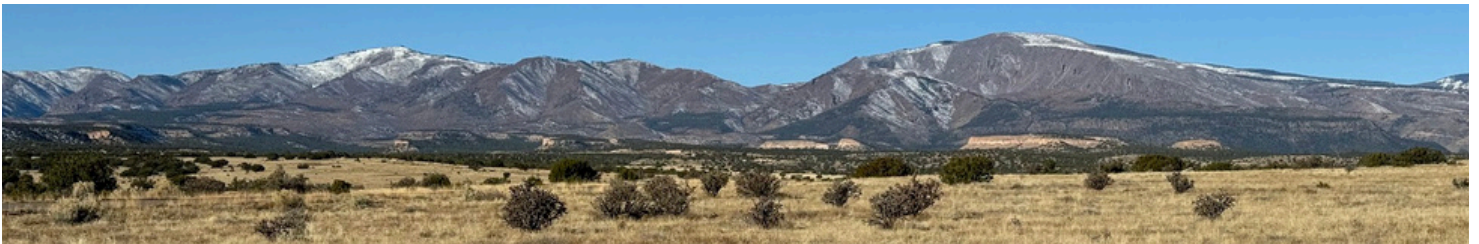


INDIGENOUS KNOWLEDGES AND SCIENCES AS BEST AVAILABLE SCIENTIFIC INFORMATION

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Best Available Scientific Information (BASI) is defined as science that is accurate, reliable, and relevant. Indigenous Knowledges and Sciences (IKS) are place-based, culturally relevant knowledge that has been collected and carried down by Tribes and Indigenous Peoples from generation to generation. The wisdom contained within the broad scope of IKS is accurate, reliable, and relevant and is therefore qualified as BASI that can be used by land managers and researchers.



Jemez Mountains from Santa Clara Pueblo. Photo by Molly McCormick.

HOW ARE INDIGENOUS KNOWLEDGES CONSIDERED BASI?

Accuracy

IKS is informed by empirical, observed evidence and firsthand human experience. Indigenous and Tribal knowledge systems exhibit provable metrics of precision and authenticity and are able to both recount the past and adapt to the present. IKS provides eyewitness accounts of the natural world that build a foundational understanding of change over time that is otherwise unattainable through Western science.

Reliability

Indigenous Peoples have witnessed and accounted for ecological processes at the organismal, population, and ecosystem levels since time immemorial. The traditions, beliefs, and cultural values of Tribes around the world emphasize a long-standing commitment to the preservation and careful study of their land.

Relevance

Indigenous sciences provide numerous and ongoing contributions to research and applied management strategies including long-term species monitoring and ecological interactions which are inherent in IKS and contain a unique and sizable wealth of information.

HOW TO USE IKS AS BASI

- **Developing methodologies & hypotheses:** IKS can add tremendous value to all stages of research. Indigenous Peoples have long considered perspectives excluded by Western sciences, asking questions and testing predictions based on complex systems unknown to academia. Centralizing IKS in research and management planning can provide a new lens through which to examine ecological systems and processes.
- **Education & outreach:** The more frequently we engage with Indigenous communities and IKS, whether through the role of student, researcher, professional, or policy maker, the more developed and well-rounded our scientific understanding becomes. Opening and encouraging a prevalent dialogue with IKS in literature and practice heightens its visibility and reaffirms its lasting validity.

HOW TO APPROPRIATELY ENGAGE WITH IKS AS BASI

The dimensions of specialization, personal experience, and transmission of IKS are diverse and complex. Researchers and professionals need to recognize this diversity and understand that the information gathered by Indigenous Peoples is collected and communicated in different ways. Immense variation is present among Indigenous cultural roles, languages, and oral histories, as well as in methods of obtaining information. In order for IKS to maintain its accuracy, reliability, and relevance, users must dedicate time and resources to its interpretation and contextualization. Western thought and reasoning does not inherently align with the complexities of Indigenous knowledge transmission; thus, working with Tribal experts to gain well-rounded understanding and avoid bias is recommended.

Ultimately, the findings obtained and documented through IKS belong to the people of that Indigenous Nation. Acknowledgement and respect of this sovereign ownership is of the utmost importance, and non-Tribal entities must adhere to a Nation's wishes for privacy of culturally sensitive materials. This principle stands even if it presents barriers to accessibility or reproduction of data. Scholarly and applied efforts benefitting from the adoption of IKS as a resource should represent a transparent and equitable partnership, prioritizing the needs and desires of the Nation that has maintained the applicable knowledge.

HOW IKS IS PRESENTED AND WHERE TO FIND IT

Oral histories	Perspectives, memories, and eyewitness accounts collected through interviews with Tribal members. Tribal elders often act as the primary historians of Indigenous communities. Additionally, many Tribes possess cultural preservation centers or departments dedicated to the consultation of elders and reporting of oral histories.
Academic and non-academic publications	Found in various forms, including Tribal websites, biographies, and through legends and stories. Western science reinforces a narrative that sources outside the realm of accepted scholarship are unreliable, and are therefore unusable. This presents considerable limitations for incorporating IKS. Additionally, many outsider studies are flawed by misinterpretation or a lack of informed consent from the Nation involved. The integration of IKS demands a broader survey of the available content and an effort to redefine what constitutes a valuable source.
Community engagement	Events such as conferences, meetings, and teach-ins hosted by Tribes or that highlight Tribal speakers are a direct form of engagement with IKS. Not only does it allow the participant to enhance their involvement with Tribal communities, but it presents an opportunity to learn key information from those who know it best.

Resources:

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National Oceanic and Atmospheric Administration (NOAA). (2024). *Guidance and Best Practices for Engaging and Including Indigenous Knowledge in Decision-Making*. NOAA Office of Legislative and Intergovernmental Affairs, Tribal Resources.

Reid, A. J., McGregor, D. A., Menzies, A. K., Eckert, L. E., Febria, C. M., & Popp, J. N. (2024). Ecological research 'in a good way' means ethical and equitable relationships with Indigenous Peoples and Lands. *Nature Ecology & Evolution*, 8(4), 595-598.

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The Southwest Fire Science Consortium (SWFSC) is a regional organization that facilitates knowledge exchange and disseminates wildland fire research and information across agency, administrative, and state boundaries in the Southwest. The SWFSC is one of 15 Fire Science Exchange Networks funded by the Joint Fire Science Program.



The Arizona Wildfire Initiative (AZWI) at the Northern Arizona University's School of Forestry supports Arizona's wildland fire needs by enhancing workforce development and education, communicating science, and increasing resilience to Arizona's communities. AZWI is funded by the state of Arizona.

