

Traditional Foods in Alaska:

Potential Threats from Contaminants and Climate Change



State of Alaska
Division of Public Health
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Overview of Talk

- n Why are traditional foods important in Alaska?
- n Threats to traditional food safety
 - n Traditional focus on contaminants
 - n Nexus with climate change
- n Conclusions

Why are Traditional Foods Important?



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Health Benefits of Seafood, Marine and Terrestrial Mammals



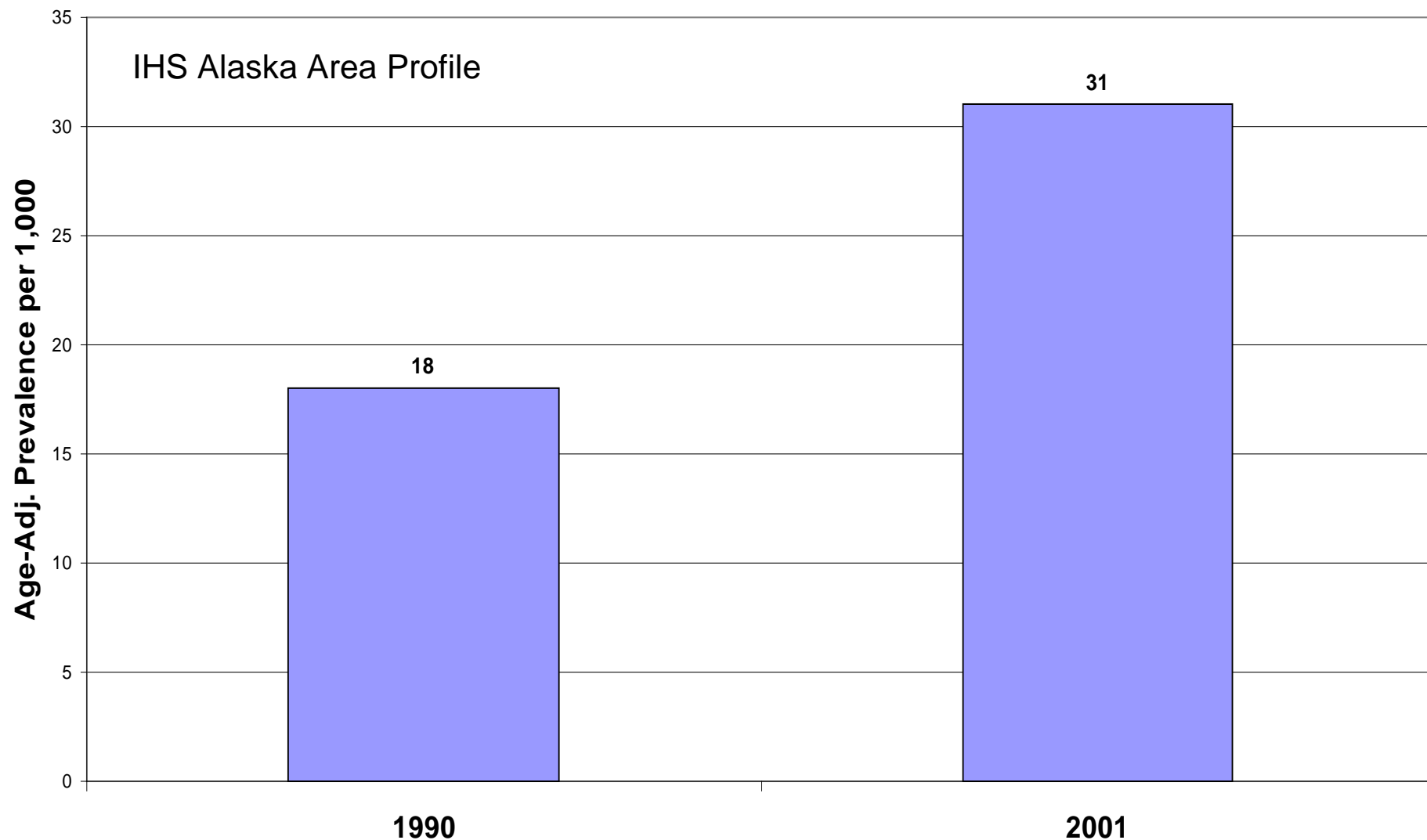
- High nutritional value
- Vitamins A, E, C
- Protein
- Energy
- Omega - 3 - fatty acids
- Monolipids
- Iron, zinc

Prenatal & Infant Development

- n Omega-3 fatty acids important for neurodevelopment. Used during third trimester for:
 - n brain and retinal development
 - n maturation of the visual cortex
- n motor skills development in infants

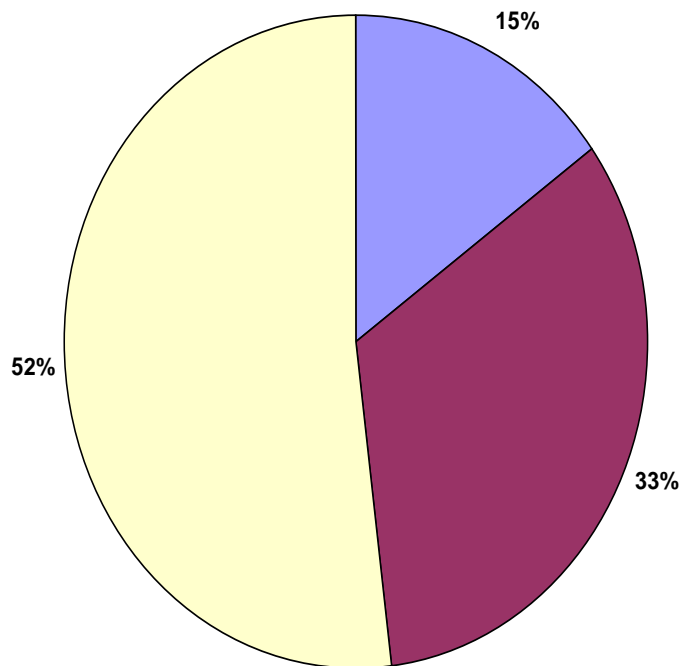


Diabetes Prevalence in Alaska Natives: 72% increase from 1990 to 2001

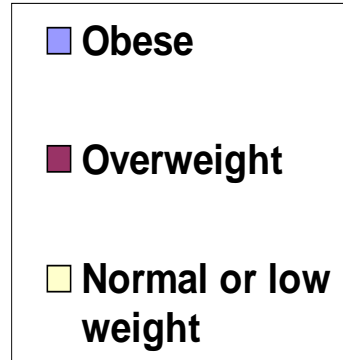
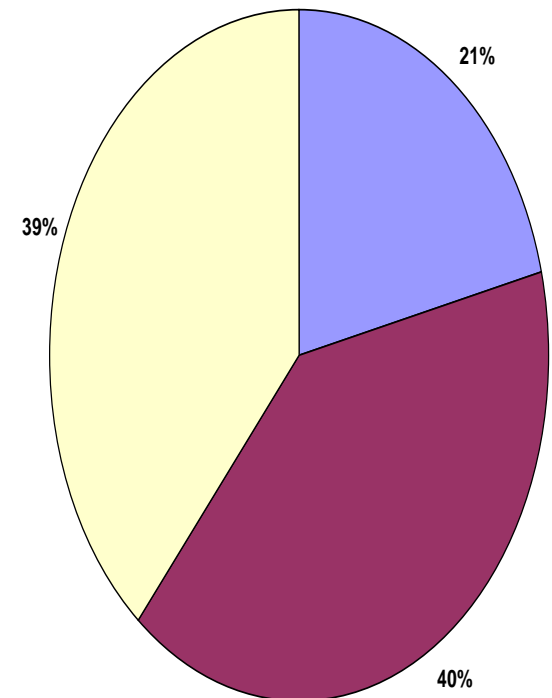


Percent of Alaskan Adults who are Overweight or Obese

1991-1993: **48%**



1999-2001: **61%**





Chronic Health Problems Associated with Obesity

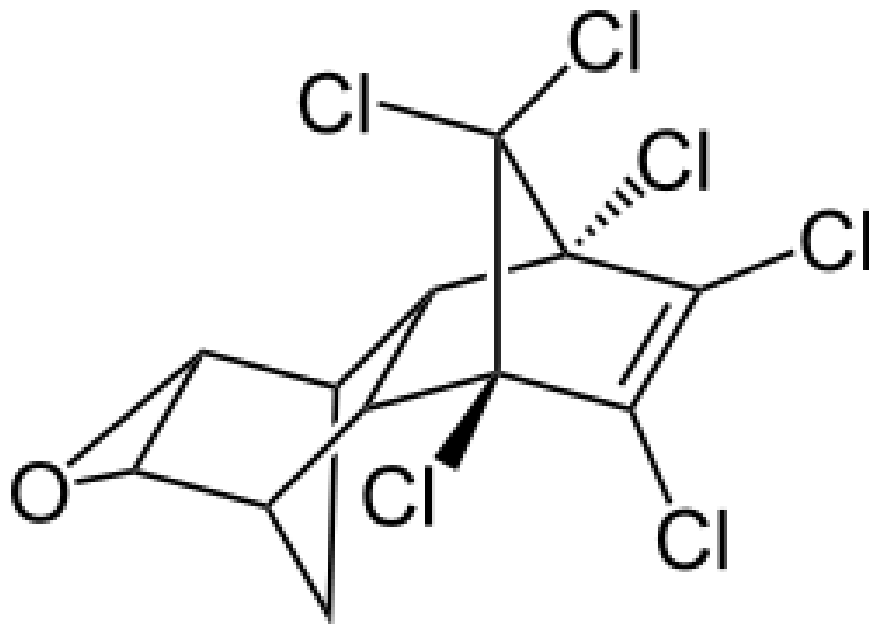
- n Premature Death
- n Heart Disease
- n Diabetes
- n Arthritis
- n Cancer
- n Breathing Problems
- n Reproductive Complications
- n And More.....



Drawbacks of Restricted Consumption of Traditional Foods

- n Health risks associated with alternative foods
 - n - saturated fat: cardiovascular disease
 - n - carbohydrates: diabetes
- n Loss of nutritional and health benefits
- n Overall negative health impact of dietary and lifestyle changes
- n High cost of replacement foods
- n Social, economic and health consequences from the breakdown of subsistence

Potential Threats to Traditional Food: Contaminants





Toxic effects of Mercury

- n High doses: Personality changes, tremors, changes in vision or hearing, loss of sensation, memory difficulties
- n Most sensitive endpoint:
 - n fetal brain development
- n Low doses through fish/marine mammal consumption: Epi studies inconsistent

What are the Potential Effects of PCB-like chemicals?

- **Immunotoxicity:**

Decreased ability to fight disease

- **Neurodevelopment:**

Learning and behavior

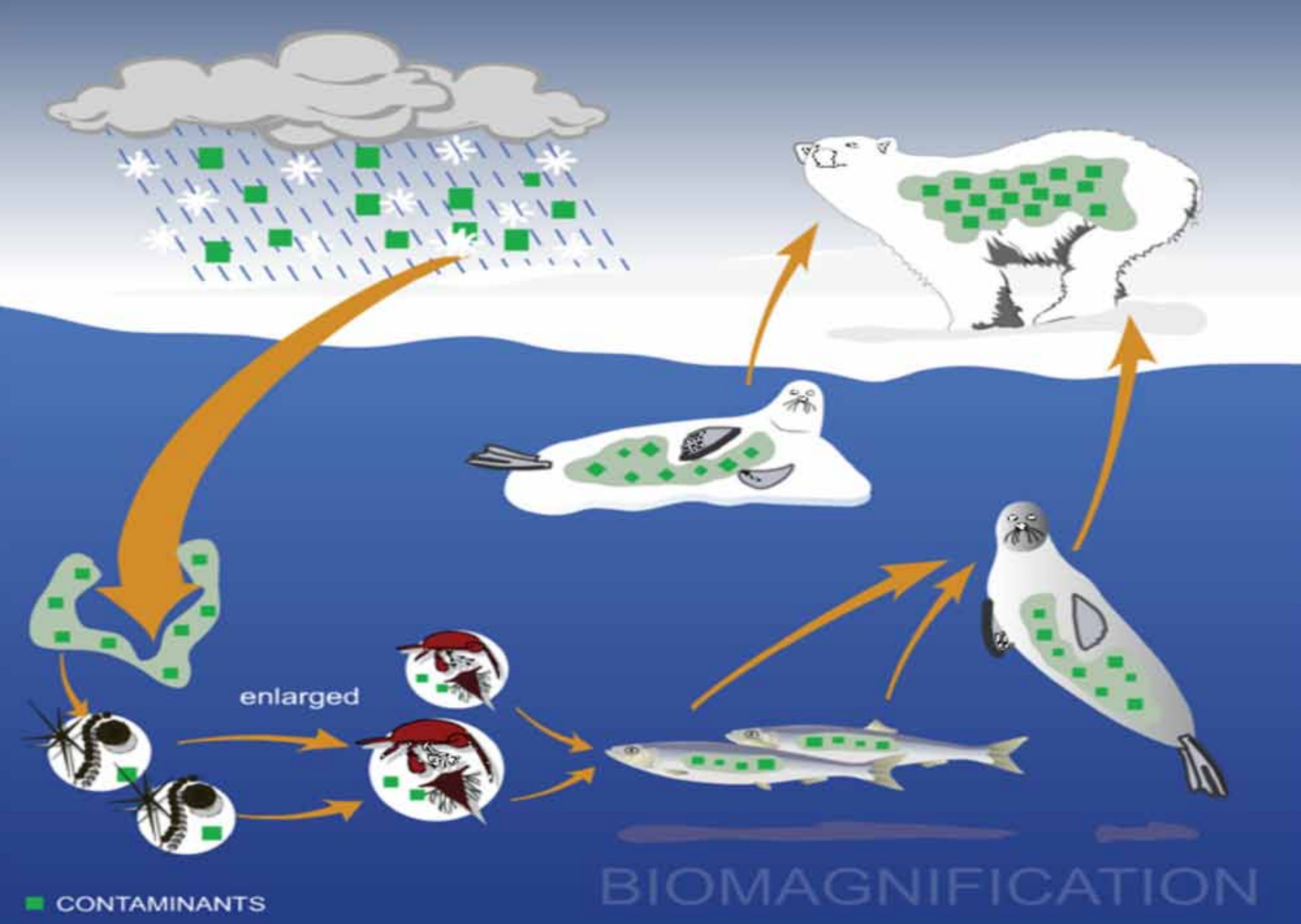
- **Endocrine disruption:**

Interactions with thyroid and sex hormone receptors

- **Cancer**

Fiercely debated whether these effects could occur at the low doses encountered through subsistence food consumption!

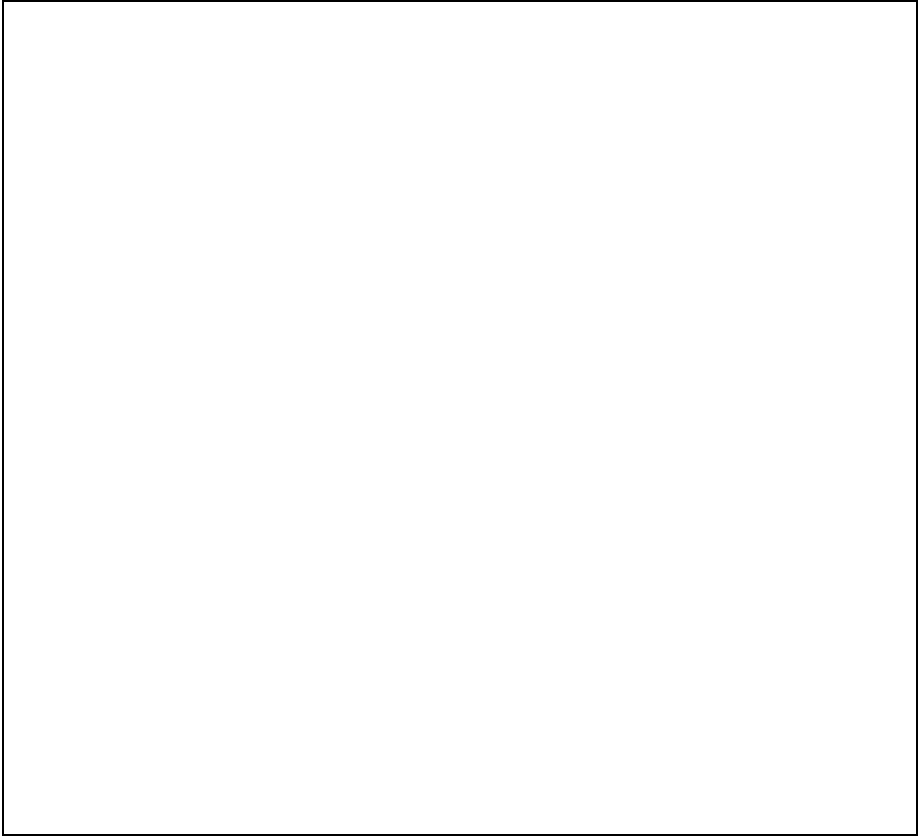




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Public Health Recommendations



- Benefits far outweigh potential adverse effects
 - Traditional foods are a healthy dietary choice
- 

How could climate change
affect traditional foods?



Glaciers Melting

Shown here are Austin Post's 1958 photo of the McCall Glacier terminus, alongside of a 2003 photo by Matt Nolan taken at almost the same spot.

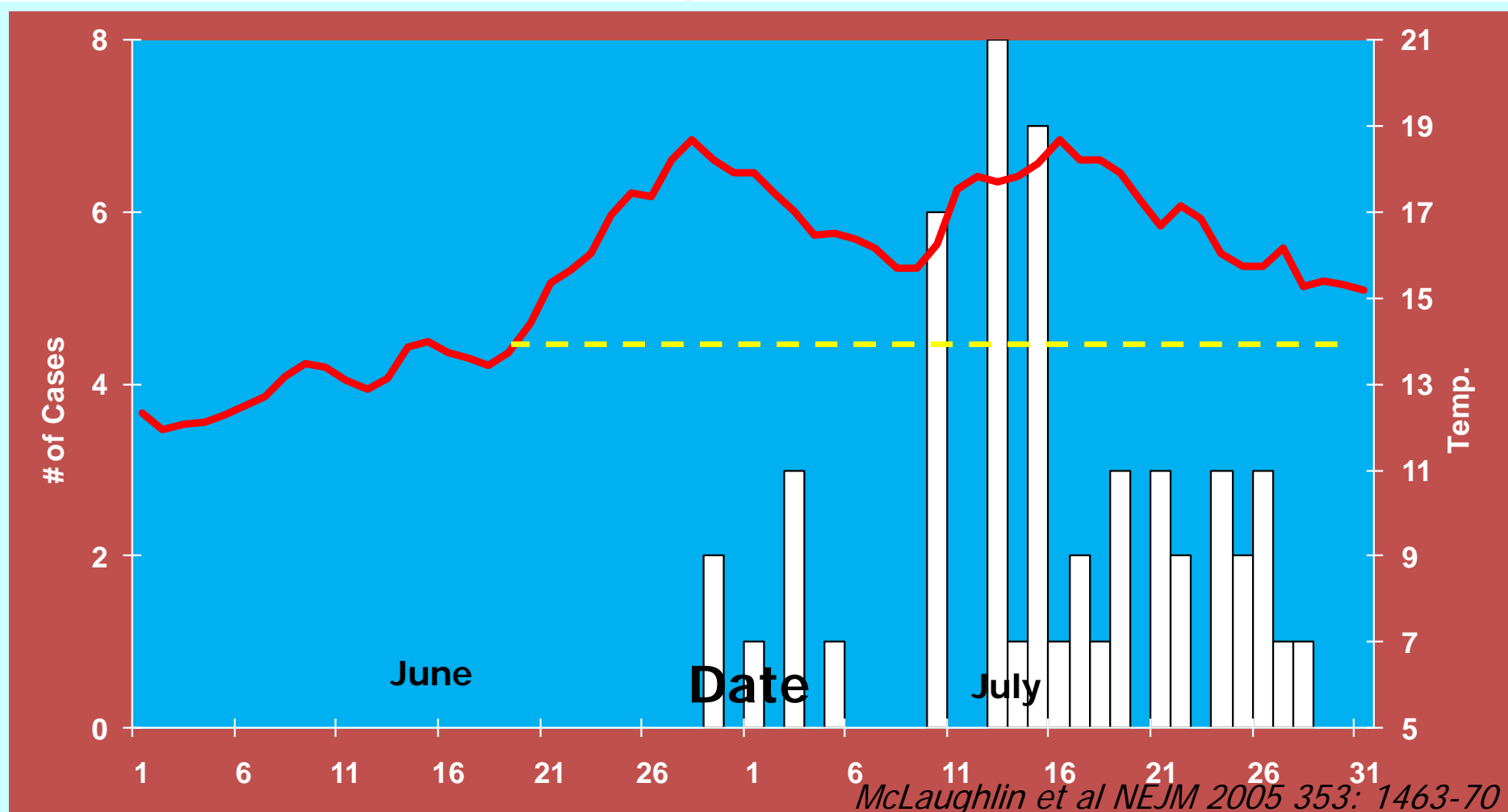




Melting glaciers may be a source of POPs to Arctic lakes

- n Alberta Canada – elevated concentrations of POPs in layers of ice deposited in the 1950s through 1980s
- n Bow Lake POPs input measured in 1997
 - n Glacial melt stream a major source of POPs to the lake
- n Italy – melting Alpine glaciers a current source of DDT to local lakes

Vibrio Outbreak: Mean Daily Farm "A" Water Temperature by Date, and Number of Farm "A"-associated Case-patients by Harvest Date of Consumed Oysters-2004

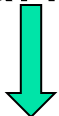





Arctic Warming may Increase Bioaccumulation of Methyl Hg

- n Temperature enhances Hg methylation

- n Warming  primary productivity

- n  sunlight =  demethylation by uv light

- n Methylation by sulfate-reducing bacteria depends on organic matter

- n Zooplankton species – Daphnia higher in Hg; dependent on dissolved organic carbon

- n Methylated Hg bioaccumulates in fish

Eagle Village spring flooding, June 2009

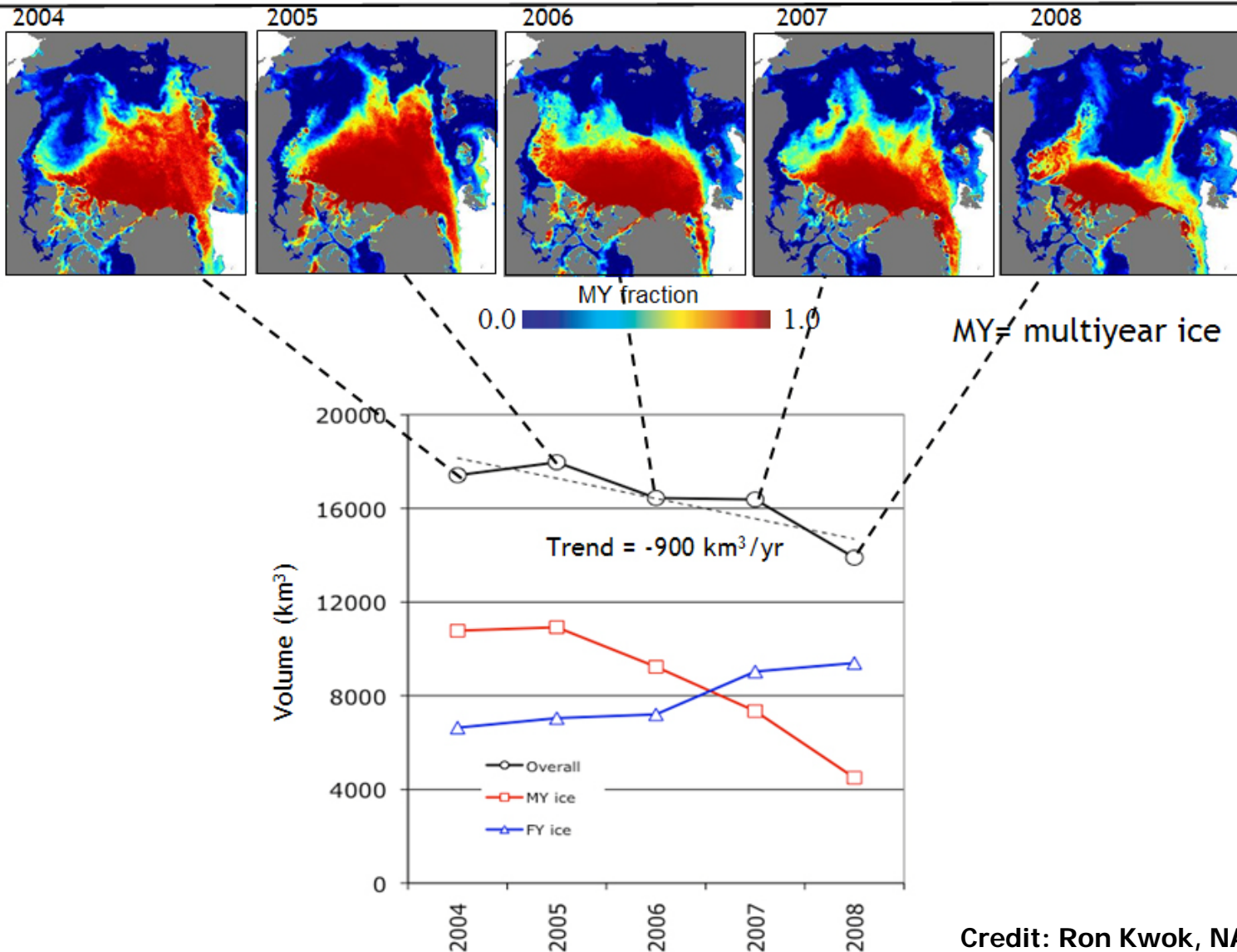


Eroding Landfill, Port Heiden 2008





Trend in winter sea ice volume



Effects of decreasing sea ice on Pacific Walrus


- n Use sea ice for:
 - n Resting platform over offshore feeding areas
 - n Escape from predators
- n Since 2007, large # of walrus haul out on coast
 - n 131 young walrus killed in stampede near Icy Cape
 - n stampedes also on Russian side of Chukchi Sea in 2007





Conclusions

- n Traditional foods are central to Alaska Native culture, and a healthy lifestyle
- n Climate change has the potential to threaten traditional food safety and security
- n Need to protect the environment to protect traditional food abundance and safety
- n Need careful planning to minimize impacts of climate change that are unavoidable

A scenic landscape photograph of a lake with a glacier in the background and red flowers in the foreground. The text is overlaid on the upper right portion of the image.

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