knowledge identifies disease and other factors that may have contributed to the death of the seal. At the affiliated Ocean Bowl, students compete against each other in an 'academic decathlon' type of activity thus showing what they know.

Data suggest that SIS is having a positive impact. On statewide tests of science administered by the Alaska Department of Education and Early Development, Sitka School District students have outperformed their peers statewide and from comparable districts for all of the years the test has been administered. This is particularly true at the lower level of testing (Grade 4) where students have had SIS experiences for their entire elementary school career.

The test results from 2017 show:

- Two-thirds (66.93 percent) of Sitka students achieved Advanced/Proficient scores, compared to 46.46 percent statewide.
- Sitka 4th grade students had the highest ranking, with 68.27 percent scoring as Advanced, compared to 39.70 percent statewide.
- Fourth grade scores for comparable districts were similar to the statewide results: 36.11 percent for Kodiak and 40.45 for Ketchikan.

Community Application

The Sitka Campus annually offers a course on Policy and Procedures in Resource Management that includes attendance at an Alaska Federal Subsistence Board meeting. Participating students research a particular subsistence issue from both traditional and Western science perspectives prior to attending the meeting.

Integrating Indigenous Knowledge

- Scientists in the Schools and the course *Policy and Procedures in Resource Management* both integrate local knowledge of resources into curricula.

Innovative Delivery

- Scientists in the Schools has developed a successful model to integrate scientists into the K-12 curriculum.
- Experiential and authentic scientific units are planned and implemented in a collaboration between scientists, teachers, and educators at the Sitka Sound Science Center. During the 2016 – 2017 school year, a total of 168 class days with scientists were recorded. Over 1000 students worked with scientists on scientific activities which extended classroom curriculum and established lab and field science skills.

Promotion & Collaboration

- The Sitka Campus program is reaching out to other communities in the region to enhance science education in the schools. The 2016 Ocean Bowl had high school participants from Angoon, Ketchikan and Petersburg was well as Sitka. The grant has funded students from near-by Prince of Wales Island to participate in WhaleFest activities. Both programs also rely heavily on collaborating with local, regional and other partners.
- The Sitka Sound Science Center is a major collaborator on delivering the Scientists in the Schools and WhaleFest. This collaboration has resulted in a considerable leveraging of funds from NSF, USDA and other public and private sources to support and expand both formal and informal science education efforts.

Sustainable energy session for Dillingham Kindergarden students.

Sustainable Energy

Sustainable Energy courses taught include topics such as renewable energy technology, energy storage, weatherization, building science, lighting and appliances and basic physics related to electricity and heat. Awards available: Occupation Endorsement in Sustainable Energy.

Participant Capacity

Alaska Native high school students are learning about sustainable energy in high schools throughout Alaska and learning how to be stewards of local resource from early ages.

Community Application

Rural entities are reducing their reliance on imported diesel. For example, the main building at Bristol Bay Campus (BBC) in Dillingham has reduced its electrical energy consumption by about 40 percent since the beginning of the Sustainable Energy Program. The energy efficiency improvements in the BBC building serve as educational examples for other entities. Following are comments from two students:

> *I used the excel spreadsheet from the Energy Efficient Building Design and Simulation course to roughly calculate the losses through the ceiling in my rental house. I used that information to inform the owner...Based on the rough calculations using that fantastic spreadsheet, the expected return on investment is full payback in approximately 2.5 years which includes cost of materials and labor.*

> *The topics in class that we have been learning are extremely useful...The cash flow diagram would be part of a great upcoming presentation when we accomplish a Renewable Energy Plan and propose sustainable energy options to granting agencies and the board who owns the Community Building. This class is extremely beneficial to my tribe.*

Integrating Indigenous Knowledge

- In the sustainable energy classes, students are encouraged to share their local knowledge and the instructor emphasizes that such knowledge is an important part of effective sustainable energy solutions.
- As an example, indigenous knowledge continues to be an important part of the *Home Energy Basics* course where students discuss how sustainability components in early houses of Alaska's Native people can be used in today's houses.
- The Home Energy Basics class starts with a slide showing an established Yup'ik value: *Qigcikluku nunamta atullerkaa*: Have respect for our land and its resources.

Innovative Delivery

- High school teachers are now integrating sustainable energy into their classes.

Promotion & Collaboration

- Collaboration between Bristol Bay Campus and Northwest Campus provides the opportunity for students in Nome to earn an Occupational Endorsement (OE) in Sustainable Energy, and that adds to a growing list, since the Sustainable Energy OE can also be earned through the Interior Alaska and Kuskokwim Campuses. Participating campuses market the program and classes because they have an incentive since their campus receives the headcount for graduates and this allows sustainable energy education to reach wider populations.

Tribal Stewardship Planning - First intensive cohort.

Tribal Natural Resource Management

Tribal Natural Resource Management (TNRM) is a series of courses under the Tribal Management (TM) program that aim to protect food security for Alaska Native tribes through mapping traditional territories and customary land use and developing a resource management plan. Tribal Stewardship courses have over 90% Alaska Native participation. Awards available: TM Certificate and Associate Degree.

Participant Capacity

Tribal Natural Resource Management courses aim for individuals to maintain traditional lifestyles and historic wild food rates of consumption through developing a Tribal Stewardship Plan that identifies hunting and harvesting areas, traditional land use and designations, and tribal access and environmental protections. Individuals in this class comment on the role they would like to play…

A voice as a tribal member in planning…

To attend and be a part of all decisions made on our village's behalf…

I am a council member and I see myself in being supportive of [the tribe's] goals…

To learn all the federal laws and how tribal laws are more important than federal laws…

With rising costs and regulations, it is important for communities and their members to take an active role in developing their own individual resource plans for continued sustainability.

Community Application

To come together and stand as one will be a powerful impact…one student called it a *regulation of destiny.*

Tribal Management courses in advocacy, natural resource management and stewardship help Alaska Native Tribal members protect resources and historic and current ways of life, share information and network to develop a strong plan. Through these courses, participants develop a Tribal Stewardship Plan which leads to increased ability to impact hunting and fishing regulations. Participants comment on the ways they apply this knowledge:

To be able to manage our lands and make ordinances…

Yes, sharing our meat, fish, and berries is a big part of our traditional ways and I have practiced sharing my harvests with my community…

To inform others of our land uses and plans; to protect our resources and work well with other entities; to protect our historic and current way of life; to be healthy; to produce economic development; protection of our land, animals, and native plants. Written on paper it's proof of ownership...

Educate the tribal members and affected people trying to use the land so that it is beneficial to both...

I am excited to share mapping and tribal traditional law/code making with my village…

A faculty member comments:

With rising costs and regulations, it is important for communities and their members to take an active role in developing their own individual resources plans for continued sustainability.

Integrating Indigenous Curriculum

- Community, cultural practices and customs are used in student recruitment and support. They are also used to organize and lead field practicums in the community.
- The inclusion of elders in the classroom brings vital history, knowledge, culture and values to be mindful of, when developing resource plans to ensure success.
- Classes are organized around traditional seasons and local requests to ensure the highest attendance possible.

Innovative Delivery

- Face to face intensive instruction works best to deliver the content appropriately for the natural resources planning curriculum. The intensive format adapts to subsistence calendar and other cultural events to garner the highest attendance and success rates.
- The *Long Term Challenges to Alaska's Salmon and Salmon Dependent Communities* workshop was held in Anchorage in November of 2016, bringing over 200 diverse salmon stakeholders from across Alaska together in a new forum to share common goals and build relationships to protect salmon.

Promotion & Collaboration

The project has built stronger networks and collaboration between the Tribal Management program and numerous partners to strengthen delivery of appropriate curriculum and technical assistance to increase Alaska Native food security. Partnerships have grown with tribal and other organizations such as the USDA Forest Service, with First Alaskans Institute, the College of Rural and Community Development, the University of Alaska Fairbanks, Alaska Native Studies and Rural Development programs, the UAF School of Fisheries, Tanana Chiefs Conference, UAF Community Partnerships for Self-Reliance - Scenarios Network for Alaska & Arctic Planning, the Council of Athabascan Tribal Governments, Native Nations Institute, Central Council Tlingit Haida Indian Tribes of Alaska, and Ahtna Intertribal Resource Commission.

Student Outputs

The seven programs of *Drumbeats Alaska* began delivering courses during various academic years as shown in Table 1 and Table 2. The data shown in both tables is cumulative from the start date of the academic year noted through spring semester 2017. An academic year begins with a fall semester and includes the following spring and summer semesters. For example, academic year 2016-17 includes fall 2016, spring 2017 and summer 2017. While UAS campuses joined the Consortium in 2014, they received funding under the ANNH program since 2004. Student statistics for summer 2017 are not included.

Table 1. Headcount in *Drumbeats Alaska* courses.

First Year Courses Offered	Program/Courses	Unduplicated Headcount	Duplicated Headcount
2014-15	Anthropology	98	140
2015-16	Biology	104	143
2007-08	Environmental Studies	1,083	1,892
2007-08	Ethnobotany	194	337
2004-17	Fisheries Tech	405	1,161
2007-08	High Latitude Range Mgmt	64	189
2011-12	Sustainable Energy	494	700
2013-14	Tribal Management	249	489
2005-06	Veterinary Science	202	488

Notes: Column totals may not equal reported enrollments, following university procedures fo anr unduplicated headcount, a student enrolled in multiple semesters in a year is counted only once in that year.; and for a duplicated headcount, a student enrolled in multiple semesters in a year is counted multiple times in that year. Veterinary Science was discontinued in the 2013-14 academic year.
Source: University of Alaska Banner closing extracts, data generated by UAF Institutional Research.

Table 1 shows both duplicated and unduplicated headcounts by program. The Mariculture and Scientists in the Schools programs deliver content through Anthropology and Biology courses, both UAS Campuses deliver the Fisheries Tech program. The following *Drumbeats Alaska* programs delivered at least one course beyond the sponsoring CRCD campus: Environmental Studies, Sustainable Engery, Ethnobotany, Tribal Natural Resource Managment and Veterinary Science.

The cumulative total for all programs over the various years each program was delivered is 2,695 for unduplicated headcount with 47% Alaska Native enrollment. The duplicated headcount over the same years is 5,539 with 46% Alaska Native enrollment.

Table 2 shows the awards for each *Drumbeats Alaska* academic/career program. Credits to earn awards are Occupational Endorsements (OE) at 9 to 18+ credit hours of content courses; Certificates at 30 credit hours; and Associate Degrees at 60 credit hours. The Associate of Science degree was developed in the 2004-05 academic year and represents the completion of a broad-based course of study with an emphasis in the sciences. This degree may serve as a stepping-stone to a science-related baccalaureate program and has expanded to UAF-wide delivery thus the high count of 74 Associate Degrees awarded. The only *Drumbeats Alaska* program with an Associate of Applied Science (AAS) degree is UAS Fisheries Technician which is also the longest running program supported by ANNH funds with the largest number of awards received. Occupational Endorsements show the highest number of awards of the three levels and are popular with rural, especially village-based Alaskans as they are often tied directly to the rural workforce.

Table 2. Awards earned by students by *Drumbeats Alaska* program and level.

First Year Courses Offered	Program	Occupational Endorsements	Certificates	Associate Degrees
2008-09	Associate of Science	-	-	74
2007-08	Environmental Studies	22	8	NA
2007-08	Ethnobotany	NA	7	NA
2007-08	High Latitude Range Mgmt	NA	4	NA
2004-17	Fisheries Tech/Mgt	29/5	26	32
2011-12	Sustainable Energy	56	NA	NA
2005-06	Veterinary Science	NA	4	NA

Notes: If a student earned multiple awards, each award is counted. NA= Award not available. Veterinary Science was discontinued in the 2013-14 academic year.
Source: University of Alaska Banner closing extracts, data generated by UAF Institutional Research.

The percentage of *Alaska Native students* earning any award by program (may be a duplicated count) varies from high of 91% (20 Alaska Native students, 22 total) for the Environmental Science Occupational Endorsement (OE) in Rural Waste Management and Spill Response; and 75% (3 Alaska Native students, 4 total) for a Certificate in High Latitude Range Management. Four programs with at least a quarter of Alaska Native students earning an award: Associate of Science Degree at 30% (22 Alaska Native students, 74 total); Ethnobotany Certificate 29% (2 Alaska Native students, 7 total); Sustainable Energy Occupational Endorsement 25% (14 Alaska Native students, 56 total) and Veterinary Science Certificate 25% (1 Alaska Native student, 4 total). Keep in mind that the time to earn different levels of awards varies greatly by the number of credit hours to earn the credential: 9 credits for an OE, 30 credits for a Certificate, to 60 credits for an Associate Degree.

Data on *Drumbeats Alaska* enrollments, awards and program majors by program is available disaggregated by academic year by Campus and by Program. These files were distributed to the project faculty, staff and administrators as a supplement to this report.

Evaluation Findings & Recommendations

The evaluation has identified three findings listed and discussed below.

1 **Each program meets and exceeds project objectives.**

The evidence provided by the various sources for this report indicate that not only are community and project objectives being met, but the partner and inter-consortium collaborations that have developed over time expand and sustain program activities. Examples include working with Cooperative Extension Service, strengthening partnerships with Native organizations, program expansion into other consortium campuses and across the ANNH program, leveraging funding from collaborative efforts and working with industry partners to strengthen and promote programs. In addition, integrating Indigenous knowledge into program curriculum and delivery brings local and traditional knowledge into content areas and overall, makes the courses and programs relevant for the local rural and Alaska Native population it targets.

Student outputs show that most programs have a limited number of students who earn a Certificate and the Fisheries Technician program is the only program to deliver an Associate of Applied Science degree. Program students are more likely to complete an Occupational Endorsement as developed by three *Drumbeats Alaska* programs or attend an informal educational experience such as a symposium, workshop, or gathering. A Project faculty gives an opinion on direction for future Drumbeats Alaska activities:

> *We need more students - programs need to be advertised statewide.*

Recommendations: Follow the faculty and administration highest ranked measures for program promotion, collaboration and review (Objective 2.2) – to promote and expand programs for use statewide. In addition, the informal educational opportunities are very well attended – however not all events are well documented, especially to show how they add to evidence that Drumbeats Alaska *is meeting project objectives. This recommendation leads directly into the remaining two findings.*

2 **Project faculty participation and input in the evaluation process is key to document program outcomes.**

The multi-site evaluation of a *Drumbeats Alaska's* diverse and geographically remote project is challenging both in time and cost. It would be improbable and costly for an evaluator to be at program events or courses to document student, community and program outcomes. Consequently, the success of showing the depth and breath of the seven programs depends heavily upon the participation of faculty and their willingness to complete interviews and surveys mindfully and creatively, to provide photos of program activities and to assist the evaluator when the call comes (usually first at the *Drumbeats Alaska* teleconferences and then via email). Some faculty collect more information than others, not only on their program but on student and community outcomes. This difference will always exist. As a result, the evaluation has identified a third finding:

3 A systematic, consistent, cross-program data collection method would help to bring evaluation parity among programs.

When comparing each program's section on meeting objectives in this evaluation report, some programs have more information or evidence than others. This is due in part to one evaluator, Madden and Associates, working with two UAS campuses; and two UAF programs receiving help with student surveys from the second evaluator from Evaluation Research Associates LLC (ERA) as well as varying levels of documentation on program outcomes.

The upcoming 2017-18 project year year repeats the same, Madden and Associates working with the two UAS campuses and the ERA working with two UAF programs that have not received a site-visit or individual work in some years. During this first project year, two surveys will be deployed across all seven programs in fall, spring and summer semesters: a pre and post survey for semester-based students; and an event/short-course survey for all other activities. Again, the success of this evaluation method depends heavily upon faculty participation in survey distribution and collection.

Posed are questions and options on the future evaluations of ANNH continuation funding:

1 Develop an evaluation plan for the remaining two years of ANNH continuation funding.

2 Madden and Associates plans to retire after the 2017-18 project – will this position be filled or remain vacant?

3 Should the systematic use of surveys continue for the next two project years, 2018-19 and 2019-20? If so, should the two surveys remain the same to show change over time? Keeping surveys the same would only work if the surveys gathered data that could accurately respond to Consortium objectives. Therefore…

4 Should Consortium objectives stay the same over the continuation of the ANNH Project?

The direction of the Drumbeat Alaska evaluation can be decided through the monthly teleconferences and during the proposed project faculty meeting.

Recommendation: A decision on the direction of the evaluation for the three-year funding cycle should be made before writing for Year 2 ANNH continuation funding. The evaluators understand that Drumbeats Alaska *is usually only a percentage of project faculty effort, who have additional, multiple responsibilities. However, if faculty are directly involved in evaluation design at the in-person meeting, it could also increase participation as they will know, far in advance, what to expect each year from program evaluation and can integrate evaluation activities into program delivery.*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