

American Fisheries Society  
Creating a Fisheries Mosaic:  
Connections across Jurisdictions, Disciplines  
and Cultures



Alaska Native Science  
Commission  
[www.nativescience.org](http://www.nativescience.org)

*SURFACE CULTURE*

*FOLK CULTURE*

- fine arts •
- storytelling • drumming
- subsistence • dancing •
- games • cooking • dress

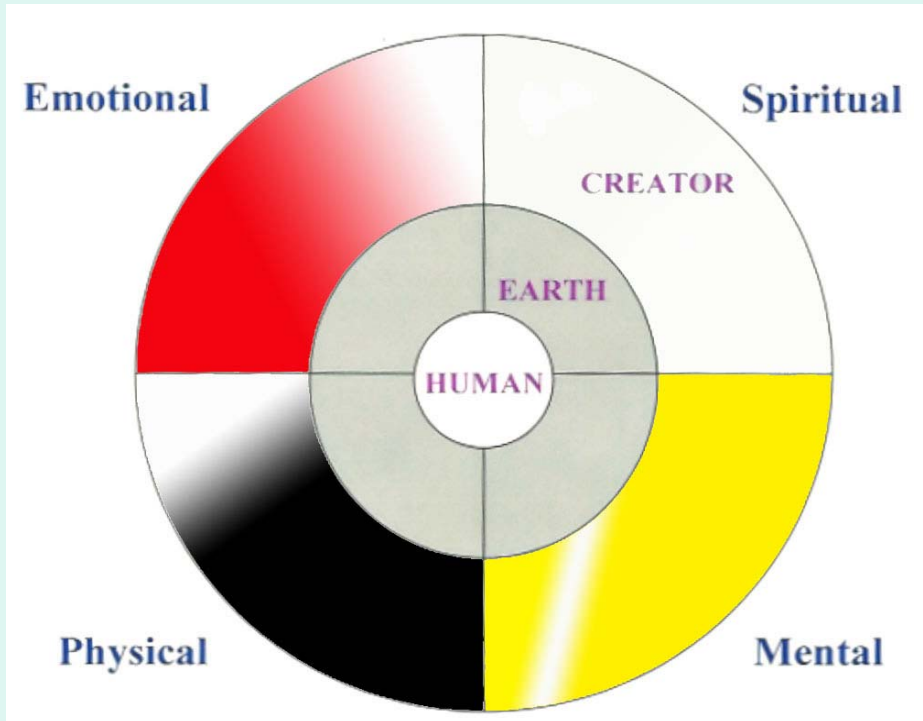
- weather forecasting • animal behavior •
- navigation skills • observation skills • pattern recognition •
- seasonal changes/cycles • edible plants / medical knowledge •
- star knowledge / constellations • language / terminology/concepts •
- counting / measurement / estimation • clothing design/insulation • tools/
- technology • building design/materials • transportation • genealogy •
- waste disposal • fire/heating/cooking • hunting / fishing / trapping • weapons •

AND MUCH, MUCH MORE . . .

*DEEP CULTURE*

# Native Worldview

## Holistic View



## Value Systems

- Responsibility to Tribe
- Knowledge of Language
- Sharing
- Respect for Others
- Cooperation
- Respect for Elders
- Love for Children
- Hard Work
- Knowledge of Family Tree
- Avoiding Conflict
- Respect for Nature
- Spirituality
- Humor
- Family Roles
- Hunter Success
- Domestic Skills
- Humility

# Structure Characteristics

- MALE
  - Top down decisions
  - Do not use intuition
  - Do not use feeling
  - Do not compromise
  - Seek control
  - Do not listen
  - Competitive
  - Violent
  - Aggressive
  - Physical
- FEMALE
  - Consensus building
  - Use intuition
  - Emotional
  - Compromising
  - Sharing
  - Active listening
  - Non competitive
  - Non-violent
  - Nurturing
  - Loving

# Cultural Comparisons

- NATIVE
  - Emphasis on age
  - Excellence related to group contribution not personal glory
  - Children participate in adult activities
  - Family life includes extended family
  - Clock time is whenever people are ready/arrive
  - People express ideas and feelings through actions
  - Future orientation
  - Giving, sharing
  - Patience
  - Listening skills
  - Spirituality is way of life
  - Modesty
  - Work limited to meeting needs of family
  - Harmony with nature
  - Indirect, non-assertive
- NON NATIVE
  - Emphasis on youth
  - Competition, winning, gaining status is emphasized
  - Adults participate in youth activities
  - Family life includes nuclear family
  - Clock time is exactly that – by the clock
  - People express themselves and impress others with speech
  - Present orientation
  - Taking, saving
  - Aggression
  - Verbal skills
  - Spirituality is a segment or part of life
  - Self attention
  - Work focused on getting ahead or getting rich
  - Mastery over nature
  - Assertive

# Considerations

- Alaska culture group differences
- Rural/urban Natives
- Traditionally and non-traditionally raised
- Dysfunctions
- Historical Harm
- Generational differences
- Body Language – eye contact, space
- Behavioral styles
- Stereotypes
- Language barriers – speed
- Modern appearances deceptive
- Humor, teasing

# WHAT IS TRADITIONAL KNOWLEDGE?

- It is practical common sense based on teachings and experiences passed on from generation to generation.
- It is knowing the country. It covers knowledge of the environment - snow, ice, weather, resources - and the relationships between things.
- It is holistic. It cannot be compartmentalized and cannot be separated from the people who hold it. It is rooted in the spiritual health, culture, and language of the people. It is a way of life.

## Cont.

- Traditional knowledge is an authority system. It sets out the rules governing the use of resources - respect an obligation to share. It is dynamic, cumulative, and stable. It is truth.
- Traditional knowledge is a way of life -wisdom is using traditional knowledge in good ways. It is using the heart and the head together. It comes from the spirit in order to survive.
- It gives credibility to the people.



# Challenges to the Use and Application of Traditional Knowledge and Wisdom

- The scientific community, as well as federal and state resource managers and policy makers address the issue of use and access of traditional knowledge and wisdom, for the most part, on a case-by-case basis rather than from long term, methodical, and strategic processes.
- Alaska Natives may serve as advisors, but rarely act as research partners or significant collaborators except to provide information in western scientific frameworks; most approaches have been on a case-by-case basis, depending on the interest and commitment of the individual researcher.

# Challenges (cont.)

- There are no policy-level directives or consistent financial support for use and application of traditional knowledge and wisdom, or for researchers to engage in cross-cultural awareness and communication orientation programs.
- Little is understood about how to communicate and exchange information between scientists and the Alaska Native Elders (the keepers of traditional wisdom and knowledge).
- Scientists and researchers have little or no grounding in cross-cultural communications or awareness protocols.

# Challenges (cont.)

- Scientists are unable to determine if the information they receive from Alaska Native observations is local, regional, or ecosystem-wide in scope and therefore discount the information they receive or label the information “anecdotal”.
- Alaska Natives, generally speaking, are skeptical of scientific motivations and thus may not cooperate, or cooperate minimally. Many believe either that the research is too limited in scope, or the data will be used to justify development in areas Alaska Natives want to protect for subsistence purposes.

# Challenges (cont.)

- Alaska Native observations of wildlife and environment may be taken into account when making research and management decisions; however, quantitative western scientific research systems are not equipped, without innovative approaches, to validate these qualitative ways of knowing. In addition, state and federal laws mandate the use of “best available science” in making management and policy decisions, effectively marginalizing the Alaska Native ways of knowing.
- Changes in government administrations have constantly shifted institutional commitment to appropriate use and access of traditional knowledge and wisdom for stewardship and research.

# Native Ways of Knowing Contribute to Understanding the Ecosystem

Qualitative understanding of:

- 1) How cultures are sustained in extreme climates
- 2) How/when/where to access subsistence foods
- 3) Daily and seasonal weather patterns
- 4) Sustainable food harvesting techniques and strategies
- 5) Wildlife biology and behavior patterns
- 6) How to adapt to climatic changes
- 7) Complex natural interrelationships
- 8) Abnormal natural phenomena in the context of long time periods
- 9) Qualitative historical knowledge and information of the natural world

## **Sentinels of Ecosystem Changes - Sea Ice Change,** Pungowiyi (2000), Noongwook (2000), Krupnik (2000)

- Residents from over 54 coastal villages in northern Alaska have reported changes in ice conditions from what they experienced when they were younger or what they considered normal.
- These changes in sea ice conditions appear to have begun in the 1970's.
- Residents commented that the sea ice conditions, including shorefast ice, are more variable, less predictable and more dangerous. Sea ice is considerably thinner, however, in some areas the ice is thicker and occasionally some persistent thick ice remains all summer in the Chukchi and Beaufort Seas.

# Sea Ice Change - Continued

- The ice edge is moving farther north in the summer. Consequently, seabirds which nest on the barrier islands and feed along the ice edge, are thinner as they have to fly farther and they are producing fewer young. These seabirds fly to the ice edge to feed on zooplankton and fish and then bring home food for their young.
- Residents in Shaktoolik, Gambell and Savoonga are seeing more spotted seals; a species associated with breakup and open water periods. The spotted seals are arriving earlier and remaining later in the year and hunters in Savoonga report that spotted seals are around all year.

# Sea Ice Changes - Continued

- Snowfall in the Bering Straits area has decreased, which favors certain species such as ptarmigan, but is detrimental to species that depend upon snow for denning, such as polar bears and ringed seals.
- The number of summer storms generating high waves has increased resulting in the erosion of land around some villages (notably Kivalina and Shishmaref) and washing up shallow water benthos onto beaches. Sea level appears to be rising.



# Sea Ice Changes - Continued

- Freeze up is later.
- Multi-year floes are reaching Barrow in November and December instead of during the fall.
- The shorefast ice seems to be melting more rapidly in the spring.
- The north Alaska coast is windier than in the past and sea ice is being driven up onto land at an alarming rate.

# Sea Ice Changes - continued

- Cloud cover is more persistent, making observation of celestial bodies associated with hunting, fishing, navigation and weather prediction more difficult.
- It is more difficult (and dangerous) to conduct subsistence activities associated with sea ice.

# Alaska Native Perspectives – Recent Observations

- a) an increasing number of salmon have parasites, and that some salmon flesh appears abnormal in consistency and color
- b) more salmon are appearing with abrasions on their skin, possibly due to lowered water levels in rivers
- c) halibut are disappearing around the Pribilof Islands, perhaps migrating to waters further north
- d) beaver are moving further north in Bering Sea connected rivers such that for the first time beaver are appearing inside the Arctic Circle
- e) sea ice is thinning, appearing later in the winter season, and withdrawing earlier than previously known; and
- f) there was a dramatic increase in the abundance of jellyfish, with the numbers now rapidly decreasing.

While observations collected by Alaskan Natives span many aspects of the ecosystem, few of these observations make their way into scientific literature.

# Benefits and Products

- We may be able to determine if observations of anomalies or changes in any parameter are local, regional, or may be ecosystem-wide in scope.
- We may be able to identify emergent trends at their outset.
- We may assist in developing hypotheses for declining marine species. Alaska Native observers may provide information that lead to development of new, additional research parameters that would not have been added otherwise, or would have been added later than would have been possible without the observer system.
- Local communities will be active participants and partners in research, ensuring more support for efforts of the scientists and enhancing opportunities for future partnerships.

# Benefits

- Usable data will be gathered that may provide some degree of ground-truthing to scientific data gathering.
- Student observers will increase their observation skills, contact with local Elders, and become more engaged in science that is immediately relevant to their communities.
- Properly constructed processes and protocols could be replicated in other areas until observer coverage includes many Arctic indigenous communities.
- Engaged Native organizations will become more active participants in scientific conferences and workshops thus increasing the likelihood that Natives will want and seek partnerships, collaboration, and scientific research funding.