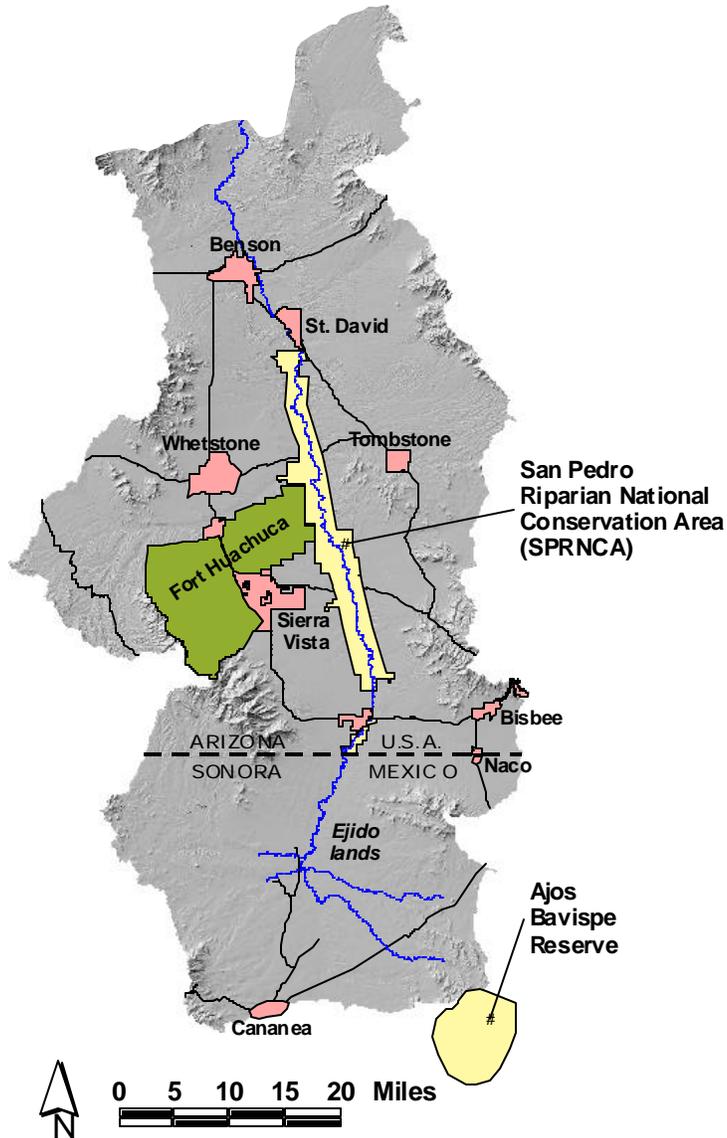


UPPER SAN PEDRO RIVER BASIN

Arizona, U.S. – Sonora, Mexico



INTRODUCTION

The Upper San Pedro River is one of the last free-flowing rivers in the desert borderlands region, supporting a rich riparian corridor that is critical to local and regional biodiversity. The groundwater aquifer that supports the San Pedro River also sustains the municipal, agricultural and industrial land uses that exist in the basin. Since the early

1990s, resource managers have recognized that the Upper San Pedro Basin and its natural resources are indeed binational and that its management needs transcend the cultural, political, and economic differences across the international border.

This case study outlines a unique, multi-faceted approach to transboundary collaboration that has benefited from the intervention of the tri-national Commission on Environmental Cooperation (CEC), the dedication of individuals working on the ground, and the creativity of high-level officials in designing an unusual conservation program. These discrete yet interconnected programs involving federal agencies, the CEC, and local stakeholders have made significant progress in bridging the information and communication gap between the U.S. and Mexico. While there are several transboundary programs that exist in the basin, this case study will focus on the Upper San Pedro River Basin Issue Team, the Commission for Environmental Cooperation's Upper San Pedro Initiative, and the federal-level San Pedro Binational Initiative.

The programs described in this case study demonstrate that a certain level of transboundary collaboration can occur on an ad hoc basis without a formal international agreement. These on-the-ground activities have played an important role in building the foundation of communication, trust, and understanding. Building from this foundation, the U.S. Department of the Interior and the Mexican Secretariat of the Environment and Natural Resources have been developing a partnership that was initiated through a Joint Declaration. This partnership, the San Pedro Binational Initiative, has facilitated the pending designation of an expanded reserve in the Mexican portion of the basin. If decreed, this reserve will be a significant step towards protecting the Upper San Pedro ecosystem.

This case study also illustrates the usefulness of political champions who are interested in the area and committed to transboundary efforts. The support of the U.S. Secretary of the Interior and his Mexican counterpart have given top-down encouragement to collaborative efforts on the ground and have also made possible a creative and ambitious strategy to overcome some of the barriers to transboundary collaboration. Finally, this case demonstrates how an international institution (the CEC) can be useful to transboundary efforts by providing a forum for information gathering and discussion, which helped to push stakeholders to define and implement management solutions.

Why Transboundary Collaboration?

In 1988, the U.S. Congress established the San Pedro Riparian National Conservation Area (SPRNCA), recognizing the ecological and social values of the river and the need to protect them. Despite this protection, however, the viability of this ecosystem continues to be threatened by groundwater pumping on both sides of the international border. Over that past several years, stakeholders have become increasingly aware that the San Pedro basin is indeed binational, and that any concerted effort to protect the ecological resources of the river will have to address the social, economic, hydrological and ecological conditions on both sides of the international border. The programs described in the case study reflect various approaches to such an effort, building momentum towards ever more inclusive and coordinated management of this transboundary resource.

While these transboundary programs have only begun to address the daunting issue of groundwater allocation, they have made great strides in improving both the level of knowledge about the San Pedro and the communication and understanding between those stakeholders who look after and depend upon it. Through creativity, dedication and innovation, there has been considerable progress towards a more culturally and ecologically connected basin. In 1999, Secretary of the Interior Bruce Babbitt observed: “Looking across the border, the emerging partnership between Arizona and Sonora is a powerful success story. We have come a long way in overcoming the cross-border communication barriers... This is not about compromising sovereignty; rather, [it is] about creating a new model, a common landscape where a new binational culture would be created out of the best of both cultures.”¹

CONTEXT

The 4,000 square mile/6,400 square kilometer² Upper San Pedro River Basin spans the international border between Arizona, U.S.A., and Sonora, Mexico. From its headwaters near the mining town of Cananea, Sonora, the San Pedro River flows north into the United States, passing near the towns of Sierra Vista, Tombstone, and Benson, Arizona towards its confluence with the Gila River, a tributary of the Colorado River. This arid region, known as the Basin and Range Province, is located at the transition zone between the Sonoran and Chihuahuan desert ecoregions. This landscape is characterized by lowland deserts of big sacaton grasslands and desert shrublands that are interspersed with isolated mountain ranges. These mountain ranges, or “sky islands,” are covered with forests of Mexican oak and pine.³

In stark contrast to this desert landscape is the lush riparian corridor of the San Pedro River, consisting of Fremont cottonwood/Gooding willow forests, mesquite *bosques*, and riverine marshlands or *ciénegas*. The San Pedro is one of the last free-flowing rivers in the region, and it supports a riparian forest ecosystem that is recognized to be of critical importance to regional biodiversity, serving as an important stopover for migratory songbirds. This ecosystem also supports numerous species of waterbirds, native fish, reptiles, amphibians and mammals.

Land ownership and management

Home to about 120,000 people,⁴ the Upper San Pedro River Basin consists of a mix of public and private land ownerships on both sides of the international border. Mexico’s San Pedro basin consists mainly of farms and ranches that are owned by private individuals or collectively owned *ejidos*.⁵ *Ejidos* are lands that were established by the Mexican government in 1958 to be used as common lands for the community members (*ejidatarios*).⁶ In the United States, publicly-owned lands in the Upper San Pedro Basin include the Fort Huachuca Military Reservation, Coronado National Forest, Coronado National Memorial, extensive state-owned lands, and lands managed by the federal Bureau of Land Management, including the San Pedro Riparian National Conservation Area (SPRNCA).

In 1988, the U.S. Congress established the 55,000-acre SPRNCA, “to protect the riparian area and aquatic, wildlife, archaeological, paleontological, scientific, cultural, educational and recreational resources of the public lands surrounding the San Pedro River...”⁷ Along with the establishment of the SPRNCA came a land use planning process that included substantial public participation.⁸ This process resulted in the prohibition of mineral development and cattle grazing within the SPRNCA, as well as the retirement of thousands of acres of agricultural land that were formerly used for irrigation.⁹

While most of the Upper San Pedro’s riparian corridor is protected in the U.S. by the SPRNCA, the river corridor enjoys no official protection south of the international border. In Mexico, however, the Ajos Bavispe Reserve (*Reserva Forestal Nacional y Refugio de Fauna Silvestre ‘Ajos Bavispe’*) covers a small corner of the basin’s southeastern headwaters in the Sierra Madre Mountains.¹⁰ This area is managed by the Mexican Secretariat of the Environment and Natural Resources (SEMARNAT)[†]. The recent efforts of the San Pedro Binational Initiative, described below, have been instrumental in planning and implementing a reserve that protects parts of the riparian habitat in Mexico.

Ecological Values

The single largest ecological value of the Upper San Pedro Basin lies in its intact riparian communities. Each year, millions of songbirds migrate between their wintering ground in southern Mexico and Central America, and their summer breeding areas in the U.S. and Canada. In order to cross the landscapes of the Sonoran and Chihuahuan Deserts successfully, these songbirds congregate along some of the few north-south corridors where they can find food, water, and shelter. The San Pedro River is one of those corridors.¹¹

The San Pedro’s lush riparian corridor plays an important role in maintaining both local and regional biodiversity, supporting habitat for migratory songbirds and numerous other wildlife species. A number of these species are threatened, endangered, or rare, including the southwestern willow flycatcher.¹² The riparian habitat that is sustained by the San Pedro is threatened by human impacts that began over 400 years ago.

Historical Human Uses

Since the arrival of Europeans in 1540, human activities in the basin have had a profound effect on this desert ecosystem. Beginning with the introduction of livestock by early Spanish settlers, human activities in the basin have expanded to include irrigated agriculture, suburban development, and copper mining. Over the last 100 years, much of the human settlement and activity has been sustained by pumping from the 50 million acre-foot aquifer that lies beneath this binational basin.¹³

[†] This agency was formerly called SEMARNAP, since it also included Fisheries (*pesca*). For the purpose of clarity, both the current and former secretariats will be referred to by the current acronym, SEMARNAT.

The culmination of human activities, especially groundwater withdrawal, has contributed to the degradation of the San Pedro ecosystem, and the alteration of the river's flow from a largely perennial to a largely ephemeral stream system.[‡] As a result, the riparian forests and grasslands along the river that are dependent on groundwater inflow have become more vulnerable to climatic fluctuations.¹⁴

Competing Economic Values

The human communities that have flourished in the San Pedro basin have done so because of the availability of groundwater. Economic activities, ranging from agriculture to mining and municipal use, are inextricably linked to the same groundwater aquifer that sustains the San Pedro ecosystem. Among the basin's largest water users is *Mexicana de Cananea*, one of the largest open-pit copper mines in the world. This mine is located on the southwestern edge of the basin near the town of Cananea.¹⁵ Other major water users in Mexico's part of the basin are *ejidatarios* and other agricultural users, who have taken advantage of larger pumps that have become available in recent years.¹⁶ Ejido reforms in the early 1990's allowed for the sale of common lands to private farmers. These reforms have changed some of the agricultural land uses, leaving some observers to believe that groundwater pumping has expanded in the past decade.¹⁷

In Arizona, the largest single water user is the Fort Huachuca Army Base, located near Sierra Vista. While the Fort has taken strides to reduce its water consumption,¹⁸ these reductions are offset by residential growth in the area and its associated water needs. The Sierra Vista area is estimated to be one of the fastest growing in Arizona.¹⁹ While irrigated agriculture was greatly reduced in the U.S. part of the basin by the SPRNCA designation, its groundwater use is still significant, especially in the Benson area.²⁰

The economic values of the San Pedro's groundwater quite literally competes with its riparian ecosystem. While 53 percent of the total groundwater depletion in the Arizona portion of the basin is for municipal and agricultural uses, 42 percent comes from evapotranspiration from the vegetation along the riparian corridor.^{§ 21} As the human population grows, the groundwater deficit (withdrawals vs. inflow) will increase, lowering the water table along the river and increasing the competition between the basin's natural and human communities.

Socioeconomic Considerations

The prospect of limiting groundwater use in the basin directly conflicts with its economic viability. As Fort Huachuca and the Cananea copper mine are the basin's single largest consumers of groundwater, they are also the primary economic engines on their respective sides of the border.²² Forty percent of the employment in Cochise County, Arizona is associated with Fort Huachuca, which has been a presence in the region for 120 years. Similarly, the copper mine supports a significant part of the population in and

[‡] At least seven miles of the system remain perennial. Besides human impacts, changes in the river's flow have also been attributed to an earthquake in 1887.

[§] Groundwater depletion data is unavailable for Sonora.

around Cananea. These institutions have been and will continue to be important stakeholders in the San Pedro basin.²³

Over the past century, heavy livestock grazing in Arizona's part of the basin has caused many of the native grasslands to convert to desert scrub. In Mexico, grazing in recent years has been less intense, especially on the *ejido* lands, which has allowed many of the grasslands to recover to their natural state. These increased resource values have enhanced the value of the areas to wildlife viewing and hunting.²⁴ Recognition of these potential economic values of an intact ecosystem can help empower citizens on both sides of the border to better coordinate opportunities for conservation and tourism throughout this binational basin.

Barriers to Transboundary Collaboration

While the basin economies on either side of the border are equally connected to the river and its associated groundwater system, the cultural and socioeconomic differences between countries are quite pronounced. These obvious differences have often been a hindrance to cooperation across the international border, where different customs, laws, and settlement patterns prevail. A significant barrier has been the language difference. While many natural resource professionals on either side of the border are bilingual, most of the broader stakeholders in the basin are not. This has been an impediment to the development of public dialogue on issues concerning the basin-wide community.

The border itself has also been a physical barrier to binational research and management activities in the basin. One Mexican scientist working in the region noted that one of the largest barriers to his work has been dealing with customs and the Border Patrol in the U.S., as well as problems with the police and army in Mexico who are looking for illegal aliens and drug traffickers.²⁵ These border issues reflect some of the economic differences between Mexico and the U.S. that have made it difficult to coordinate resource management activities across the international border.

In the U.S. part of the basin, there is growing concern about the health of the river, and a great deal of effort has been focused (albeit amid controversy) on how water use can continue without further impacting the ecosystem. Despite these concerns however, everybody on the U.S. side of the basin has clean water to drink. In Mexico, people's primary concerns are much more immediate, relating to the quality and availability of drinking water.²⁶

Different natural resource priorities have made it difficult to coordinate research and management activities throughout the basin, as the state and federal governments in Mexico have been focused on other, more pressing issues in the region.^{**27} As one Department of Interior official described, "for on-the-ground cooperation, the biggest

** The Sonoran government has, for the past two years, been providing water to the City of Cananea while also working to mitigate water quality concerns in Rio Sonora. Sharing its headwaters and mining contamination concerns with the San Pedro near Cananea, the Rio Sonora flows south towards Sonora's capital city of Hermosillo.

barrier was that the Mexican federal government was not very focused on the San Pedro for a long time, so there really weren't very many people to work with."²⁸

The increasing role of Mexico

Over the last several years, there has been a marked increase in the level of Mexican involvement in the basin. This growing role can be partially attributed to an overall rise of natural resource issues in the national policy agenda. Since 1995, the federal government of Mexico has substantially increased its level of support for protected area designations, management and operations. Now, the San Pedro is included in a larger effort by the Mexican federal government to provide adequate management to natural resources and biodiversity in northeastern Sonora.²⁹

Along with a greater overall recognition of the San Pedro's resources, pressure from American organizations has also helped turn Mexico's attention to the San Pedro.³⁰ These organizations have included The Nature Conservancy, which listed the San Pedro among its Last Great Places of the Western Hemisphere;³¹ American Rivers, which placed the San Pedro on its 1999 Most Endangered Rivers list;³² the American Bird Conservancy, which in 1996 considered it to be a Globally Important Bird Area;³³ and the Center for Biological Diversity.³⁴ Programs and initiatives by resource management agencies and the Commission on Environmental Cooperation have also raised Mexico's awareness of the San Pedro. These programs are discussed in detail below.

Trust, understanding, and goodwill

Despite the increased attention that the federal government is giving to the basin, the Mexican natural resource agencies that are working in the San Pedro are operating with limited resources (compared to their U.S. counterparts) to conduct research and develop management options for the basin.³⁵ Indeed, while the Cananea mine is a significant economic engine for the region, most of the profits flow out of the basin leaving very few resources for social programs and ecosystem protection.³⁶ The Mexican resource management agencies are very committed to protecting the San Pedro ecosystem, but limited staff and funding has made it difficult to achieve their conservation goals in a short period of time.³⁷

In addition to the disparity of resources and information across the border, there has been a lack of communication, coordination and understanding between the communities on either side. This resulted in a certain amount of mistrust and "finger-pointing" among the basin's citizenry over who is to blame for the San Pedro's woes. Mexican resource managers, the Cananea mine, and *ejidatarios* have often been disparaged by American citizens for neglecting the resources on their side of the basin. Some contend that these charges are inaccurate,³⁸ illustrating that they only exacerbate the barriers to trust and cooperation. The real issue here is groundwater, and many stakeholders, such as the Cananea mining company, are very protective of information about this resource. As one American researcher explains, "there's a sentiment that if they let us know what they have we're going to take it."³⁹

This lack of trust, which is exacerbated by the cultural and economic barriers to collaboration across the border, illustrates that there is much to be done in terms of developing a greater sense of connection and community throughout the San Pedro basin. However, while these socioeconomic barriers to collaboration are persistent, they can be overcome by expressions of goodwill and reciprocity. As one researcher explains, the communities on either side of the border can have very different concerns and priorities: “If you go down to Mexico and talk about water, they’re going to want to talk about public health.” She goes on to point out, “That’s where people on the U.S. side can really offer something”⁴⁰ in terms of technical assistance, resources and expertise.

By recognizing and addressing the core concerns of the Mexican citizens and assisting with such things as water quality monitoring and restoration, agencies and researchers that are concerned with the ecological health of the San Pedro can help galvanize support among Mexican citizens, governments, and perhaps in time, the Cananea mine.⁴¹ In one small but significant example of goodwill, the Huachuca Audubon Society in Arizona donated Spanish-language ecology books to teachers in Mexico.⁴²

Political Considerations

Besides the differences in economic resources and opportunities on either side of the border, the level of political advocacy and activism is also very different between American and Mexican parts of the San Pedro basin. Cochise County, which comprises most of the American part of the basin, is considered to be one of the most politically conservative areas in the region, with vocal property rights and anti-government contingencies.⁴³ To many local citizens in this part of Arizona, it makes no sense to allow the consumptive water use of the riparian vegetation to limit economic growth.⁴⁴ Given this tradeoff, the ecological values of the river are of minor importance, as evidenced by a Sierra Vista city councilman’s statement that, “If the San Pedro is a national treasure, we are an impoverished nation. You can’t drown a fish in it.”⁴⁵

Much of this local resentment to efforts to protect the San Pedro comes from long-term rural landowners and developers, who are hostile towards “outside” interference in local land and water use issues, including those on state or federally-owned lands. Many locals in Cochise County are still bitter over the retirement of traditional grazing and agricultural land to create SPRNCA.⁴⁶ The increased presence of local and national environmental organizations has been effective in raising the cause of the San Pedro, but it also has fueled the fears of property rights activists.⁴⁷ As a result, there have been sharp divisions in the community, with factions falling along very adversarial lines.⁴⁸ However, the recent creation of the Upper San Pedro Partnership in the U.S. part of the basin (described below) has helped bring these forces together, and “people are really working together pretty well these days.”⁴⁹

In Mexico’s part of the basin, there are no organized property-rights or anti-government groups, and fewer advocates for ecological protection than there are on the U.S. side.⁵⁰ Instead, the politics of the basin are largely driven by the economic power of the Cananea mine, which has traditionally dominated water policy and management. A researcher in the basin explains that the mine has “more political clout than any of the local

governments and all of the federal agencies,” as evidenced by disputes over water supply to the city of Cananea.⁵¹ The Nature Conservancy’s U.S.-Mexico Coordinator continues: “The mining company is... incredibly powerful. They bring in quite a bit of revenue to the State of Sonora, so they are a powerful enemy or ally, depending on whose side you’re on.”⁵² Lasting protection of Mexico’s San Pedro will have to include the mine but will also require a strengthening of local governments, agencies and community leaders in the basin.⁵³

Recognition of a Transboundary Resource

Over the past 400 years, early settlers and modern communities have learned how to live and prosper in the arid environment of the San Pedro basin. Now, human activities on both sides of the international border are nourished by the same transboundary groundwater aquifer that sustains the riparian ecosystem of the San Pedro. In this competition for water, the river has been losing.

While much of the riparian corridor is now protected within Arizona, the viability of the river is still threatened by groundwater pumping throughout the binational basin. In recent years, researchers, resource managers and policy makers have realized that they cannot address these issues by looking at only part of the puzzle. The fate of the San Pedro river and the groundwater aquifer that sustains it – resources that both the human and natural communities of the basin are vitally dependent upon – are inextricably connected on both sides of the border.

Despite the cultural and economic differences that have made Arizona and Sonora seem like different worlds, stakeholders in the San Pedro basin are beginning to recognize these connections, and the need for better coordination across the border to address water issues that pertain to the entire basin. The following programs illustrate how resource managers and stakeholders in the basin have been working to improve communication and cooperation across the border in order to articulate and implement solutions as a basin-wide community.

APPROACH TO TRANSBOUNDARY MANAGEMENT

The 1988 establishment of the BLM’s San Pedro Riparian National Conservation Area (SPRNCA) illustrated the ecological importance of the San Pedro and the need to protect its unique resources. The threats to these resources, however, are much more widely distributed throughout the basin than just along the river. Despite the protection of the SPRNCA, the San Pedro ecosystem remains vulnerable to development and water withdrawals on both sides of the international border. Along with increasing recognition of the San Pedro’s importance, momentum has been gathering over the past decade to protect the San Pedro as a transboundary resource. This momentum comes in the form of several separate but very connected programs, events, and initiatives— these include the Upper San Pedro River Basin Issue Team, the CEC Upper San Pedro Initiative, the San Pedro Binational Initiative, and other transboundary activities.

Upper San Pedro River Basin Issue Team

Beginning in 1986, the Bureau of Land Management (BLM) made several attempts to contact their counterparts working in the Mexican part of the basin. While the BLM had no experience working across the border, they made some initial contacts, and with the help of The Nature Conservancy and the Arizona-Mexico Commission,^{††} these relationships were fostered and expanded over the years.⁵⁴

In 1994, the U.S. Department of Interior (DOI) organized the United States-Mexico Border Field Coordinating Committee (FCC) to harmonize activities among the various DOI agencies that were working along the U.S.-Mexico border.⁵⁵ Recognizing that the San Pedro was an area of high interest to many DOI bureaus, the Upper San Pedro River Basin Issue Team was established to determine how the individual bureaus could work with each other, and with their counterpart natural resource research and management agencies in Mexico.

Capitalizing on the contacts that the BLM and other DOI agencies had previously established in Mexico, representatives from SEMARNAT, IMADES (Institute for the Environment and Sustainable Development for the State of Sonora), and other research institutions became involved in the Issue Team shortly after its inception.^{††56} The Issue Team Coordinator explains: “Inviting Mexican representatives to participate on the Issue Team was a natural and they began their participation very early.”⁵⁷ Since its inception, the Issue Team has become a useful forum for building relationships and improving communication between resource managers, researchers and other stakeholders in this binational basin.

The membership of the Issue Team is not fixed—it varies depending on the issues being considered. Primary participants generally include the DOI agencies, IMADES, SEMARNAT, local and state governments and agencies, universities in Arizona and Sonora, and non-governmental organizations such as The Nature Conservancy, the Sonoran Institute, Huachuca Audubon Society, and the Friends of the San Pedro River.⁵⁸

Principal Transboundary Actors

- U.S. Department of Interior agencies (BLM, USGS, NPS, etc.)
- Mexican Secretariat of the Environment and Natural Resources (SEMARNAT)
- Commission for Environmental Cooperation (CEC)
- Institute for the Environment and Sustainable Development for the State of Sonora (IMADES)
- Udall Center for Studies in Public Policy at the University of Arizona
- Semi-Arid Land-Surface Atmosphere Program (SALSA)
- The Nature Conservancy

^{††} The Arizona-Mexico Commission is a non-profit commission dedicated to improving the economy and way of life in the Arizona-Sonora region by utilizing cultural, economic, human, natural and technical resources.

^{‡‡} In addition to the greater Issue Team activities, the National Park Service and the U.S. Geological Survey have been working with SEMARNAT since 1998 on cooperative fire and wildlife studies between the Ajos Bavispe Reserve in Sonora, and Chiricahua National Monument in Arizona (east of the San Pedro basin). As “sky islands,” these sites share a similar ecology, but have different histories of land use and fire suppression.

Issue Team activities have included a binational resource management training, coordinated habitat management, and joint studies of neotropical migrant bird species.⁵⁹

For the first several years, the Issue Team met regularly to develop better understanding of the participants and resources on either side of the border. These activities, which included field trips and joint research projects, helped facilitate the development of trust and the sharing of information across the border. This cross-boundary exchange of information and ideas has been bolstered by a sense of top-down encouragement and support for transboundary activities within the agencies.

This top-down encouragement, however, took place without any official binational agreement or declaration. Instead, the relationships and trust that were established by the Issue Team laid the groundwork for a more ambitious initiative in 1999 that was established by a Joint Declaration (see below). One thing that enabled the Issue Team to move forward was the support that has come from agency supervisors, the FCC program, and Secretary of Interior Bruce Babbitt himself. An Arizona native, Babbitt effectively championed protection efforts in the San Pedro and has helped build the momentum for transboundary consideration of the basin's resources.⁶⁰

As Issue Team activities began to slow down in 1996, the Commission for Environmental Cooperation (CEC)^{§§} took center stage with an initiative to study the resources of the binational basin.⁶¹ Because of all of the activity relating to this study, the Issue Team stopped meeting regularly until 1999, when it resurfaced with occasional meetings and activities.⁶²

CEC Upper San Pedro Initiative

In 1996, the Southwest Center for Biological Diversity petitioned the CEC to investigate whether Fort Huachuca violated the National Environmental Policy Act (NEPA) by failing to address the impacts of Fort activities and associated groundwater depletions on the San Pedro system. Recognizing the SPRNCA as an Important Bird Area, the CEC launched its Upper San Pedro Initiative in 1997.⁶³ While it was not well received on the U.S. side of the basin, this CEC Initiative was effective in pushing the stakeholders to articulate their options for protecting both human and ecological needs in the Upper San Pedro River basin.

The CEC's Initiative set out to investigate the ecological, biohydrologic, socioeconomic and institutional conditions in the Upper San Pedro basin, evaluating a range of solutions that were under consideration by stakeholders.⁶⁴ In addition, the CEC wanted the study to serve as an example of how to protect a transboundary watershed.⁶⁵ An Expert Study Team, consisting of scientists from both the United States and Mexico, was in charge of the study.⁶⁶ While members of the Issue Team were not on the Expert Study Team, they contributed through interviews and reviews of the study.⁶⁷

^{§§} The CEC is a trinational institution set up by a side agreement to North American Free Trade Agreement (NAFTA) to facilitate cooperation and public participation in conserving the natural environment within the context of increasing economic and social links between the US, Canada and Mexico. The CEC also investigates allegations of non-enforcement of environmental laws by member nations.

Though it was funded and organized from outside the basin, the CEC initiative played a major role in galvanizing interest and encouraging a broader dialogue about the issues in the San Pedro.⁶⁸ At the outset, the local communities in the U.S. were suspicious of the CEC and promptly opposed the study. One local official characterized this sentiment, calling the CEC “an arrogant group of internationalists coming here telling us what to do.”⁶⁹ Tensions calmed over time, as many communities recognized that this outside expertise might be able to help them with their water supply problems.⁷⁰ During the preparation of the draft report on the San Pedro, the CEC commissioned a public input process at the request of the local communities.⁷¹

Public Input

In 1998, the Udall Center for Studies in Public Policy at the University of Arizona (Udall Center) conducted the public input process for the CEC study.⁷² This process, based mainly on U.S. stakeholders, demonstrated that there was broad-based appreciation for the river, recognition of the shared interests and responsibilities between stakeholders, support for sharing the burdens of conservation among water users, and a desire for local participation and control. However, many participants criticized the CEC study for not adequately addressing hydrologic conditions in Mexico and the impact of Mexican economic activities on the system.⁷³ The results of this process were considered in the final draft of the technical report.⁷⁴

CEC Report

In 1999, the final draft of the CEC’s report was released. The report, *Ribbon of Life: An Agenda for Preserving Transboundary Migratory Bird Habitat on the Upper San Pedro River*, included some of the following primary recommendations:

- Reduce irrigated agriculture in the Mexican side of the basin
- Limit irrigated agriculture extractions on the U.S. side of the basin
- Develop water conservation and recycle/recharge initiatives to reduce municipal and domestic water demands
- Establish a binational, coordinated planning structure to develop a comprehensive water planning and management plan⁷⁵
- Create a protected area in Mexico’s part of the basin⁷⁶

Water conservation and recharge projects were widely accepted, and are beginning to be implemented in the U.S.⁷⁷ However, the reduction of irrigated agriculture, seen by the CEC to be the most economically feasible solution, was severely criticized on both sides of the border because of its social implications.⁷⁸ Some citizens were concerned that the solutions unfairly targeted agricultural users, while failing to address growth management around Sierra Vista. As one citizen put it, “there is too much emphasis on politically easy solutions like retiring agriculture rather than the politically more difficult solution of cutting urban growth.”⁷⁹

The calls for drastically reducing irrigated agriculture in the basin have been cause for alarm among the farmers, ranchers and *ejidatarios* who depend on irrigation for their livelihood.⁸⁰ While some American participants in the CEC process argued that Mexico

should do its fair share to reduce groundwater use, others were concerned that such measures would have a disproportionate impact on Mexican citizens. “Is it a fair solution, (that is) just, given the economic consequences to an already deprived region?” asked one participant.⁸¹ It is interesting to note that, consistent with some of the complaints about the CEC report, it makes little mention of the possibilities of limiting water consumption by the Cananea copper mine. The mine is the single largest water user in the basin, which already has had an impact on the ability of nearby *ejidos* to pump the groundwater needed for agriculture.⁸²

Binational Coordinated Management

Another recommendation by the CEC included a binational, basin-wide coordinated resource management program. This idea of better coordinated, transboundary management of the basin is not new; one of the original long-term goals of the Issue Team was to eventually develop a management plan for the entire basin that would be compatible with the laws and needs of both countries.⁸³ There has also been persistent mention of the formation of a binational commission that would coordinate water and resource management in the basin,⁸⁴ and many resource managers and citizens in Mexico are interested in the formation of a watershed council that would be similar to the San Pedro Partnership^{***} in the U.S.⁸⁵ Despite the debate over whether such an organization should be a governmental commission or a grassroots watershed group,⁸⁶ most observers feel that some sort of binational entity is possible.⁸⁷ Many however, feel that the establishment of a watershed council in Mexico would be the first of many steps toward the long-term goal of binational coordination.⁸⁸

The final recommendation by the CEC was to establish a protected area in the Mexican part of the basin.⁸⁹ While this solution has been widely supported, many stakeholders in the basin have recognized that the creation of such a reserve would be difficult for Mexico’s cash-strapped government, and would surely meet resistance from the Cananea mine. By 1999, however, a unique binational partnership would make this vision seem possible, or even likely.

San Pedro Binational Initiative

Following the release of the CEC report on the San Pedro in 1999, U.S. Secretary of the Interior Bruce Babbitt and Mexico’s Secretary of the Environment and Natural Resources (SEMARNAT) Julia Carabias launched the San Pedro Binational Initiative. Building off of the existing work in the field, these two leaders developed a very unique and creative approach to transboundary conservation. By signing a Joint Declaration, Babbitt and Carabias formalized the sharing of funds, information, and conservation expertise across the border.⁹⁰ The most significant and unusual aspect of the Initiative was a program to designate a protected area in the Mexican part of the basin that would be paid for by \$1.5 million from private U.S. sources. In addition, the U.S. Department of Interior announced plans to use Land and Water Conservation Fund money to purchase additional land and water rights within Arizona.⁹¹

*** Described below, the Upper San Pedro Partnership is a collaborative partnership of eighteen agencies and organizations that is seeking to better coordinate water management in the U.S. part of the basin.

Working with partners such as the World Wildlife Fund and the National Fish and Wildlife Foundation, the Department of Interior arranged for funds to be put into the Mexican Fund for the Conservation of Nature, *Fondo Mexicano*.⁹² Portions of this trust fund were to be used for the establishment of a large protected area that would encompass the San Pedro River in Mexico. According to its preliminary design, the Mavavi Biosphere Reserve would be an expansion of the existing Ajos Bavispe Reserve that would include much of the San Pedro corridor under a higher level of protection.⁹³

Mavavi Reserve designation

During the initial phase of discussions about the Mavavi Reserve, Hector Arias, a prominent researcher in the basin, was working on a plan to compensate farmers for not pumping groundwater. This plan fell through when Arias took a job outside of the basin. Now, the Reserve design is focused on protecting the land.⁹⁴ In November, 2000, the Mexican federal government published a notice to decree the Mavavi Biosphere Reserve in the San Pedro basin. Public notice of the decree allows interested parties to raise concerns with the National Commission for Protected Natural Areas (CONANP – a subsidiary of SEMARNAT).⁹⁵

The original Mavavi Reserve design included core protected areas along the San Pedro River near the Cananea mine operations. Due to concerns expressed by the mining sector during public hearings, adjustments were made to the reserve design. Now, CONANP is conducting additional public meetings and is developing a management plan for the Reserve. The management plan will establish the uses, zoning, and proposed actions for operation and administration of the area. CONANP plans on submitting a final Mavavi Biosphere Reserve Decree by the end of 2001.^{††† 96}

While this proposed reserve would expand the visibility and protected status of much of Mexico's part of the basin, the fact that it does not directly address water use has drawn criticism from some of the people who are working in the basin.⁹⁷ Others, however, are optimistic that the Mavavi Reserve will be a step towards protecting the river, by providing the recognition and funding that will

Significant Milestones

- 1988**- San Pedro Riparian National Conservation Area created in the United States.
- 1994**- Upper San Pedro River Basin Issue Team established among U.S. and Mexican agencies.
- 1997**- Commission for Environmental Cooperation (CEC) initiates a study of the basin.
- 1999**- CEC *Ribbon of Life* report completed
- 1999**- San Pedro Binational Initiative launched by Joint Declaration between the U.S. DOI and SEMARNAT.
- 1999**- Transboundary *Divided Waters-Common Ground* Conference held.
- 2000** - Notice to decree the Mavavi Biosphere Reserve published by the Mexican government.

^{†††} The Mavavi Biosphere Reserve Project is included in Mexican President Vicente Fox's National Crusade for Water and Forests because of its role in the border region. This initiative will work for protection of the resource and the promotion of more efficient water use through public participation.

promote more efficient water use.⁹⁸ As a researcher at the Udall Center put it, “I would agree that creation of the reserve doesn’t address that, but it’s a step towards addressing that- it’s a step towards protecting the area, and it raises awareness that this is a resource that is nationally and internationally valued.”⁹⁹

Facilitating Factors

While transboundary activities involving federal-level agencies had been going on for several years, this higher-level initiative necessitated the signing of a Joint Declaration to formalize the agreement to establish the protected area. However, despite this semi-formal governmental endorsement, the structure of this program has been loose, focusing on a specific goal and involving a small number of stakeholders. The apparent effectiveness of the Binational Initiative has been largely credited to Babbitt’s level of interest in the area, and his relationship with Carabias. As described by a DOI official: “The Babbitt-Carabias relationship and friendship really helped... They’ve become really good friends over the last five years, and I think because of that friendship they have enough trust in each other to sign this Joint Declaration and agree to do something in the basin.”¹⁰⁰ This relationship has been a powerful force in building trust across the border and leveraging the resources to make the Mavavi Reserve possible.

Other Transboundary Activities

SALSA Program

Besides the transboundary programs and events described above, there have been several other programs and efforts that have greatly enhanced the spirit of binational cooperation in the San Pedro basin. One of the most significant of these has been the Semi-Arid Land-Surface-Atmosphere (SALSA) program. Consisting of researchers from the United States, Mexico and Europe, the goal of the SALSA program is “to advance scientific understanding of the hydrology and ecological diversity of semiarid regions in order to provide reliable information for natural resource decision making.”¹⁰¹

With a purpose and participation that has been closely related to that of the Issue Team (above), the SALSA program has made a significant contribution to the current understanding of the basin’s resources and has also been instrumental in advancing the cause of binational coordination. Following the CEC study, the SALSA program sponsored a binational conference in 1999.

At the *Divided Waters-Common Ground* conference, participants spent the first day in Cananea, Sonora, the second day along the river, and the third day in Bisbee, Arizona to better understand the San Pedro basin in its entirety. The objectives of the conference were to foster knowledge exchange, communication, and cooperation across the border, and to obtain future research direction from resource managers, decision-makers, and the public.¹⁰² This conference was recognized as a landmark event that will help take the transboundary preservation of the San Pedro into its next phase of development.

Local Outreach

Several other programs have also contributed to transboundary coordination and understanding in the San Pedro. For example, The Nature Conservancy has been

working with IMADES on community outreach work in Mexico, hoping to help communities maintain a livelihood in the basin while minimizing their impacts. These activities have also included community-based monitoring efforts that can help enhance the level of involvement of these communities in understanding and protecting the ecological resources of the basin.¹⁰³

Upper San Pedro Partnership

Limited to the U.S. part of the basin, the Upper San Pedro Partnership has become an important force for collaborative decision making among the American agencies, municipalities and organizations that are involved. Consisting of eighteen local, state, and federal agencies, as well as several non-governmental organizations, the Partnership has been working toward the development of a comprehensive water resources plan for the U.S. part of the basin.¹⁰⁴ Despite criticism that this partnership has inadequate public involvement,¹⁰⁵ it has become an important asset for cooperative management and discussion in the U.S. If a watershed council or similar entity could be created on the Mexican side of the basin, the Partnership could interface with that entity to enhance binational coordination.¹⁰⁶

Each with its own unique purpose, these various programs and efforts greatly contribute to a “culture of cooperation” in the basin. They illustrate that collaborative problem solving is possible and set a precedent for the larger, more ambitious transboundary efforts that are described above.

ACCOMPLISHMENTS

Coordinated management and protection of the transboundary San Pedro basin is far from complete, but there have been many accomplishments to date. The increased communication and cooperation between U.S. and Mexican researchers and resource managers is a positive end in itself.¹⁰⁷ This coordination and sharing of information, as well as a more sophisticated use of technologies such as Geographic Information Systems and remote sensing, has greatly enhanced the collective understanding of the basin’s resource base.¹⁰⁸

The fundraising activities in the U.S. to help Mexico establish the Mavavi Reserve was a significant and creative accomplishment on the part of federal officials and non-governmental organizations.¹⁰⁹ While the surface protections of the reserve will not directly affect water use, it will add a layer of protection and recognition to the area. This increased attention could help attract additional funding and technical expertise that can help make agricultural operations more water-efficient.¹¹⁰ If the Mavavi Reserve is decreed, its establishment through the Binational Initiative will be a boost for protection efforts in the San Pedro basin and will also set the stage for a more comprehensive approach to transboundary conservation.

Another important outcome of the transboundary initiatives in the San Pedro is the increased awareness of basin resources on both sides of the border. In Mexico, there is

an increased awareness that the river is an ecological resource, and that the condition of Mexico's part of the basin should be a source of pride.¹¹¹ In the U.S., there is increased awareness that the issues and resources surrounding the San Pedro are indeed binational, and they have had to learn to work with a neighbor, that according to one researcher, "they didn't consider from the point of view of management."¹¹²

Despite all of the progress made in coordinating research, management, and administration, the core issue of water hangs like a dark cloud over all of these activities. "You can't just turn back the clock," says the BLM's Issue Team Coordinator, "so you have to decide how you're going to deal with the increased development that is going to occur and still protect the river."¹¹³ The sheer magnitude of this issue is still present, despite the notable progress of these efforts. Little has been done to address urban growth in Arizona, and the Cananea mine will be a continuous threat to the viability of conservation efforts in Mexico.¹¹⁴

Over the past decade, the momentum towards coordinated transboundary resource management in the San Pedro basin has increased, with several new initiatives and events. Throughout all of this, the people who have been involved in these processes have learned valuable lessons. The DOI's U.S./Mexico Coordinator points out that it is important that the U.S. is not too far ahead of Mexico, and that both countries come together "as equal partners with common priorities, and mutual concerns."¹¹⁵ Because of Mexico's limited resources and the difficulties of working across an international border, patience is important.¹¹⁶

CONCLUSION

While the barriers to coordinating resource management and research across the U.S./Mexico border have been daunting in the San Pedro, the energy and commitment has been dedicated to overcome these barriers is encouraging. With all of these transboundary programs and efforts in the region, the momentum towards more coordinated resource management throughout the binational basin is growing. These programs have not solved the basin's imposing groundwater issues, however, and the San Pedro is still threatened by economic activities. What these unique efforts have done is develop a better understanding of what the basin community's conservation options are, and establish the trust and communication channels that are essential to tackling these issues as a basin-wide community. These accomplishments will set a firm foundation for continued efforts to preserve ecological integrity of the San Pedro River along with the communities that depend on it as a valuable, transboundary resource.

Lessons

The efforts and programs that were investigated for this case study revealed the following lessons about transboundary resource management:

- **The involvement of high-level government officials is useful in leveraging resources and encouraging transboundary, inter-agency collaboration.** The

relationship between U.S. Secretary of the Interior and Mexico's Secretary of the Environment and Natural Resources was important in facilitating transboundary collaboration among resource management agencies. The support of these leaders gave a sense of top-down encouragement to transboundary, inter-agency efforts such as the Upper San Pedro River Basin Issue Team. In addition, their relationship was critical in developing the San Pedro Binational Initiative, a creative approach to expanding the protection of the San Pedro ecosystem.

- **An official transboundary agreement can be helpful in leveraging funding, recognition and support for collaborative programs.** While the Issue Team made significant progress without any sort of binational agreement, the more ambitious objectives of the Binational Initiative necessitated the signing of a Joint Declaration between high-level agency officials. It is important to note that a formal, international treaty was not needed.
- **While informal, ad hoc coordination can be effective, the creation of a formal binational structure is recognized to be necessary for a long-term collaborative process.** Various ad hoc efforts have been useful in developing relationship, trust and communication. While these efforts have been useful in gathering momentum towards protecting the San Pedro, many participants recognize the future need for a coordinated binational board or management plan to effectively address difficult groundwater issues.
- **Public involvement is important, and should to be integrated early in the process.** While most of the binational programs in the San Pedro basin have sought public involvement on an as-needed basis, their lack of public involvement has drawn criticism. Some of the officials in the basin recognize the need for increased public involvement, and lament having not initiated it earlier in the process.
- **The involvement of an international institution can help facilitate dialogue about transboundary resources that may result in the development of possible resource management solutions.** While the Commission for Environmental Cooperation's study of the basin was seen at first to be an outside interference in local affairs, it helped draw the attention of to the issues in the basin, and also helped stakeholders begin to articulate management strategies. Several of those strategies are beginning to be implemented.
- **Efforts of goodwill and understanding that recognizing the socioeconomic needs of transboundary partners can be effective in promoting a greater sense of community.** Since Mexico has limited resources to commit to the San Pedro, initiatives that bring resources to the table, such as funding or support, have helped Mexico become an equal partner in protecting the river. Besides making conservation actions more feasible, these initiatives also break down the barriers of misunderstanding and mistrust that can impede the development and sustainability of transboundary efforts.

- **It is important that both nations come together as equal partners, and that the interests of one are not forced upon the other.** While the U.S. and Mexico have many common goals towards protecting the river, they also have their differences in economic realities. It is important that U.S. agencies and organizations continue to recognize this and find creative ways to overcome these differences.
- **It is important to recognize small gains and not get bogged down by the sheer magnitude of some issues.** The groundwater issues in the San Pedro basin are imposing, and a more coordinated transboundary management structure to deal with this core issue is far from a reality. However, substantial progress has been made in many areas, and it is important to recognize those incremental steps towards protecting the San Pedro ecosystem.
- **Transboundary work can take much longer than expected, so patience is important.** Working through the barriers transboundary collaboration, it has taken a long time to develop the relationships and communication that are necessary for effective transboundary collaboration and eventual ecological achievements.

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