

CAREER DEVELOPMENT

Indigenous Voices *in the* International Polar Year

by Cassandra Brooks

Fur seals in Paradise Bay, Antarctica



In July 2008, I joined thousands of other polar scientists in St. Petersburg, Russia, for the Scientific Committee on Antarctic Research (SCAR) conference. SCAR is an interdisciplinary committee responsible for initiating, developing and coordinating international scientific research in the Antarctic region and understanding its effect on the greater Earth system. The committee holds a conference every two years to bring awareness to Antarctic issues and to provide collaboration between Antarctic scientists.

The theme of this year's conference was "Polar Research—Arctic and Antarctic perspectives in the International Polar Year." We are in the midst of the fourth designated International Polar Year (IPY), which is the largest internationally coordinated scientific research program of the last 50 years. It has resulted in an incredible surge of interdisciplinary science focused on the Arctic and the Antarctic, where climate change is occurring faster than anywhere else on Earth. Each IPY has contributed greatly to the progress in scientific knowledge and understanding of polar science, but this year's IPY is a milestone in the documentation of indigenous knowledge of sea ice environments. It also has created opportunities to develop new methods for bringing western scientific and local indigenous observations in Arctic ecosystems. As Yvon Csonka, one of the keynote speakers at the SCAR conference stressed, this year's IPY was finally involved with science not only of the poles, but also by and for the polar populations.

Yvon Csonka: Looking Forward

Yvon Csonka, a professor at the University of Greenland and president of the International Arctic Social Sciences Association (IASSA), gave one of the plenary keynote talks on "Polar Societies and Cultures in a Changing World." While so many polar scientists focus on the doom and gloom scenarios of climate change, Csonka paints a picture of hope. He stresses the adaptability of the human species, including those at the poles who have been surviving there for millennia.

While most human adaptation occurs over long time scales, polar societies have faced rapid and major changes since World War II. These changes include increased exploitation



Small ice flow in Admiralty Bay, King George Island

Arctic Study Organizations

International Polar Year: Social Responsibility in the Fourth IPY

The International Polar Year (IPY) is a large scientific program focused on the Arctic and the Antarctic from March 2007 to March 2009 and is organized through the International Council for Science (ICSU) and the World Meteorological Organization (WMO). This IPY is actually the fourth polar year, following those in 1882-3, 1932-3, and 1957-8. This year in particular, IPY has strived to promote involvement with northern people, through community monitoring, acknowledgment and protection of traditional knowledge, and inclusion of northern people as valued partners in planning and conducting IPY. In this polar year, researchers have focused on northern human health, particularly on impacts of pollution, contaminants and parasites in traditional foods, existing and emerging infectious diseases, chronic diseases, and unhealthy behaviors. Researchers have also explored many aspects of Arctic social systems with the hopes of determining resiliency to social and environmental change and to developing adaptation strategies. Further IPY social studies include research on the uses of language, such as for intergenerational understanding of sea ice; the study of how legal systems protect the value and integrity of traditional knowledge; and economic and social assessments of the impacts and opportunities related to natural resource management and energy and transportation developments.

For more information, visit www.ipy.org

The International Arctic Social Sciences Association

The International Arctic Social Sciences Association (IASSA) is an international association founded in 1990 to represent Arctic social scientists, those who study people and culture in the Arctic. Their goals are to promote international cooperation and to increase the participation of social scientists in national and international Arctic research.

For more information on IASSA, visit www.iassa.gl/index.htm

The Aleut International Association

The Aleut International Association (AIA) is an Alaska Native nonprofit. The association was formed to address environmental and cultural concerns of the extended Aleut community whose lives have been connected to the Bering Sea resources for millennia. AIA actively pursues collaboration with governments, scientists and other organizations to develop programs and policies that could improve the well-being of the Aleut people and their environment.

For more information on the Aleut International Association, visit www.aleut-international.org

of non-renewable resources, assimilation of indigenous people, loss of autonomy, concentration and denormalization of people, immigration from the south, increase in health care, and emergence of social problems. Many of these changes have introduced polar communities to social systems associated with southern, temperate climates. But now with climate and environmental changes, "People are literally adapting to a warmer and more temperate climate," Csonka states. These challenges and changes led to the inclusion of polar societies and cultures in the scope of IPY science this year. Many 2007-2008 IPY sponsored projects are focused on helping polar communities adapt socially and physically in their increasingly dynamic environment.

One IPY sponsored project called "Moved by the State" studies populations that have adapted by literally moving. The melting permafrost, erosion, and lack of sea ice in summer have forced some coastal villages to relocate and build new villages nearby. These movements are state-induced, and it's well known that state paternalism can create as many or more social problems than they fix. The "Moved by the State" project, however, facilitates collaboration between researchers and locals. "Community participation in decision-making is key to the success of a relocation" says Csonka "and should help in future relocation in the face of climate change." These state-induced movements are not necessarily common yet, but they will happen more and more in the future. Csonka elaborates, "Some communities are already subsidized



Yvon Csonka, professor at the University of Greenland

and so they will receive more subsidies. The challenge for the future is to fight and lobby to get their share of the exploited resources."

The Role of Indigenous Knowledge in Modern Polar Science

In conjunction with the surge of social science projects in this year's IPY, SCAR hosted a novel session on "The Role of Indigenous Knowledge in Modern Polar Science." A variety of research projects were discussed at this symposium, all of which revolved around using traditional knowledge and the greater involvement of indigenous people in polar science. The presenters all stressed giving traditional knowledge and indigenous people a voice in managing their own land, resources and fate in the future of climate change. Victoria Gofman, executive director of the Aleut International Association, one of the theme leaders for the symposium, commented, "The most important significance of this session is that it opened doors to this forum for research related and relevant to indigenous peo-

ples who live in the Arctic." Below are two IPY sponsored projects that were especially exciting for bringing indigenous knowledge into polar science.

The Bering Sea Sub-Network: A Meeting Ground For Traditional and Western Knowledge

Victoria Gofman opened up the symposium describing her work with the Bering Sea Sub-Network (BSSN), an international, community-based observation alliance for the Arctic. It is well understood that the people living in the Bering Sea region are dependent on maintaining ecologically sustainable conditions in the region. Through the BSSN, Western scientists work with local communities doing structured interviews that allow them to observe changes in the environment. They also look for the status and change in resources for the communities, especially subsistence important species.

In this way, indigenous traditional knowledge systems and Western knowledge are working together. Currently, BSSN is working with communities in Western Alaska and Northeast Russia. But for new interested communities, Gofman commented, "We are in the process of preparation for the next proposal to continue the project. We anticipate geographical expansion as well as extending coverage to more species." For more information on BSSN, visit www.BSSN.net

The Ice We Want Our Children to Know

Claudio Aporta, assistant professor at Carlton University in Ottawa, Canada, presented his work with the Sea Ice Knowledge and Use (SIKU) project. The SIKU project is one of several IPY projects aimed at documenting indigenous observations of environmental changes in the polar areas. This initiative brings together anthropologists, human geographers, sea ice and climate scientists, marine and ecosystem biologists from the United States, Canada, Russia, Greenland, and France in partnership with almost two dozen indigenous communities in Alaska, Arctic Canada, the Russian Chukchi Peninsula, and Greenland in a concentrated effort to document use and knowledge of sea ice in the Arctic.

Aporta described how sea ice is an

Research Institutions and Universities

Below is only a tiny fraction of the many research institutions and universities with polar science programs. Bear in mind, however, that you can study polar science from almost any university, whether or not it offers a specific polar science program.

- Texas A&M University, <http://psp.tamu.edu>
- University of Washington, <http://psc.apl.washington.edu/pscweb2002/homepage.html>
- Ohio State University, <http://bprc.osu.edu>
- Woods Hole Oceanographic Institute, www.whoi.edu/page.do?pid=12295
- University of Colorado, <http://instaar.colorado.edu>
- University of Alaska, Fairbanks, www.iarc.uaf.edu
- Dartmouth University, www.dartmouth.edu/~arctic



Victoria Gofman in Tymlat, a village in Koryakia and one of the BSSN Russian communities

integral part of the Arctic people's environment for eight months out of the year and is of the utmost importance to their persistence. "People are born on the sea ice, they build summer camps to live on the sea ice, they hunt on the sea ice, even kids play on the sea ice," he said. People have to travel on a regular basis across the sea ice and they recreate trails year after year. Aporta and his team are working on documenting and mapping this body of knowledge in what Aporta described as "a new conception of map showing all dynamic features." They are then using this knowledge to create an atlas and database. Local residents, Elders and community experts work together in the SIKU research. Collectively, they record daily sea ice and weather observations, collect local terms for sea ice and weather phenomena, document traditional ecological knowledge related to sea ice and sea ice use from local Elders and experienced hunters, and search for historical records of sea ice conditions. In documenting seasonal sea ice conditions, including the extent and areas of sea ice use, key harvesting areas, and traditional and current ice routes, the researchers can interpret shifts in patterns of ice use related to social and climate change. Most importantly, "Local people are taking a very active role in document-

ing their own use of the sea ice," Aporta said, "and securing knowledge for future generations."

Taking Control of One's Destiny

Polar communities face the greatest social and environmental threat to their way of life in a future of continued climate change, but not only are people adapting, they are taking control of their own destiny. As I listened to the speakers at SCAR, it became clear that this year's IPY was successful in bringing the

voice of Arctic communities to the forefront and in bringing together western science and traditional knowledge. I left agreeing with Yvon Csonka's opinion that there is no need for a catastrophic attitude about climate change. It is happening, and we should do whatever we can to mitigate it, but we will adapt and find ways to preserve our land and culture for future generations. ❖

Cassandra Brooks, Abenaki, is currently a graduate student in the University of California, Santa Cruz science communication program.

Careers in Polar Science

One can study polar science from anywhere on earth since much of the Arctic and all of the Antarctic are considered international territory. As such, it is the global community's responsibility to study and manage these polar ecosystems. Since the polar regions are experiencing the effects of climate change at a faster rate than anywhere else on earth, there is no better time to get involved.

Polar Science Disciplines

Polar science is a generic term for the wide range of sciences one can study at the poles and covers physical sciences, biological sciences, and even social sciences like the work described in this article. Below are just a few examples of potential research areas in polar science.

Polar biology focuses on the plants and animals that live in the Arctic and Antarctic and all aspects of their life cycles. These include marine and terrestrial organisms from the tiny plankton that fill the polar oceans to the huge polar bears in the Arctic. All aspects of an organism's life, from migration to reproduction, may be studied, as well as small-scale aspects like genetics or molecular biology. Many polar biologists spend their time studying the strange adaptations that plants and animals have developed through thousands of years of adaptation, allowing them to survive in a freezing environment. These adaptations make polar organisms vulnerable to climate changes.

Polar earth sciences include meteorology, hydrology and oceanography to name a few. **Polar meteorologists** specifically study weather and climate forecasting, including the past, present and future climate change in the polar regions. **Polar hydrologists** study the movement, distribution and quality of water throughout the poles, including water locked up in glaciers and ice sheets. Many hydrologists spend their time drilling massive ice cores in the polar ice sheets, which when analyzed, allow them to understand our past climate. **Polar oceanographers** can study a wide range of topics, including marine organisms, ocean currents, water chemistry and how the polar marine ecosystem functions. All of these earth science disciplines often work together to gain a better understanding of climate change in a regional or global scale and to develop models that predict future changes in climate, ice sheet dynamics and changes in sea level. Earth science disciplines may also work with **polar astronomers** to make observations of the poles from space. This includes observing changes in seasonal ice over time, tracking the shrinking or growth of ice sheets, or even using satellites to observe the movement of massive icebergs.

Polar social science includes research with and regarding people living at the poles, including coming up with solutions in the face of climate change. Polar social science encompasses psychology, anthropology, linguistics, history, economics, environment, natural resources and politics, but also includes outreach and education. All the research described in this article encompasses polar social science.

Ice Stories

For a wonderful array of polar scientists at work, visit the ice stories link which leads you to San Francisco Exploratorium's "Ice Stories" program. This web base provides up-to-date interactive dispatches from Arctic and Antarctic scientists in all polar science fields.

Visit <http://icestories.exploratorium.edu/dispatches/index.php>