

## Northwest Alaska / Iñupiaq Regional Listening Session Notes

Communities in the northwest rely on subsistence hunting and gathering for most of their food as store bought food is very expensive. Less snowpack and rain affect berry production.

After fire even with permafrost impacts, revegetation occurs quickly though it may not be the thick mats of vegetation that were once there prior to the fire.

Drought related to temperature (evapotranspiration) as much as precipitation.

Long days of daylight in summer a concern as will increase evaporation.

Permafrost thaw can lead to deeper water flow paths and colder water temperatures (Josh Cook et al. work).

With beaver invasion there is a higher nutrient flow with permafrost thaw. See higher water temperatures early in season when mostly runoff, then runoff reduces.

## Great Kobuk Sand Dunes

Don't usually have water perched high, usually flat, see flat regional groundwater table, perched aquifer through entire dune field that followed topography, perched on carbonate layer or ice layer or dry permafrost (not sure how perched). But this perched aquifer may not be there now. Perched aquifer is interesting, maybe protected from saltwater intrusion, maybe related to winter storminess (atmospheric pressure on water). Maybe need better understanding of our hydrology here.

Multi-temporal image analysis of historical aerial photographs and recent satellite imagery reveals evolution of water body surface area and polygonal terrain morphology in Kobuk Valley National Park, Alaska

<https://iopscience.iop.org/article/10.1088/1748-9326/8/2/025007>

## Kotzebue

Historically sea ice would be 4-5' thick, now out in the channels is only 19" thick.

Northwest AK people are seal-oriented, ocean-oriented people. Changes in climate are causing changes in animals, in timing of their migration, changes to migration patterns and direction.

25 years ago, beavers moved into the area and now there are millions of them. Beavers have polluted every river and stream. **Indian health services now digs wells to provide drinking water because surface water is not safe.**

High temperatures, past 4-5 years there has not been enough snow. This affects the survivability of berries and impacts human nutrition.

1977 was a super-hot year with many lightning strikes resulting in millions of acres burnt. Led to good moose habitat but also lots of scarring of permafrost. The heat melted out some new lakes from the permafrost. Haven't had a large fire like that since.

Blue green algae have had big blooms east of Kotzebue. Interest in having more real-time water temperature network set up to better expect fish die-offs and if

oxygen in rivers is low as it is crucial to fish. Two fish die-offs in 2014 and last year, since in Kotzebue. \*Note no dry conditions noted in region in 2014

Lots of permafrost thaw resulting in foundations sinking. Not certain how much of town will be above sea level once all permafrost has thawed. People are moving up hill.

## Nome

Rivers in NW in around Nome are relatively small and shallow and respond quickly to precipitation deficits. Mountain snow melt has big impact to these waters. Hydrology is important to understand in this region.

Snow drought is impactful to the NW because it has transportation impacts and people cannot travel via snow machines and can only use ATVs at a more limited distance.

**May 2020 Nome had its warmest May on record.** \*No dryness or drought conditions for Nome in May 2020 were able to be recorded. Not a lot of snow, ran off quickly and river levels went to nothing. This affected people's food security issues.

**Note:** The 2020 end-of-March snowpack was near to below normal on most of the Seward Peninsula.

Thawing weather commenced in mid-April (earlier than normal), including a record early and large straight-rain event (at low elevation) that accelerated snow melt.

May was the warmest on record, largely finishing off snowmelt in the Kigluaik Mountains. The first three weeks of June were sunny, record warm and dry.

Impact: very low and very warm water in the rivers at a time when salmon are congregating at the mouths and ready to head upstream, and the season was saved by a cold inch of rain the last days of June and then cooler weather in July.

**68F affects fish (ex. oxygen depletion and heat stress), 2018-2019** was devastating for fish populations.

5 out of 15 villages do not have running water and use honey buckets. Area of high poverty.

Subsistence resources include sea mammals, seabirds/eggs, ocean fish, river fish, land mammals, invertebrates, birds, berries, greens, and roots if can't eat one then go to the next one. Non-commercial agriculture includes tuber potatoes, roots, willow leaves, medicinal greens, broadleaf plants, berries, and kelp, etc.

Subsistence; no mechanism in state government allows to pay for non-commercial agriculture disaster relief. **This is a big issue, need to have a mechanism by which the government can provide relief for non-commercial agriculture.**