



Bering Sea Sub-Network Implementation Workshop

November 26, 2006



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INTRODUCTION

Over the past several years, research and assessment reports produced by the Arctic Council¹, especially the Arctic Climate Impact Assessment, have demonstrated a clear need for large-scale network-based local observation of environmental changes.

In 2004, the Aleut International Association (AIA) began exploring the concept of a network for community-based monitoring within the Bering Sea region.

An initial workshop was held in October 2005 to facilitate exchange of information for establishing a network for participating organizations to prepare for and learn about current and past community-based research projects, as well as to scope out potential funding opportunities. In 2006, the International Polar Year (IPY) Joint Committee endorsed the concept of the Bering Sea Sub-Network. The cumulative result of these efforts was a proposal submitted to the National Science Foundation (NSF) in May 2006 under the title: **Bering Sea Sub-Network, International Community-Based Observation Alliance for Arctic Observing Network (BSSN)**. The proposal responded to the needs of the Arctic Observing Network (AON) by demonstrating an understanding of the issues in the context of both science and traditional knowledge and showed a grassroots support at the community and regional level. NSF has offered to fund a pilot project.

During this pilot, BSSN should demonstrate that it can function as a network. The success of the pilot will likely ensure the continuation of funding at a level of support that will not only sustain the network but also provide funding opportunities and support for regional community-based monitoring efforts.

A November 2006 workshop was organized to continue discussions with participating communities on the Bering Sea Sub Network, to obtain recommendations for a scaled-down project and develop an implementation plan.

¹ The Arctic Council (AC) is an international, intergovernmental circumpolar organization with eight state members (Canada, Denmark, Finland, Iceland, Norway, Russian Federation, Sweden, and the United States) and six Indigenous Peoples' organizations, called Permanent Participants (The Aleut International Association (AIA), The Athabaskan Arctic Council (AAC), the Gwich'in Council International (GCI), the Inuit Circumpolar Council (ICC), the Russian Association of Indigenous Peoples of the North (RAIPON), and the Saami Council (SC). The Arctic Council provides a mechanism to address common concerns and challenges faced by Arctic residents through scientific research, program implementation, and development of policy recommendations.

The BSSN workshop was one of the three consecutive meetings held in Anchorage to address an implementation plan for the Circumpolar Biodiversity Program of the Conservation of Flora and Fauna working group of the Arctic Council.

ACKNOWLEDGEMENTS

Aleut International Association would like to express its appreciation for support and acknowledge commitment and involvement of the following agencies, organizations, and individuals.

- U.S. Department of State, Bureau of Oceans and International Environmental and Scientific Affairs
- Environment Canada
- U.S. Fish & Wildlife Service, Anchorage
- UAF, International Arctic Research Center
- Alaska Conservation Foundation

and

- Julie Gourley
- Ann Gordon
- Mike Gill
- David Atkinson

WORKSHOP AGENDA

Bering Sea Sub-Network Implementation Workshop **Hotel Captain Cook, "Adventure" Room** **Anchorage, Alaska**

Sunday November 26, 2006

Agenda

8:00-8:30 AM	Registration
8:30 AM	Opening Ceremony by a local Indigenous representative
8:45 AM	Introductions of the BSSN participants
10:15 - 10:30 AM	Coffee break
10:30 AM	BSSN: presentation of the proposed program <ul style="list-style-type: none">▪ History, overview, main elements (Victoria Gofman)▪ Science plan (Dr. Lillian Alessa)▪ Circumpolar Biodiversity Monitoring Programme as a vehicle for circum-Arctic collaboration (Mike Gill)
11:30 AM	Comments and questions
12:00 – 1:00 PM	Lunch
1:30 PM	Presenters' answers and comments
2:30 – 3:30 PM	Coffee break
3:30 PM	Developing recommendations for BSSN set up and implementation (A moderated discussion)
4:30 – 4:45 PM	Break (A small drafting group edits recommendations and develops a draft)
4:45 PM	Presentation of the draft for final editing and approval
5:00 PM	Meeting Adjourn

BSSN: HISTORY, OVERVIEW & MAIN ELEMENTS

Victoria Gofman, AIA executive director and BSSN managing co-principle investigator, made a presentation on the project's main elements and its history. She discussed the initial concept for the Bering Sea Sub-Network, the October 2005 BSSN Workshop and the May 2006 grant proposal submitted to the National Science Foundation.

Considering the reduced funding allotted by the NSF, Gofman stated that the BSSN pilot objectives should be to demonstrate the following:

1. The network can function.
2. Information can be collected efficiently.
3. Consensus on data management can be reached.
4. The methodology used by the network has scientific merit.

Workshop participants recommended adding three more objectives that would help ensure the pilot success:

5. a mentorship program;
6. peer reviewed publications;
7. an international workshop at the conclusion of the project demonstrating findings and conclusions and making recommendations for continuation of the BSSN.

The project name, Bering Sea Sub-Network, has gained some recognition and BSSN, as an acronym, now holds meaning for many people and organizations. However, there has been some discussion on changing the name. David Atkinson, of the International Arctic Research Commission at the University of Alaska Fairbanks suggested Bering Sea Sustainability (or Sustainable) Network, referencing both the sustainability of the network itself in addition to the sustainability of the Arctic. The web domain www.BSSN.net has been registered for the project.

The structure of the Bering Sea Sub-Network as proposed in the original NSF grant application included a steering committee of the four principal investigators (Victoria Gofman, AIA; Patricia Cochran, ANSC; Lillian Alessa, UAF; Joan Eamer, UNEP), representatives from the villages and scientists, a Secretariat (senior coordinator), 14 member participants, a data management group (DMG), a science advisory group (SAG), regional/inter-regional/international collaborators, and consultants, as needed.

Figure 1: BSSN Originally Proposed Structure

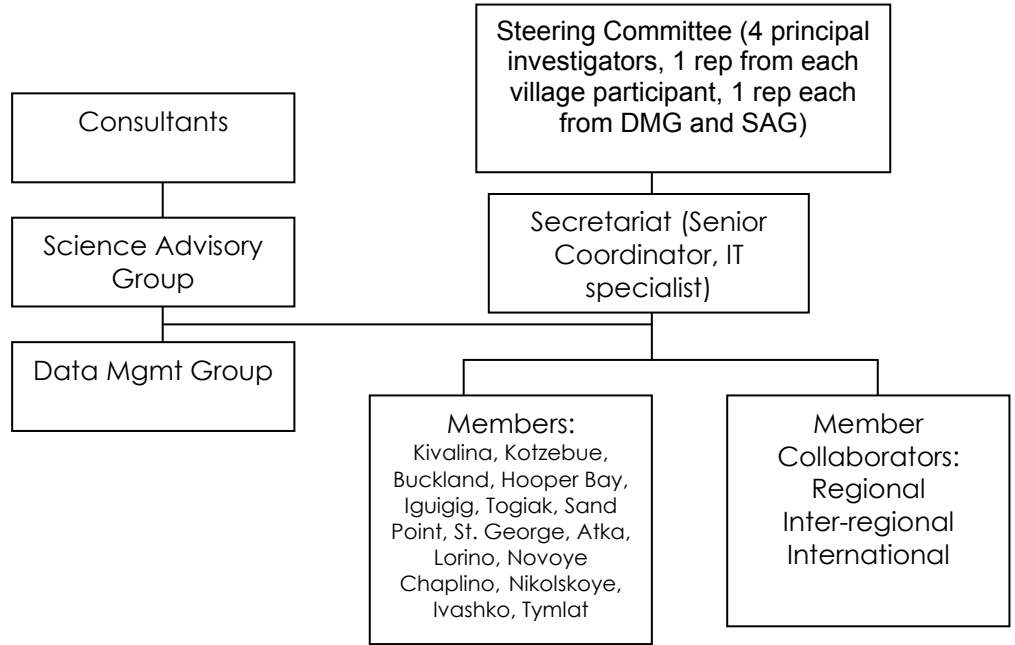


Figure 2: BSSN Originally Proposed Participating Communities



Based on the reduced NSF grant award, the new structure will most likely be very similar, but the number of participating members would need to be reduced. The new structure may include:

- Participating Members – 6 villages
- Collaborators – unspecified number
- Steering Committee – approximately 12 members
- Data Management Group – approximately 5-6 members
- Science Advisory Group – approximately 7-8 members
- Consultants – as needed
- Secretariat – 3 people, based in Anchorage at AIA

Sub-awards for pilot villages included:

- A part-time (50% FTE) coordinator in Alaska and a full time coordinator in Russia
- Materials and equipment
- Travel
- Village participant incentive payments
- Range between \$46K and \$75K per village in Alaska and about \$26K per village in Russia

Ms. Gofman presented on a possible collaboration of BSSN with CBMP (Circumpolar Biodiversity Monitoring Program) and other community-based monitoring networks. She posed the following for discussion by workshop participants:

Where could the projects benefit most from cooperation?

- Data management protocols
- Data exchange through species networks
- Comparative assessments (divergence and convergence of western science derived and human observed data.

What actions would be required for implementing this type of program coordination?

- Actions required from the BSSN project
- Actions required from the CBMP

Who will coordinate community and joint activities of CBM networks?

How can we ensure continuity and exchange of experience and best practices?

Who will fund the coordination and communication?

BSSN: SCIENCE PLAN

Dr. Lillian Na'ia Alessa, Professor with the University of Alaska Anchorage, and co-principal investigator for the Bering Sea Sub-Network, presented on the science plan and data management for the project.

Dr. Alessa spoke of the people who have inhabited the Arctic and sub-Arctic for years and how indigenous people have been finessing knowledge through empirical observations for thousands of years. She spoke of humans as “sensors of change” – that people could be the most sophisticated sensor with the ability to provide high-resolution imagery that no remote sensor could ever produce. The challenge, she says, is to learn how to read these fine human instruments. The BSSN project will attempt to do this by using innovative methods of surveying and collecting environmental information.

The objectives of BSSN are listed as:

1. Establishing the BSSN infrastructure and policies
2. Design and implementation of a pilot on collection of data on selected key variables and indicators across the network
3. Establishing collaboration with SEARCH (Study of Environmental Arctic Change) and other International Polar Year (IPY) science projects on community-based research components.

Information management will be key to this project. Standards are essential to managing GIS data. File naming conventions, directory structures, projections and datums will be established during the implementation of a GIS database. Accessibility, password protection, firewalls and query based search features will be explored. There will be a need to develop a consensus-based collaborative idea on what accessibility to data and information is and means.

- Data will be physically entered and stored
- Data will be disseminated via the Internet
- Essentially there will be no single entity housing all the data
- A management team will organize the data in time/space for users

When we consider which communities should participate in the pilot, the following points should be considered:

- Latitudinal coverage in all three zones: North, Central and South Bering Sea areas
- Existing data and coverage
- The ability to commit time and resources towards a community of practice, not just a project
- Willingness to participate as a member of the team: coordination, communication, ideas, in-community tasks, meetings, etc.

CIRCUMPOLAR BIODIVERSITY MONITORING PROGRAM

The Bering Sea Sub-Network will coordinate with the Circumpolar Biodiversity Monitoring Program (CBMP). A CBMP overview was provided by Mike Gill, Environment Canada, Manager of the CBMP Secretariat and Indicator Task Team Lead.

The CBMP is a CAFF (Conservation of Arctic Flora and Fauna) program. CAFF is a working group of the Arctic Council. A key partner in the CBMP is the United Nations Environment Program (UNEP), both UNEP-WCMP (World Conservation Monitoring Center and UNEP-GRID (Global Resource Information Database). Canada is the lead country for the CBMP.

Mr. Gill provided information on the importance of preserving arctic biodiversity. The Arctic is home to diverse indigenous cultures. It is the breeding ground for hundreds of migratory species that occupy every part of the world with the exception of the interior of Antarctica. Species within the Arctic have a high genetic diversity and the Arctic biodiversity is critical to human well-being providing fuel, food, fodder, nature tourism, fiber, pharmaceuticals and more. Some of the world's few remaining pristine environments can be found in the Arctic including vast wilderness areas. The Arctic plays a key role in the physical, chemical and biological balance of the globe and represents an early warning system. By monitoring its changes, we will provide knowledge that can be used elsewhere around the world. Arctic biodiversity is facing growing pressures from climate change to the cumulative impacts of roads and pipelines, oil/gas development, urbanization, forestry, mining and agriculture.

The mission statement of the CBMP is:

To strive for conservation of biological diversity, to halt or significantly reduce its loss, and provide information for the sustainable use of the Arctic's living resources for the Indigenous Peoples of the Arctic, and other Arctic residents and stakeholders inside and outside the Arctic.

The CBMP is an international network and coordinating entity for existing Arctic biodiversity monitoring programs; for initiating new programs to address gaps; for data gathering and data analyses; and, to coordinate and communicate results. It is a program meant to harmonize efforts across the Arctic to improve detection and reporting of important trends in biodiversity.

The CMBP will:

- Identify and communicate on status and trends of biodiversity in the circumpolar Arctic; populations, species, key habitats and ecosystems under threat, and emerging issues such as early warning of changes to habitats and species
- Provide information and work together to share knowledge and increase action on biodiversity loss
- Build and maintain cost effective monitoring capacity
- Other value-added components include: facilitation of resource sharing, increased opportunities for funding, common resources and tools and standardized collection and communication of information

Mr. Gill provided an overview of information and knowledge sources that will be utilized including both community-based and scientific methods of approach engaging research stations, regional programs, species networks, regional and circumpolar networks and remotely-sensed data. Partners include organizations from all eight Arctic nations with associated governmental institutions, six international indigenous peoples' organizations, UNEP-WCMC and UNEP/GRID-Arendal. In addition, more than 40 organizations have signed on as collaborators.

The CBMP's progress to date includes:

- CBMP was officially launched in Cambridge, UK in September 2005 with Canada as the project lead
- WCMC was identified as the site for the web-based data portal

- CBMP Secretariat and Steering Committee (12 members from 6 countries) was established
- Six task teams established: key indicators, data management, community based monitoring, remote sensing, funding and assessment and outreach.
- Linkages with over 40 organizations have been established
- Draft Indicators, Remote Sensing and Data Management strategies are being developed
- Several pilot projects are underway or planned (CBIRD, CBVM, CARMA, MMC, and possibly BSSN and/or Polar Bears)
- An annual report was published for the AC Salekhard Ministerial in October 2006
- Major IPY Canada funding proposal was submitted ("Harmonizing Efforts to Detect Change and Conserve Arctic Biodiversity: The Circumpolar Biodiversity Monitoring Program")
- Community-based monitoring and implementation workshops to further define the program are being planned
- Stakeholders Workshop planned for 2007 in Washington DC

Priorities for the year ahead include finalizing the implementation strategies, developing a detailed international proposal, securing funding, developing the CBMP website and other communication products, launching several pilots and contributing towards the 2010 Arctic Biodiversity Assessment.

BSSN WORKSHOP DISCUSSION

After the presentations, workshop participants entered into discussions on the topics set forth in the presentations. The purpose was summarized as:

This workshop was developed for communities and organizations to come together to discuss the concept of the BSSN project and attempt to achieve consensus on how to move forward with an implementation plan that is agreeable to all involved. Aleut International Association, as the NSF proposal submitter, needs and wants direction from the group on how to proceed. The critical decisions as to the governing council (steering committee) have not yet been made. There is a need to achieve consensus on the governing council and the organizations/entities empowered to make the decisions, whether regional or village organizations.

Several comments were made regarding the amount of community-based monitoring that is already occurring in the Bering Sea area. Several participants indicated that by bringing

together those communities and projects that are already doing some form of community-based monitoring and developing others will help lead to success. Given the reduced funding, the BSSN project could accomplish more by utilizing communities that are already doing some form of community-based monitoring and adding in a few more.

BSSN Proposed Structure

There was an extensive discussion on the proposed structure of the BSSN, the steering committee and its functions. Functions of the steering committee were outlined as: developing consensus on protocols for data collection and management, and providing a communication hub. The steering committee would be the mechanism for communities to communicate to the scientists their thoughts, ideas and needs. The village steering committee representative could be the person tasked with doing the actual work or acting as a coordinator with others performing the tasks. It would be up to the villages to decide who would take the actions. However, it was requested that the steering committee member be knowledgeable about both the project and the community they are representing. The four principal investigators will serve on the steering committee and provide representation of the entities attempting to establish the network. By including village representation on the steering committee there will be a more diverse and collective body to make decisions, as well as bringing local ownership of the project.

One suggestion was that the steering committee be small and compact; that the founders agree on what it is to be created and funded. The steering committee would then be responsible for preparing the documentation and vision and the village representatives would then review and approve or offer constructive criticism or changes.

The community representative would be responsible for coordination of information at the local level; be the one to take the initiative to say, "This is the best way for our community to collect information." The representative would be the liaison, or coordinator, and link with or interface with others.

There was a discussion on the need for a steering committee to be established as soon as possible and that if it is not completed at the workshop, the four principal investigators would be tasked with making the decisions until a committee could be formed. There was a suggestion that the workshop participants allow the Aleut International Association to lead the project and make the decisions necessary to move it forward.

BSSN Project Work Plan

There were questions as to whether or not the work plan submitted in the proposal to NSF would have to be revised. It was stated that the work plan would have to be revised in terms of the scaled down project, but that NSF was not requiring a new work plan to be submitted. The portion of the work plan detailing surveying would need careful consideration in light of the reduced funding.

BSSN Project Purpose/Result/Products

Questions were posed on what the end result of the project will be so that organizations could decide if they can commit the time and resources to the project. It was stated that the Bering Sea Sub-Network would result in an organized network for collection and dissemination of data resulting in a tool that is more relevant to communities than what is currently available. It will provide reliable information that can improve decision-making by local communities in searching for answers to questions such as "Where are the food resources? Or, should I stay in this community or should I go to another? Or, should we move this community due to erosion and sea level rise"? It will also provide a legacy of an indigenous observing network driven by communities rather than by outside organizations.

The projected result:

A formalized network for information collection, data organization, and for discussions on common issues is established. The network consists of six communities engaged in monitoring and the secretariat serving as a central location for the development of data management protocols, communication inside the BSSN and tying it into the Artic

The funding agency, NSF, will want the project to demonstrate that a network can be formed, can function effectively and information and data can be managed efficiently. If this can be demonstrated, the grantor will likely consider the project successful and it could increase the likelihood of additional funding for the future. Several tangible products were listed in the proposal including reports produced on CD, videos, and publications.

It will be important that communities provide ideas and information on the types of media that will be most relevant and useful to them. With the project being funded for only one year, deliverables will be limited.

There was an additional discussion on the following ideas and comments:

- Mentorship: the project should consider getting young people involved at an early age and having them team with scientists and elders. The mentorship can work in many directions: scientists learning from community members, both young and old, young people learning from both scientists and elders, etc.
- Publications: to the extent feasible, it may be helpful to look at publishing a cooperative document or report that results from collaboration within the network. This would support both the project's success as a network and in terms of products produced. Peer review publications will be promoted.
- Final Workshop: the granting agency may be very interested in seeing a workshop at the end of the project that discusses best practices, lessons learned, strengths of the project and areas for improvement.

BSSN Project Timeline

Several questions were posed as to project timelines. The project has, in many ways, already begun. There has been concept development, the initial October 2005 workshop, the funding proposal submission to NSF and the November 2006 workshop. However, as to the actual pilot communities being chosen and work beginning, the closest that can be estimated is sometime in the next year, i.e. 2007. Several tasks still need to be completed including selection of the pilot communities and a budget revision to NSF due within the next three to four weeks. The start of the one-year project as relates to the NSF grant has not yet begun.

BSSN Pilot Communities

Workshop participants agreed that there should be six participating pilot communities rather than 14 due to the reduced funding from NSF. The six communities should be split equally with three coming from the Alaskan side and three from the Russian side.

The group discussed how to select participating pilot communities at length. Suggestions ranged from regional areas based on Inupiaq, Yupik and Aleut segmentation to geographical areas, species coverage, capacity and manpower considerations. Ultimately, the following selection criteria were established for regional organizations to use in electing which community participates in the BSSN pilot.

- North, Central, South Bering Sea ecosystem coverage (e.g., sea ice, migration routes, breeding colonies/grounds)
- Does the community have the technological infrastructure/capacity and a qualified individual to bring energy, desire and initiative to the project?
- Will the community be able to engage interested individuals in the village to support the project?
- Does the community have a desire and/or need for this type of project, i.e. immediate ecological concerns impacting subsistence species?
- Can the community build on existing experience, knowledge, capacity and activities already going on in the community (i.e. community contribution to the project)?
- Would such a project benefit the community's existing programs and enhance indigenous and traditional knowledge (i.e. project contribution to the community)?

Additional discussion resulted in the decision that the preceding criteria would be given to regional entities to use in their selection process with the understanding that it is not essential for any community to meet all the criteria, but that a village that meets several of the criteria may be more likely to be chosen than one that meets only a few of the criteria. Stronger weight will be given to the first criteria to ensure North, Central and South Bering Sea ecosystem coverage. The Aleut International Association will be sending out a letter to respective regions providing the criteria and asking for their selection of a community/village to participate in the project.

WORKSHOP DECISIONS

The following outlines decisions arrived at during the workshop:

- The number of pilot communities will be reduced from the originally proposed 14 to six due to the decreased funding from NSF.
- The selection criteria established and reported on above will be used to determine the six communities that will participate in the one-year pilot. Regions will utilize the selection criteria and nominate one village within their area.
- Aleut International Association will distribute a letter to each region informing them of the selection criteria and requesting they nominate one village.

- If no steering committee is established during the workshop, the four principal investigators will be tasked with making the decisions until the committee can be formed.

NEXT STEPS

The following items were identified as next steps:

- Letter from AIA to regions regarding criteria and selection of pilot communities
- NSF budget revision
- Formation of the steering committee
- Communication with regions and selected villages on continuing next steps after NSF accepts a finalized budget revision
- Define issues for steering committee consideration, i.e. data management, building connections and communications, other programmatic issues

PARTICIPANT LIST

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PARTICIPANT BIOGRAPHIES

Victoria Gofman, Aleut International Association

Victoria Gofman is the Executive Director of AIA and has been actively promoting and developing community-based projects led by indigenous organizations through her international work in the Arctic Council, International Bering Sea Forum, and in regional initiatives, such as Alaska Contaminants Alliance. She has been a catalyst in developing an international network for community-based monitoring projects in the region. In the recent years, she contributed to the major Arctic Council reports: the Arctic Climate Impact Assessment, the Arctic Human Development Report, the Arctic Marine Strategic Plan and the Discussion Paper on Community-based Monitoring for the Circumpolar Biodiversity Monitoring Program where she serves on a Steering Committee as a co-lead on community-based monitoring.

Mike Gill, Head, Circumpolar Biodiversity Monitoring Program Secretariat

Mike Gill is Head of the Circumpolar Biodiversity Monitoring Program (CBMP) Secretariat in Whitehorse, Yukon, Canada and is Lead of the CBMP Indicator Task Team. Mike has been involved in a number of ecological monitoring programs in Northern Canada including the Arctic Borderlands Ecological Knowledge Cooperative, a program involving both community-based and scientific monitoring approaches.

Dr. Lillian (Na'ia) Alessa

Dr. Alessa is an Associate Professor in Biological Sciences at the University of Alaska, Anchorage and the leader of the Resilience and Adaptive Management Group. She has a background in ecology, toxicology, cognitive psychology, and environmental science. Her research focus is on the response, resilience, and adaptation of human communities to environmental change. She has been a board member of the Arctic Research Consortium (ARCUS), which includes science-planning activities for the Arctic and as the "Enabling Education" liaison for the University of Alaska, Anchorage (2000-2002). She is co-PI on several large initiatives, including Resilience and Change in the North (EPSCoR) and the Humans and Arctic Environmental Change Community of Practice (ARCSS). She is co-PI on "The Intersection Between Climate Change, Water Resources and Humans" and "Humans and Hydrology at High Latitudes." The overall objective of the research is to understand the vital role of freshwater in the lives of humans in the Arctic, its values and uses, how it has changed in the past, and how future changes will affect societies in the North. A model, applicable at both local and circumarctic scales, enables responses by humans to climate-induced changes in the hydrologic cycle to be examined.

Reid Brewer, Alaska Sea Grant Marine Advisory Program, Unalaska

I am the Unalaska Agent of the Alaska Sea Grant Marine Advisory Program. My role in Unalaska is to bridge the gap between community members and university and government researchers. The primary focus of my effort in Unalaska has been to encourage the establishment of two-way communication so that locals are aware of the results of research, and researchers are able to access traditional knowledge from locals. Recently, much of my time has been involved in planning and piloting community based coastal monitoring protocols. I have a master's degree in Marine Biology with a focus on intertidal invertebrates. My efforts in Unalaska are focused on education, outreach and research.

Bruce Wright, Aleutian/Pribilof Islands Association

Bruce Wright has served as the director of Conservation Science Institute since 2002 and science advisor for the Aleutian Pribilof Islands Association since 2005 and Aleut International Association since 2006. Wright is the PI on two current projects: Testing and

monitoring for Paralytic Shellfish Poisoning in Aleut Communities and Oil Spill Capacity Building, Preparedness and Monitoring Project. Wright was a University of Alaska professor for 12 years where he received the Conservation Education Outstanding Achievement Award for 1998 for the bald eagle courses from the University's "Alaska Wildlife Series." During his tenure with NOAA Fisheries, Wright worked for the *Exxon Valdez* Oil Spill Trustee Council helping to guide their science program and direct the Alaska Predator Ecosystem Experiment and Alaska Shark Assessment Program. From 1997 to 2001 Wright was the chairman of the Board of Directors of the Bald Eagle Research Institute. In 2000 Wright was selected as host scientist for Alaska for the *JASON XIII: Frozen Worlds*. Also in 2000 he was assigned to be the science advisor to Alaska's Governor Tony Knowles and his work for the Pew Oceans Commission. Wright has been on national and international media (60 Minutes, SKY News and others) where he discussed the *Exxon Valdez* oil spill, bald eagles and sharks. Wright has some publications to his credit including three books, *Ecology and Conservation of Alaska's Predators* (expected release spring 2007, Hancock House Publishing), *Bald Eagles in Alaska* and *Alaska's Great White Shark*.

Tatiana Vlasova, Russian Academy of Sciences

Dr. Vlasova holds a Ph.D. and is a leading researcher and Head of the Arctic Sustainability Project, Russian Academy of Sciences, Institute of Geography. She is a nominated member to the IPY ICSU/WMO Subcommittee on Observations, member of Steering Committees of International Arctic Science Committee and International Geographic Union working groups dealing with different aspects of socio-economic and human development of the Arctic States. Dr. Vlassova was nominated by Indigenous peoples from RAIPON to the Arctic Climate Impact Assessment (ACIA) Policy Document Team. She is also a contributing author to ACIA Scientific report and ACIA Overview and to the Arctic CBD report. She coordinates the IASOS-CASEAS (IPY EoI 899; FP 303). Tatiana has participated in the launching and development of a number of monitoring programs and networks (AON, CEON, CBMP, COMAAR, SCANNET, ARN, etc.) involving local/traditional knowledge as well as scientific approaches.

Karin Holser, Pribilof Islands Stewardship Program Coordinator

I have worked as the coordinator for the Pribilof Islands Stewardship Program for the past ten years, which has a grant with National Park Service to develop a model community-based environmental monitoring program, and also has a very successful mentorship program. I work on contract to the St. George Traditional Council doing grant writing and have helped to start the St. George Island Institute. Am a volunteer for US Fish and Wildlife Service and NOAA.

Kaisu Mustonen, Snowchange

Ms. Kaisu Mustonen is a representative of the Snowchange Cooperative, based in Finland. Snowchange (www.snowchange.org) is a cultural and scientific organization devoted to the advancement of Northern Indigenous and local communities - headquarters are in Finland. Kaisu Mustonen is a specialist on traditional knowledge and biodiversity, with a specialty on the role of women and women's knowledge in the Arctic regarding the biodiversity and climate changes. She lives in Joensuu, Finland and is associated with the Human Geography Programme at the University of Joensuu. She has field experience from Alaska, Arctic Canada, Iceland, Norway, Finland, Murmansk and Siberia in Russia.

David Atkinson, UAF – International Arctic Research Center, Fairbanks

David E. Atkinson, Assistant Professor of Atmospheric Sciences, International Arctic Research Center, University of Alaska Fairbanks, specializes in arctic storms, how they grow strong in the Bering Sea, what affects their paths, and their effects on the coastal region, especially erosion and flooding issues. He conducts fieldwork on the west coast of Alaska. All of his university degrees have focused on different aspects of arctic research, including frozen ground, satellite remote sensing, data issues, and climatological aspects of the Canadian Arctic Islands. He has worked with the Arctic Coastal Dynamics project for several years, led the environmental working group of that project, and sits on its steering committee.

Eduard Zdor, Traditional Marine Mammal Hunters of Chukotka(TMMHC)

Mr. Zdor is the Executive Director of TMMHC, a Chukotka non-profit organization formed to represent interests of traditional marine mammal hunters. The organization's projects range from the protection and preservation of habitat and biological resources important for Native peoples to community education and science support.

Gennady Zelensky, Chukotka Science Support Group

Mr. Zelensky, in his capacity as the Executive Director of Chukotka Science Support Group, works in close cooperation with Barrow Arctic Research Consortium providing logistical support for scientific research in Chukotka.

Ivan Gutorov, Association of Tribes (Obshchiny) of Indigenous Peoples in Kamchatka

Mr. Gutorov is the Chair of the Association. He travels extensively to remote communities in Kamchatka and Koryakia assisting local tribal businesses (obshchiny) with addressing various problems related to organizing and running an obshchina. He is interested in involving local fishers and hunters in research projects aimed at

protection and sustainable use of biological resources in Kamchatka.

Alexey Drozdov, Tribal Community Kam-Avva

Mr. Drozdov is the Head of Kamchatka Native small fishing obshchina Kam-Avva. Mr. Drozdov is very interested in helping local communities to establish and sustain their subsistence-based economy. He brings an intimate knowledge of remote villages and understanding of local logistics to the Bering Sea Sub-Network.