

# NOAA Guidance and Best Practices for Engaging and Incorporating Indigenous Knowledge in Decision-Making

## Introduction

Indigenous Peoples across the United States have been stewards and part of their environments for thousands of years. Throughout this time they have amassed an immense amount of knowledge informed by unique ways of knowing and being. This knowledge continues to grow today, built upon a living process over a millennia<sup>1</sup>. To truly understand the environment and to have adaptive and holistic decision-making, we need to bring together Indigenous Knowledge and science. Bringing forward equitable engagement practices for the involvement of Indigenous Knowledge will inform and enrich many aspects of NOAA's work, allowing us to better understand Earth and ocean systems and fulfill our management responsibilities. As a continuation of our commitment to engage meaningfully with federally recognized Tribes, non-recognized Tribes and other Indigenous Peoples, NOAA is building upon the "[NOAA Procedures for Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations](#)" (Consultation Handbook) to provide guidance on including IK in federal decisions. This document goes beyond the Consultation Handbook to recognize and be inclusive of all Indigenous Peoples within the United States and the importance of equitable engagement and involvement of their knowledge (e.g., American Indian, Alaska Natives, Native Hawaiians, Chamorro, American Samoans, and Taíno).

NOAA encourages the inclusion of IK, as appropriate and to the extent practicable and permitted by law, in the line offices' environmental science, policy and decision making process, to better facilitate consultations as required by [E.O 13175](#), fulfill federal trust responsibilities, respect treaty rights, understand environmental justice concerns as directed by E.O. 12898, inform agency decision making, and to build partnerships with indigenous Peoples.

Indigenous Peoples refer to their knowledge by different terms (e.g. Indigenous Knowledge, traditional knowledge, hunters knowledge). While it is important to respect and refer to knowledge as Indigenous Peoples distinctly reference their own knowledge, NOAA uses the term "IK" in this guidance as a broadly inclusive term aligned with the terminology used by the Council on Environmental Quality (CEQ) in 2022 interagency guidance on the use of IK in federal decision-making. The CEQ guidance "reaffirms that Federal agencies should recognize and, as appropriate, apply Indigenous Knowledge in decision making, research, and policies across the Federal government and is founded on the understanding that multiple ways of knowing or lines of evidence can make for better-informed decision making." This NOAA

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<sup>1</sup>Indigenous Knowledge is a systematic way of thinking applied to phenomena across biological, physical, cultural, and spiritual systems. It includes insights based on evidence and acquired through direct and long-term experiences and extensive and multigenerational observation, lessons, and skills. It has developed over millennia and is still developing in a living process, including knowledge acquired today and in the future, and it is passed on from generation to generation. Inuit Circumpolar Council. 2022. Circumpolar Inuit Protocols for Equitable and Ethical Engagement. Accessed on Sept. 22, 2022 at <https://iccalaska.org/wp-icc/wp-content/uploads/2022/06/EEE-Protocols-LR-1.pdf>

guidance is designed to build on that interagency guidance with a focus on NOAA’s mission, capabilities and authorities.

The NOAA Consultation Handbook, defines IK as “a cumulative body of knowledge, practice and belief evolving by adaptive processes and handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment.”<sup>2</sup> Moreover, the CEQ guidance adds that “Indigenous Knowledge is based in moral and ethical foundations often grounded in social, spiritual, cultural, and natural systems that are intertwined and inseparable, thus offering a holistic perspective. Indigenous Knowledge is inherently heterogeneous due to the cultural, geographic and socioeconomic differences from which it is derived, and is ... deeply connected to the Indigenous Peoples holding that knowledge.”

Knowledge systems consist of agents, practices, and institutions that organize the production, transfer, and use of knowledge. Knowledge systems are the foundation for all societies, are connected to our cosmologies (ways of viewing the world), often reflect our values, support and guide behavior, communication, decision-making, and other aspects of life, including governance. In relation to Indigenous Peoples, different types of IK (e.g., taxonomic, spatial, temporal) are often held by specific knowledge holders (agents) and manifested in the various parts of their unique cultural traditions, such as language, customs, and social institutions. Like all knowledge, IK and its systems are dynamic and evolve over time, integrating new information and experiences.<sup>3</sup>

This guidance focuses on knowledge held by indigenous peoples, as distinguished from “local ecological knowledge” held by long-time residents in an area, or long-term participants in an activity or industry. Although such local knowledge has importance to NOAA’s work, the focus of this guidance is on the incorporation of knowledge from indigenous peoples.

## **Objective**

NOAA recognizes the importance of Indigenous peoples’ knowledge for understanding the environment, adapting to environmental change, and mitigating negative environmental impacts. Therefore, NOAA has developed this guidance document to provide best practices designed to ensure that the sharing and application of IK is responsible, effective, and mutually beneficial.

## **Context**

Although the integration of IK can improve the knowledge foundation upon which federal decisions are made, Indigenous communities may be reluctant to share this type of information out of concern that it be misused or mis-appropriated, because sharing certain parts of this knowledge to those outside the group or who lack specified training and understanding of the cultural context may be forbidden, or based on lack of trust in federal agencies due to historical injustices. IK has been excluded, marginalized, misinterpreted, appropriated, or undervalued in U.S. policy making frameworks. Examples of potential

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<sup>2</sup> Berkes F., J. Colding, and C. Folke. (2000). Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications*, 10(5), 1251-1262.

<sup>3</sup> Tengö, M., R. Hill, P. Malmer, C. M. Raymond, M. Spierenburg, F. Danielsen, T. Elmqvist, and C. Folke. (2017). Weaving knowledge systems in IPBES, CBD and beyond – lessons learned for sustainability. *Current Opinion in Environmental Sustainability*, 26-27, 17-25.

risks to Indigenous Peoples of sharing IK include the misuse of intellectual property, confiscation of physical property such as artifacts, confidentiality concerns, restricted resource access, misaligned expectations, social retaliation, damaged social networks, restricted research opportunities, knowledge misinterpreted and treated anecdotally, and knowledge being translated into another knowledge system, cherry picked, and has resulted in threats to Indigenous communities self-determination and sovereignty. Engaging with Indigenous Peoples and their knowledge systems "involves encounters of different world views, identities, practices, and ethics, in a context of asymmetries of power and rights."<sup>4</sup> This guidance aims to acknowledge this context and offer best practices for successful communication, engagement and knowledge sharing to improve federal decision-making.

This guidance is not intended to supersede any obligation of NOAA to consult IK holders with whom they are collaborating. Nor is this guidance intended to supersede any Executive Orders, policies or laws requiring consultation with federally recognized tribes and Alaska Native Corporations. This guidance and its implementation does not create enforceable rights or a cause of action under law.

## Principles

This guidance is premised upon three foundational principles applicable to the use of IK by decision makers: 1) Cause No Harm; 2) Free, Prior and Informed Consent; and 3) Knowledge Sovereignty. These principles are intended to guide the motivation, character, and intent of collaborative initiatives undertaken by NOAA and IK holders. These principles recognize that each indigenous community has its own customs, practices and requirements that may guide IK interactions with outside entities and may restrict how different facets of IK are shared and used by tribal and non-tribal entities.

*"Cause No Harm."* This principle involves identifying and avoiding risks that could lead to misappropriation of IK. Specifically, it includes identifying any potential intellectual property concerns that may result from sharing IK information related to natural and/or cultural resources. To do this successfully, NOAA staff are encouraged to:

1. Consult with the NOAA Office of General Counsel on the potential intellectual property and data confidentiality implications of any prospective IK collection;
2. Consult with Tribal Liaisons for NOAA and the relevant Line Office;
3. Consult with the Institutional Review Board for any partner agencies, organizations, or universities that may be subject to Human Subjects Review;
4. Consult with the NOAA Office of General Counsel regarding data collection that involves asking identical questions to 10 or more individuals;
5. When individuals voluntarily participate in a scientific process that involves IK, it may also be considered citizen science. Examples include individuals assisting in gathering IK or documenting traditional practices involving natural resources. Citizen science is defined by the Crowdsourcing and Citizen Science Act (15 U.S.C. § 3724) as "a form of open collaboration in which individual or organizations participate voluntarily in the scientific process." Define clearly

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<sup>4</sup> Tengö, M., R. Hill, P. Malmer, C. M. Raymond, M. Spierenburg, F. Danielsen, T. Elmqvist, and C. Folke. (2017). Weaving knowledge systems in IPBES, CBD and beyond – lessons learned for sustainability. *Current Opinion in Environmental Sustainability*, 26-27, 17-25.

and carefully, in conjunction with indigenous peoples, the roles and responsibilities of all partners;

6. Define, in conjunction with indigenous peoples, what information will be shared and under what context;
7. Establish at the outset of the project, in conjunction with indigenous peoples, the acceptable use and means to interpret or share information; and,
8. Demonstrate trust and respect for Indigenous Peoples Knowledge and community members through honesty, accountability, and equity. Be mindful of body language, ways of speaking, and tones in your communications. Listen more than you speak and look to Indigenous Partners for guidance.

*“Free, Prior and Informed Consent.”* The principle of Free, Prior and Informed Consent (FPIC) is a critical element of IK collection efforts involving indigenous peoples. Following is a summary of these concepts:

- Free: IK holders should not be coerced or pressured into sharing IK with the federal government.
- Prior: This term ensures that, procedurally, IK holders should be involved at the earliest stage. Prior refers to a process to obtain consent before IK is accessed. For some undisclosed knowledge, consent may not be given.
- Informed: Existing treatments of the meaning of "informed" have emphasized the need to address costs and benefits, risks and opportunities, and the facts surrounding any given situation.
- Consent: This term ensures that processes for obtaining consent should first affirm the right of IK holders to decline to engage in mobilizing IK for cooperative projects, and that saying "no" should have no legal implications for respecting indigenous rights and interests or fulfilling any trust obligations.<sup>5</sup>

*Knowledge Sovereignty.* The principle of knowledge sovereignty is described in Article 31 of the United Nations Declaration of Rights and Indigenous Peoples (UNDRIP):

Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions.

## Guidance

Best available science should incorporate IK and other related indigenous practices. Ensuring ongoing two-way communication with IK holders through transparent processes and good governance at all levels, including through appropriate coordination mechanisms, is essential to establishing the trust necessary for responsible collection and integration of IK into decision-making. IK should be respected as belonging to the indigenous knowledge holders. Depending on the situation, it may be inappropriate to

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<sup>5</sup> Although FPIC draws upon the concepts outlined in the United Nations Declaration of Rights and Indigenous Peoples (UNDRIP), as used in this guidance FPIC is relied upon specifically to guide IK activities. As noted in the “Announcement of U.S. Support for the United Nations Declaration on the Rights of Indigenous Peoples,” the United States recognizes the significance of UNDRIP’s provisions on free, prior and informed consent, which the United States “understands to call for a process of meaningful consultation with tribal leaders, but not necessarily the agreement of those leaders, before the actions addressed in those consultations are taken.”

suggest that IK should be “validated”.<sup>6</sup> Rather, Indigenous Peoples’ own internal methods of defining, valuing, and validating their own knowledge/knowledge systems should be respected and trusted.

The concept of “co-production of knowledge” is a “process that brings together Indigenous Peoples’ knowledge systems and science to generate new knowledge and understandings of the world that would likely not be achieved through the application of only one knowledge system.”<sup>7</sup> As an agency that provides science to support management decisions, NOAA has an opportunity to broaden its use of IK in support of equitable engagement, trust responsibilities, and better management outcomes. Co-production of knowledge relies on equity, and may require new approaches that address past and current inequities. In “A Framework for co-production of knowledge in the Arctic,” the authors note:

Another valuable concept that applies co-production principles, known as “two-eyed seeing,” brings together different epistemologies in research. The concept was described in Bartlett et al. (2012:295) by Mi’kmaw elder Albert Marshall as, “to see from one eye with the strengths of Indigenous knowledges and ways of knowing and from the other eye with the strengths of Western knowledges and ways of knowing and to using both these eyes together, for the benefit of all.” ...As with our CPK framework (Fig. 2), reciprocity is an important characteristic of the two-eyed seeing approach that embodies the mutual respect for the contributions of different knowledge systems and their respective importance in generating understandings of the world.”<sup>8</sup>

NOAA staff should consider ways to co-develop and include IK for decision-making through multiple programs and approaches. Long-term research programs and partnerships may offer opportunities to jointly identify priorities and design research, while other decision-making processes may be on shorter timeframes. While the latter may not offer as much latitude for co-development of knowledge, there are still steps NOAA staff can take to include IK.

#### Text Box: Bridging Traditional and Western Fisheries Knowledge in Alaska through Tamamta

While Alaska Natives make up nearly 20% of the state’s population, less than 3% of students and less than 1% of faculty in the College of Fisheries and Ocean Science are Alaska Native. In 2020, an interdisciplinary team of UAF faculty members and other partners initiated the first cohort of Tamamta Fellows at UAF. Tamamta is the Yup’ik and Sugpiaq word meaning 'all of us,' so the program is centered on elevating 14,000+ years of Indigenous stewardship and bridging Indigenous and Western sciences to transform graduate education and research in fisheries and marine sciences.

A key purpose of the program is to help guide students as they use a co-production of knowledge approach to explore key questions in fisheries and marine research, education, and management. The

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<sup>6</sup> It should be noted that many large-scale environmental changes described by indigenous populations can, in fact, be tied to events from thousands of years ago that are known to us through science (Nunn, P. (2018). *The Edge of Memory: Ancient Stories, Oral Tradition and the Post-Glacial World*. London, Bloomsbury.).

<sup>7</sup> Ellam Yua, J. Raymond-Yakoubian, R. Aluaq Daniel. and C. Behe. 2022. A framework for co-production of knowledge in the context of Arctic research. *Ecology and Society* 27(1):34. <https://doi.org/10.5751/ES-12960-270134>

<sup>8</sup> Ellam Yua, J. Raymond-Yakoubian, R. Aluaq Daniel. and C. Behe. 2022. A framework for co-production of knowledge in the context of Arctic research. *Ecology and Society* 27(1):34. <https://doi.org/10.5751/ES-12960-270134>

team builds on years of cross-cultural and cross-disciplinary work to address pressing questions of equity and sustainability of life and relations in Alaska. Tamamta addresses a huge problem in Alaska – the exclusion and erasure of Indigenous peoples and their knowledge systems. As such, the Tamamta Program has relevance to NOAA’s work on environmental justice, honoring tribal sovereignty and self-determination, elevating indigenous knowledge into the best available science, and building a climate-ready nation. The majority of the Tamamta fellows grew up in rural Indigenous communities. The program is supported by the National Science Foundation Research Traineeship and Navigating the New Arctic Programs. NOAA is one of several partner organizations where students have opportunities to receive on-the-job training or do research.

#### Starting a IK Dialogue:

NOAA respects the inherent value of IK and intends to include and give appropriate weight to IK that Indigenous groups agree is relevant to specific projects and management issues. If a community chooses to discuss IK with NOAA, the following questions will help to clarify the scope of and process for the discussions:

- 1) What is the purpose of gathering IK? Are there shared priorities that can be identified between NOAA and tribal/indigenous partners?
- 2) Should we be aware of any tribal/native laws or policies established regarding the use of IK?
- 3) Does the IK holder believe the knowledge to be subject to any applicable intellectual property rights (e.g., copyright, patent)?
- 4) What specific role would the Indigenous group like to have in the identification of relevant IK related to a specific area or question?
- 5) How will the Indigenous government(s) or their duly designated representative(s) prefer to transmit the information?
- 6) Is the IK holder(s) requesting confidentiality for the IK? Have they been informed that there are limitations on the agency's ability to protect IK from public disclosure (which includes NOAA’s obligations under the Freedom of Information Act), and alternatives to protect sensitive information?
- 7) Is anonymity being requested by individuals sharing IK?
- 8) Have you discussed how the IK will be incorporated with existing information and processes to impact decision-making?
- 9) How does the IK holder wish to be credited or cited for the use of their knowledge in the decision-making process?
- 10) What methods should be used for gathering and analyzing IK?
- 11) Should a Memorandum of Agreement or other documentation be required or recommended to memorialize FPIC prior to sharing of IK?

#### Methods for Identifying and/or Collecting IK<sup>9</sup>:

Below are some of the methods that can be used to identify IK. NOAA staff should first engage with tribal governments and/or indigenous groups leaders to agree on a framework for sharing IK, such as answering the questions listed above. No data would be collected until a preferred method is established with Indigenous group leaders and, through them or previous fieldwork, with IK holders. IK data is best collected in partnership with Indigenous organizations and by experienced social scientists,

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<sup>9</sup> Bernard, H. R. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Lanham, MD: Rowman & Littlefield.

ideally someone who has existing knowledge of and/or relationships with the Indigenous group in question.

- *Literature review* is an important component in understanding previously gathered IK (Bernard 2017:76-82). Many publications are publicly available, either on the web, through NOAA Library sponsored subscription services, membership in scientific associations, and through interlibrary loan. Many Indigenous groups in the United States have been studied by socio-culturally-focused disciplines such as anthropology and sociology at one time or another. Some indigenous scientists and their communities have published their own documents on their own history and cultural practices. During a literature search, ethnographies as well as collections of stories, myths, legends, and songs will be instrumental to one's research on societies, clans, keepers of knowledge, ceremonies, uses, processes, and interactions. Researchers should work with IK holders to share information about the project and seek their guidance on sources.
- *The semi-structured interview* is a standard ethnographic method for gathering information. Semi-structured, or in-depth interviewing uses open ended questions, but follows a general guide and covers a list of topics (Bernard 2017:164-165). Use of a guide allows for collection of reliable, comparable qualitative data across multiple interviewees. For example, a guide about a particular species may include such topics as its habitat, interactions with other species, related traditions and ceremonies, who or what positions hold knowledge of and rights to the species, taboos, cyclical events, and vocabulary. These will not necessarily be addressed in any specific order. Begin with the open-ended topic questions (e.g., Can you tell me about... or How did you learn about...). Ask additional probing questions as necessary (to ask for more information or clarification on a point) throughout the interview, but the detail of content and flow is directed by the interviewee. Some topics may be discussed in-depth while others are only touched upon.
- *Focus groups* are a group interview (usually 6-12 people) facilitated around set topics and materials (Bernard 2017:179-183).<sup>10</sup> The group dynamic of a focus group can allow for the discovery of additional topics of interest that might not come up in individual interviews. A focus group can also be used to explore the normal variations between general rules and specific behaviors under varying conditions. In general, focus groups can be helpful in determining who within a community is most knowledgeable about the species or ecosystem being studied. However, for IK research it is often best to go through existing official contacts with a particular indigenous group to request the names of IK holders who hold specific types of knowledge. This is a matter of respect and proper procedure.
- *Participant observation* is a research method, often used in anthropology and sociology, which involves a researcher studying a group by sharing in their lives and activities. Information is recorded about what people do and say, and how they describe specific topics and under what circumstances. Every culture has standard norms of behavior that anyone can articulate and these may be readily provided in interviews. There may be some exceptions within the culture. Participant observation can help the researcher identify these normal inconsistencies and ask about them more specifically in order to fully understand the complexities of the behavior in question. It can also provide awareness of apparent rules for behavior in each culture (including

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<sup>10</sup> Note that standard questions posed to ten or more individuals by the federal government may trigger the requirement for prior approval by the Office of Management and Budget pursuant to the Paperwork Reduction Act. 44 U.S.C. §§ 3051 *et seq.*

your own) that no one may have mentioned because they were so deeply engrained in the culture that no one would think to mention them. If it is what people do, it may never occur to anyone that it might be done differently. There are similar “obvious” rules for interacting with the environment that may not come up in an interview, but may be noted when participating in daily activities (re. Becker and Geer 1957).

- *Language* can provide insight into a culture and its view of the natural world. Some indigenous people now have written dictionaries for their languages. A native speaker can provide information about words, their meanings, associations and similarities.
- *Oral history* is, in this context, the process by which indigenous people interpret their lifeways and beliefs to outsiders, or teach or remind other members of the group about them. The person providing the information during an interview, often an elder, will be sharing lifeways surrounding the topic in question. Often, this person is highly respected in that culture. The researcher should begin by asking about a general topic (e.g., Please help me to understand salmon). Bernard (2017:168)<sup>11</sup> notes that the rule for oral histories is: “Get people onto a topic of interest and get out of the way. Let the informant provide information that he or she thinks is important.” This technique of asking open-ended questions will also help avoid inadvertently offending the person being interviewed.

#### Information/Data Quality:

If communities understand the intended uses of information/data, they may be more likely to provide access and/or contribute their knowledge and data to the process. Once data has been collected, and a preliminary analysis is conducted, NOAA should share these results with the indigenous communities and provide opportunities for feedback before finalizing results. Final results used to inform Federal decision making and policy development should also be shared. Knowing that the data they submitted was integral to Federal decision making - particularly resource allocation and service provision decisions – is essential for establishing a long-term relationship of scientific collaboration.

In documenting knowledge processes (those of defining, valuing, and validating knowledge) the information should go through a systematic vetting process, established in the methods section, but different levels of “validation” may be appropriate or inappropriate depending on the research question (or form of IK), method for collecting IK, and research and management goals.

#### Communication and Training:

Working with IK holders and community leaders to develop a shared understanding of why the research and data are needed, the expected relationship between the researchers and the community, and planned uses of the data prior to collecting data is essential. The information/data collection process should be discussed and agreed upon prior to data being collected. Data forms and requested information should be clearly defined and reviewed by relevant tribal and indigenous representatives, when necessary, training should be provided to communities regarding collection of information.

NOAA can help to improve the quality and quantity of data collected in communities by providing clear instructions and definitions of agreed upon data variables to communities and by offering organized training sessions or other forms of technical assistance regarding data collection. Initial scoping

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<sup>11</sup> Bernard, H. Russell. (2017). Research methods in anthropology: Qualitative and quantitative approaches. Rowman & Littlefield.



meetings may be necessary to define the kinds of IK that may be shared. For example, it may be helpful to include contact information on data forms for a specific staff member who is available to guide communities through data collection. Training is key for survey technicians, scientific staff, and community data collection personnel to ensure that best practices for conducting surveys, interviews, or other data collection methods are being used and we are ensuring respectful interactions with our native communities. Whenever possible, researchers with a prior relationship to the indigenous group should be involved or consulted to facilitate good working relationships.

*Data Confidentiality:*

*NOAA employees should not begin obtaining Indigenous Knowledge without first establishing mutual trust, respect, and recognition of knowledge sovereignty.* Prior to collection or use of IK, it is strongly recommended that a clear understanding and agreement are established about data confidentiality between and among all parties directly involved. NOAA programs should consult with NOAA General Counsel before meeting with a IK holder to avoid potential issues related to data confidentiality.

The development of written data sharing and confidentiality agreements that outline the purpose of data collection, intellectual property and data ownership, privacy, and use is recommended. The agreement should also include ways in which data will not be used and any applicable procedures in place to protect sensitive data, including the identity of individual communities or informants. It is important to communicate precisely about the ways in which data will be secured and protected, and the circumstances in which data may or may not be used, including being made publicly available. It is important to tell the community that their data, generally, may nonetheless be subject to release under the Freedom of Information Act (FOIA) or other legal requirements.

*Best Practices for Identifying and Considering IK:*

*Respectful communication and trust building:*

- Respect and seek to understand each unique indigenous group and their knowledge system(s).
- Recognize that IK holders are the authorities on their own knowledge systems, and deserve to be treated as such. Ensure that the people tasked with working with communities have knowledge, experience and training in working with indigenous peoples and IK and are aware of the fact that trust must be developed first, which can often be a long process.
- Be humble and open to getting advice from those who know the communication protocols and how to identify community authorities and experts.
- Find out how to follow communication protocols and respectfully identify authorities in order to develop an appropriate approach for working with IK systems in a partner community (e.g., what are common terms used in the community? What types of questions are appropriate for outsiders to ask? Who will delegate authority to speak for the indigenous community and how is that decision made? Who is a contact person/go-between in the community who will help educate researchers?)

*Data sovereignty and protection of sensitive information:*

- Understand and clearly disclose any constraints or limitations regarding the ability to protect sensitive or confidential information before seeking access to IK. Consult with NOAA General Counsel, and specify what measures will be taken to protect sensitive or proprietary information (understanding that there are often legal limits to what protections can be provided by NOAA for

information in the government's possession). Remember to discuss and come to agreement about any concerns from the community prior to beginning conversations around IK.

- If the indigenous government or knowledge holder requests protection for IK that may be shared, agency staff should not write down or electronically record confidential or sensitive information. Agency staff should also discuss with the IK holder the advantages and disadvantages of keeping IK confidential. For example, if information is not recorded as part of the administrative record, the agency cannot rely on that IK as part of its basis for the federal decision.
- Respect the rights of Indigenous governments and/or IK holders to withdraw participation and access to IK at any time during the collaborative process. Some reasons for withdrawing participation may not be evident to those not operating within a given IK system and the communities, governments, or individuals should not be penalized for doing so.
- NOAA should work to share and archive any data collected in cooperation with IK holders and communities. IK holders and communities should review NOAA products that include IK before publication. Any confidential or proprietary data that has been provided for public release solely in aggregate form must not be shared in disaggregated form -- except under any legal requirement (e.g. Freedom of Information Act) and never without prior notification of the provider of that particular IK.

#### *Applying IK:*

NOAA makes decisions based on multiple factors and considerations, such as statutory requirements, best available science, and other factors. IK will not be the sole determining factor in agency decision-making, but should be integrated into the best available science to support decision-making. When applying IK:

- Collaborate with Tribal and Indigenous partners from the beginning to develop agreed-upon methods for each step of bringing IK into initiatives, rule makings or other Federal actions.
- When appropriate and only with the Free, Prior and Informed Consent of IK holders, decision-makers should consider and use IK.
- As appropriate, explain and document how tribal treaty rights, government-to-government consultations, and IK help inform agency actions in decision documents and administrative records.
- Understand and implement into your actions and processes community standards, protocols, and legal requirements for all federal project team members participating in projects related to IK.

#### **Examples of Including IK:**

The NOAA Preserve America Program funded a project titled: *Traditional Ecological Knowledge: Reconstructing the Historical Run Timing and Spawning Distribution of Eulachon Through Tribal Oral History*. This was a joint IK project by the NOAA Fisheries' West Coast Region and the Cowlitz Indian Tribe located in Longview, Washington.<sup>12</sup>

Coastal Indian Tribes, such as the Cowlitz Tribe, and First Nations of the Pacific Northwest have fished and traded for eulachon (*Thaleichthys pacificus*) in tributaries of the Columbia River for many generations. The cultural significance of this species is immense to these tribes, "and eulachon appears as a prominent figure in ancestral native myths." Historically returning to Columbia River tributaries in

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<sup>12</sup> NOAA Fisheries and Cowlitz Indian Tribe. 2010. Traditional Ecological Knowledge: Reconstructing the Historical Run Timing and Spawning Distribution of Eulachon Through Tribal Oral History. National Marine Fisheries Service and the Cowlitz Indian Tribe. NOAA Preserve America Program 2010. Order Number: AB133F10SE3168.

the late winter and early spring when other food supplies were scarce, this species is commonly known as the “savior” or “salvation fish”.

The rest of the world was introduced to eulachon in February 1806, when Meriwether Lewis described this previously “unknown” fish as “superior to any other fish I ever tasted.” Since then, settlers to the Columbia River Basin identified eulachon as an important resource and developed extensive commercial and recreational fisheries that continue to the present.<sup>13</sup>

Despite the economic, cultural, and ecological importance of the southern distinct population segment (DPS) of the Columbia River eulachon run, the timing and distribution of this species was poorly known. The goal of the joint Federal/Tribal IK project was to reconstruct historical run timing and spawning distribution of eulachon through the use of tribal oral history gathered from elders of the Cowlitz Indian Tribe and other Tribal elders who traveled to the tributaries of the Lower Columbia River to fish. In a summary report of eulachon, NOAA’s Northwest Fishery Science Center specifically stated, “...there is a largely untapped store of knowledge on eulachon residing in the culture and traditions of Native American Tribes and First Nations of Canada...” Native American tribal oral histories aided in the identification of key spawning habitat, timing of eulachon runs, and run differences between tributaries. The joint IK project was described as “...an invaluable resource that can capture much more information than simple presence/absence or extent of distribution.”<sup>14</sup> This information directly enhanced NOAA Fisheries and Native American Tribes in their efforts to identify and protect critical habitat, increase abundance of the species, and achieve species recovery.

NOAA Fisheries issued a Final Listing Determination for the southern DPS of eulachon as a threatened species under the Endangered Species Act in March 2010.<sup>14</sup> IK provided by the Cowlitz and other Columbia Basin Tribes was used in designation of proposed critical habitat for the Southern Distinct Population Segment of Eulachon<sup>15</sup> and to develop actions listed in the *Endangered Species Act Recovery Plan for the Southern Distinct Population Segment of Eulachon (Thaleichthys pacificus)* completed in 2017.<sup>16</sup> The results of the IK project jointly developed by NOAA Fisheries and Native American Tribes had an immediate and direct effect on important efforts to protect (through designation of critical habitat) and guide actions to recover (through development of a recovery plan), this listed species.

### **Mai Ka Pō Mai - Integrating Hawaiian Culture into Management of Papahānaumokuākea**

Papahānaumokuākea Marine National Monument has been elevating ITEK in co-management with a mission to ensure ecological integrity and achieve strong, long-term protection and perpetuation of Northwestern Hawaiian Island ecosystems, Native Hawaiian culture, and heritage resources for current

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<sup>13</sup> At its height, the Columbia River Basin eulachon fishery produced commercial harvests in excess of 3 million pounds and supported large recreational harvest as well (NOAA Fisheries and the Cowlitz Indian Tribe 2010).

<sup>14</sup> Federal Register, Vol. 75, No. 52. March 18, 2010. Endangered and Threatened Wildlife and Plants: Threatened Status for Southern Distinct Population Segment of Eulachon. Final Rule. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 13012-13024.

<sup>15</sup> Federal Register, Vol. 76, No. 3. January 5, 2011. Endangered and Threatened Wildlife and Plants: Designation of Critical Habitat for Southern Distinct Population Segment of Eulachon. Proposed Rule; request for comment. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. 515-536.

<sup>16</sup> National Marine Fisheries Service. September 2017. Recovery Plan for the Southern Distinct Population Segment of Eulachon (*Thaleichthys pacificus*). National Marine Fisheries Service, West Coast Region, Protected Resources Division, Portland, OR, 97232.

and future generations. The backbone of building a firm foundation to apply ITEK to management has been pursuing strategies for meaningful inclusion of indigenous leadership and recognizing that ITEK is an indigenous science that contributes to the mission of the monument. The long-term planning needed to effectively apply ITEK to management hinges on empowering indigenous peoples within research, management, and policy who are well-positioned to work collaboratively from the agency to Native Hawaiian communities. These positions tap into community networks and enhance the longevity of management and meaningful relationships to Native Hawaiian communities. More than a decade of engaging with Native Hawaiian communities throughout Hawai'i and working closely with the Cultural Working Group reinforced the presence of Native Hawaiians in key research, management positions, and political advocacy. Many decades of this work have led to Mai Ka Pō Mai, the historic Native Hawaiian guidance document to be infused in all aspects of biocultural management.

Mai Ka Pō Mai is an historic guidance document created to help integrate Hawaiian culture into the management of the Papahānaumokuākea Marine National Monument, created with involvement of multiple state and federal agencies and NGOs, including NOAA (see Kawaiola article). Mai Ka Pō Mai is a culmination of over 10 years of working collaboratively with the Native Hawaiian community, specifically the Papahānaumokuākea Native Hawaiian Cultural Working Group, and its managing agencies to provide an indigenous perspective to help guide Papahānaumokuākea management (see Office of Hawaiian Affairs report). It uses traditional concepts and cultural traditions related to Papahānaumokuākea in its structure to set a foundation for how management should be conducted that will be used to help the co-managers think about activities in (and about) Papahānaumokuākea through a Native Hawaiian perspective. This living document will guide research and management for years to come (see OHA info on Voices of Papahānaumokuākea).

The application of ITEK is demonstrated through targeted approaches to: 1) position indigenous communities at the core of management and policy as a co-manager, 2) support the integration of multiple knowledge systems to increase Native Hawaiian participation in research, management, education, and policy, and 3) respect and value the guidance of indigenous people who cultivate lasting relationships to Native Hawaiian communities.

### **Chumash Knowledge Informing Management and Designation of National Marine Sanctuaries**

In 2014, NOAA's Office of National Marine Sanctuaries began development of the updated Condition Report for Channel Islands National Marine Sanctuary. Condition reports describe the status and trends for important resources in a sanctuary to inform the site's management plan. Sanctuary staff invited Chumash community leaders to provide a chapter to the condition report, the Chumash Ecosystem Services Assessment, to describe the values of the sanctuary to the Chumash community, recognizing the diverse perspectives and multiple tribal groups and organizations. The chapter also provides historical and cultural context to help readers effectively see through the Chumash perspective. The assessment notes strides made toward integrating community voices and practices, including representation in reports and advisory councils, education and community monitoring programs, cultural events like the annual tomol crossing, and protection of sacred sites. See more detail here. In

2015, the Northern Chumash Tribal Council nominated an area of the South/Central California Coast to be considered for designation as the Chumash Heritage National Marine Sanctuary, and the designation process began in November 2021. The decision to begin designation was largely based on the traditional and scientific knowledge included in the nomination developed by the Northern Chumash Tribal Council.



Chumash community members gathered on the island of Limuw (Santa Cruz Island) pray, sing, and rejoice for the safe arrival of tomol paddlers finishing their annual 20 mile cross channel paddle. Many paddlers have remarked that every pull of the paddle through the waters is a prayer. Photo: Robert Schwemmer/NOAA.

### **Building Capacity Within NOAA**

NOAA will continue to build the capacity of our staff to build respectful and productive relationships with tribes and indigenous communities, including the recognition and appropriate use of IK as funding allows. This includes developing and delivering training materials and case studies on IK and its application in federal decision-making.

### **Interagency Coordination**

NOAA has the ability to bring IK into agency decision making through interagency as well as NOAA processes. When conducting formal or informal consultations with other federal agencies on issues with implications for tribes and indigenous communities, NOAA should include and acknowledge IK as part of best available science and as part of the administrative record.

### **Measuring Effectiveness**

IK has the potential to facilitate improved relationships among indigenous peoples and Federal or State governments (Cronin and Ostergren 2007). While, in some cases, including IK has proven beneficial in

improving resource management, some challenges have been identified, including a basic lack of trust, institutional barriers, mission conflicts, cultural differences, and the ambiguity of terms (Berkes et al. 2000). To successfully include IK, these challenges should be understood and addressed (Cronin and Ostergren 2007).<sup>17</sup> In addition, any assessment of effectiveness should include outcomes related to how often and how well IK is used in decision-making and whether reasonable attempts were made to identify and include IK from indigenous groups with relationships to the resource in question.

## Conclusion

Although the collection of IK is itself not government-to-government consultation (but may be part of it in some circumstances), IK is one way federal agencies can begin to fulfill the federal trust responsibility to federally recognized tribes with regard to the management of agency trust resources. More broadly, the integration of IK can contribute to a mutually beneficial partnership between agencies and indigenous people and communities. A critical aspect of environmental management is acquiring information that is not only accurate but trusted by those who make and abide by decisions based on that information. The understanding and incorporation of IK offers one important way of bridging gaps in perspective and understanding, especially when used in conjunction with knowledge derived from ecological and social sciences. The effective participation of indigenous and local communities in the development and implementation of actions can facilitate support of measures, reduce conflicts during implementation and contribute to the recognition of the rights of federally recognized tribes and other indigenous groups (Wiber et al. 2004<sup>18</sup>; Röckmann et al. 2012<sup>19</sup>; Msomphora 2015<sup>20</sup>).

Signed



6/27/2023

Date

Deputy Under Secretary of Commerce  
for Oceans and Atmosphere  
and NOAA Administrator

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<sup>17</sup> Cronin, Amanda E., & Ostergren, David M. (2007). Democracy, participation, and native American tribes in collaborative watershed management. *Society and Natural Resources*, 20(6), 527-542.

<sup>18</sup> Msomphora, Mbachi R. (2015). Stakeholder participation and satisfaction in the process of developing management plans: The case of Scottish Inshore Fisheries Groups. *Ocean & Coastal Management* 116:491-503

<sup>19</sup> Röckmann, Christine, Clara Ulrich, Marion Dreyer, Ewen Bell, Edward Borodzicz, Päivi Haapasaari, Kjellrun Hiis H. Hauge, Daniel Howell, Samu Mäntyniemi, David Miller, George Tserpes, and Martin Pastoors. (2012). The added value of participatory modelling in fisheries management—what has been learnt? *Marine Policy* 36(5):1072-1085.

<sup>20</sup> Wiber, Melanie, Fikret Berkes, Anthony Charles, and John Kearney. (2004). Participatory research supporting community-based fishery management. *Marine Policy* 28(6):459-468.