

# Blended ecological knowledge systems yield insight for managing beargrass

January 21 2015

---



Beargrass leaves are used in traditional basketry by tribal weavers, whose knowledge of good leaf harvesting sites contributed to a novel new study. Credit: J. Johnson, 2013

In a study that blended tribal cultural knowledge with scientific methods, U.S. Forest Service researchers identified the ecological conditions of forest sites preferred by harvesters of beargrass for use in traditional weaving.

The study, which is among the first to merge traditional ecological knowledge with scientific ecological knowledge to understand how different knowledge systems can apply to forest management, appears in the January 2015 issue of the *Journal of Forestry*.

"Our premise from the beginning was that the best information for sustaining culturally important plants comes from studies that link traditional ecological and scientific knowledge," said Susan Stevens Hummel, a research forester with the Forest Service's Pacific Northwest Research Station who led the study. "We selected beargrass because of its traditional and commercial value."

Beargrass is a perennial plant that grows in a variety of habitat types and conditions throughout portions of the Western United States. Its durable, flexible leaves, which can be tightly woven, have been harvested by American Indians for generations. The volume of beargrass harvested from federal lands by the multimillion-dollar floral greens industry in California, Oregon, and Washington dwarfs that harvested by tribal members for use in basketry and regalia and for medicinal and decorative purposes.

In the study, Hummel and Frank Lake, a research ecologist with the Forest Service's Pacific Southwest Research Station, combined traditional ecological knowledge and scientific ecological knowledge to identify specific conditions on forested sites that six tribal weavers from three states and four tribes classified as "good," "marginal," or "poor" for beargrass harvesting. Working from the weavers' subjective classifications, the researchers used field methods adapted from ecology and forestry to quantitatively measure forest and plant characteristics on a total of 72 areas in California, Oregon, and Washington to identify differences among the sites. Among their findings:

- Levels of coarse woody debris, like fallen trees and branches,

differed significantly between good and poor sites in the three states, with sites that tribal harvesters classified as "good" containing less debris than "poor" sites.

- Sites classified as "good" had fewer trees per acre and were, thus, less dense than sites classified as "poor" by tribal harvesters.
- Variations in beargrass leaf color decreased as the site class for plant harvest improved.

"The structural elements preferred by tribal weavers for beargrass harvest relate directly to those associated with managing fire behavior in similar forest types," Hummel said.

In addition to a set of site attributes preferred by tribal harvesters, the study also yielded a five-step framework for blending traditional ecological knowledge and scientific ecological knowledge that could be applied to other culturally important plants and fungi, like hazel, huckleberries, and chanterelle mushrooms. The framework begins with consideration of the species' natural and cultural history, and then moves on to recruiting study participants, selecting sites, sampling, sharing preliminary findings with participants, analyzing data, and communicating results.

"We also worked with the tribal weavers during the field visits to develop a decision key that highlights the considerations they gave to certain site and plant conditions," Lake said.

"Our study demonstrates a 'crosswalk' between ecological knowledge derived empirically via the scientific method and via traditional ecological knowledge because clear differences between good and poor harvesting sites were identified by both," Hummel said. "The blended approach we developed and applied demonstrates that scientific ecological knowledge can be advanced by combining qualitative and quantitative methods and that traditional ecological knowledge can be

generalized using [scientific methods](#)."

Provided by USDA Forest Service

Citation: Blended ecological knowledge systems yield insight for managing beargrass (2015, January 21) retrieved 31 May 2023 from <https://phys.org/news/2015-01-blended-ecological-knowledge-yield-insight.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.