


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**Aleutian and Bering Sea Islands
Landscape Conservation Cooperative**

Alaska  *Shumai*

Seetien *Karaton* *Agghka* *Saioosham* *Halibut* *Perider*

2013 Annual Report



LANDSCAPE
CONSERVATION
COOPERATIVES

Introduction

The Aleutian and Bering Sea Islands Landscape Conservation Cooperative (ABSI LCC) made continued progress in 2013. During the past year, we finalized the development of a Strategic Science Plan that will guide our activities over the next five years. The plan identifies six landscape-scale stressors of concern in the ABSI region. Based on expert opinion and literature review, we have defined our primary science focus as climate variability and change, with a secondary focus on marine vessel traffic, invasive and introduced species, and contaminants and pollutants. In 2013 we also funded a suite of seven projects that address one or more of these landscape-scale stressors.

The following sections that describe on our mission, goals, and scope are taken directly from our charter.

Mission

The ABSI LCC promotes coordination, dissemination, and development of applied science to inform conservation of natural and cultural resources in the face of climate change and other landscape-scale stressors.

Goals

The goals of the ABSI LCC (not in priority order) include:

- Promote communications to enhance understanding regarding effects of climate change and other landscape-scale stressors in the ABSI region,
- Support coordination and collaboration among partners to improve efficiencies in their common science and information activities,
- Identify and support research, including data collection, analysis, and sharing that address common information needs of land and resource management decision makers,
- Enable synthesis of information at landscape and larger spatial scales,
- Enhance resource management in the ABSI region through applied science, analytical tools, data management, and information transfer.

Scope

The geographic scope of the ABSI LCC includes the islands of the Aleutian archipelago and the Bering Sea and surrounding marine waters (Figure 1).

The science focus of the ABSI LCC is the natural and cultural resources and their associated marine and terrestrial ecosystems important to ABSI LCC partner organizations. The ABSI LCC will strive to avoid duplication with other entities, and coordinate on issues of mutual interest.

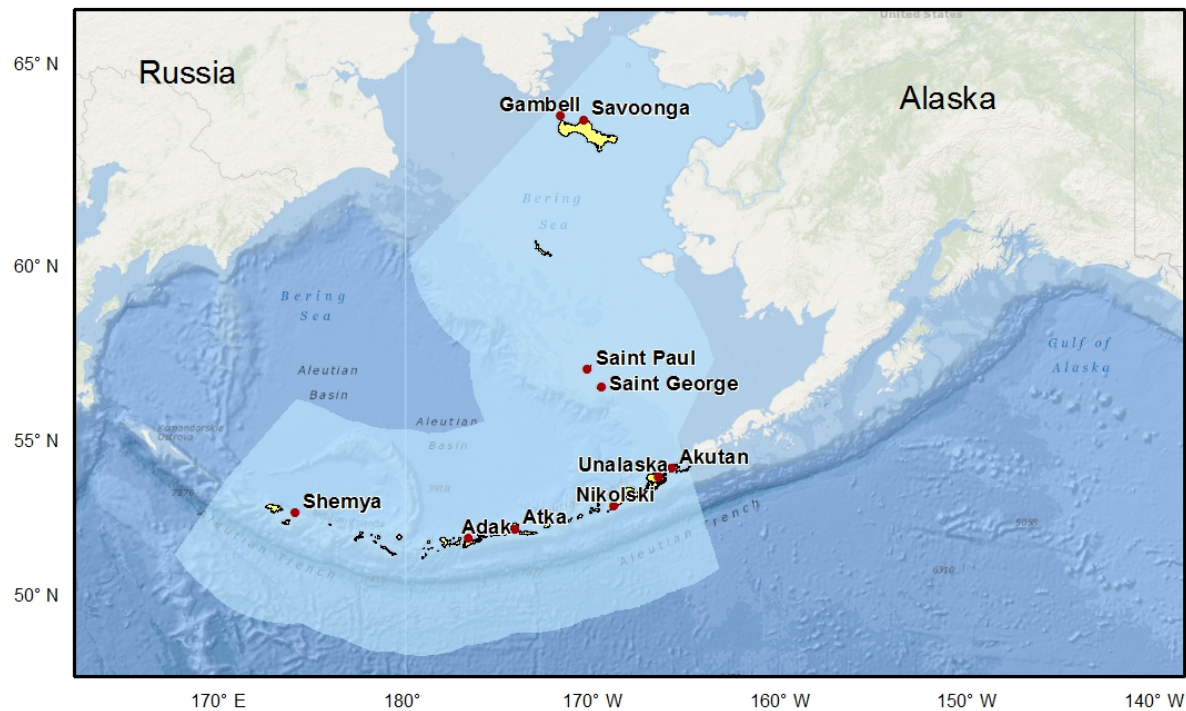


Figure 1. Geographic scope of the Aleutian and Bering Sea Islands Landscape Conservation Cooperative.

Governance

The ABSI LCC Steering Committee met five times in 2013. In March 2013 the position of Steering Committee Chair passed from Tony DeGange (U.S. Geological Survey) to Vice Chair Joel Garlich-Miller (U.S. Fish and Wildlife Service). At that time, the Committee also elected Karen Pletnikoff (Aleutian Pribilof Islands Association) as their new Vice Chair. In August 2013 the ABSI LCC welcomed Carol Fairfield (Bureau of Ocean Energy Management) and Lynn Fuller (Pacific Coast Joint Venture) to the Steering Committee, bringing the partnership to a total of seven member organizations (Table 1). In December 2013, John Bengtson (NOAA) stepped down from the Committee, and a replacement has yet to be named. [Meeting agendas and notes](#) are available on the ABSI LCC web site.

Strategic Science Plan

The ABSI LCC completed development of its Strategic Science Plan that identifies our science focus for the coming five years. The plan is based on a synthesis of over 50 existing research and management plans relevant to the ABSI region. These plans range from single and multi-species

plans to those proposing strategies for ecosystem-wide management. Collectively they represent a rich legacy of effort from countless resource managers and researchers working in the region over decades.

Table 1. The 2013 members of the ABSI LCC Steering Committee.

Name	Affiliation	Department
John Bengtson	NOAA	National Marine Mammal Laboratory
Tony DeGange	USGS	Alaska Science Center
Carol Fairfield ^a	BOEM	Environmental Sciences Management
Lynn Fuller ^a	Pacific Coast Joint Venture	Alaska Region
Joel Garlich-Miller	USFWS	Marine Mammals Management
Stephen Gray ^b	USGS	Alaska Climate Science Center
William Lekanoff	Qawalangin Tribe of Unalaska	Tribal Council
Patricia Livingston	NOAA	Resource Ecology and Fisheries Management Division
Heather Renner	USFWS	Alaska Maritime National Wildlife Refuge
Lyman Thorsteinson	USGS	Office of the Regional Director for Alaska
Karen Pletnikoff	Aleutian Pribilof Islands Association	Community Services

^a joined in August 2013

^b non-voting member

Through an analysis of these plans we identified six landscape-level stressors facing the region:

- Climate Variability and Change;
- Marine Vessel Traffic;
- Invasive and Introduced Species;
- Ocean Acidification;
- Contaminants and Pollutants; and
- Commercial Fishing.

In 2012 the Steering Committee conducted an internal assessment of the potential impacts of these landscape-scale stressors on seven broad categories of natural and cultural resources, and four categories of ecosystem services (Table 2). The assessment revealed that climate variability

and change was considered to be to have moderate or high potential to impact all resources and ecosystem services of interest within the ABSI region. In general, seabirds and marine mammals were considered to be the resources most at risk from a variety of stressors.

Table 2. Broad categories of resources and ecosystem services at risk from six landscape-level environmental stressors in the ABSI Region.

Resource Categories	Ecosystem Services
Coldwater Corals	Commercial Fishing
Cultural Artifacts/Sites	Human Community Sustainability
Fishes	Subsistence Culture
Invertebrates/Shellfish	Trophic Function
Marine Mammals	
Seabirds	
Terrestrial Vegetation	

On January 25, 2013, the ABSI LCC hosted a workshop to present information about the development of this Strategic Science Plan for the region. The workshop, held in association with the Alaska Marine Science Symposium, was attended by over 50 participants with an interest in the conservation of natural and cultural resources in the ABSI region. This facilitated workshop was structured to solicit input from the participants on the initial threat assessment of the six landscape-scale stressors conducted by the Steering Committee and core staff. Participants were asked to identify critical management issues, their associated applied science needs, interested potential collaborators, and the best role for the ABSI LCC to advance the science related to each identified issue.

The rationale and results of the Steering Committee's initial assessment of potential priorities for investment was shared with workshop participants. Some overarching perspectives of the Steering Committee were presented as follows: 1) in the case of commercial fishing and ocean acidification, considerable resources are already directed toward these stressors by others; 2) ocean acidification has significant uncertainty surrounding it and identifying applied research efforts to address unclear impacts would be problematic; 3) strategic investments in the areas of climate variability and change, marine shipping, invasive and introduced species, and contaminants and pollutants might be more appropriate for the ABSI LCC; and 4) climate change is a focus of all LCCs nationally and has profound interactions across all five of the other stressors being considered.

Workshop participants identified 18 potential management issues and associated information needs across the six landscape-scale stressors which are described in detail by Burn and Poe (2013). Some of the major themes that emerged during the workshop:

- Increased consideration of cultural resources and the perspectives of cultural resource specialists and stakeholders are needed.
- An effort should be made to share the LCC's strategic science planning process with community stakeholders and gain their insights on important science needs.
- Education/outreach that facilitates the sharing of scientific information broadly, including with stakeholders and communities in the region, should be a key activity for the LCC and could be accomplished in part by having local communities help with data collection and sharing.
- Investments in baseline data like the coastal mapping products from ShoreZone as well as those that synthesize existing data to power better models (e.g., current data for vessel and spill response as well as climate and community models) are useful for a number of managers.

There was broad agreement among participants about the importance of understanding climate change and the potential impacts to natural and cultural resources in the ABSI region. The importance of education, especially about the prevention of invasive and introduced species, was recognized as a high priority need by workshop participants. Participants also noted that knowledge about ocean acidification will likely change substantially in the near future and that the ABSI LCC should revisit conclusions about its associated conservation threat, management issues and science needs in the near future. Copies of the [Strategic Science Plan Workshop Report](#) are available on the ABSI LCC web site.

Beginning in March 2013 the staff of the ABSI LCC launched an online survey tool to collect input from researchers, managers, and stakeholders from the region. We advertised the survey broadly requesting submissions from: our ABSI LCC contact list (over 100 members); all individuals who attended our 2013 workshop; Alaska Native tribal and other local government representatives; the EPA's environmental coordinators in the region; and key research experts identified by our Steering Committee. In all instances recipients were encouraged to share the survey with their network of contacts to maximize response.

Respondents were asked to rank the conservation threats posed to 11 resources and ecosystem services by each landscape-level stressor in a process similar to that which generated Table 2. The average threat scores for each stressor by resource/service interaction were summarized and compared to those returned by the Steering Committee and core staff. We also requested narrative input similar to that asked of our 2013 workshop participants (i.e. key management issues and their associated science needs for each stressor). During the two-month survey period we received 20 responses. The majority of respondents identified themselves as federal employees (n=15) with two respondents each from university and tribal entities, and one from a non-governmental organization.

The concerns about conservation threats from stressors were similar to those identified by the Steering Committee and core staff for climate change and variation, commercial fishing, and

invasive and introduced species (Table 3). Respondents from the partnership community had somewhat less overall concern for threats from marine vessel traffic. The greatest differences were observed for ocean acidification and contaminants and pollutants, respectively. In the case of these stressors, respondents evaluated them as being of greater threat to resources and ecosystems in the ABSI Region. Respondents submitted a number of narrative comments specific to the conservation threats management questions and information needs. These and other details about the survey effort are described in [Appendix H of the Strategic Science Plan](#).

Table 3. Comparison of average threat ranks between the ABSI LCC Steering Committee and core staff (n = 8) and partner community (n = 20) for landscape-scale environmental stressors in the ABSI LCC.

Stressor	Steering Committee	Survey Respondents	Difference
Climate Variability and Change	1.99	2.04	0.05
Commercial Fishing	1.51	1.61	0.10
Marine Vessel Traffic	1.31	1.16	-0.15
Invasive and Introduced Species	1.29	1.36	0.07
Contaminants and Pollutants	1.25	1.49	0.25
Ocean Acidification	1.18	1.59	0.41

The management issues and science needs identified during the January 2013 workshop were similar to those offered by with survey respondents. Understanding the interacting relationships among landscape-scale stressors was described in both forums as a key role that could be fulfilled by the ABSI LCC (e.g., how the biological availability of contaminants is changing as a result in changes in climate). The multiple vulnerabilities of cultural resource sites were identified as a key gap in our consideration of conservation threats. Workshop attendees and some survey respondents identified impacts from climate change and site degradation by introduced ungulates, compounded by the potential for looting.

Contaminants and pollutants, and ocean acidification, were thought to be of greater concern by the partner community than was indicated by the Steering Committee/core staff evaluation. This could be a result of the widespread impacts predicted of these stressors being poorly understood and thus interpreted as having greater potential conservation threat. As Steering Committee and core staff considered threats that would drive science priorities we placed relevance on investments that could: benefit multiple managers and stakeholders; leverage existing efforts or fill a unique niche in the region; and address an information need that would result in products useful in the near term. This simultaneous consideration of the context for evaluating conservation threats likely had some influence on our overall evaluations. For instance, we recognize ocean acidification to be a broad-based threat with cascading impacts similar to climate change. However, given the paucity of specific information about the threat and the number of organizations currently working on this issue, was difficult to envision new lines of inquiry that would result in science products to guide near term management decisions.

Similarly, though we understand that commercial fishing is a significant stressor within the ABSI region, when considering our focus we are sensitive to the mandates, jurisdictions and the substantial investments of other resource managers. For example, organizations like the North Pacific Fishery Management Council (NPFMC), NOAA, the North Pacific Research Board (NPRB), and the State of Alaska currently have lead roles in the management of commercial fisheries in the ABSI region. Recognizing the extent of these organizations' activities the Steering Committee made careful consideration about ABSI LCC investments relative to commercial fishing. Though commercial fishing has important potential threats, the Steering Committee felt that the ABSI LCC should only play a limited role with respect to science needs that support sustainable commercial fishing.

The results from these efforts, combined with our earlier plan and literature review allowed us to identify climate change and variability as a *primary* science focus for the LCC. Marine vessel traffic, invasive and introduced species and contaminants and pollutants were assigned to a *secondary* category of focus. Commercial fishing and ocean acidification are considered a *tertiary* focus in large part due to substantial ongoing efforts aimed at these stressors.

Applied Science Projects

In Fiscal Year 2013, the ABSI LCC had limited funds available for applied science projects. The LCC Staff and Steering Committee compiled a list of potential applied science projects and ranked them according to set of criteria. At the April 10, 2013, meeting the Committee elected to fund seven of the highest-ranked projects (Table 4). A project to develop a statewide online database of invasive and introduced species was not implemented, as it required matching funds from another Alaska LCC whose Steering Committee elected not to support. Working with approximately \$145K of USFWS funds and \$20K from the USGS, these seven projects leveraged over \$600K of partner funds. Detailed descriptions of these projects are included below.

FY2013-01 Downscaled Climate Models

This project funds integration of projections from the [Bering Sea Integrated Ecosystem Research Project](#) (BSIERP) and [Spatial Tools for Arctic Mapping and Planning](#) (STAMP) for regional managers and stakeholders to understand climate change implications in ABSI. It consists of 4 phases: 1) collaboration between climate model PIs to identify how predictions are similar/different and where key uncertainties exist; 2) an evaluation of implications/vulnerabilities for key resources and services from BSIERP researchers and others; 3) an e-workshop/town hall (broadcast from Unalaska) sharing results with manager stakeholders with Q&A opportunities with researchers and feedback on their perceptions about vulnerabilities given these predictions; and 4) posting final interpreted data layers and analyses at AOOS. [Additional information about this project](#) is available on the ABSI LCC web site.

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change.

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Table 4. Applied science projects selected for funding in FY2013.

Project ID	Title	ABSI Funds	Partner Funds	Collaborators
2013-01	Downscaled Climate Models	\$30,000	\$80,000	Alaska Climate Science Center, Alaska Ocean Observing System, University of Alaska Fairbanks, University of Washington, ACCAP
2013-02	Commercial Shipping Vulnerability Analysis	\$22,639	\$35,000	Wildlife Conservation Society, Audubon Alaska, Alaska Marine Conservation Council, Oceana, Marine Exchange of Alaska, Alaska Ocean Observing System, Aleutian Islands Risk Assessment
2013-03	Invasive/introduced species database	n/a	n/a	Northwest Boreal LCC
2013-04	Seabirds as Indicators of Climate Change FY13	\$53,724	\$118,000	USGS, USFWS Alaska Maritime NWR
2013-05	Aleutian Islands Cultural Resources	\$9,523	\$10,000	University of Alaska Anchorage, USFWS Refuges
2013-06	Analysis of Historic Seabird Diet Samples	\$20,000	\$30,000	USFWS Alaska Maritime NWR, Kachemak Bay Research Reserve, USFWS MBM, Axiom Consulting, USGS Alaska Science Center, University of Alaska Fairbanks
2013-07	ShoreZone Mapping of St. Lawrence Island	\$10,000	\$117,775	Oil Spill Recovery Institute; Alaska Department of Natural Resources; NOAA, NMFS, Alaska Region; NOAA, Alaska Collaboration Team; NOAA, National Ocean Service, Office of Response and Restoration; Alaska Department of Environmental Conservation
2013-08	Modeling Marine Bird Distribution in the ABSI Region	\$20,000	\$210,000	USFWS Migratory Bird Management, USFWS Alaska Maritime NWR, Aleutian Islands Risk Assessment, BOEM, NOAA
Total		\$165,886	\$600,775	

FY2013-02 Commercial Shipping Vulnerability Analysis

This project will use Automated Identification System (AIS) point data from Alaska Marine Exchange's station-based network, and satellite platforms (see below), to produce monthly and seasonal summaries of commercial shipping intensity by ship type. AIS data evaluation and spatial characterization will be completed by a UAF PhD student currently producing spatial summaries of AIS data for the Bering Strait for the Wildlife Conservation Society. This project expands upon that work to create a set of regional layers that will then be analyzed by a group of leading NGOs including: Oceana, Audubon Alaska, and the Alaska Marine Conservation Council. This team will explore the degree of intersection with marine mammals, seabirds, commercial fishing and subsistence harvest areas to assess potential vulnerabilities. Final layers will be available to managers and stakeholders through one or more online data portals.

Landscape-scale stressor(s) addressed by this project: Marine vessel traffic.

FY2013-04 Seabirds as Indicators of Climate Change FY13

This project is a continuation of project FY2013-02, and funded ship time for the second year of the USGS study exploring feasibility of using seabirds as indicators of forage fish assemblages.

The field portion of this project occurred from August 11-22, 2013, aboard the *R/V Tiglax*. Despite challenging weather conditions, the field team sampled diets of Tufted Puffins from seven colonies between Adak and Attu islands; none of these colonies had been sampled previously (Figure 2). The CPUE (catch per unit effort) from these colonies suggests that feeding conditions were less than ideal as compared to the colonies in the eastern Aleutians that were sampled in 2012. Puffin diet samples were characterized by fewer numbers of larger prey items, dominated by Atka mackerel. In addition to collecting information on puffin diets and chick weights, the study also added a stable isotope component in collaboration with Dr. Douglas Causey from the University of Alaska Anchorage. A [cruise report](#) for this project is available for download from the [ABSI LCC web site](#).

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change, Commercial Fishing.

FY2013-05 Aleutian Islands Cultural Resources

The Aleutian archipelago is an area that is rich in cultural history. Information about cultural sites and artifacts exists in a variety of formats including peer-reviewed publications, agency reports, and other records. The purpose of this project is to: (1) develop GIS data layer(s) of cultural sites that can be used in vulnerability assessments; and (2) develop an annotated bibliography of literature about cultural resources that can help guide future management and research in the region.

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change, Commercial Fishing, Invasive and Introduced Species.



Figure 2. Researcher measuring a puffin chick in the western Aleutian Islands.

FY2013-06 Analysis of Historic Seabird Diet Samples

Continuous, long-term monitoring of the food habits of marine birds is a key component in detecting responses to anticipated climate change of both the birds and the prey populations on which they depend. The Alaska Maritime National Wildlife Refuge (AMNWR) has been collecting seabird diet samples from the Pribilof and Aleutian Islands for more than 30 years. Partly with previous LCC funding, in order to manage the analysis of these diet samples, AMNWR has developed protocols for zooplankton sample analysis, created a reference collection of seabird prey items, and helped develop and populate a publicly available data management system. Still needed are process and capacity for whole fish samples and digested fish samples (hard parts such as otoliths). This project dovetails with Piatt's Seabirds as Indicators project in that that project has paid for identification / processing of historic whole fish samples, whereas this one will formalize a protocol and make a publicly available lab manual / reference collection – as well as tackle a different category of prey. This will be of use not only to seabird biologists / managers but also fisheries types, which have similar diet samples.

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change, Commercial Fishing.

FY2013-07 ShoreZone Mapping of St. Lawrence Island

This project takes advantage of an existing helicopter platform on St. Lawrence that will be used to collect [ShoreZone](#) imagery of the island. This project is leveraging contributions by the [Oil Spill Recovery Institute](#), the [Alaska Department of Natural Resources](#), the [Alaska Department of Environmental Conservation](#), and [NOAA Fisheries](#) to collect imagery in the summer of 2013. The ABSI LCC provided \$10K to map the highest priority section of the St. Lawrence Island coastline.

The ShoreZone mapping system has been in use since the early 1980s and has been applied to more than 40,000 km of shoreline in Washington and British Columbia. Through partnerships with other agencies and organizations, portions of southeastern and central Alaska have been imaged and mapped. This standardized system catalogs both geomorphic and biological resources at mapping scales of better than 1:10,000. The high resolution, attribute rich dataset is a useful tool for extrapolation of site data over broad spatial ranges and creating a variety of habitat models.

Imagery collection was conducted July 21-27, 2013. All told, the team was able to image approximately 930 of the estimated 1,100 km of coastline on St. Lawrence Island (Figure 3). Mapping of this imagery is currently underway. Visit the [ShoreZone flex site](#) to see images and video from the St. Lawrence Island collection.

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change, Marine Shipping.



Figure 3. ShoreZone image of lagoon entrance on the south shore of St. Lawrence Island.

FY2013-08 Modeling Marine Bird Distribution in the ABSI Region

This project will expand abundance & distribution models for seabirds, currently underway in Aleutian Is region (USFWS-funded project under Survey, Monitoring & Assessment program) to the greater ABSI-LCC region, and integrate 2013 seabird surveys into the analysis. In particular, this expanded effort would first focus on the North Bering Sea/Bering Strait/southern Chukchi region, which has greatest potential for increased vessel traffic and development. Using at-sea survey data, colony data, and environmental parameters, Tern Again Consulting (Dr. M. Renner) is developing seasonal species-specific models of seabird distribution in the Aleutian Islands region for use in a shipping risk assessment. The resulting models greatly expand the value of at-sea survey data and improve potential applications to a variety of risk analyses and predictive models. As with the Aleutian Islands Risk Assessment, all products would be accessible to managers, responders, and stakeholders on the AOOS web site.

Landscape-scale stressor(s) addressed by this project: Climate Variability and Change, Marine Shipping, Commercial Fishing.

FY2012-02 Alaska Platform of Opportunity Portal

This project from the previous Fiscal Year was completed through a cooperative agreement with the Alaska Ocean Observing Network (AOOS), with participation from NOAA and the U.S. Coast Guard. The [Alaska Platform of Opportunity Portal](#) (APOP) was unveiled at the Alaska Marine Science Symposium in January 2013. The map-based data portal served ship schedules for a number of research vessels operating in Alaska marine waters, including the USFWS *R/V Tiglax* and the USCG Icebreaker *Healy*. Preliminary steps were made to also serve NOAA research vessels in APOP, however due to the impacts of the sequester, these ship schedules were not finalized in time to incorporate them into the portal.

Working Groups

The ABSI LCC participated in several standing working groups in 2013. The [Aleutian Islands Risk Assessment](#) (AIRA) was established following the December 2004 grounding of the *M/V Selendang Ayu* on Unalaska Island in the Aleutian archipelago. To conduct this study, the Transportation Research Board (TRB) within the National Academies empanelled the Committee for Risk of Vessel Accidents and Spills in the Aleutian Islands: A Study to Design a Comprehensive Assessment. The committee included individuals with expertise in risk assessment methods and practices; risk assessment data and analyses; risk analyses, with emphasis on evaluation and prevention of ship accidents; commercial shipping, with emphasis on North Pacific operations; navigation safety and voyage planning; U.S. Coast Guard missions and operations related to waterway management and accident response; environmental protection; and regulatory approaches to ship safety and accident prevention. The efforts of this committee culminated with the completion of their report titled: [Risk of Vessel Accidents and Spills in the Aleutian Islands](#).

In 2013, one of the USFWS members of the Advisory Panel resigned, and the ABSI LCC Coordinator was asked to replace her on the Panel. The AIRA is in the process of developing recommended vessel routing measures along the Northern Great Circle that transits through the

Aleutian archipelago. Data products from project *FY2013-02 Commercial Shipping Vulnerability Analysis* will be integral to the process, as it will identify ongoing marine shipping routes and will inform a vulnerability assessment to determine areas at greatest risk to vessel groundings.

The ABSI LCC staff also participated in the Aleutian Islands Cultural Resources Working Group. Chaired by [Diane Hanson](#), Associate Professor of Archaeology at the University of Alaska Anchorage, this working group meets periodically to share information about ongoing work in the Aleutian archipelago. Membership of the group includes staff from USFWS, Bureau of Indian Affairs, the Aleutian/Pribilof Islands Association, and the University of Alaska system. Dr. Hanson is also the Principal Investigator on project *FY2013-05 Aleutian Islands Cultural Resources*.

The ABSI LCC established a Contaminants and Pollutants Working Group focused on the Bering Sea and Aleutian Region. Chaired by the ABSI LCC Science Coordinator, this group includes 20 representatives from several Federal and State agencies as well as members of the academic community and an Alaska Native NGO. This diverse group of specialists aided in the development of the science priorities outlined in our Strategic Science Plan as well as a joint RFP that we launched with the Western Alaska LCC focused on contaminants flow into coastal systems from terrestrial fresh waters. Members of this group are in the process of working with ABSI LCC staff to develop a database of sample distribution across the region from contaminant levels in key species of seabirds, marine mammals and fish. This spatial database will be used to assess information gaps and will serve as a means to foster collaborative efforts to understand vulnerabilities of the LCC's priority resources from contaminants and pollutants.

Science and Planning Support

In addition to funding the projects listed previously, the ABSI LCC staff helped support a number of science efforts in 2013. We provided geospatial data support for two complex interagency projects in the ABSI region. The first was a series of site visits to Formerly Used Defense Sites (FUDS) in the Aleutian Islands. Field teams used mobile GIS tablets to collect information about sensitive natural and cultural resource sites and provided these data layers to the U.S. Army Corps of Engineers prior to the commencement of remediation efforts. The second project was a joint USFWS-USGS research cruise to the northern Bering Sea and Chukchi Sea to collect skin biopsies of Pacific walrus. These field teams also used mobile GIS tablets to map the location where they collected more than 1,600 biopsy samples (see cover image).

Geospatial data are limited for the ABSI region, as is the expertise to work with these products. We helped locate, acquire, and distribute satellite imagery of several study sites to support a landcover analysis of coastal islands that informs an effort to remove introduced cattle populations.

Staff from the ABSI LCC also assisted Alaska Region Refuges Inventory and Monitoring to help with an *Inventory and Monitoring Needs Assessment* for the AMNWR. We provided expertise

relative to data portals that could support more efficient transfer of monitoring data as well as partner efforts that might compliment Refuge inventory and monitoring protocols. As part of this session we also presented a possible approach that would link national LCC Network efforts around Landscape Conservation Design to a future possible revision of the refuge's Comprehensive Conservation Plan.

Lastly, the ABSI LCC provided secure, cloud-based data storage to the North Pacific Seabird Diet Database project. This workspace, hosted as a sub-site of absilcc.org, allowed USFWS Biologists and contractors to collaborate on data QA/QC from a variety of locations across the U.S. and Alaska.

Outreach

The ABSI LCC began the year with a poster presentation at the 2013 [Alaska Marine Science Symposium](#) (AMSS) in Anchorage, Alaska. The Symposium, hosted by the North Pacific Research Board (NPRB) is an annual event that brings together nearly 1,000 resource managers, researchers, and students together to present information about marine science in Alaska. On the final day of the Symposium, we held a professionally-facilitated workshop to solicit input on our Strategic Science Plan. The AMSS has quickly become a key meeting for the ABSI LCC to interact with researchers and managers of natural and cultural resources. In October 2013, ABSI LCC staff joined the AMSS Organizing Committee to help with planning and logistics for the January 2014 Symposium. Our involvement included reviewing abstracts, assisting with development of plenary session programs, web site development, Twitter account management, and serving as judges for student awards.

Core staff conducted in-person outreach at a variety of forums throughout the year, including the [Alaska Forum on the Environment](#), an annual event that brings resource managers from across the State to Anchorage for a week-long meeting that offers a broad range of plenary sessions with nationally recognized keynote speakers. There are over 80 breakout sessions which are organized by subject tracks including: climate change, emergency response, environmental regulations, fish and wildlife populations, rural issues, energy, military issues, business issues, pollution prevention, contaminants, and others. In the past five years, AFE has offered technical sessions on a diversity of environmental issues such as; energy issues, alternative energy sources for rural villages, subsistence hunting, fishing, and gathering on federal lands, biological studies, bioterrorism, effects of climate change, Alaska Native Claims Settlement Act, military environmental restoration, and tribal and federal government-to-government policies.

The ABSI LCC Coordinator was invited to give a presentation at the 101st U.S. Arctic Research Commission meeting in Unalaska, Alaska. The ABSI LCC is located entirely within the Arctic as defined by the [U.S. Arctic Research and Policy Act](#). As used in the Act, the term "Arctic" means all United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering and Chukchi Seas; and the

Aleutian chain. The Commission, chaired by former Alaska Lieutenant Governor Fran Ulmer, appreciated the opportunity to learn more about the ABSI LCC partnership.

Core staff also participated as judges in the “[Tsunami Bowl](#)” – the Alaska regional competition for the [National Ocean Sciences Bowl](#). Other judges included staff from NOAA, the University of Alaska system, Alaska Pacific University, and the Alaska SeaLife Center. This two-day event gave staff a unique opportunity to present information about the ABSI LCC to a variety of marine scientists, educators, and resource managers. The team that won the Alaska regional competition, Juneau-Douglas High School, placed third in the National competition held in April 2013 in Milwaukee, Wisconsin.

Staff from the ABSI and Western Alaska LCCs gave a joint presentation on our applied science efforts to the annual shareholders meeting for the Aleut Corporation. This Alaska Native organization is the umbrella corporation for 14 Aleut villages in the Aleutian region and their meetings are key outreach opportunities for both LCCs to share our research priorities with community members. The presentation also provided an opportunity for LCC staff to hear concerns related to emerging environmental issues in the region as well as hear about future community development interests.

On December 17, 2013, we sponsored a [webinar](#) hosted by the [Alaska Center for Climate Assessment and Policy](#) (ACCAP). This webinar was the public launch for project *FY2013-01 Downscaled Climate Models* and featured an introduction by Jeremy Littell (Alaska Climate Science Center), and presentations by Dr. John Walsh (University of Alaska Fairbanks) and Dr. Nick Bond (University of Washington). The 45-minute program had 108 attendees, followed by 15 minutes of Q&A. There was broad interest in learning more about downscaled climate models for the ABSI region.

Throughout 2013, the ABSI LCC used our web site (<http://absilcc.org>) and Twitter account to share information of interest to the resource management and research community. During the past year, our web site had over 23,000 page views during more than 3,800 visits by 1,793 unique visitors. The majority of our web traffic originates within the U.S. and Canada; our mailing list has grown to over 150 members.

In addition to hosting information about the ABSI LCC, we have maintained a “[partner sub-site](#)” for the Alaska Maritime National Wildlife Refuge biological science team. This sub-site includes a [document library of reports](#) in PDF format, as well as access to the current version of the *R/V Tiglax* ship schedule for the upcoming 2013 field season. The content management system of the site (Sharepoint Foundation) allows the site to be updated from any computer with internet access, and additional partner sub-sites can easily be created to meet future needs. We see this as service that the ABSI LCC can easily provide to help promote integrated science in the region.

Future Plans

The ABSI LCC will begin the new year by hosting two workshops at the Alaska Marine Science Symposium in Anchorage, Alaska. Both workshops are in support of project *FY2013-01 Downscaled Climate Models*. We will also be co-authors on a poster presentation of preliminary results from project *Fy2013-02 Commercial Shipping Vulnerability Analysis* (Figure 4).

At the December 6, 2013, meeting, the Steering Committee elected to issue a Notice of Funding Availability (NOFA) to solicit proposals to address the landscape-scale stressors of invasive and introduced species, and contaminants and pollutants in the ABSI region. We intend to announce the opening of the NOFA on January 20, 2014, at the Alaska Marine Science Symposium.

The Steering Committee will hold a two-day retreat February 26-27, 2014, in Anchorage, Alaska, to develop a Science and Operations Plan that will pick up where the Strategic Science Plan leaves off, and identifies more specifically what actions we intend to focus on in the next 1-2 years. We will also hold a half-day session to meet with key Non-Governmental Organizations (NGOs) with an interest in the ABSI region.

The LCC Staff also prepared a white paper outlining a conceptual approach to Landscape Conservation Design (LCD) within the ABSI region. Key partners in any LCD effort would include a number of partners who would develop a series of “design elements” that would address conservation threats from our primary and secondary landscape-scale stressors of interest.

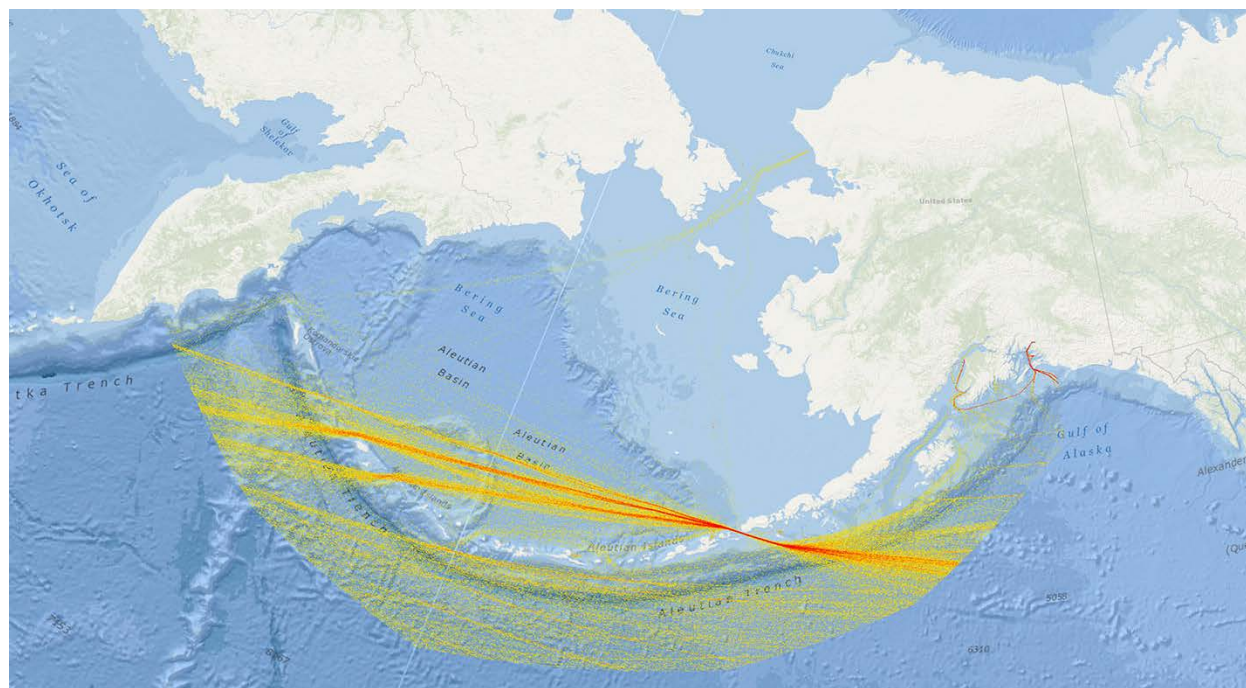


Figure 4. Preliminary analysis of bulk transport vessels in the ABSI region.

