Appendix 1. Materials used in workshops to elicit Traditional Ecological Knowledge including open-ended questions to facilitate discussion, a Structured Decision Analysis consequence table, and multiple-choice surveys completed by individual participants.

Workshop 1 - 27-28 January, 2015

Open-ended questions (after concepts of SDA had been introduced)

- 1. What is the reason people live and stay in Wainwright?
- 2. What factors affect the ability of people to live and stay in Wainwright?
- 3. What topics would you like to focus on for this decision-making framework, ie what issues or problems relating to the ability to stay in Wainwright are important to you?

Workshop 2 - 28 July, 2015

Open-ended question (after a brief refresher on SDA and topics covered during workshop 1)

1. We are providing a tool for decision-making, and in the previous workshop you identified some broad topics that are important to the community of Wainwright (for example maintaining the subsistence way of life while allowing for development). If possible, we would like the group to identify three specific issues to focus on for this exercise.

Follow-up discussion with two participants, 19 November, 2015

Open-ended questions

1. Please take a look at these influence diagrams (pasted below, as developed by the authors following discussions during Workshop 2) and tell us if they seem accurate to you.

Figure A1.1. Model of the caribou subsistence system in Wainwright, Alaska

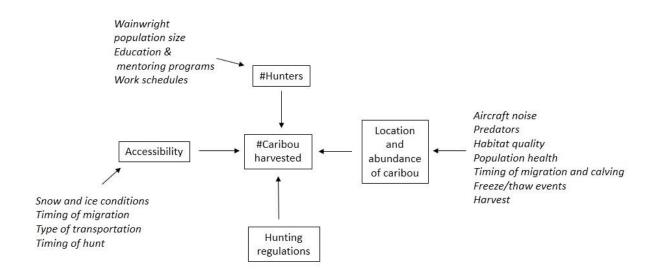


Figure A1.2. Model of bowhead whale subsistence system in Wainwright, Alaska

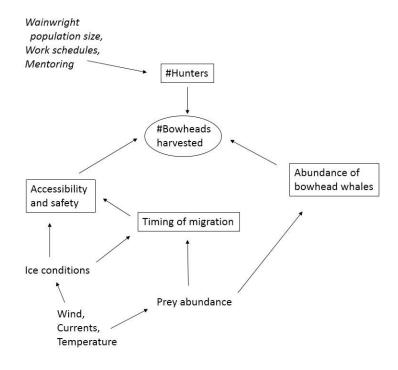


Figure A1.3. Model of walrus subsistence system in Wainwright, Alaska

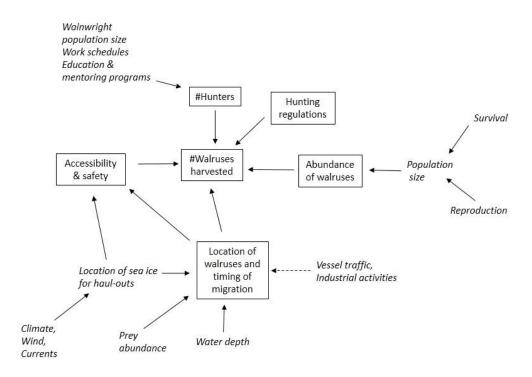
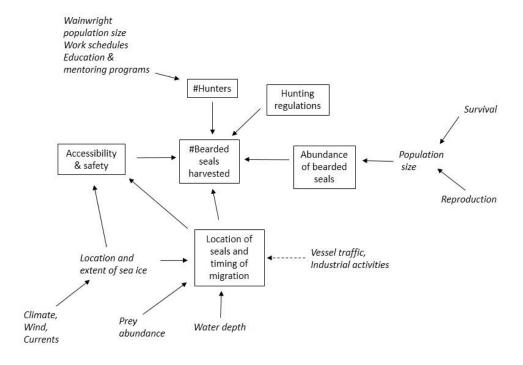


Figure A1.4. Model of bearded seal subsistence system in Wainwright, Alaska



- 2. How do you anticipate that climate change will affect hunting activities for each of the above species?
- 3. What would be a good way to survey peoples' attitudes about what limits hunter access to these resources?
- 4. What strategies could the community put in place to enhance hunter safety in Wainwright? What ranking system would make sense to evaluate these strategies?

Workshop 3 - 3-4 March, 2016

Table A1.1. Structured Decision Analysis consequence table for hunter safety strategies. Participants evaluated each strategy based on its ability to meet the objectives. This consequence table was completed by the group during workshop 3.

Objective	Weight (%)	Performance measure	Safety equipment sharing	inReach group discount program	SPOT group discount program	Financial aid for capital equipment (eg. boats)	Safety works- hops	Hunter meeting place	Docking facility	Search and rescue boats
Prevent Accidents	40	No effect, low, moderate, high								
Successful rescue	40	No effect, low, moderate, high								
Minimize cost	20	\$, \$\$, \$\$\$, \$\$\$\$								

Multiple choice surveys on the importance of different factors on wildlife health and abundance.

CARIBOU

1. How important are the following factors in influencing caribou health and abundance?

	Very important	Somewhat important	Not important	Unknown
Synchrony of calf birth	\bigcirc	0	0	0
Predator abundance	0	0	0	0
Summer temperature	0	0	0	0
Summer forage quality	\bigcirc	0	0	0
Insect abundance (mosquitoes, warbles)	0	0	0	0
Lichen abundance/accessibility	\circ	0	0	0
Snow depth and compaction	0	0	0	0
Winter temperature	\bigcirc	\circ	\bigcirc	0
Frequency of freezing rain/icing events	\circ	0	0	0
Timing of spring migration	\circ	0	0	0
Timing of fall migration	0	0	0	0
Disturbance by humans (vehicles, aircraft, etc.)	\circ	0		0
Harvest by hunters	0	0	0	0
Other (please explain):	0	0	0	0

2. How important are the following factors in influencing caribou hunting success?

	Very important	Somewhat important	Not important	Unknown
Abundance of caribou	0	0	0	0
Timing of spring migration	\circ	0	0	0
Timing of fall migration	0	0	0	0
Caribou distance from town	0	0	0	0
Disturbance by humans (vehicles, aircraft, etc.)	\circ	0	0	0
Access to hunting equipment (snow machine, ATV, etc.)	0	0	0	0
Hunter expertise	0	0	0	0
Other? Please explain:	0	0	0	0

BOWHEAD WHALE

3. How important are the following factors in influencing bowhead whale health and abundance?

	Very important	Somewhat important	Not important	Unknown
Extent of sea ice retreat	\circ	0	\circ	\circ
Timing of sea ice breakup	0	0	0	0
Zooplankton prey abundance	0	0	0	0
Shipping traffic	0	0	0	0
Harvest by hunters	0	0	0	0
Other? Please explain:	0	0	0	0

4. How important are the following factors in influencing bowhead whale hunting success?

	Very important	Somewhat important	Not important	Unknown
Abundance of whales	0	0	0	0
Timing of migration	0	0	0	0
Timing of sea ice breakup	0	0	0	0
Duration of breakup period	0	0	0	0
Shorefast ice thickness	0	0	0	0
Distance from shore of migrating whales	0	0	0	0
Access to hunting equipment (boats, etc.)	0	0	0	0
Hunter expertise	0	0	0	0
Other? Please explain:	0	0	0	0

BEARDED SEAL

5. How important are the following factors in influencing bearded seal health and abundance?

	Very important	Somewhat important	Not important	Unknown
Sea ice thickness	\bigcirc	0	0	\circ
Extent of sea ice retreat	0	0	0	0
Timing of sea ice breakup	0	0	0	0
Benthic prey abundance (clams, etc.)	0	0	0	0
Shipping traffic	\circ	0	0	0
Harvest by hunters	0	0	0	0
Other? Please explain:	0	0	0	0

6. How important are the following factors in influencing bearded seal hunting success?

	Very important	Somewhat important	Not important	Unknown
Abundance of bearded seals	0	0	0	0
Timing of spring migration	0	0	0	0
Timing of sea ice breakup	0	0	0	0
Duration of break-up period	0	0	0	0
Location of seals relative to shoreline	0	0	0	0
Amount of broken ice near the shore	0	0	0	0
Access to hunting equipment (boats, etc.)	0	0	0	0
Hunter expertise	0	0	0	0
Other? Please explain:	0	0	0	0

WALRUS

7. How important are the following factors in influencing walrus health and abundance?

	Very important	Somewhat important	Not important	Unknown
Sea ice thickness	0	0	0	0
Extent of sea ice retreat	0	0	0	0
Timing of sea ice breakup	0	0	0	0
Benthic prey abundance (clams, etc.)	0	0	0	0
Shipping traffic	0	0	0	0
Harvest by hunters	0	0	0	0
Other? Please explain:	0	0	0	0

8. How important are the following factors in influencing walrus hunting success?

	Very important	Somewhat important	Not important	Unknown
Abundance of walruses	\circ	0	0	0
Timing of spring migration	\circ	0	0	0
Timing of sea ice breakup	0	0	0	0
Duration of break-up period	\circ	0	0	0
Distance from shore of migrating walruses	0	0	0	0
Amount of broken ice near shore	0	0	0	0
Access to hunting equipment (boats, etc.)	0	0	0	0
Hunter expertise	0	0	0	0
Other? Please explain:	0	0	0	0

Workshop 4-4-5 January, 2017

Multiple choice surveys on dependence of subsistence activities on sea ice and observed changes in availability.

1. How dependent is each subsistence activity on safe ice conditions?

	High	Medium	Low	Unknown
Bowhead whale (spring harvest)	0	0	0	0
Bowhead whale (fall harvest)	0	0	0	0
Beluga	0	0	0	0
Bearded seal	0	0	0	0
Walrus	0	0	0	0
Salmon	0	0	0	0
Tomcod	0	0	0	0
Whitefish	0	0	0	0
Grayling	0	0	0	0
Smelt	0	0	0	0
Snow goose	0	0	0	0
White-fronted goose	0	0	0	0
Brant goose	0	0	0	0
Sea ducks	0	0	0	0
Caribou	0	0	0	0
Wild plants, berries	0	0	0	0

2. How vulnerable is each species to loss of sea ice in the Wainwright area?

	High	Medium	Low	Unknown
Bowhead whale	0	0	0	0
Beluga	0	0	0	0
Bearded seal	0	0	0	0
Walrus	0	0	0	0
Salmon	0	0	0	0
Tomcod	0	0	0	0
Whitefish	0	0	0	0
Grayling	0	0	0	0
Smelt	0	0	0	0
Snow goose	0	0	0	0
White-fronted goose	0	0	0	0
Brant goose	0	0	0	0
Sea ducks	0	0	0	0
Caribou	0	0	0	0
Wild plants, berries	0	0	0	0

3. Have you observed a change in each species' availability over the past decade?

	Strong decline	Slight decline	No change	Slight increase	Strong increase	Unknown
Bowhead whale (spring harvest)	0	0	0	0	0	0
Bowhead whale (fall harvest)	0	0	0	0	0	0
Beluga	0	0	0	0	0	0
Bearded seal	0	0	0	0	0	0
Walrus	0	0	0	0	0	0
Salmon	0	0	0	0	0	0
Tomcod	0	0	0	0	0	0
Whitefish	0	0	0	0	0	0
Grayling	0	0	0	0	0	0
Smelt	0	0	0	0	0	0
Snow goose	0	0	0	0	0	0
White-fronted goose	0	0	0	0	0	0
Brant goose	0	0	0	0	0	0
Sea ducks	0	0	0	0	0	0
Caribou	0	0	0	0	0	0
Wild plants, berries	0	0	0	0	0	0

Open-ended questions

- 1. What kind of products would be useful for the community of Wainwright? Examples of products are a presentation to the Trilateral committee and/or Alak school, a visually appealing report available to all community members (provided examples of such reports).
- 2. How could Structured Decision Analysis complement traditional decision making in Wainwright?
- 3. Did you find the SDA process helpful? If so, how?