

Executive Summary

The SCERP Tribal Environmental Program

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INTRODUCTION

Nearly 40,000 people and a land base of 3 million acres make up the approximately 60 U.S. and Mexican tribal nations and indigenous communities encompassed by the U.S.-Mexican border zone, defined as the 100 kilometers north and south of the international boundary between the United States and Mexico. The original territories of the tribes in this region—which include California, Baja California, Arizona, Sonora, Texas, and Coahuila—are now bisected by the international boundary.

Despite their long-held and intimate knowledge of their lands and environments, these tribes have been excluded from some conventional environmental programs. Too often in many projects' final reports, native populations were addressed in little more than a generic paragraph outlining a cursory effort to include them. Prior to the 1990s, the involvement of tribal nations in any U.S. government initiative was usually limited to activities where tribes clearly needed to be integrated or needed to be present in order to avoid lawsuits. However, the U.S. Environmental Protection Agency (EPA) recognized the intimate relationship among sovereignty, environmental equality, transboundary pollution, and human health and chose to incorporate both state and tribal interests into its border programs. The recent Border XXI and 2012 initiatives are excellent examples of the integration of tribes into local planning and implementation

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efforts. There is even a special grants program to help tribes deal with pollution prevention. In Mexico, though, the less-formal status of tribal people has diluted their roles in Mexican border environmental programs. The critical problem for the future will be how to integrate the perspectives and needs of these tribal nations (Figure 1) into a shared, multinational vision for the border region.

The Southwest Center for Environmental Research and Policy (SCERP) created the SCERP Tribal Environmental Program (STEP) as a binational, multi-university effort to study natural resource development and tribal cooperative planning among interested Native American communities located along the U.S.-Mexican border. This interdisciplinary applied research initiative involved scholars and technical experts from San Diego State University (SDSU), Arizona State University (ASU), the University of Utah (UofU), New Mexico State University (NMSU), and the University of Texas at El Paso (UTEP), as well as colleagues from various Mexican universities. The tribes served by the program include the Paipai of Santa Catarina, Baja California; the Tohono O'odham of Arizona; and the Ysleta del Sur Pueblo Tigua Tribe of El Paso, Texas.

The purpose of this pilot program was to build a critical mass of research about the range of environmental problems, socioeconomic issues, and political issues that challenge tribal efforts to achieve sustainable development in the U.S.-Mexican border region. By offering training and educational opportunities to tribal members, as well as technical expertise in the form of Geographic Information Systems (GIS) development, the program sought to promote productive interactions among academics, government agencies, non-profit organizations, and the tribal groups themselves.

TRIBAL NEEDS

The challenge for all nations is to simultaneously develop all sectors of society—environmental, human health, economic, and entrepreneurial—so none suffers at the expenses of the others. Tribal efforts that aim to meet this challenge are similar to programs in other nations, but tribes need to improve inter- and intra-agency coordination, build overall capacity, and improve science-based decision making to succeed.

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Through their involvement with STEP specifically, tribes needed to be provided with basic information they could present to state and federal governments to obtain financial support and access to programs and services. Mexican tribal nations that have developed natural resource management plans have found that this information often facilitates access to private and public funds to implement portions of those plans. Other general needs included:

- An industry survey that informed tribes about the value of their products for marketing
- A stock of education materials on environmental topics
- GIS tools
- Sampling and analysis of soil, water, and air
- Energy development planning
- Web sites, CD-ROMs, and other electronic materials

Role of Academia

SCERP became involved with this project at the request of the EPA and Mexico's Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT). At that time in the late 1990s, both federal environmental agencies were developing binational environmental programs that included tribal nations. Initially, EPA and SEMARNAT, while sensitive to tribal needs and attentive to their capacity, did not have the experience or track record that would allow them to integrate tribal interests from both sides of the border and thus help tribes in environmental endeavors.

SCERP was an ideal organization to spearhead a program to improve tribal nations' capacities for addressing environmental issues. The consortium intended to assist both with developing tribes' abilities to deal with environmental and health issues as well as with improving actual environmental quality, especially in the areas of water, soil, and air pollution.

Tribal nations are an environmental microcosm of the border region. Tribal lands are arid and the nations are plagued by poverty. Many are experiencing significant demographic growth. Importantly, some tribes suffer the fragmentation of an additional political boundary—the international boundary between Mexico and the United States. With its expertise in transborder studies, models of

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cooperation, and experience with collaboration on binational issues, SCERP can translate scientific or technical findings into meaningful information policymakers can use. The consortium has relationships with tribal researchers on both sides of the U.S.-Mexican border, as well as environmental expertise developed over the last 14 years while researching the border region's environmental issues.

In 1999, SCERP began the STEP program by building on the research of Alan Kilpatrick at SDSU and Diane Peart at ASU. They had examined a handful of tribal issues in Arizona, Sonora, California, and Baja California through research papers. These papers highlighted research topics that needed to be addressed in other geographic areas of the border region. From there, SCERP began identifying researchers. Not only did they need to be technically proficient and have an affinity for working with U.S.-Mexican border region tribal nations, they also had to understand the rules and protocols (ways of conducting business under tribal culture) that must be followed when working with the nations. In addition, they had to be sensitive to the history of the relationship between tribal nations and non-Indians—non-Indian researchers in particular. Many past instances have seen researchers announce their presence on tribal lands, gather data, and disappear without ever presenting their data to the tribe—and more importantly, without recognizing the sovereign tribes' specific protocols for carrying out research and their rights to the proprietary data gathered. This was exactly the situation SCERP did not want to re-create. The process of pairing the right researchers with the right nations took nearly a year.

RESEARCH MISSION AND OBJECTIVES

The overall mission of the program was to assist in devising and implementing culturally sensitive and sustainable resources that would aid the nations in making decisions about their lands. SCERP hoped these studies and tools would encompass:

- Economics, such as marketing surveys and ecotourism feasibility studies
- Health care, including establishment of the unique links among environmental exposure, tribal customs, and health effects

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- Energy, especially wind energy
- Information technology, especially GIS
- Human resources, including environmental training and education
- Community needs, including tribal boundary definition
- Water, such as sourcing, treatment, and disposal
- Natural resources, such as forestry
- Soils, including laboratory analysis

However, the studies and tools SCERP would ultimately help develop depended upon the needs of the particular tribes. Almost all projects consisted of an initial inventory and accounting of available resources, an evaluation of their current status, and organization of that data or asset. GIS was often used to first collect and conceptualize issues, and then to display data for decision making on issues such as carrying capacities, natural resource yields, and management plans. From there, the specific research approaches for SCERP included:

- Conducting research important to the nations
- Providing tangible results to participating tribes
- Appreciating the nature and protocol of research with tribal nations
- Recruiting a cadre of knowledgeable and culturally sensitive researchers
- Receiving guidance from tribal councils and staff
- Building capacity with the tribes
- Initiating a series of demonstration and pilot projects
- Developing studies and tools that are transferable to other tribes
- Exporting the research to other tribes so they can actually use it

Developing the Program

SCERP's initial contacts with tribal EPA representatives led to a variety of activities, including visits, conversations with other agencies, and tours of tribal lands, all of which culminated in a meeting

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with tribal council presidents to offer assistance. Native authorities then developed a list of needs and priorities and SCERP selected for action those that could be accomplished.

A key component of the research plan was to maintain an appropriate methodology and respectful interaction with tribal representatives. SCERP researchers did not seek to approach tribes as outside experts but as collaborators seeking active participation in mutually beneficial projects. As a result, these projects were approached with sensitivity toward the collective tribal nation concerns and made every effort to involve the tribes at all stages of the research. The ultimate goal was to foster inter-tribal cooperation on a binational level, an approach geared toward building capacity by using existing tribal strengths.

Obtaining tribal approval for a project sometimes meant finding a sponsoring government agency within the tribe. This entailed meeting with the tribal administrator, obtaining council approval, and then presenting the idea to different departments to find a proper “host.” Although SCERP funded the work, SCERP researchers were met with mistrust and skepticism, which resulted in the need for many visits for the important task of simply listening to tribal representatives to understand the decision-making process and use for the research.

Researcher sensitivity involved not only conducting research to support the tribe’s needs, but also helping the tribe ask the right research question. Often, a client recognizes a problem that must be addressed, but the solution might not be readily evident. It is incumbent upon the researcher to determine whether the question is appropriate or should be revised. This dialogue occurred between the nations and SCERP and led to stronger research projects.

For example, the Tohono O’odham Nation became involved in two projects: the GIS project with UofU and the mine tailings project with NMSU. The Cyprus-Tohono copper mine had a mine tailings pond left from ore processing during the 1970s. This leftover waste material had a high iron content, and the tribe wondered whether it might be suitable for use as an iron fertilizer for golf courses in the southwestern United States. The first meetings and interactions helped the tribe define and refine its research questions.

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The modified research questions ultimately became:

- What were the iron characteristics of the material in the tailings pond?
- Do plants, especially turfgrass, respond to the material in iron-deficient conditions?
- Does the industry—golf courses and recreation areas—have a need for this material?

Other projects began in a similar fashion. Eventually, over a three- to five-year span, SCERP faculty from the five U.S. universities, as well as a number of Mexican universities and NGOs, worked closely with interested native communities and appropriate government agencies to:

- Identify the need for baseline environmental data on the reservation or Indian community
- Analyze the nations' political contexts; assess the effectiveness of various conflict-resolution methodologies; and investigate the impact of international, federal, state, and local government environmental policies on tribal sovereignty
- Provide public outreach by sponsoring conferences and workshops to disseminate the research results

WORKING WITH TRIBAL NATIONS: LESSONS LEARNED

During this multi-year project, one broad lesson learned was that SCERP researchers were ultimately working for the people in the tribal community, not just for themselves. As well, many researchers learned the true differences between sharing ideas versus imposing ideas, and understanding what it is to see the world from a different perspective versus proselytizing. One outcome of this shift in approach was that, after reviewing the final products, in many cases the tribes discovered a value of the work that had not been apparent to the academic researchers, adding even more value to the end result.

Perhaps the most valuable lesson researchers gleaned—and hope to communicate to others who do research with tribal nations—was that the tribal nations' ways of conducting business must be

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respected. Tribal governments, traditions, and protocols differ with every nation. There is no way to conduct significant research without first forming a meaningful relationship with the tribe, and that comes only through learning how the tribe operates and how its protocol should be followed.

For instance, research results must first be presented to the tribal council and the tribal administrator should facilitate that process. Tribal councils expect as much respect as do federal and state governments in the United States and Mexico; just as there are pathways to reach the upper echelons of these governments, there are similar pathways in tribal governments. These ideas are explored more fully in the Epilogue of this volume.

Tribal governments are small and there is a tendency to assume they are agile and able to reach quick decisions about research. However, that is not the case. The tribal sense of urgency was not the same as many researchers', and that meant reviews of research and approvals took much longer than expected—perhaps as long as federal or state entities in the United States or Mexico would take. Further complicating matters was the fact that some tribal governments change with elections every two years, so elements of the researchers' relationships with the tribes sometimes needed to be reestablished.

With this in mind, future researchers addressing tribal issues should allow in their plans enough time to learn how the tribe operates and to develop appropriate relationships under those conditions. Building the relationship is an ongoing process where trust is gained over time and, as is often the case when working across cultures, through frequent and extra effort on the part of the parties involved. In an effort to provide new depth to their relationship with the Tohono O'odham, ASU researchers invited tribal members to their campus for a tour and hands-on look at how business and research are conducted at a U.S. university. This helped the tribe better understand the approach of the researcher.

This basis for understanding was also important for non-disclosure agreements between tribes and academia. While the research conducted on tribal lands—which are sovereign nations—is proprietary as far as the tribal nation is concerned, academics need and want to publish their research results. Many STEP researchers faced this dilemma.

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For example, during the NMSU mine tailings project, the Tohono O’odham requested, as it did of UofU during its GIS project, that NMSU researchers sign non-disclosure and confidentiality agreements to protect tribal interests. There were several problems with this. First, NMSU has a policy prohibiting signing such agreements. Second, NMSU’s College of Agriculture and Home Economics—with which the NMSU researchers are affiliated—discourages this type of proprietary, contract research. Third, the research needed to be published in peer-reviewed journals before the tribe could have any credibility as a supplier of an effective iron fertilizer. The tribal representatives recognized the importance of the third factor and waived the rights to confidentiality. They did, however, request and receive the right to review any manuscripts prior to publication.

Therefore, learning the protocol of providing information should be the first activity of any researcher working with tribes. The next tasks would be to have the tribal members articulate what research they need, then secure the permission to perform it. Researchers should never arrive on a sovereign nation’s land and announce what research they believe is needed.

SUMMARY OF SPECIFIC PROJECT FINDINGS

The specific projects successfully accomplished are listed in Table 1. While more detailed information is presented in the chapters of this volume, summarized here are the various findings of the STEP projects.

During “The Cocopah Indian Tribal Environmental Education Project,” (see Epilogue) researcher Richard Meyers learned about the challenges of implementing a project in an indigenous community that is wrestling with the competing interests of environmental preservation and development within its definition of what it means to be a sovereign nation. The working relationship between a tribe and a university requires a delicate approach; it is an ongoing process that must commit to recognizing and allowing the tribal nation to voice and assert its own decisions while at the same time communicating and working with the research community’s academic and scientific institutions.

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Table 1. Tribal Nations and Projects Accomplished through STEP

U.S. Tribal Name	Mexican Tribal Name	Location	Project	Deliverables
Tohono O'odham	Pápago	Southern Arizona	GIS	Maps, software, and electronic data resources
			Mine tailings evaluation and golf industry market survey	Experimental evaluation and market survey
Cocopah	Cucapá	Southwestern Arizona	Environmental education	Collection of environmental education materials
Paipai	Paipai	Santa Catarina, Baja California	Sustainable economic development activities evaluation	Evaluation of sustainable economic practices
Ysleta del Sur Pueblo Tigua Tribe	Tiguas	El Paso, Texas	Wind survey	Anemometer procurement

Source: Authors

Environmental education is not a commodity package that can be delivered to the tribe via academia, Meyers discovered. And conversely, tribal knowledge cannot be extracted from the tribe and put on exhibit for other cultures. A trusting and effective working relationship must exist if a knowledge exchange is to occur and a valuable research project is to succeed. In the same vein, as is evident in Susan Williams' "Indigenous Education: A Literature Review," research has demonstrated that when set in a culturally appropriate framework, knowledge of indigenous plants, animals, and geological features is associated with better learning outcomes and conservation of local resources.

The importance of flexibility was reiterated in Jacob Massoud's and John Peterson's wind potential survey with the Tigua tribe in Texas, as detailed in the chapter titled "Ysleta del Sur Pueblo Tigua Tribe of El Paso, Texas." After determining which areas on the reservation might be appropriate sites for a wind farm, the project was successful in working with the tribe to obtain permanent access to an anemometer to determine seasonal and time-of-day wind availability. The most important lessons learned, however, were that

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researchers should be open-minded and adaptable to any circumstances that might arise, and how tribal protocol, traditions, and the tribe's proprietary information might affect the timeline for conducting a project.

In their preparation of GIS materials for the Tohono O'odham Nation in Arizona, Phoebe B. McNeally, Barry Biediger, and Daniel McCool, authors of "The Development of a Geographic Information System at Tohono O'odham Nation, Arizona," had expected formal, written answers to a questionnaire they developed at the outset of the process. They were at first disappointed that the answers they received and the way they received them—through conversations with tribal representatives—were so informal. Yet, a closer look proved the answers were still useful, and so then was the development process of the questionnaire. It was clear that the questionnaires brought about a deeper consideration of the nation's data needs than if a detailed questionnaire had not been made.

In evaluating the Tohono O'odham's mine tailings in "Iron-Rich Mine Tailings Fail to Perform as Fertilizer: An Economic Development Model," John G. Mexal and his team yielded several results that could benefit other tribes. The survey of the golf course industry in the southwestern United States revealed that iron nutrition is a serious concern to golf course managers; there is a general dissatisfaction with many current iron fertilizers; an efficacious iron fertilizer would be readily accepted by the industry; and cost would not likely be an issue for application to golf course fairways, roughs, and tees. Also, the study revealed that the tribe's mine tailings failed to improve the growth, color, or mineral content of any of the six plant species tested in two trials. It appears there is little benefit to developing a fertilizer product from the mine tailings on the Tohono O'odham lands, unless it is possible to further refine the product to improve iron availability without greatly increasing production costs.

For the Santa Catarina community of the Paipai in Baja California, Michael Wilken-Robertson created strategies that could help bring about sustainable development practices, both for this community and tribes elsewhere. "Strategies for Sustainable Development of Natural and Cultural Resources in the Paipai Indian Community of Santa Catarina, Baja California" shows that when

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land use possibilities were evaluated, ecotourism, conservation, and grazing agriculture were determined to be the best uses for the land. An evaluation of cultural resources revealed that increasing hand-craft production might be a viable economic activity. Further studies are needed to determine the feasibility and sustainability of these activities to ensure a dynamic, diversified economy for the community. Academia, rather than expensive consultants, is ideally suited to carry out these studies through the continued collaboration of the indigenous community with the Instituto de Culturas Nativas de Baja California (CUNA), Universidad Autónoma de Baja California, SCERP, and other institutions.

The volume also includes two other chapters by Wilken-Robertson. "Indigenous Groups of Mexico's Northern Border Region" examines the impact of the U.S.-Mexican border on the environments of native and migrant groups within the Mexican border region. "Indigenous Groups of Baja California and the Environment" discusses environmental issues faced by tribal groups in the Baja California peninsula. As well, included herein is an abridged version of Kathleen Coates Hedberg's Master's thesis for the SDSU Department of Public Health, "Association of Gastrointestinal Illnesses and Environmental Factors in a Kumiai Indian Community in Baja California, Mexico."

CONCLUSION

As Tigua tribal member Massoud articulated in his chapter, the SCERP program was hardly a panacea, but it did provide a venue for communication and a chance to develop and cultivate working relationships—processes regarded by both parties as productive. The Indian and academic participants came to know each other and each others' ways, and the program slowly evolved into a fruitful relationship between tribes and academia. As participants come and go within tribal governments and the universities, predicting whether the relationships will survive beyond the parameters of the SCERP Tribal Environmental Program is difficult. But, perhaps the positive history of working together will promote new and varied exchanges, Massoud wrote.

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The extended effect of STEP yielded a research approach for academia and other consultants who work with tribal nations. The program developed a number of valued products that provided positive outcomes for the nations involved. In addition, the expertise developed within SCERP allows subsequent research projects to be conducted as sensitively and effectively as possible, and without undue delay. Such liaison enables SCERP researchers to readily assist tribal members, agencies, and councils to apply for and conduct EPA, General Assistance Program (GAP), and SCERP grants and contracts.

Through this endeavor, many tribal nations discovered a wealth of information and assistance available from willing partners within the universities. The schools, in turn, found a new community to serve as part of its academic education and training mission. SCERP can be the vehicle that continues to facilitate these links between academia and tribes.