Alaskan Natives are the Healthiest People in the World
Time of Contact for Alaska Native Groups

- Aleut/Unangan     1740-1780
- Alutiiq          1740-1780
- Yup’ik           1780-1840
- Inupiaq          1850-1870
- Tlingit/Haida/Tsimshian (Interior) 1840-1860
- Tlingit/Haida/Tsimshian (Coast) 1775-1800
Dietary Variation b/t Region

Pre-contact:

• High, healthy protein diet
• High, healthy fat diet
• Low in Carbohydrates
Dietary Changes: 1950s

- Local source of carbohydrates ranged from 20 – 45%
- Portion consumed as candy and pop ranged from 15 – 32%
- In Adults: 1/3rd of daily calories were from bread, cereal, grain products
Dietary Changes: 1980s

1989: Statewide survey doing 24-hour dietary recall from Alaska Native people

On average:

<table>
<thead>
<tr>
<th></th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>19%</td>
<td>18%</td>
</tr>
<tr>
<td>Fat</td>
<td>38%</td>
<td>37%</td>
</tr>
<tr>
<td>Carbs</td>
<td>41%</td>
<td>44%</td>
</tr>
</tbody>
</table>
A Changing Picture...
ALASKA SPORTSMAN: THE BEST HUNTING SPOTS

The Store Outside Their Door

Can Natives Sustain the Subsistence Lifestyle?

Alaska INSIDE

SPECIAL SECTION for Alaskans Only
Weston Price
1933...Traveled to Remote Alaskan Villages

...examples of physical excellence and dental perfection such as has seldom been excelled by any race in the past or present.
“...strong rugged babies”
Virtually NO Dental Decay, Until...

- ...villages with trading posts... “store grub”...
- “A typical effect of modernization on a growing girl was shown in a case in which the central incisors and 16 other teeth were attacked by dental caries. Sixty-four percent of her teeth had tooth decay.”
1st Generation of Children Born After Adoption of ‘Store Grub’

- Dental arch deformities
- Crooked Teeth
- Changed facial form

“We have few problems more urgent or more challenging than reversing these trends.”

Weston A. Price, 1933
Pottenger’s Cats

10 year nutritional study

Cats on optimal cat diet: (raw meat, raw milk) thrived - 4 generations later still healthy-

Processed diet (canned milk, condensed milk, cooked meats):
1st gen - sick older age
2nd gen - sick middle age
3rd gen - sick from birth, behavior problems
4th gen - NO 4th generation - sterile or aborted fetuses
136% increase in diabetes in Alaska Native people.27
“First, remove obstacle to cure”
Self-actualization: morality, creativity, spontaneity, problem solving, lack of prejudice, acceptance of facts

Esteem: self-esteem, confidence, achievement, respect of others, respect by others

Love/Belonging: friendship, family, sexual intimacy

Safety: security of body, of employment, of resources, of morality, of the family, of health, of property

Physiological: breathing, food, water, sex, sleep, homeostasis, excretion
Vis Medicatrix Nature
“Let food be your medicine”
-Hippocrates
TRADITIONAL VALUES OF ALASKA

SAINT LAWRENCE ISLAND YUP’IK VALUES
- Listen with your heart and mind
- Honest Family
- Give Service to others
- Never give up
- Respect all living things
- Remember values of elders
- Plan for the future
- Be Independent
- Avoid laziness
- Gather knowledge and wisdom
- Respect the natural environment

YUP’IK VALUES
- Help others
- Help with family chores and needs
- Early to bed and early to rise
- Provide time to see how your life is going
- There’s always time to play if you work is done
- Learn to do things yourself
- Respect and honor your elders
- Always choose good behavior
- Listen to all sharing given to you
- Remember what you are taught and told
- Respect other people’s belongings
- Respect the animals you catch for food
- Gather knowledge and wisdom from the elders
- Never give up in trying to do what you set your mind to.

RELIGIOUS ALEUT YUP’IK VALUES
- Have respect for our land and its resources for all times
- Be helpful to one another
- Share with others whenever possible
- Respect and care for others’ property
- Respect spiritual values
- Learn hunting and outdoor natural skills
- Pray that and take good care of your family
- Through love, respect your children
- Respect your elders
- Work hard and don’t be lazy
- Refrain from alcohol and drug use
- Learn, gain, and be proud of the Native way of life

UNANGAX (ALEUT) REGION

ST. LAWRENCE ISLAND
YUP’IK REGION

NUNAVUTQ REGION
ATHABASCAN REGION

ALUTIQ REGION

SOUTHEAST REGION

Unangax (Aleut) Region

SELF-RELIANCE VALUES
- Self-sufficiency
- Hard Work
- Care and concern for the family

KNOWLEDGE AND LANGUAGE VALUES
- Knowledge of Language
- Knowledge of Family Traditions
- Herding
Store Outside?
Traditional Food Guide

For Alaska Native Cancer Survivors

Alaska Native Tribal Health Consortium Cancer Program
Fiddlehead Fern

NATIVE NAMES: Creughua ( Yup’ik )
Fiddlehead ferns are also known as the "trailing wood" fern. Fiddleheads are the coiled edible spring growth of ferns. They can be found from the Brooks Range southward toward the Aleutian Islands, and on the Alaska Panhandle. To harvest them, pick the tightly coiled fiddleheads in early spring. Fiddlehead fern rootstock can be harvested in early spring or fall.

CAUTION: Pick fiddleheads only when they are young and tightly coiled, as the mature ferns are toxic.

PREPARATION: Fiddleheads should always be cooked before eating. The tighter the head the tastier it will be. Fiddleheads can be prepared by steaming, boiling, or baking. Before cooking fiddleheads, rub off the bitter brown chaff on the stalks and rinse them with water.

"In the early spring one year, the people ran out of food. They divided into two groups, one moving into the higher country to dig ferns, and the other to the salt water to dig clams. These people who lived on ferns received back their strength and gained weight, while those that lived on clams barely survived."

— Tusima Plantlore

FIDDLEHEAD FERN NUTRITION INFORMATION
Fiddlehead ferns are an excellent source of fiber and Vitamin A, and a good source of Vitamin C.

<table>
<thead>
<tr>
<th>Fiber</th>
<th>Vitamin A</th>
<th>Vitamin C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Cup</td>
<td>7 g</td>
<td>40 mg</td>
</tr>
</tbody>
</table>

HEART FRIENDLY
• Low in fat
• Very low in sodium

NUTRITION INFORMATION
No serving: 1 cup
Calories: 8
Fiber: 1 g
Carbohydrate: 6 g
Fat: 0 g
Sodium: 0 mg
Vitamin A: 56 IU
Vitamin C: 40 mg
Iron: 2 mg
Fireweed is an excellent source of Vitamins A & C, and a good source of fiber.

HEART FRIENDLY
- Fat free
- Very low in sodium

FIBER
MAN WOMAN MAN WOMAN

VITAMIN A

VITAMIN C

NUTRITION INFORMATION
Per serving - 1 cup: raw

<table>
<thead>
<tr>
<th></th>
<th>Calories</th>
<th>Protein</th>
<th>Carbohydrate</th>
<th>Fat</th>
<th>Calories from fat</th>
<th>Saturated fat</th>
<th>Dietary Fiber</th>
<th>Cholesterol</th>
<th>Sodium</th>
<th>Vitamin A</th>
<th>Vitamin C</th>
<th>Iron</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24</td>
<td>2 g</td>
<td>3 g</td>
<td>0</td>
<td>0 %</td>
<td>NT*</td>
<td>3 g</td>
<td>NT*</td>
<td>28 mg</td>
<td>3146 IU</td>
<td>55 mg</td>
<td>1 mg</td>
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</table>

*Not Tested
**Whale, Beluga, Bowhead**

**Native Names:**
- Araq (Yup’ik)
- Talin (Dena’ina)
- Yulay (Tlingit)

For centuries, whales were hunted for their valuable oil and very fine-grained meat. Alaska Natives in the North continue to harvest whales as a source of food and fuel, as they have traditionally done for thousands of years.

**Preparation:** Whale meat can be prepared by pan-broiling the square steaks and serving them sizzling hot. Whale meat is also excellent for soup stock, stews, roasts, and curries. Another way to enjoy whale is to eat the muktuk (the outer covering of the whale), which is traditionally eaten raw or cooked.

September brings whaling season to Kaktovik, a village-wide activity. Women prepare food to send out with the whaling crews and wait on the beach for the crews to return with a whale. The day after the whale is beached, everyone goes to the captain’s house to eat whale meat and muktuk. They spend the whole day visiting and eating and then take some of the leftover whale meat home with them.  

— Frances Lampé, Kaktovik

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**Whale Nutrition Information**

Whale is an excellent source of protein & iron

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Per serving - 3 oz cooked</th>
<th>Heart Friendly</th>
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</thead>
<tbody>
<tr>
<td>Protein</td>
<td>72 g</td>
<td>Lean</td>
</tr>
<tr>
<td>Carbohydrate</td>
<td>0 g</td>
<td>Low in sodium</td>
</tr>
<tr>
<td>Fat</td>
<td>1.3 g</td>
<td></td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>0 g</td>
<td></td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>0 mg</td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>14 mg</td>
<td></td>
</tr>
<tr>
<td>Sodium</td>
<td>85 mg</td>
<td></td>
</tr>
<tr>
<td>Vitamin A</td>
<td>280 IU</td>
<td></td>
</tr>
<tr>
<td>Vitamin C</td>
<td>6 mg</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>12 mg</td>
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</table>
IRON

IRON...

how many hotdogs?

Country food is good for you and your family
Comparison of Berries
The Effect of Seal Oil/Salmon on Glucose Intolerance


Glucose intolerance is less common among those who eat seal oil and/or salmon daily.
Alaskan Seaweed

- *Ulva lactuca (UL)*
  - Sea lettuce

- *Saccharina latissima (SL)*
  - Sugar wrack

- *Saccharina groenlandica (SG)*
  - Kelp

- *Pyropia fallax (PF)*
  - False laver

- *Alaria marginata (AM)*
  - Winged kelp

- *Fucus distichus (FD)*
  - Bladderwrack
Antioxidant Activity

- Oxidative damage related to a number of chronic diseases
  - Obesity
  - Diabetes
  - Arthritis
  - Cardiovascular disease
- Preventing oxidants can slow or reverse damage to tissue
- Treat macrophage cells to determine effects on blocking oxidants

**Most active species:**
Brown kelps:
F. distichus – bladder wrack
A. Marginata – ribbon kelp
S. groenlandica – kelp
S. Latissima – surgar wrack
Lipase Inhibitory Activity

• Lipases are enzymes that digest fat from the diet
  • Our lipases are more active than the amount of lipids we consume
  • Increasing fat in the diet means it is just as easily broken down and digested
• Main source of circulating lipids in the blood stream
• Blocking lipase can help lower lipid digestion
  • Decrease obesity (Orlistat)

Most active species:
Brown and red kelps:

F. distichus – bladder wrack
P. Fallax – false laver
Glucosidase Inhibitory Activity

- Glucosidases breakdown starch to sugar
  - We contain a variety of related enzymes in our digestive system
- Main source of circulating sugars in the blood stream
- Blocking can help lower glucose metabolism and digestion
  - Decrease glucose levels internally
  - Lower insulin stress, decrease insulin resistance

Most active species:
Brown kelps:
F. distichus – bladder wracker
A. Marginata – ribbon kelp
Decrease in Lipid Accumulation

- Fat cells synthesize and accumulate lipids from the bloodstream
  - Grow larger to accommodate all the lipids, leading to obesity
- High accumulation levels also increases inflammation, can lead to diabetes
- Lower levels can help lower obesity risk
  - Decrease lipids circulating in bloodstream
  - Lower inflammation and insulin resistance

Fraction from A. marginata (ribbon kelp) and S. latissima (sugar wrack) and P. fallax (false laver) all decreased fact accumulation in cells by as much as 24%.
Conclusion and Next Steps

- Seaweed from Alaska have potential to offset complications of obesity and diabetes
  - Reduce oxidative damage
  - Inhibit digestion of certain dietary nutrients
    - Glucosidase
    - Lipase
  - Reduce accumulation of lipids in fat cells
- From here to the future
  - Determine active chemicals
  - Elucidate mechanisms of action
  - Investigate clinical and dietary interventions at the community level
Traditional Infant Feeding Guide