

Traditional knowledge relating to Arctic marine species and habitats

Prepared for the Convention on Biological Diversity Arctic Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (EBSAs) by Marjo Vierros (United Nations University, Traditional Knowledge Initiative), with contributions from Henry Huntington (Pew Charitable Trusts) and Tero Mustonen (Snowchange Cooperative)

The marine environment and resources have sustained Indigenous communities in the Arctic for millennia. The intimate association between Arctic peoples and their environment has allowed them to survive and has resulted in the accumulation of generations of knowledge about species, their movements, their behavior and ecology, as well as the structure and functioning of the marine environment. The knowledge of Indigenous Peoples of the Arctic is also an important source of information for others wishing to study and understand the Arctic marine system.

This report compiles readily available published information related to traditional knowledge of Arctic marine species and environments that may be of value for the CBD Arctic EBSA workshop. The authors hope that the information can, where relevant, be used to further enhance EBSA submissions. It should be noted that the information presented here is not a comprehensive account of traditional knowledge on Arctic marine species and habitats, given that most such information is not published, and the information that does exist is often fragmented and difficult to access.

The information is compiled in three tables: 1. Information related to marine species; 2. Information related to oceanography, marine habitats and climate change; and 3. Information related to human uses and culturally significant areas. There is also a more general bibliography at the end of this document, as well as a map of Arctic Indigenous Peoples.

Table 1: Information related to marine species:

Species	Region	Type of information	Source citation
Bowhead whale	Northern Bering Sea	Seasonal movements, distribution and abundance near St. Lawrence Island.	George Noongwook et al (2007) Traditional Knowledge of the Bowhead Whale (<i>Balaena mysticetus</i>) Around St. Lawrence Island, Alaska," <i>Arctic</i> 60, no. 1: 47-54. Online at http://pubs.aina.ucalgary.ca/arctic/arctic60-1-47.pdf

Beluga whale	Chukchi and Northern Bering Seas	Timing, location, and direction of beluga movements, including annual migrations and local movements. Ecology.	Huntington, H.P. and Mymrin, N.I. Traditional Ecological Knowledge of Beluga Whales. An Indigenous Knowledge Pilot Project. http://www.mnh.si.edu/arctic/html/tek.html See also: Mymrin, N.I., the Communities of Novoe Chaplino, Sireniki, Uelen, and Yanrakinnot, and H.P. Huntington. 1999. Traditional knowledge of the ecology of beluga whales (<i>Delphinapterus leucas</i>) in the northern Bering Sea, Chukotka, Russia. <i>Arctic</i> 52(1): 62-70.
Beluga whale	Chukchi and Northern Bering Seas	Descriptions of migratory and local movements, feeding, calving, ecological interactions, and human influences on distribution and behavior.	Huntington, H.P., and the Communities of Buckland, Elim, Koyuk, Point Lay, and Shaktoolik. 1999. Traditional knowledge of the ecology of beluga whales (<i>Delphinapterus leucas</i>) in the eastern Chukchi and northern Bering seas, Alaska. <i>Arctic</i> 52(1): 49-61.
Walrus	Northern Bering Sea	Walrus hunting data, ice concentration around St. Lawrence Island, Alaska	Huntington, H.P., G. Noongwook, N.A. Bond, B. Benter, J.A. Snyder, and J. Zhang. 2013. The influence of wind and ice on spring walrus hunting success on St. Lawrence Island, Alaska. <i>Deep-Sea Research II</i> 94:312-322.
Polar bears	Greenland	Occurrence, dens, changes in catch and occurrence.	Born, E.W., Heilmann, A., Holm, L.K., and Laidre, K.L. 2011. Polar bears in Northwest Greenland: an interview survey about catch and climate. <i>Monographs on Greenland</i> No. 351. Copenhagen: University of Copenhagen.
Polar bears	Nunavut	Collection and analysis of TEK relating to polar bears over management units.	Dowsley, M. 2009. Community clusters in wildlife and environmental management: using TEK and community involvement to improve co-management in an era of rapid environmental change. <i>Polar Research</i> 28(1): 43-59.
Polar bears	Low Kolyma, Russia	Polar bear status	Yakovlev, Fedor. State of Polar Bear Population in Low Kolyma Area. WWF Informational Reports, 2005-2009. Available from the Sakha Department of Biological Resources, Ministry on Nature Protection, Russia.
Salmon and other fishes	Ponoi and Näätamö watersheds	Cultural areas, fish migration.	Mustonen, T. (2013) Ponoi and Näätamö River Collaborative Management Plan 2013

Salmon	Unalakleet, Alaska	Salmon fishing traditions and areas	Mustonen, Tero and Mustonen, Kaisu with the people of Unalakleet. It Has Been In Our Blood For Years And Years That We Are Salmon Fishermen – A Snowchange Oral History Book of Unalakleet, Alaska, USA. Snowchange Cooperative, 2009
Fish	Low Kolyma River, Russia	Fish resources.	Tyaptirgyanov, Matvey. Fish Resources of Low Kolyma River. ECORA project report, 2007. Available from the Northern Forum Academy, Russia

Information related to oceanography, marine habitats and climate change

Habitat or phenomena	Region(s)	Type of information	Source citation
Climate change	Case studies from/by Northwest Alaska, The Aleutian and Pribilof Islands region, Alaska, Yukon, Denendeh, Nunavut, Qaanaq, Greenland, Sapmi, Saami, Kola	Observations of climate change.	IASC (2005) Arctic Climate Impact Assessment, Chapter 3: Changing Arctic: Indigenous Perspectives (pp. 61-98) http://www.acia.uaf.edu/PDFs/ACIA_Science_Chapters_Final/ACIA_Ch03_Final.pdf
Climate change, resilience of socio-ecological systems	Arctic general	Resilience, likely changes, adaptations, with a focus on Indigenous Peoples in the Arctic	Arctic Council (2013) Arctic Resilience Interim Report 2013. Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm.
Marine ecosystems, status, trends	Arctic general	Marine ecosystems, species and their uses	CAFF 2013. Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity.
Climate change	Northern Norway,	Indigenous observations of	Mustonen, Tero & Helander, Elina (eds.) Snowscapes, Dreamscapes – A

	Russia	climate change, including from coastal areas.	Snowchange Community Book on Community Voices of Change. Tampere University of Applied Sciences, Tampere, 2004
Resilience of costal social-ecological system	Yamal Peninsula, Russia	Climate change, human uses.	Forbes, Bruce, Stammler, Florian, Kumpula, Timo, Meschtyb, Nina, Pajunen, Anu, Kaarlejärvi, Elina. High resilience in the Yamal-Nenets social-ecological system, West Siberian Arctic, Russia. PNAS, vol 106, no. 52. 2009. http://www.pnas.org/cgi/doi/10.1073/pnas.0908286106
Oceanography	Beaufort Sea	Oceanography, particularly phenomena of special relevance to winter travel and fishing, winds, ice conditions, pollutants.	Carmack, E., and R. Macdonald. 2008. Water and ice-related phenomena in the coastal region of the Beaufort Sea: some parallels between Native experience and western science. <i>Arctic</i> 61(3):265-280.
Sea ice dynamics	Northern Alaska	Shorefast ice dynamics, climate change, bowhead whale hunting.	George, J.C., H.P. Huntington, K. Brewster, H. Eicken, D.W. Norton, and R. Glenn. 2004. Observations on shorefast ice failures in Arctic Alaska and the responses of the Inupiat hunting community. <i>Arctic</i> 57(4): 363-374.
Sea ice dynamics	Barrow, Alaska and Clyde River, Nunavut	Changes in sea ice.	Gearheard, Shari, et al. "It's not that simple": a collaborative comparison of sea ice environments, their uses, observed changes, and adaptations in Barrow, Alaska, USA, and Clyde River, Nunavut, Canada." <i>AMBIO: A Journal of the Human Environment</i> 35.4 (2006): 203-211.
Sea ice	Northern Alaska and Canada	Knowledge of sea ice, dynamics.	Krupnik, Igor, Aporta, Claudio, Gearheard, Shari, Laidler, Gita, Holm, Lene Kielsen. <i>Siku: Knowing Our Ice - Documenting Inuit Sea-Ice Knowledge and Use</i> . New York: Springer, 2010.

Information related to human uses and culturally significant areas:

Type of areas	Region	Type of information	Source citation
Human use areas	Bering Sea	Spatial characteristics of areas where fish, marine mammals and seabirds are harvested. Harvested species life cycle and annual migratory path.	Huntington, H.P., I. Ortiz, G. Noongwook, M. Fidel, L. Alessa, A. Kliskey, D. Childers, M. Morse, and J. Beaty. 2013. Mapping human interaction with the Bering Sea ecosystem: comparing seasonal use areas, lifetime use areas, and “calorie-sheds”. <i>Deep-Sea Research II</i> 94:292-300.
Areas of social and economic importance	Coast of Norway, Barents Sea	Areas where human dependency on the marine environment is high. This includes some traditional use areas.	AMAP/CAFF/SDWG. (2013) Arctic Marine Shipping Assessment IIc: Identification of Identification of Arctic marine areas of heightened ecological and cultural significance
Cultural heritage sites	Arctic Canada, Greenland	Archaeological and historical sites and other sites of high cultural significance.	AMAP/CAFF/SDWG. (2013) Arctic Marine Shipping Assessment IIc: Identification of Identification of Arctic marine areas of heightened ecological and cultural significance
Traditional use areas	Alaska, Bering Sea	Seasonal subsistence areas and other traditional use areas.	AMAP/CAFF/SDWG. (2013) Arctic Marine Shipping Assessment IIc: Identification of Identification of Arctic marine areas of heightened ecological and cultural significance
Indigenous marine uses and areas	Arctic in general, including Bering Strait, Kola Coast, Aleutians, Canadian Arctic,	Information Indigenous uses and perspectives on marine environment and	Arctic Council (2009) Arctic Marine Shipping Assessment Report. See, in particular, chapter on human dimensions.

	Beaufort, Greenland.	shipping	
Subsistence use areas	Chukchi and Beaufort Sea	Distribution of marine species, subsistence use areas.	OCEANA (in prep) Important Ecological Areas of the Beaufort and Chukchi Seas. Note: not yet publicly available.
Sacred sites	Northern Russia	Listing of sacred sites, location, values	CAFF 2004. The conservation value of sacred sites of indigenous peoples of the Arctic: a case study in Northern Russia. Report on the state of sacred sites and sanctuaries. CAFF Technical Report No. 11.
Community conserved areas	Arctic in general, with case studies from Nunavut, Canada and Russia	Community conserved areas, including in regards to marine mammals and fishing	Ferguson, M.A.D. and Viventsova, K. (2007) Community Conserved Areas in the Circumpolar Arctic http://cmsdata.iucn.org/downloads/arctic_cca_study.pdf
General about peoples and biodiversity	Arctic, general	General information about Indigenous Peoples, species uses for subsistence fishing and hunting, traditional activities, sacred sites, linguistic diversity.	CAFF 2013. Arctic Biodiversity Assessment. Status and trends in Arctic biodiversity.

There also exists a multitude of other valuable references that are more general in nature, or consist of books not readily available online, and/or documents published in non-UN languages. However, these references are valuable resources about traditional knowledge and Indigenous Peoples in the Arctic. The list below provides a sampling of such resources.

Arasejin, B. et al. Jakutija – Istoriko-Kulturnii Atlas (Sakha Historical-Cultural Atlas),

Institute of Humanities, Yakutsk, 2007.

Augerot, Xanthippe. Atlas of the Pacific Salmon. University of the California Press, 2005.

Bennett, John and Rowley, Susan, (eds.). Uqalurait: An Oral History of Nunavut. Montreal: McGill-Queen's University Press, 2004.

Burch, Ernest Jr. The Inupiaq Eskimo Nations of Northwest Alaska. Fairbanks, University of Alaska Press, 1998

CBD (2005) Composite Report on Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities, Region: Arctic. Document UNEP/CBD/WG8J/4/INF/3

Cruikshank, Julie. Do Glaciers Listen – Local Knowledge, Colonial Encounters & Social Imagination. Vancouver: UBC Press, 2005.

Kilukishak, Gamallie. Inuit. In a book Posey, Darrell Addison (ed.). Cultural and Spiritual Values of Biodiversity – A Complementary Contribution to the Global Biodiversity Assessment. UNEP, 1999.

Kublu, Alexina, Laugrand, Frederic & Oosten, Jarich. Introduction: Interviewing the Elders in a book Laugrand, Frederic & Oosten Jarich. Interviewing Inuit Elders: Volume 1: Introduction. Iqaluit: Language and Cultural Program of Nunavut: Arctic College, 1999.

Macdonald, John. The Arctic Sky – Inuit Astronomy, Starlore and Legend. Toronto: Royal Ontario Museum, 2000.

Mustonen, Tero. Report on the Biodiversity Observations of the Indigenous Communities of the ECORA Model Area Lower Kolyma River, Sakha-Yakutia, Russia. A Conference Speech in Snowchange 2007: Traditions of the North, held in April 2007 in Neriungri and Iengra, Sakha-Yakutia, Russia. Available from the Snowchange Cooperative, Finland.

Mustonen, Tero. Report on the Biodiversity Observations of the Indigenous Communities of the ECORA Model Area Lower Kolyma River, Sakha-Yakutia, Russia. A Conference Speech in Snowchange 2007: Traditions of the North, held in April 2007 in Neriungri and Iengra, Sakha-Yakutia, Russia. Available from the Snowchange Cooperative, Finland.

Mustonen, Tero. Karhun väen ajast aikojen avartuva avara. University of Joensuu Press, 2009

Mustonen, Tero and Mustonen, Kaisu. Eastern Sámi Atlas. Snowchange Cooperative: Kontiolahti, 2011.

Pika, Alexander. Neotraditionalism in the Russian North. Canadian Circumpolar Institute, 1998.

Sillanpää, Lennard. Awakening Siberia - From Marginalization to Self-Determination: The Small Indigenous Nations of Northern Russia on the Eve of the Millennium. Department of Political Science, University of Helsinki, Acta Politica No. 33, 2008.

Slezkine, Yuri. Arctic Mirrors – Russia and the Small Peoples of the North. Cornell University Press, 1994.

Veersalu, Aune. Helmestyksen historiaa – monenlaisia helmenpyytäjiä. in a book Metsähallitus. Pohjoisten virtujen raakat –Interreg-kartoitushanke Itä-Inarissa, Norjassa ja Venäjällä. 2008

Map of Arctic Indigenous Peoples (Source: Arctic Council (2013) Arctic Resilience Interim Report 2013. Stockholm Environment Institute and Stockholm Resilience Centre, Stockholm).

