



# The incorporation of traditional knowledge into Alaska federal fisheries management



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## ABSTRACT

Fisheries policy and management processes for federal waters off western Alaska currently lack consistent and considered integration of traditional knowledge (TK), TK holders, social science of TK, and subsistence information. The incorporation of these into fisheries work can lead to more informed, equitable and effective policy and management practices. This paper includes information and recommendations derived from previous work by the authors as well as from two community workshops with indigenous TK holders and fisheries experts. Discussions of TK and related concepts, TK research in the Bering Strait and Yukon River regions, and Alaska federal fisheries management-related institutions and processes as pertains to TK are presented. Substantive recommendations are provided for improving processes, increasing tribal representation, capacity building, effective communication, outreach and relationship-building, the incorporation of indigenous concerns and values, and regarding the development of a Fisheries Ecosystem Plan for the Bering Sea.

## 1. Introduction

Management of fisheries in federal waters off the coast of western Alaska (3–200 nautical miles offshore) is often a complicated and fraught process with multiple stakeholders and agencies involved. The primary body responsible for developing management strategies, policies and regulations related to Alaska federal fisheries is the North Pacific Fishery Management Council (NPFMC, or the Council) [78]. The NPFMC is one of 8 regional councils created by the Magnuson-Stevens Fishery Conservation and Management Act (MSA) [58]. The regional councils are overseen by the Department of the Commerce's National Marine Fisheries Service (NMFS), which is a part of the National Oceanic and Atmospheric Administration (NOAA; NMFS is often referred to as "NOAA Fisheries"). The councils are not part of NMFS or any other federal agency, but rather are an independent body which works with NOAA/NMFS. The councils develop management plans and regulations which can be (and almost always are) adopted by NMFS who then implements them and provides enforcement. This paper pertains to all the key institutions involved in western Alaska federal fisheries management (including those noted above, as well as other related institutions such as the North Pacific Research Board [NPRB]). As the NPFMC plays the key role in

developing management plans and regulations, considerations of its role are, however, the focal point of this paper.

As discussed further below, traditional knowledge (TK), TK holders, and the social science of TK have by and large not been incorporated by the NPFMC into their science, policy, and management initiatives, positions and actions for western Alaska federal fisheries, with the potential emerging exception of the development of a Bering Sea Fisheries Ecosystem Plan (FEP). Western Alaska tribes and others have expressed concern over this lack of integration, which has also been of particular concern given the seemingly high level of involvement of commercial fishing industry interests throughout the NPFMC decision-making process (see e.g. [25,86]). It is timely to consider what role TK and social science of TK can play in fisheries management processes, in particular with regard to the NPFMC as it continues its work on issues of critical concern to tribes and expands their work into other areas like the creation of a Bering Sea FEP.

In this paper, the authors provide a definition of TK, discuss TK and subsistence fishing (as well as social science relating to it) in western Alaska, evaluate key aspects of the historical and current state of affairs regarding TK and fisheries management in western Alaska, and finally provide a discussion of the value of integrating TK into Alaska federal

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Fig. 1. Study area.

fisheries management accompanied by recommendations for this integration (Figs. 1 and 2).

This paper focuses heavily on data drawn from work with Bering Strait and Yukon River indigenous communities. These western Alaska communities are a major point of impact from Alaska federal fisheries activities and management, and are also within the areas of expertise of the authors. The recommendations in this paper, as well as the tribal perspectives presented within it, have been formulated based on over a decade of social science research conducted by the authors in and with Alaska Native fishing communities in western Alaska. Additionally, two workshops were held by the authors (one in Golovin and one in Russian Mission) specifically to solicit comments and input on this paper and its recommendations. Each workshop was convened with a group of experts chosen by the tribal governments of the two communities. Workshop participants reviewed drafts of this paper, had extensive conversations with the authors, and provided detailed feedback on manuscript content, including the recommendations section. While this paper reflects the thoughts and ideas gleaned from previous work with many western Alaska tribes, it was most intensively reviewed and commented on by fisheries experts in these communities.

## 2. Traditional knowledge and subsistence

### 2.1. Overview of traditional knowledge

Building upon the work of Raymond-Yakoubian and Raymond-Yakoubian [96], the authors will forward and utilize the following definition of TK for this paper:

Traditional Knowledge (TK) is a living body of knowledge which pertains to explaining and understanding the universe, and living and acting within it. It is acquired and utilized by indigenous communities and individuals in and through long-term sociocultural, spiritual and environmental engagement. TK is an integral part of the broader knowledge system of indigenous communities, is transmitted intergenerationally, is practically and widely applicable, and integrates personal experience with oral traditions. It provides perspectives applicable to an array of human and non-human phenomena. It is deeply rooted in history, time, and place, while

also being rich, adaptable, and dynamic, all of which keep it relevant and useful in contemporary life. This knowledge is part of, and used in, everyday life, and is inextricably intertwined with peoples' identity, cosmology, values, and way of life. Tradition – and TK – does not preclude change, nor does it equal only 'the past'; in fact, it inherently entails change.

As Berkes and Folke note, “[t]he word *traditional* is used to refer to historical and cultural continuity” ([12]: 5); change, growth, and loss may occur within a body of TK, and this itself is part of a constant process of contemplation, discussion and negotiation within indigenous societies (*ibid.*, [96]: 8).

The authors posit that, as bodies of TK contain systematic interconnections between sociocultural, environmental, spiritual, and other phenomena, TK pertains necessarily to, among other things, the environment, and has an ecological or ecosystematic perspective. The literature discussing and documenting the environmental, ecological, and ecosystematic aspects of TK, and the interconnections between the environmental and other aspects of TK, is vast (e.g. [10,62,41,11]).

This paper will also stress, in addition to the importance of TK itself, the importance of indigenous voices regardless of their, or their knowledge's, connection to 'tradition' – that is, the authors recognize the importance of the crucial epistemic (as well as policy and management) contributions to marine policy processes that indigenous people in general can make.

How to interface TK and western science, policy and management is a complex, unresolved, and contentious issue. The same can be said of how best to characterize and compare TK and science in relationship to each other (see e.g. [13,14,10,19,40,61,110]). TK has many fundamental parallel and similar qualities and characteristics to science, albeit sometimes with different foci and contexts, in addition to having contrasting and dissimilar characteristics and qualities (e.g. *ibid.*, and [42]: 27). Likewise, as with its potential interfacing with western policy and management (see e.g. [41]), various aspects of TK can be more or less compatible or, alternately, incompatible with western science. This paper will not take a position as to whether and how much TK should be viewed as scientific, but rather will stress that TK should be considered equal to science from epistemic, policy, and management perspectives.

### 2.2. Overview of subsistence and traditional knowledge in the Bering Strait and Yukon River regions

By the term “subsistence,” the authors employ the senses commonly used by indigenous residents of this region (as opposed to, for example, the State of Alaska's understanding). The indigenous perspective encompasses hunting and gathering related activities which have a deep connection to history, culture, and tradition, and which are primarily understood to be separate from commercial activities.

Indigenous communities along the Bering Sea coast and the Yukon River are very diverse culturally (being primarily Aleut, Yup'ik, St. Lawrence Island Yupik, Inupiaq, and Athabaskan). Also diverse are the various ecosystems within which these communities are located. The Bering Sea area extends from the Aleutian Islands north to the Bering Strait, and the Yukon River extends 2200 river miles inland. Because of the extent of these areas, it is impossible to give one description of the seasonal round of subsistence activities carried out by Bering Sea and Yukon River residents. The communities located here all have residents that conduct subsistence activities.

The exact timing of subsistence harvests varies by area within this large region, as do the particular species harvested by each community. Some of the major foods harvested by these communities include: all 5 species of salmon, halibut, herring, various other non-salmon fish, caribou, muskox, moose, bowhead whales, beluga whales, ice seals, walrus, bears, birds, berries, and other plants. Harvests of subsistence foods largely follow the seasonal migrations of different species,

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