Climate Change and Health in the Arctic: Impacts on Alaska Native Communities and a Spotlight on Efforts to Improve Climate Health

HOST
NATIONAL INDIAN HEALTH BOARD (NIHB)
ANGELICA COLAGRECO, MPH
PUBLIC HEALTH PROJECT COORDINATOR
Mission Statement

Established by the Tribes to advocate as the united voice of federally recognized American Indian and Alaska Native Tribes, NIHB seeks to reinforce Tribal sovereignty, strengthen Tribal health systems, secure resources, and build capacity to achieve the highest level of health and well-being for our People.
• Climate Ready Tribes project
• Recorded and posted online
• Please mute your phone lines
• Questions
  ◦ Dedicated times
  ◦ Use the chat box
• Survey
9th Annual
Tribal Public Health Summit

• May 22-24, 2018
• Prior Lake, Minnesota
NIHB Webinar
Climate Change & Health in the Arctic
January 25, 2018

Patricia A.L. Cochran
Alaska Native Science Commission
*Bringing together research & science*  
in partnership with the Native community

[www.nativescience.org](http://www.nativescience.org)  
[www.nativeknowledge.org](http://www.nativeknowledge.org)
Title and Content Layout with List

- Add your first bullet point here
- Add your second bullet point here
- Add your third bullet point here
ARCTIC SEA ICE EXTENT

Arctic Sea Ice Extent
(Area of ocean with at least 15% sea ice)

Sea Ice Extent
Dec 2016

Total extent = 12.1 million sq km
Climate change poses particular threats to Indigenous Peoples’ health, well-being, and ways of life.

- Threatened access to traditional foods
- Significant decrease in water quality & quantity
- Declining sea ice
- Human health & livelihood hazards
- Infrastructure damage
- Thawing permafrost
- Relocation
Impacts of Climate Change

Health

Sea Ice
Erosion

Permafrost
2003 US government report found 3 communities seeking to relocate in Alaska and 184 other communities are being affected by flooding and erosion.

2009 US government report found 12 seeking to relocate. Now more than 30.
Rights, Resilience and Community-Based Adaptation
Community-led Relocation & Migration

Kwigillingok

Port Heiden

4 sub divisions-Unalakleet
Kotlik, AK – STORM SURGE

“In November 2013, Kotlik experienced a devastating flood caused by a storm surge in the Bering Sea. The storm surge caused an unprecedented flood event that destroyed homes, severed water and sewer lines, demolished the water system, damaged the boardwalk system and forced hundreds of people to seek shelter in the school for an extended period of time.”

Golovin, AK – AIRPORT FLOOD

“We are not looking forward to fall or winter weather. We've had high tides as late as November and December. Earlier rainy seasons during the winter and spring caused our runway to shut down, either to ice conditions, or mud and slush. Golovin Airport is the only way into and out of our community. We were concerned when airplanes couldn't come in.”
LOSS OF CULTURE

It takes many years to build our fish camps. Floods and ice sliding events have damaged cabins where community members teach the younger generation how to fish. Harvesting traditional foods not only nourishes the community, but it speaks to our identity and our ability to carry on traditions lasting many generations.

-Golovin tribal members
Research Protocols Empowering Indigenous Peoples

Right to self determination – Partnership – Recognition

Research process and result benefits indigenous community (materially, socially, culturally, spiritually)

Traditional knowledges – languages and cultural practices honored

Indigenous partners are compensated for their work

Research materials and results are shared with indigenous community
Language & climate change

- Language tied to environment
- Our people are safer when using our language while out hunting
- As our environment shifts, we see shifts in our languages

**Alliviñiq** – ice under another piece of ice which may surface due to ocean currents or wake of a boat

**Apuqtinniq** – ice that has been pushed onto shore

**Asitaq** – cracked ice made by force of moving ice when it attaches to free-floating ice

**Aunniq** – rotten ice

**Ayiupaq** – ice chipped off by ocean waves

**Iḷḷigauraq** – ice that has begun to melt and although solid is spongy and dangerous

**Imuniq** – young ice that has been crushed by moving ice

**Muğrak/Puğrak** – slush ice

**Qaimġuq** – first shore ice in fall

**Qaiqsuaqtat** – Smooth ice between areas of rough ice

**Qimaqtinniq** – shore-fast ice that left behind when the ice is carried away by an ocean current

**Sikuliağruaq** – ice that is about one and a half feet thick

**Sikulluataq** – freshwater ice

**Suğaiñņuğruaq** – very large mass of pack ice
Traditional & Western Knowledges combine to understand Shishmaref sea ice conditions
Golovin color-indexed maps
• Native Village of Golovin
• Alaska Division of Geological Surveys
• National Weather Service
Community-Based Black Carbon & Public Health Assessment

- Sponsored by Arctic Council
- Partners: ANSC, Arctic Alliance, Aleut Intl Assn, UAF, UAA, All Russian Research Inst for Nature Protection
PROVING HOPE FOR OUR FUTURE GENERATIONS
Climate Change and Health in the Arctic

A public health view and introduction to resources

Tom Hennessy, MD, MPH
US Centers for Disease Control and Prevention (CDC)
Arctic Investigations Program
Anchorage, Alaska
thennessy@cdc.gov
907 729 3400
Website: https://www.cdc.gov/ncezid/dpei/aip/index.html
Disclaimer

The audience should know that...

this presentation represents the conclusions of the presenter and, does not necessarily represent the official position of CDC
Public Health approach to climate threats

- Being prepared can save lives and reduce suffering
- Provide information on what to expect
- Support climate change adaptation
Building Resilience Against Climate Effects

01. Forecasting Climate Impacts and Assessing Vulnerabilities
02. Projecting the Disease Burden
03. Assessing Public Health Interventions
04. Developing and Implementing a Climate and Health Adaptation Plan
05. Evaluating Impact and Improving Quality of Activities

https://www.cdc.gov/climateandhealth/BRACE.htm
Other resources...
“Recognizing the rights of Arctic indigenous Peoples and the unique role of the Permanent Participants with the Arctic Council…”

-Aleut International
-Arctic Athabaskan Council
-Gwich’in Council International
-Inuit Circumpolar Council
-Saami Council
-Russian Association of Indigenous Peoples of the North

“…the Arctic is warming at more than twice the rate of the global average, resulting in widespread social, environmental and economic impacts…”

http://Arctic-council.org
Interagency Arctic Research Policy Committee

Arctic Research Plan 2017-2021
Policy Drivers and Research Goals
Learn more at: iarpc_collaborations.org

9 Collaboration Teams, led by…

32 program managers and Arctic research leaders, implementing…

122 performance elements, in collaboration with…

1000 Arctic researchers, using a website with…

1500 views per month!
Thank you!
Local Strategies for Surveillance of Emerging Climate Health Threats

Climate Change and Health in the Arctic: Impacts on Alaska Native Communities and a Spotlight on Efforts to Improve Climate Health - A National Indian Health Board Webinar

January, 25 2018

Presented by: Mike Brubaker, MS
Director Community Environment and Health
Alaska Native Tribal Health Consortium
OUR VISION: Alaska Native people are the healthiest people in the world.
Air Quality –
Wildfire on
Moose Mountain.
Land Hazards - Warming is causing thawing and erosion on the North Slope.
Source water quality - Larger thaw features can be seen on many rivers include the Selawik.
Drinking Water - Erosion turns stream water in Golovin the ‘color of coffee’.
Infrastructure - Downstream in the village, thawing permafrost causes damage to infrastructure and disruption of services.
Food security - Salmon die-off from stream drying event, the result of disappearing snowpack.
Connecting the dots between climate change, environmental impacts, animal and plant impacts, and human health.
CLIMATE
in the Bering Strait Region

Center for Climate and Health
Mysterious outbreak killing Arctic Alaska ringed seals

A mysterious and potentially widespread disease is thought to have contributed to the deaths of dozens of ringed seals along Alaska's Arctic coast. Scores more are sickened, some so ill that skin lesions bleed when touched.

The animals are an important subsistence food for Alaska Native hunters and their families, and the National Oceanic and Atmospheric Administration has proposed listing them as threatened or endangered under the Endangered Species Act.

RELATED: Alaska walrus hauled out on beaches show symptoms similar to ringed seals ailment

In July, biologists with the North Slope Borough's Department of Wildlife Management began receiving reports of ringed seals hauled out on beaches, an unusual behavior since the animals usually prefer the water or ice. Since then, they've found at least 100 seals with telltale mangy hair and skin lesions, mostly while traveling by four-wheeler along 30 miles of Beaufort and Chukchi sea coastline outside...
Local Environmental Observer
Three Platforms

- Publishing
- Observing
- Social Media
Observation: I wrote decades ago about our drying ponds. This one was a once vibrant lake. In the spring carrying the sounds of swans, ducks, frogs and snipes. When I first came up to this lake about 1996, it still had frogs, and the water was up to the trees. Now it’s 3/4 grass. There were no sounds up here this fall and last fall. This spot is a 40 minute walk from the highway up the Mankommen Lake Trail. Wilson Justin

LEO says: Thank you Wilson for your observation. Lake change and lake drying is a phenomena across Alaska, a result of warming temperatures, changes in precipitation, and thawing permafrost. In every climate change assessment performed over the past decade by ANTHC, lake drying has been described. The impacts for fish, birds and wildlife are only just beginning to be understood. In some areas there are also implications for community water supply, and water security. The following consult by Andrew Bach explores the science behind lake change and provides analysis based on the consult and image provided by Wilson.

Huxley College of the Environment Consult: This observation is showing a pond that has suffered a change in hydrology. There are many possible explanations for this change, among them are:

- less water (rain and runoff) entering the pond due to drought conditions, either temporary (just a few dry years) or more permanent due to climate change.
- increased temperatures causing increased evaporation, more likely attributed to global warming.
- surface water diversion, like a tributary stream was diverted by construction or

Reference

Location of LEO Members
Shishmaref
Alaska, United States

Nearby Posts within 50 km

14

Open Water in Our Ocean
Shishmaref, Alaska, United States
30 DEC 2016

Unusual Spider (Araneus marmoreus)?
Shishmaref, Alaska, United States
21 JUL 2016

Unusual Ladybug (Calvia quatuordecimguttata)?
Shishmaref, Alaska, United States
7 JUN 2016

Odd Marine Debris
Shishmaref, Alaska, United States
28 AUG 2015

7 LEO Members

Fred Eningowuk
Shishmaref, Alaska, United States

Anthony Fernandez
Shishmaref, Alaska, United States

Andrew Kakoona
Shishmaref, Alaska, United States

Richard Kuzuguk
Shishmaref, Alaska, United States

Sharon Nayokpuk
Shishmaref, Alaska, United States

Ralph Sinnok
Shishmaref, Alaska, United States

Follow
The Northern Climate Observer

The Northern Climate Observer is a compilation of articles and observations about changing environment and climate, and the impacts on Northern communities. It is a LEO Network product, published weekly by the Center for Climate and Health at the Alaska Native Tribal Health Consortium.

Autumn storm batters northern coastline
Barrow, Alaska, United States

The effects of a storm that battered the North Slope coastline may carry a price tag exceeding $100 million.

Read article on Arctic Sounder

Investigation into washed up whale’s death begins in Alaska

The extraordinary sight of a 30-foot-long dead humpback whale that washed up on a beach area in Kivalina.

Read article on Eye on the Arctic

American coot sighting in eastern Arctic pretty unusual says bird expert

Thereafter the bird apparently took the way to the usual wintering grounds far away to the south.

Read article on Nunatsiaq Online

Stinger jellyfish swarms wipe out farmed salmon in west of Ireland
Identifying health effects of climate change in Alaska

- Allergic Reactions
- Travel Safety
- Waterborne Disease
- Respiratory Health
- Ice Hazards
- Harmful Algae
- Food Security
- Vessel Safety
- Nutrition
- Allergies
- Infrastructure Damage
- Food Spoilage
- Food Confidence
Fourth National Climate Assessment

Development of the Fourth National Climate Assessment (NCA4) is currently underway, with anticipated delivery in late 2018. Below you will find information related to Volumes I and II of NCA4, including background information, frequently asked questions, and opportunities to participate in the process.

GCRA Mandate

Learn more about USGCRP and the National Climate Assessment, mandated by the Global Change Research Act (GCRA) of 1990.

LEARN MORE
Welcome to the USGCRP Review and Comment System

You have accessed the United States Global Change Research Program (USGCRP) Review and Comment System. This site provides an interface for users to access USGCRP-related documents available for public review.

Please login into the system or if you do not have an account, please click on Create New Account (left).

If there are no documents for public review available below, the Create New Account link may not be shown.

Please click on the Help tab above for additional information about how to create an account and login.

Documents Available for Public Review

- Fourth National Climate Assessment: Public Review (Nov. 3-Jan. 31)
Wainwright, AK
Wainwright, AK

• Situated on the shores of the Chukchi Sea
• 3 miles northeast of the Kuk River estuary
According to 2010 census:
• Population size: 546, 94.6% Iñupiat
• 93% of households reported participating in the local subsistence economy
• More than 2/3 of households acquire 50% + of their diet from hunting, fishing, and gathering
Well-Being & ‘Eskimo Soul Food’
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• Whale meat and other Native foods actually have more nutritional value than store-bought products
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- First Foods and the maintenance of Tribal identities = a sovereign ‘right to food’ (Adamson, 2011)
- Aboriginal subsistence rights extinguished under ANCSA
Implement a focused adaptation plan and evaluate its impact on the health of the community.
Promoting Adaptive Capacity with a Geo-Location Device Check-Out Program in Wainwright, Alaska

Alana Shaw, PhD
Village of Wainwright

Micah Hahn, PhD and Rebecca Van Wyck
ICHIS, University of Alaska Anchorage
Data Collection & Project Goals
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• We were able to view North Slope Borough de-identified patient encounter logs and Wainwright weather data collected by NOAA
Data Collection & Project Goals

• We were able to view North Slope Borough de-identified patient encounter logs and Wainwright weather data collected by NOAA.

• Wainwright Search & Rescue Rescue Mission Records, Safety Workshop audio recordings, and inReach check-out forms used to measure changes in the frequency of community member use of location technology, dialog on the use of location technology, dialog of safe subsistence travel practices, and unintentional injuries associated with unseasonable weather.
Data Collection & Project Goals

• Success in this project will be viewed as the increased knowledge and use of location technology within the community and an increase in informed risk behavior.
Implementation
Implementation

• On May 26, 2017 a Workshop was held in Wainwright, AK to inform community members of the Search and rescue check-out program and the utilization of PLBs and SENDs
Remote Travel Safety Workshop
When: May 25, 2017, 5:30PM-9:30PM
Where: Community Center
All Wainwright Hunters and Travelers are welcome to attend

In addition to PLBs, Wainwright Search & Rescue is launching a new inReach check-out program

Come receive hands-on training with these devices
Please feel free to bring your own inReach, if you have one

Other topics covered will include:
   Trip Planning
   Proper Equipment
   Navigation

Community members are encouraged to attend in order to share their own knowledge and best practices

Cost of Attendance is Free!
Dinner will be Provided
Door Prizes: 5 $200 Gas Vouchers

Hosted by Village of Wainwright & the Institute for Circumpolar Health Studies
in Partnership with Wainwright Search & Rescue

Village of Wainwright
In Partnership with Wainwright Search & Rescue

With funds from the National Indian Health Board

inReach SE units are now available for check-out at Wainwright SAR base!!

Upon equipment return, individuals will receive an entry into a random prize drawing for their own inReach device. Drawings will be held at the close of the project.

To check-out an inReach unit:
Please contact Wainwright SAR at:
763-0272 or 925-2004
Implementation

- PEF logs were collected spanning from January 2016 through November 2017.
Implementation

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• NOAA temperature data from Wainwright spans the same time period
Implementation

- PEF logs were collected spanning from January 2016 through November 2017.
- NOAA temperature data from Wainwright spans the same time period
- Another helpful metric of hours spent in search and rescue operations was discovered.
Implementation: Challenges

• **As anticipated** ....... Remote Travel Safety Workshop and the Weather!!

• **Relatively Low Checkout Rates:**
  o Already working with a small population size, especially when it comes to active hunters and travelers
  o The people who probably need them the most are the ones who think that they are already “prepared”
    • 1 Potential Solution: Hands on Workshop at the School
  o The age old issue with instituting behavioral changes
    • Already made sure to have devices available at the same location where PLBs have always been checked out
    • 1 Potential solution: Equipment delivery service?

• **Use in the field (once they are checked out):**
  o Getting people to bring them and turn them on!!
    • 1 Potential Solution: Another booster workshop on Remote Travel Safety Best Practices
Quyanakpak to our Project Champions!

• Wainwright Search and Rescue
• City of Wainwright and Olgoonik Corporation
• Village of Wainwright Clinic
• National Indian Health Board
• North Slope Borough, Community Health Aide Program
• Bethel Search and Rescue
Resources, Discussion, Q&A