

Research Problem: The Cherokee Nation of Oklahoma has engaged in a myriad of development activities in recent years to increase tribal economic capacity and thus enhance the quality of beneficial tribal services. These activities include the construction of casinos, resorts, golf courses and housing developments. Yet, as development increases, many tribal citizens are noticing the decline of certain culturally significant plants, specifically within fragile riparian ecosystems. For instance, giant river cane (*Arundinaria gigantea*) and sweet flag (*Acorus calamus*) are marsh-growing plants that are now threatened by the draining of wetlands due to development activities. Within the traditional Cherokee world-view, the use of culturally significant plants is guided by a land ethic that encapsulates the proper behavior to be exercised during harvesting practices. This land ethic promotes deep respect for and responsibility to the health of the ecosystem.

This situation indicates that while development has benefited the tribe by allowing it to exercise greater sovereignty, increasing economic growth, and improving local quality of life, it has created a major contradiction between the traditional land ethic and the need for economic development. In analyzing this contradiction, I am interested in the gap between Cherokee traditional resource management and modern tribal development, the realities and importance of both sides, and how they could intersect in the realm of environmental policy. I hypothesize that in-depth analysis of this problem at historical, political, and practical angles could result in effective methods for integrating tradition with policy.

As such, my research aims to answer the following questions:

1. What is the history of Cherokee traditional resource management practices in northeastern Oklahoma and how have these practices adapted through time? In what ways has traditional ecological knowledge been used (or not used) for making policy decisions throughout different eras of development?
2. In what ways has traditional ecological knowledge been incorporated into tribal environmental policy in other parts of North America? What have been the outcomes of these efforts?
3. What is the relationship between the traditional preference to keep sacred knowledge secret (such as the traditional medicinal uses of plants) and the desire to use this knowledge in tribal environmental policy?

Research Focus and Theoretical Background: “Traditional ecological knowledge” or TEK comprises the body of information, beliefs, and practices that people develop as a result of long-term resource-dependent residence in a specific region. The last two decades have seen a rapidly rising interest in how TEK can inform contemporary environmental management practices (Davis and Wagner, 2003). The worldwide effort to promote such knowledge can be seen in the areas of resource management, development planning, environmental impact assessment, wildlife restoration, and many others (Berkes, 1999; Kimmerer, 2000; Ross and Pickering, 2002; Fairhead and Leach, 2002). More and more, scientists are recognizing the value in indigenous systems of ecological knowledge for answers to today’s pressing environmental concerns.

TEK exists as a product of a particular way of life – one that assumes that humans are one of the many inter-related components of the ecological system. TEK is also a product of generations of observation and experimentation in a place and the intimate connections that are made with the non-human world, as reflected in oral tradition and stories. Because TEK is inherent in the epistemology and lifeways of a people, it is not surprising that it continues to exist in societies that have been forced off their homelands, whether by natural environmental disasters or by colonial relocation (Ross and Pickering, 2002: 210; Owens, 1998).

My research will draw from the similar studies of Turner, *et al.* (2000), Gadgil, *et al.* (2000), and Stoffle, *et al.* (1999, 1990) in its approach, design, and methods. Turner, *et al.* focus their attention on the TEK of aboriginal peoples of British Columbia as it pertains to strategies of sustainable resource use. I will borrow from their approach by framing my ideas of traditional plant management into three levels to represent what they call a “dialectic” relationship between the people’s belief systems and management practices: populations, habitats, and landscapes. Gadgil, *et al.* discuss the People’s Biodiversity Registers Program in India, which seeks to formalize the maintenance of folk ecological knowledge focusing on plants, and to provide new contexts for its continued practice across the country. I will focus on their presentation of Ostrom’s (1990) seven principles of design of long-enduring self-organized resource management systems as they relate to projects of traditional knowledge. These principles outline practical considerations for projects of community-based resource management. Stoffle, *et al.* present their research on Paiute and Shoshone culturally significant plants in order to add weight to the people’s arguments against governmental development on their traditional lands. They operationalize a quantitative method of calculating the cultural significance of plants called the Index of Cultural Significance (ICS). I will also call on this method and the lessons learned by its application to developmental decision-making.

My research is unique because it approaches TEK in a diachronic and relational way: diachronic because it views TEK in changing contexts and as a dynamic concept, and relational because of its interactions with policy and development. Whereas this situation deals with struggles within a people’s own development activities, it also differs from more common instances of indigenous struggles against development from multinational corporations. The project is also intensely practical in scope. The research is less focused on documentation and more focused on the engagement and application of the knowledge to everyday policy decisions. This research will contribute new approaches to 1) community-based, sustainable management initiatives, 2) ecological, culturally-sensitive tribal development, 3) preservation of traditional knowledge systems and 4) tribal empowerment in the context of local resource management.

Methods: In the spring of 2004, I met with a group of Cherokee Nation environmental officials to plan a project for incorporating traditional ecological knowledge in the Cherokee Nation's impending natural resource protection plan. As a result of this dialog, we proposed that traditional knowledge of plants and their ecosystems would foster a better understanding of how to protect these environments and would instill the practical application of the traditional land ethic in everyday environmental decision-making. We agreed that determining plants that are of cultural significance, how they are used, by whom, and where they are harvested will inform tribal decision-makers about areas that most urgently need protection from tribal as well as non-tribal development. We then proposed that the results of this project could include stricter regulations for development activities, the preservation of culturally significant plants for their proper traditional use, and the perpetuation of Cherokee traditional knowledge for future generations. Two months later, I was hired to initiate the Tsalagi-yi Digakohidi Ethnobotanical Project (henceforth TDEP), a project designed to collect and apply Cherokee botanical knowledge to development planning and natural resource management. The TDEP is the first formal policy-oriented project of this sort within the Cherokee Nation.

Whereas initial research served to build conceptual and practical foundations for the TDEP, future research will involve more in-depth and thorough investigations. I will use a political ecology approach to analyze the contradiction between tribal development and the traditional land ethic. This approach views the problem outside of a vacuum and recognizes the plentitude of factors that interplay in the political, historical and economic arenas. It avoids the essentialization of tribal development, and accounts for the need for self-determination and economic development in modern times. In other words, instead of viewing the traditional land ethic as a disappearing concept, a political ecology approach would view it as a dynamic cultural aspect that is being compromised in the face of changing development ideologies and would account for this in the research design and methodology.

The special collections of Northeastern State University in Tahlequah, Oklahoma houses extensive materials on the history and culture of the Cherokee Indians. Among these materials are the Indian-Pioneer Papers (an oral history of early-day events), historical maps, and comprehensive collections of Cherokee and Oklahoma newspapers. Drawing from these resources, I will conduct library research on the history of land use by Cherokees since removal to Indian Territory, extrapolating historical accounts of environmental adaptation strategies and the transferring of TEK to a new landscape.

I will use the TDEP as an ongoing case study to analyze how TEK can be practically used in environmental decision-making within the Cherokee Nation. I will conduct at least 50 interviews with key informants who will be identified in consultation with tribal leaders and based on their community reputation as experts. The goal of these interviews will be to establish which plants people are currently using as part of traditional lifeways and how they are using them. A "river trip" method will be used when possible to allow for the in-depth, *in situ*, study of species that grow along waterways, thus producing more comprehensive accounts of traditional plant use in contrast to dislocated interviews. I will use the information gained to calculate ICS scores for plant species that respondents discuss, thus creating a quantitative measure that can augment respondents' individual descriptions of the cultural importance of each plant. The plant database will provide a central location for qualitative and quantitative data; however, careful attention will be paid to *how* knowledge is documented and *which* knowledge is documented so as to keep respondents' discretion as the top priority. I will also continue physical exploration of Cherokee Nation waterways in areas that have been targeted for tribal development, using Geographic Information Systems (GIS) technology to produce a map of species distribution and patterns of traditional use. Finally, I will collate and analyze the information thus created and propose a plan for tribal resource development that defines specific target areas for conservation. The plan will minimize the disruption of traditional practices by development and, in turn, will promote the perpetuation of traditional ecological knowledge.

Furthermore, I will collaborate with tribal officials and policy-makers, seeking their advice in determining the most effective way to incorporate the project into everyday environmental policy. Tribal officials who have agreed to advise me in this way include Environmental Protection Group Director Jeannine Hale, Environmental Services Director Nancy John, and Natural Resources Supervisor Pat Gwin. I will also attend national conferences and meetings to learn about similar initiatives in other tribes that may provide possibilities for collaboration. My cultural knowledge and close ties to the local community as a Cherokee Nation tribal citizen, as well as a working knowledge of the Cherokee language allow for more leverage in a project of this sort. In addition, I hope to take language classes offered by the Cherokee Nation Heritage Center in Tahlequah, Oklahoma to further my proficiency and to facilitate interviews with Cherokee speakers.

Expected Results: This research aims to offer new approaches to tribal environmental decision-making – approaches that combine policy with culture and preservation with application. I hope to provide a theoretical analysis of the contradictions of TEK and development that will lead to a more complete understanding of why this conflict is occurring and what can be done to mitigate the issues that arise as a result of it. Through historical and ethnographic methods, I also expect my research to add to the cultural history of the Oklahoma Cherokee landscape. Furthermore, continuing work on the TDEP and using the results to inform environmental policy will result in the protection of threatened plant species and the perpetuation of Cherokee TEK. A possible scenario is the establishment of "Cherokee National Cultural Waterway Preserves," which would promote the continued traditional use of plants, and at the same time strategically prohibit developmental activities.

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