

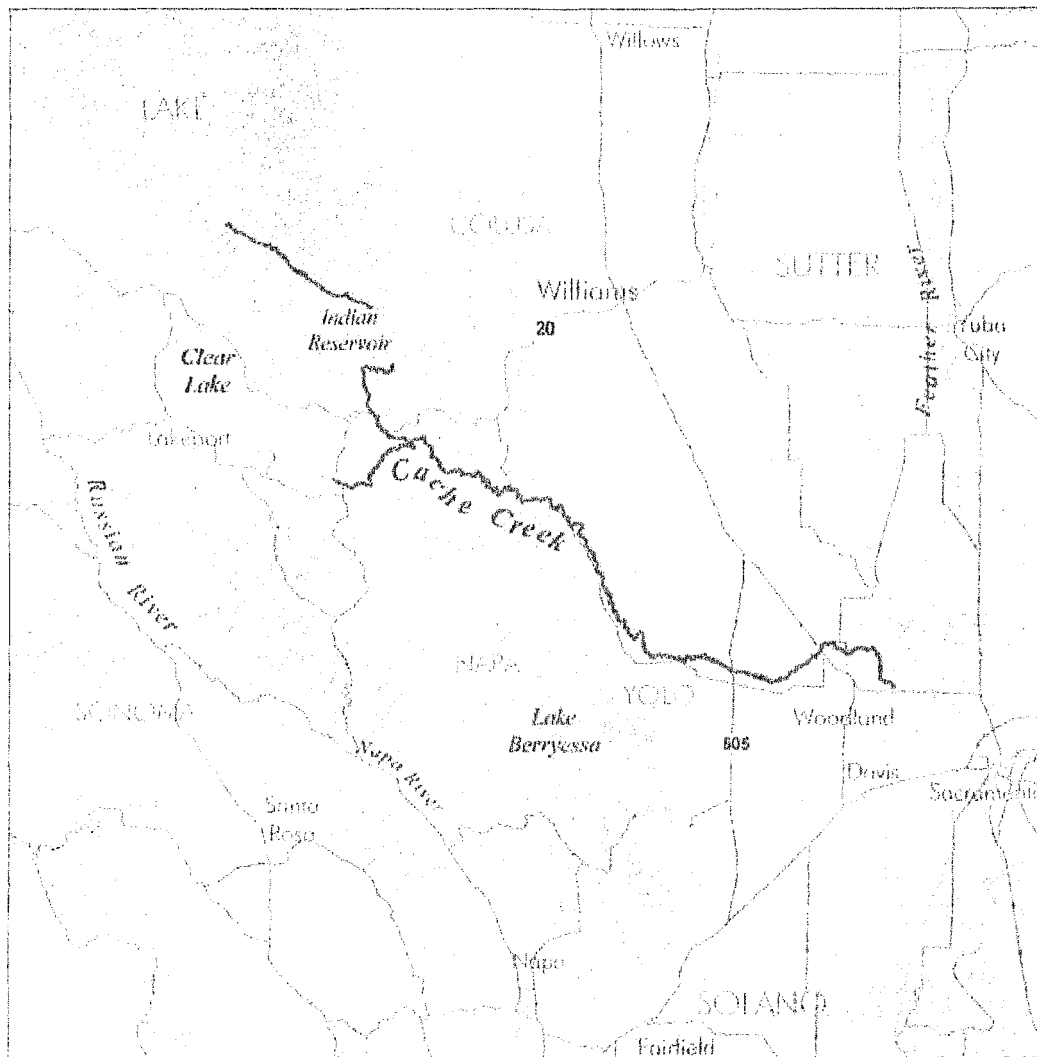
Creating Common Ground: A Collaborative Approach to Environmental Reclamation and Cultural Preservation

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This is the story of how an undergraduate's small landscape plan grew into a complex reclamation project in the form of a riparian/wetland-based garden in Yolo County, California. From the beginning, the work was a collaborative process. The use of participatory research opened communication and created common ground between competing interests. The project grew organically out of a student's desire to be inclusive of local community stakeholders. The Native American Tending and Gathering Garden (the Garden) is in the Cache Creek Nature Preserve (CCNP) located in Woodland, California, which is managed by the Cache Creek Conservancy (the Conservancy) (see Figure 5.1). The Garden is the result of collaboration between industry, the Native American community, academics, farmers and others. The journey that led to the establishment of the Garden was laden with lessons. This chapter provides a critique of the impact and contribution of participatory action research (PAR) in a local community-based natural resource management effort.

HISTORY: SETTING THE CONTEXT

The genesis of the Conservancy itself was steeped in decades' long local controversy surrounding gravel mining on Cache Creek. The resolution of that controversy indirectly created the collaborative atmosphere that welcomed the Garden concept. A review of the Conservancy's history, as well as Native American participation



Source: courtesy of Green Info Network

Figure 5.1 *Cache Creek Watershed*

within the watershed, illustrates why the Garden concept (and all that resulted) was able to find a home at the CCNP.

The Cache Creek watershed drains 420 square miles (1088 square kilometres) of the Coast Range as it winds eastward along a 100 mile (161km) course through California's Lake and Colusa counties, then southeast through the Capay Valley before its confluence with the Sacramento River. The creek is recognized on the National Register of Historic Places for its cultural richness and importance. Historically, several different groups of indigenous tribal peoples made the Cache Creek watershed their home, including Miwok, Patwin, Pomo, Wappo and Wintun peoples. Native Americans had a significant presence in the Cache Creek watershed before and during initial European settlement. Although traces of native village

sites dot the banks of the Cache Creek, the Rumsey Band of Wintun Indians is the one remaining tribe with a land base in the watershed today.

Native American community members continue to live in the area; but there has been little recognition of local tribal expertise or knowledge of natural resource management and history. The county has grappled with natural resource management issues since the early 1950s. There is no evidence that those who knew the creek's pre-contact condition were asked for their input or help. During the early 1980s, the Rumsey Band of Wintun tribal members sought to re-establish a tribal land base in the Capay Valley and bring the Wintun families home from the places to which they had migrated. Local news articles chronicled the apprehension and attitudes of some non-native residents in the valley. In Woodland, the seat of Yolo County, the city newspaper ran an article entitled 'Indians' return stirs Capay Valley protest'. A retired local medical doctor was quoted: 'I don't like the idea of having drunken Indians up and down the highway... The Indians will steal anything around' (Dianda, 1981). While such sentiments are not universal, countervailing public opinion has been largely absent. Community dialogue about the changing use of the Cache Creek is extensive; yet there has been scant acknowledgement of the impact upon Native life ways in either the historic or contemporary context.

Private landownership along the creek and loss of riparian landscape greatly diminished land access for native peoples. Access is necessary for traditional food gathering, hunting and ceremony. It is required for the tending and harvesting of plants necessary for the creation of baskets, traps, cordage and other uses. Under similar conditions in other parts of the US, lack of access has affected Native American people in a variety of ways (Anderson, 2005; Turner, 2005). In the context of Cache Creek, there has been no such discussion and, hence, no protection for health and cultural concerns unique to tribal peoples of the area.

European settlement has dramatically impacted upon the landscape. Among the local impacts was the diversion of water from the creek in 1856 into a canal that was the predecessor of the current system of dams and canals, which diverts the creek into a countywide water delivery system for agriculture and other uses within Yolo County. Upstream of the agricultural diversions the creek remains much as it has always been, albeit with the significant invasion of exotic plant species. Downstream of the diversions, the creek became a major source of aggregate (sand and gravel) starting in the late 1930s and intensifying during the 1970s and 1980s. The gravel industry began on Cache Creek as small family-run operations. One of those small companies is now owned by Rinker Materials, the second largest construction materials company in the world. Each gravel mining operation has grown rapidly, working to meet the demand for new construction in California. The Bay Bridge in the San Francisco Bay Area contains Cache Creek materials. Mining within the creek's active channel grew from a few hundred thousand tons (1 ton is roughly equivalent to 1 cubic yard) during the 1950s to 5 million tons annually under a new permitting process established in 1997.

The riparian corridor changed. Some riparian landowners were angered because they were losing their land to erosion. Environmentalists joined the fray. Disagreements turned into feuds that lasted decades. From 1974 to 1997, two decades of 'gravel wars' accomplished virtually nothing for Yolo County. In 1994, newly elected county leadership marshaled the courage and vision to face the state-mandated challenge of devising a plan to allow continued mining while fostering reclamation and restoration. The Cache Creek Area Plan, which included the Cache Creek Resources Management Plan (CCRMP), was conceived in the context of 'net gain'. This concept is based on the idea that the people of Yolo County and their natural resources would be better off at the end of 30 years of mining permits than if there had been no mining at all. In order to accomplish the net gain goal, the county would permit mining, industry would provide remediation funding, and a community collaboration would be formed. A plan for managing Cache Creek's resources to the benefit of all would result from this work.

Through the process that created the CCRMP, a sense of community purpose was kindled and disparate interests started identifying common goals. Farmers helped miners to restore off-channel pits to more fertile conditions than before mining. Gravel mining companies were recognized for the flood control and erosion control work they had provided for decades. Additionally, the companies agreed to contribute 20 cents for each ton of gravel mined for creek restoration. At 5 million tons mined per year, their yearly contribution toward environmental improvement would total US\$1 million. Starting in 2008, the gravel industry will be increasing to 45 cents per ton. The beneficiary of these proceeds is the Conservancy.

THE CACHE CREEK CONSERVANCY

The Conservancy was created as a vehicle for implementing the CCRMP. The initial board of directors included gravel miners, local government representatives, farmers, small business owners, university professors and a local historian. The Conservancy was the first organization in living memory dedicated to restoring Cache Creek's riparian corridor in the area historically mined for gravel. Its mission is to promote the restoration, enhancement and prudent management of the stream environment along Cache Creek from Capay Dam to the Settling Basin just east of Woodland. Created by the Army Corp of Engineers, the basin is a sink that lets sediment drop before the creek reaches the weir and levee that control water before it goes into the Yolo Bypass and then on to the Sacramento River:

The Conservancy's mission statement was formed in the following context:

the citizens of Yolo County acknowledge that Cache Creek is a valued resource. Past activities, including agriculture, mining, groundwater extraction, damming, irrigation discharge, other infrastructure development and construction along the creek have modified its wildlife habitat values. With the Cache Creek Resource Management Plan approved by the board of supervisors, there is now an opportunity for a coordinated response to revitalize the riparian habitat along Cache Creek. The Cache Creek Conservancy has been created to be a focal point for accomplishing many of the habitat projects identified in the management plan. (Cache Creek Conservancy Board of Directors, 1999)

The Conservancy searched for a restoration project and found that building trust and creating relationships with landowners were necessary first steps. No private landowner offered to allow a restoration project on their property by an organization that was untried, untested and distrusted. Local landowners could not decide whether the Conservancy was a bunch of environmentalists, a trick by the government to find infractions of mining regulations and inflict penalties, or a sham by gravel miners who had pulled the wool over everyone's eyes to get their use permits renewed.

The new Conservancy board members bolstered project efforts with personal calls to longtime friends who were also riparian landowners, building trust and opening the door for projects. Board members placed their reputations on the line in the aftermath of 20 years of mining discord within the rural community. In 1997, the first private landowner offered her land for a restoration project. It was a small area – nearly invisible; but this project was successfully completed a year later. The surrounding community watched how the landowner was treated by the Conservancy, looking to see if she and her land were respected and whether the result was worth the effort. The Native American community would assess the Conservancy in much the same manner some three years later.

In 1999, one of the gravel companies offered to donate a 130 acre property to the county if the Conservancy would assume management. The next 18 months of negotiations included site planning, a conservation easement to be held by the Conservancy and legal agreements. What evolved from these negotiations was the Cache Creek Nature Preserve, now the Jan T. Lowrey Cache Creek Nature Preserve, created in a context of community collaboration and involvement. The success of the Conservancy and the CCNP indicated a predisposition for community members' involvement in a collaborative process. The community networking, a partnership of the Conservancy and the CCRMP, played a crucial background role in the evolution of the Garden. Since the Conservancy was born in an atmosphere of controversy, board members and staff learned that building trust through carefully designed and implemented projects was the key to success.

In the beginning, University of California, Davis, student Shannon Brawley's idea for a garden of culturally important local plant species was an academically controversial project. There were detractors within the academic community who questioned whether a project such as this one held validity. On the community end, the collaboration of the wary Native American community in the local area would need to be an essential component for the project to succeed and have value.

In this case, one must ask if adversity sets the groundwork for creativity and collaboration. Had the 'gravel wars' never taken place there would have been no CCRMP. Without the Resources Management Plan there would have been no Conservancy. The Conservancy's successes with the local landowners led to the donation of property, which became the CCNP. Without this preserve, there would have been no place for the concept of a garden to take root. Taken in a historical context, the Garden is the result of a logical collaborative process. The success of Brawley's project is partially the result of all that came before it and partially the result of a good idea embraced by dedicated communities who had grown weary of discord. The context of a project is shaped by the participants and is influenced by their attitudes. This may be a fundamental deciding factor in the success of any given participatory research effort.

THE GENESIS OF THE GARDEN

In 2000, Brawley conceptualized the Garden as she finished her undergraduate program in landscape architecture and continued in the geography PhD program. Having read of the extensive environmental management utilized by Native Americans in California, the restoration impact of such practices intrigued her. In particular, she took note of the management skills of California Native basket weavers. Furthermore, she learned that today's weavers have difficulty in accessing traditional basketry plants, such as willow (*Salix* spp) and deergrass (*Muhlenbergia rigens*) that are free from pesticides and other chemical contaminants. Brawley contemplated two questions: could something come from a scholarly investigation of this problem? Would weavers be interested in participating in the research? From the literature (see Anderson, 2005) and later through conversations with cultural practitioners, she learned that traditional management occurred at various spatial and temporal scales (e.g. from the individual to the ecosystem and from multiple times within a season to years between management actions).

Native land managers used a number of different traditional management techniques: coppicing, pruning, tilling, transplanting, weeding and prescribed burning. These management practices mimic natural disturbances, such as lightning-induced fires, floods and animal activity. Each technique differs depending upon the scale needed and the seasonal application. Traditional management helped to maintain the plant and animal populations essential to native peoples' way of life, while supporting habitat diversity. Traditional native management tools can be the

foundation for modern management practices, which will help land managers to conserve habitat biodiversity.

The native concept of land stewardship sparked Brawley's idea of creating a garden focused on a core of local native plants. Redbud (*Cercis occidentalis*), willow (*Salix* spp), tule (*Schoenoplectus acutus*) and other plants would be tended by traditional native management techniques, such as burning, coppicing, pruning and thinning. Brawley believed that she could learn from the weavers and other Native American land managers; but there was scant precedent for their active participation in the research process.

In formulating her plan to work with the native community, Brawley sought the advice of her university teachers, but found little enthusiasm for working with native people. One of her professors told her 'people want to move into the 21st century'. This same faculty member urged a tight focus on pure scientific environmental research based on quantifiable data and statistical evidence. He discouraged the proposal to integrate applied culturally based environmental knowledge. He did not recognize the suitability of both quantitative and qualitative data collection for this project. One advantage of utilizing PAR is that both ways of accomplishing data collection are accepted. Qualitative data is especially important to promoting action because it considers the experience of individuals in the community. Recounting stories and experiences can be galvanizing. This is why the project steering committee utilized various approaches to gathering information.

Other faculty members were more encouraging to Brawley. One teacher gave her the phone number of the California Indian Basketweavers Association (CIBA). This group is the first arts service organization of its kind for Native American weavers in the US. CIBA staff connected Brawley with master weaving teacher Kathy Wallace, a descendent of the Karuk and Yurok peoples, and a member of the Hoopa Tribe, all of which are native nations based in northern California. Another of Brawley's teachers introduced her to the CCNP, located in Yolo County, California, as a possible home for the garden. The 130 acre preserve includes a 28 acre wetland, a reclaimed aggregate mining pit, oak savannah and a section of riparian corridor. The Conservancy's Executive Director Jan Lowrey greeted the idea with enthusiasm. He suggested a 2 acre site by the wetlands in the preserve as an optimal site for Brawley's project. The garden would serve as an important addition to the CCNP educational program, addressing the continuing presence and practices of Native American communities within the Cache Creek watershed. Unlike any other education program in the local area, an ethno-botanical basketry garden represented a cross-cultural approach to hands-on environmental and cultural education emphasizing the relationship between plants and people. Brawley presented the idea to the Conservancy's board of directors. There was some apprehension, but the majority of the board seemed to embrace the idea. She received authorization to proceed with her plans.

Wallace would prove to be a pivotal contact. She visited the potential 2 acre garden site off the wetlands area that had once been a gravel mining pit. She helped

to refine design ideas for the Garden. She encouraged a visit to the local tribe to introduce the project idea as this was an important first step in terms of traditional protocol and respect. An initial meeting between Brawley, Rumsey Band of Wintun tribal chairwoman Paula Lorenzo and three women weavers from the region set the stage for a project visioning process, which began in 2000. These women greeted the garden concept with a mixture of hesitancy and support. An elder Wintun master weaver offered excellent ideas about the garden design. For example, she wanted to see a shade structure built so weavers could retreat out of the sun when processing materials. She also suggested implementation of a special garden for children. She felt that children should develop respect and knowledge about the environment before moving on to weaving. Such ideas helped to complete the conceptualization of the garden and increase its cultural utility.

Wallace's experience and optimism continued to motivate Brawley and together they formulated a guest list of native weavers and cultural teachers for an open house/community forum to discuss the Garden project. Most of the people who came to the forum had positive experiences in working with each other on other projects. New suggestions for the Garden were offered quickly, such as the addition of a fire pit and curriculum for educating visitors. The note takers at the forum were hard pressed to keep track of all the ideas. Attendees added their choices to an ever expanding wish list of plants that was passed from person to person. They debated about the feasibility and desirability of additional project elements such as a living willow fence to distinguish between separate gathering areas for youth and adults. At the end of this forum, a list of ten priorities, ranging from the implementation of the garden, management of the garden, outreach curriculum, docent training and internships, was adopted for the project. As a group, the guests quickly asserted themselves as designers, planners and policy-makers for the venture and became a governing body now known as the Tending and Gathering Garden (TGG) Steering Committee (the Committee). No one at the CCNP anticipated this high degree of participation from these Native cultural practitioners. Clear, forthright, highly welcoming and inclusive communication was the bridge necessary to engage a community traditionally absent from academic discourse.

The Rumsey Community Fund (the philanthropic arm of the Rumsey Band of Wintun Indians) and the Teichert Foundation, a local gravel industry non-profit organization, donated money to implement the Garden. Some of these initial funds supported the open house/community visioning forum that allowed the Conservancy staff, weavers and cultural practitioners to discuss the project together. Currently, the Rumsey Community Fund has funded the majority of the Garden's implementation, as well as a project coordinator position. Brawley was asked by the Committee to be the coordinator until the project implementation was complete.

THE GARDEN PARTICIPATORY ACTION RESEARCH (PAR) APPROACH

This project did not start out as an intentional PAR endeavor. The participatory process was well under way when Brawley first introduced the term 'participatory action research' to the Committee. Yet, the work at the Garden is participatory research of high order. Brawley worked closely with a few Committee members, discussing the research problem, questions, methodology and data analysis. They then brought their concepts to the full committee for discussion and consensus. All were concerned that the research results would have practical utility and meet the needs of the native community.

The Committee members hail from 14 different tribes, including California tribes such as Maidu, Yurok and Pomo. In addition to their many skills and broad knowledge base as cultural practitioners, committee members brought a variety of professional skills from their positions as biologists, weavers, artists, policy designers, teachers, writers and account managers. Others who worked on the committee were Conservancy staff members Jan Lowrey, the Garden project coordinator/researcher Brawley and the CCNP education coordinator. This diversity added dimension to discussion and problem-solving, providing the needed advice to make this project a success. It is noteworthy that the majority of the committee was and is composed of women. This is not the result of exclusion, but rather a reflection of the proportion of female to male native weavers in California today. Drastic changes in hunting and fishing access and the introduction of government regulation of these activities have had a deleterious effect on traditional life. The weaving of utilitarian baskets, nets and traps was once the specialty of the men.

A participatory research process needs to be flexible to accommodate the schedules and other activities of community participants. For the Garden, these needs are accommodated in several ways. The Committee meets in the evenings and on weekends so that minimal time is lost from full-time jobs. Committee members are volunteers and their limited time is respected by flexible scheduling outside of regular business hours. The meetings often include potluck meals as some members travel far to get to the evening and weekend meetings. Members who miss meetings or events receive reports on all proceedings. Although agendas and minutes are a part of each meeting, the Committee does not use parliamentary procedure as the decision-making process. From the beginning, the committee employed a discussion and consensus process, and defers to elders. Traditional native governance often values peacekeeping, good community relations and long-range planning. The Committee meetings are always respectful, enjoyable and often several hours long. The relaxed, convivial atmosphere creates a space where everyone is allowed time to say what they need to share. Participatory research welcomes community ethics, culture and worldviews. These components are in regular practice in this project and have fostered respect and understanding

within the collaborative. It is common for the Committee members, CCNP staff and project volunteers to enjoy lengthy, informal discussions following meetings and events. These discussions are important because they increase trust and cross-cultural sharing.

Projects involving native communities seem to appeal to a wide range of people. Sometimes this interest goes awry. The Garden's native partners have experience with outsiders trying to appropriate tribal knowledge through research or grant-seeking ventures. Commonly, there was no reciprocal contribution or credit given to the host community. The sharing of these negative experiences with the non-native members of the Committee helped them to understand how mistakes had been made with tribal communities. Non-native committee members initially approached the project with a certain naiveté about project ownership, believing perhaps that issues of academic acknowledgment and intellectual property ownership would not be important issues for the native community.

Anyone contemplating cross-cultural work must be vigilant in respecting, honoring and protecting the traditional knowledge held by individuals and communities. There are boundaries to be recognized so as not to allow the research to become just another extractive process. It is imperative to build relationships that foster a mutual quest for knowledge and understanding (Simpson, 1999, 2000; Wilmsen, forthcoming). For example, Brawley made a conscious decision neither to interview nor beseech a local Wintun elder to collaborate in this project even though the elder has vast basket weaving and environmental knowledge. When the elder did choose to participate, she defined her own boundaries and let it be known that she would leave the project if things were not done correctly. In the past, she had shared her knowledge generously with outsiders, not knowing that they would later publish this information. This was tremendously painful to her. Scholars cannot assume that a community has familiarity with or innocence about standard research practice. The research and the Garden project benefited from disclosure about publication and research protocol because all involved have a responsibility to the communities they represent. Understanding Brawley's academic responsibilities and meeting her faculty advisers helped Committee members to support her work because they had a fuller picture of university expectations. Revisiting these issues has helped to keep the focus on both the community utility and academic requirements of the project.

The research problem/need

California's rural communities, as well as rural communities around the world, are facing a collision of interests and needs that often leave indigenous people out of the planning process. Policy-makers have to invest in long-term strategies that will facilitate conservation of the environment while considering sustainable economic opportunities for local rural populations.

Throughout the state of California, 'access to basketry materials has been limited by private property boundaries, as well as by public land laws and management practices which preclude gathering' (Ortiz, 1993). For instance, California's Central Valley wetlands and riparian ecosystems have been reduced by 90 per cent since 1850, due in large part to human impacts (Barbour et al, 1993). This, to some extent, is due to population growth, the encroachment of housing, business and agricultural development in the region. Riparian communities along Cache Creek are now plagued with invasive plants such as salt cedar (*Tamarix parviflora*) and arundo (*Arundo donax*) that exacerbate flooding and erosion. Interestingly, years ago both species were introduced to control the very issues they seem to cause today.

This set of problems influenced one of the main project objectives for the Garden: the creation of a safe place for native educators and cultural practitioners to teach traditional plant management and gathering techniques. The lack of access to gathering areas makes it difficult to pass on cultural traditions such as basketry to family and community members. Baskets made by California native weavers are assessed as some of the finest anywhere in the world. Exceptional weavers once tended and harvested materials in the Cache Creek watershed. Very little weaving continues in this specific area today, although it is flourishing in several other tribal regions. Historians and ecologists seem to have missed the intricacy and refinement of the relationship between tribal people and the land. Such omissions have impacted upon the land and, thus, the native peoples throughout the state. Indigenous land management techniques leave subtle marks. Only now are Western scientists scratching the surface of this knowledge.

In recent years, due in large part to the efforts of CIBA, some state and governmental agencies have granted permission to collect basketry resources, such as beargrass (*Xerophyllum tenax*), on public lands. CIBA has also focused attention on the toxic effects of herbicides and pesticides on weavers' health. Weavers often hold plant materials in their mouths to aid in splitting the fibers into proper strands. Basketry plants are highly hand processed, so both topical and systemic application of chemicals in natural environments are of concern. The continuation of weaving traditions is important to contemporary weavers and requires plentiful high-quality plant sources. Although the Garden's Committee members have access to their personal gathering areas, they are having a difficult time locating additional natural areas where potential weavers can be taken to identify plants and learn traditional management techniques.

Research objectives and process

The research questions evolved from Brawley's initial set of questions. She and a Committee member grappled with the direction of the research and formulated new questions that focused on the reclamation of the garden site and its ultimate

utility to educators, cultural practitioners and the general public. The Committee considered these concerns and refined them to produce the following primary research objectives:

- Document and analyze the process between the Committee and the Conservancy in implementing the Garden reclamation project.
- Document the creation of a safe place for native educators and cultural practitioners to teach traditional plant and management techniques.
- Determine the optimal methods for environmental mitigation for those collaborating on community-based restoration and land management projects similar to the Garden.
- Study the effects of fire on Santa Barbara sedge (*Carex barbarae*) and changes in overall plant densities before and after application of fire.

As the project began to unfold, so did the research. One difficulty faced in the beginning was defining and understanding what PAR is. Additional reading and training sessions such as the Community Forestry and Environmental Research Partnerships (CFERP) annual research workshop helped project members to define our research. CFERP included community members in the workshops, which allowed the community members an opportunity to educate students and faculty, and to share experiences with each other. Workshops like these helped to bolster the researcher and the community members when they went back home to continue the work.

Methods and analysis

Both quantitative and qualitative methods of data collection were used to respond to the research questions. The first objective was to document and analyze the process between the Committee and the Conservancy in implementing the Garden reclamation project. Documentation of this process was achieved through tape and video recordings, design charettes and written documents, such as meeting minutes, mapping of stakeholder relationships and grants, and billing information for the length of the project's research implementation (2000 to early 2005).

One of the most effective ways of gathering information and one that seemed to come naturally for the Committee was using a whiteboard to map out ideas or thoughts visually. For example, one evening three members met to discuss a writing project. Jan Lowrey, the Conservancy's executive director, was also a fifth-generation local farmer. He started to map a history of the watershed and the relationship between local Native Americans and non-native peoples. What the three Committee members began to notice was that the map became two separate but parallel sections that demonstrated how these two groups of people lived together; but the Native American presence was invisible and ignored until the

modern residential housing for the Wintun became an issue. During this process, members drew upon Jan's memories of growing up in the area and old archival clippings he had in the office. The conversation evolved into a mapping of trust and risk issues for all of the stakeholders involved in the Garden. This became a pivotal document for reframing conversations.

Communication in this project occurs on several levels, partly because the project is cross-cultural and partly because of the hierarchy and protocol within the Conservancy and the Conservancy's relationship with stakeholders. On one level, the common interaction between the Committee and the Conservancy continues to be conducted via email, phone and mail. Most individuals on the Committee have email and those that do not are kept informed by mail or by simply picking up the phone and calling. Email provides a quick and easy way of reviewing and approving signage, publication and meeting notes. The tape recordings and videotapes of meetings have been a way for the researcher to assess the process. What clearly presents itself in the transcriptions is the way in which the meetings are conducted. Each person is given the opportunity to weigh in on any issue, which gradually leads to a consensus of what direction should be taken. This also leads to creative solutions. The discussion about design of the shade structure within the Garden is a good example of this. The Committee deliberated over whether it should be of traditional or modern design, who would make it, how to insure it and how the public could use the structure. Ultimately, the innovative structure that was created was reminiscent of a traditional ceremonial structure, but adhered to state and county building codes.

The most challenging line of communication has been between the Conservancy board of directors and the Committee. The executive director (Lowrey) and the project coordinator/researcher (Brawley) went to each board meeting and presented quarterly activity reports. The Committee as a whole, however, expressed interest in having a native community member in a position to communicate directly with the board. This was unconventional in a typically hierarchical leadership structure. Eventually, a Committee member, Don Hankins (Miwko and Osage), was appointed to attend board meetings to convey project developments and to report back to the Committee. He was in a position to see issues differently than staff members did and with the added benefit of having a specific cultural lens, as well as professional background as a biologist. For Hankins, it meant a larger time investment in the Garden project. The Committee wanted the board to understand the expertise and the essential contributions of the group. Hankins conveyed that ably.

The Conservancy's support of the Committee was considered unique. No land-managing organization in the area had developed this kind of relationship with Native Americans. Outside groups wanted to know how to replicate this. An important part of the relationship was the Committee's development of specific policies that established structure for the Garden and the working relationship with Conservancy staff and board. These policies helped to define the operation

and status of the Garden within the Conservancy. Lowrey defined the need for a respectful relationship in the following manner:

For their part, the Steering Committee members have asked for nearly nothing from the project. Many have freely given of their time and expertise for presentations to many diverse audiences, ranging from Cal State Sacramento to the California Mining Association. However, there is a long and disturbing history of individuals, organizations and agencies drawing on the native community's knowledge, regalia and materials without giving credit where credit is due. Therefore, the Steering Committee members ask three things: respect for themselves as the professionals [whom] they are; recognition for their culture's unique contribution to the Tending and Gathering Garden project overall; and control over their intellectual property (that is, the oral history and teachings from generations of elders that cannot be found elsewhere). It is in this context that the Steering Committee members have composed policies and guidelines for the Tending and Gathering Garden.

The policies are meant to set forth guidelines about the relationship of individual members to the Committee, the Committee to the board of governors, and Garden visitors to the Garden. These policies are currently in final draft, ready to be presented to the board.

The Garden collaborative is multidimensional. It is easy to think of the Committee as a pan-Indian group representing California native people. This is a misconception. The Committee members all come from different tribal nations, with separate ancestries, governments and cultural legacies. Designing rules to govern the Garden represents a dimension of international negotiation. Traditional rules form the policy base. One of the most important rules is the honoring and recognition of the tribal people indigenous to the Cache Creek watershed. As the traditional local stewards of the land, their concerns have priority. The Committee often consults with local cultural practitioners and tribal leaders to make decisions and recommendations about the Garden. Adding complexity, the location of the project on public land means that the culturally foreign political and legal boundaries of local and state regulation must be considered. This diversity of cultures and governing bodies is an important factor in the participatory work. Communication between all parties must be clear and consistent. This takes more time than a conventional research project would. It also requires a bigger investment in relationships. Understanding what motivates each party and participant is important because the Garden is meant to be a permanent feature in the CCNP. It was established carefully so that it can live on through changes in Committee membership, changes in the CCNP and changes in the Conservancy board and staff.

The discussion of specific perspectives has come up often over the past few years. When Conservancy staff, Committee members and the researcher present the Garden project to broader audiences, it is typical that three perspectives are presented. Each presenter describes distinct roles in the research and project. Conservancy staff speak on mining issues and the work of restoring mining sites, the mechanisms within local government that made such projects possible, and the benefits of having multi-tribal perspectives and help in the project. Committee members discuss the tribal history of the Cache Creek watershed, traditional and contemporary needs and usage of plant species in the area, and the importance of being recognized and included in the restoration work. Brawley speaks about what she learned in applying her academic skills to a real world problem and the needs of a community. She also addresses the results of the specific plant restoration efforts and the Garden design. At gravel and mining industry events, it is not uncommon to see industry leaders respond to this presentation and publicly support this kind of creative environmental collaboration.

The second project objective planned by the Committee was to document the creation of a safe place for native educators and cultural practitioners to teach traditional plant and management techniques. It was determined that by combining mechanical methods (including harrowing and irrigation) and traditional management techniques, a site can be reclaimed to a high level of cultural utility. The Committee asked Brawley to document site analysis, plant choices, planting design, construction plans, weed management, soil preparation, irrigation and cost analysis. Photo site recording was also conducted during the implementation of the Garden.

The Garden was divided into four manageable pieces, which made it easier to plant and manage for weeds. A bed of sedge (*Carex barbarae*) was the first section to be installed. Hankins, Brawley and Lowrey analyzed the existing soil and immediately knew that the soil would not produce the long white roots necessary for basketry due to the high quantity of gravelly soils present. The Garden soil would need to be amended with sandy loam soil. With this soil improvement, the Garden was ready for sedge plants. In June 2001, over three consecutive days, 2000 sedge plugs were planted by schoolchildren from Yoche-de-he School (the tribal school of the Rumsey Band of Wintun Indians), the California Conservation Corps and Conservancy staff members. Planting anything in June was a huge risk due to the possibility that the plants would die in the summer heat. Plants received water from a fire hose and soaker hose every day throughout the summer until the sedge was established. Initially, it appeared that around the periphery of the sedge bed, 89 plants had died. They reappeared with the spring rains. Thus, the first lesson was to plant with the fall and winter rains. In the fall of 2002, juncus (*Juncus* spp), dogbane (*Apocynum cannabinum*), blue wild rye (*Elymus glaucus*), creeping wild rye (*Leymus triticoides*) and another variety of sedge were introduced to the Garden. All of the blue wild rye fell to a voracious flock of Canada geese.

The geese seem to be particularly attracted to blue wild rye and barley that were planted over the years.

Weed eradication was a priority for the reclamation to thrive as a native habitat. No herbicide was used on the 2 acres at the request of the Committee. With the help of local farmers, Brawley established a process of watering the flat area of the site utilizing local farmers' field irrigation pipes. The deep watering that this type of irrigation provided helped the Garden plantings enormously. With every new flush of weeds, local farmers would harrow the soil with their tractors. This project benefited greatly from such generosity. The tree plantings, as well as the grasses, flourished and were able to set root in the gravelly soil.

At the time of writing, the garden implementation continues to bring together experts such as Committee members, farmers, Conservancy staff and industry restorationists who offer advice on plant placement, soil preparation and irrigation. The local farmers continue to provide the use of their farm equipment for irrigation and the harrowing of weeds. The use of their expensive farm machinery has made weed management in the garden much easier. Teichert's restorationists supply plants from the watershed for the Garden and they have shared their planting techniques in gravel overburdened soils. Their field experience contributes to the garden's success. This also represents local community reciprocity.

Among the traditional management techniques implemented in the Garden, the use of prescribed burning attracted special attention. Although this was a common pre-contact tool for managing the landscape in California, contemporary fire suppression policy in the state meant that many local people had never seen a burn for restoration purposes. Brawley and Hankins presented the Committee with a study idea to ascertain the effects of fire on Santa Barbara sedge. They wanted to see if there would be any changes to the plant density before and after a wet season (winter) fire was applied.

The experiment was mapped out on the whiteboard and the whole Committee discussed the idea. All the members and visiting guests contributed. The main concern was that weavers would need an area that was left unburned for gathering while the study was conducted. A visiting guest questioned why sedge should be burned. Collectively, the committee felt that sedge is a plant within the riparian ecosystem that would have been burned when this management technique was utilized traditionally within the region. The committee also explained the cultural significance of sedge as a basketry plant for many tribal groups and their weavers. Most importantly, a study like this one had never been done before.

The Committee also discussed extending the utility of the research. This information would be useful to agencies in which large sedge populations were located (currently, the National Park Service's Pinnacles National Monument is interested in the Garden results). The Committee supported the research idea and study. The preliminary findings indicate that the overall plant success and cultural utility of the garden have been achieved.

Long-term data collection

Included in the general Garden policy is a requirement for gatherers to contribute to data on amounts of plant material harvested, field observations about plant health and environment, and harvesting techniques. This quantifiable data will provide hard evidence about management technique effects in the Garden ecosystem. Qualitatively, Garden user surveys will provide data about visiting weavers and their observations. Review of this material will assist the Committee in evaluating the health of the Garden. It will also be useful information for evaluating the project's utility to the native community and establishing outreach targets for the education component. For example, since the implementation of a data collection process, the Committee knows that the majority of weavers who have gathered sedge have used small garden tools (e.g. trowels) to harvest. Most weavers have felt the quality of roots they gather in the garden is good with respect to length, color and ease of harvesting. One weaver commented: 'Looking forward to coming back and finding the six footers (desirable, long roots) – the place looks good!' Data notes from weavers who are using the Garden reveal that the soil needs to be augmented with more sandy soil and organic matter. The majority of individuals who have been gathering in the garden are elders. Their approval and expert observations are invaluable.

Presenting and sharing the research

Outreach remains an important component of Garden operations. Many visitors come to the CCNP for interpretive events and outdoor education. As the Garden is located prominently in the core section of the preserve, an interpretive program and curriculum are important to explain this project thoroughly and to ensure that the area is treated with respect. The Committee has produced an interpretive brochure and multilingual signage (Wintun, English and Latin) in the Garden. Curriculum modules are to be finalized over the coming months. Considerable effort goes into describing the significance of the collaborative research to the Native American community, industry and the academy. This helps demonstrate to visitors and audiences that, even with disparity, multiple stakeholders can come together over issues such as restoration, education and cultural preservation.

COMMUNITY ACTION IN COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT

Through participation in the Garden and related research, contemporary history has begun to turn and Native Americans are now contributing their traditional knowledge and voices to the management of the Cache Creek watershed.

Participatory research is often said to produce community ownership of the research (Reason, 2006; Pain, 2007). Thus far, this is the case with the Garden. Community members are forthcoming in offering their individual strengths. They have assumed an enormous amount of responsibility for guidance and decision-making, with no financial recompense. At the first Steering Committee meeting, members set priorities that included planting the garden, devising education curricula, developing guides for docents and formulating policy. All of these objectives are being achieved.

Through the creation of a master list of plants for the garden, community members directed the shape of the garden for maximum cultural utility. Local tribal elementary students from the Yocha-De-He school participated in the planting.

Steering Committee members contributed to the design of the outdoor classroom. Concern about chemical contamination of materials to be used for basketry, food, medicine and other purposes guided the decision to practice non-herbicidal weed management, which includes repeated cultivation, burning and hand removal.

Everyone benefits

It is important to understand the motivations and rewards attached to each party's participation in the partnership. This is helpful to research planning, design and evaluation. Of the several participants involved in the Garden, three major parties are markedly different from each other. The gravel industry via the Conservancy, the academic research team and the Native American Steering Committee each has their own driving forces and benefits in this collaborative.

Gravel

For the gravel industry, key reasons for involvement are the obligations within the Cache Creek Resources Management Plan (CCRMP) and with the county that mandate involvement and financial support. In exchange for meeting these requirements, they are permitted to continue to mine along Cache Creek. During a presentation to environmental professionals from around the world, one gravel industry leader told the group that industry did not initially come to the table willingly; but he said they soon learned that it was the right thing to do and these industry leaders are glad they did. Moreover, no one wants to return to the days of the 'Gravel Wars', which damaged public relations for the industry and also hurt personal relationships with friends and neighbors. Local people – homeowners, farmers, county officials, industry representatives and environmentalists – serve on the Conservancy board. Industry officials know that concerns and ideas are coming directly from the community. The industry gets the rare opportunity to be part of the community solution to longstanding problems. As part of a collaborative, industry participants have access to different talents and perspectives that are

helping them to plan more carefully for future endeavors. Mining continues with diminished environmental disruption. The industry receives accolades for environmental improvement because of the restoration work. The work of the Conservancy is examined as a potential model for industry–community partnership elsewhere in the state.

Native Americans

The intertribal Committee is concerned that watershed habitat is not available at a level to sustain tribal cultural practices. In the immediate area, basketry has not continued as a strong tradition. Thus, traditional plant management has not persisted as a strong tradition. Once viable gathering areas are now overgrown, subject to chemical exposure, congested with invasive plants and suffer insect predation. The Garden has become a place to teach traditional techniques in a clean environment.

The benefits for the Committee members include the opportunity to learn from each other. Committee members are individually and collectively multi-talented and each person has completely different traditions. The garden offers them the unique opportunity to understand the thinking and learn the languages of industry and the academy – two segments with which traditional native peoples have often been at odds. Committee members can see that their contributions are of benefit to everybody and not just an intellectual exercise. There is access to a venue for balanced public education from a native perspective. There is the considerable satisfaction that comes from creating a project that will endure beyond one's own lifetime.

Researchers

Historically, anthropologists and linguists studied California native tribes intensively. Researchers extracted knowledge, human remains, ceremonial regalia and other cultural material from numerous tribal communities. Universities became repositories and are seen by tribal people as being largely inaccessible. Collectively held, tribal intellectual property was not respected by many researchers. Contemporary critique from various native scholars notes a repeat of this pattern in some research on native management that was purported to be participatory (Simpson, 1999; Simpson, 2000). Community members were not included as colleagues. They did not have a hand in directing the research and did not benefit from it.

In contrast, when time and effort are invested in nurturing relationships of trust, respect and reciprocity, PAR gives academic validity to community-directed research and vice versa. The effort is made to understand what a community holds as valuable and important. This process recognizes the vast body of knowledge owned by Native American communities. The Garden is a manifestation of what

can happen when this richness is willingly shared with academic institutions and the broader community.

Two big questions are often asked of Brawley:

- 1 What is the benefit of this project to the academy?
- 2 How are your results different than they would have been if you hadn't conducted participatory research?

Brawley was a student at a prestigious public land grant university, whose purpose is to advance knowledge. A quote from the University of California, Davis, website states: 'UC Davis is committed to the tradition of the land-grant university, the basis of its founding. This tradition [is] built on the premise that the broad purpose of a university is service to people and society' (University of California at Davis, 2008). The Garden is an example of research that serves this purpose and therefore produces a positive image of the university to the broader community. In terms of advancing relationships, this project continues to foster a link with one of the university's major benefactors – the Rumsey Band of the Wintun – by providing their children and the Native American community with a traditional educational forum. This project encouraged contributions from a broad section of the philanthropic community that supported on-the-ground research. This created positive publicity for the university. Has this research changed the academy's perceptions and utility of PAR? In a small way, yes. Two professors who advised Brawley on this project now teach PAR in the geography graduate methodology course at UC Davis. As more students, faculty and community members are exposed to this approach, they may choose to incorporate PAR in the research process.

Are the results different than they would have been without PAR? Yes. This research project has fostered relationships between a broad range of community members that might not have come to the table together otherwise. Each stakeholder had a voice in the project. Without this relationship it would just be another area dedicated to a researcher's study of Native American life ways.

CONCLUSION

When the disenfranchised are invited respectfully to a collaborative research project and treated as colleagues, the results can be amazing. PAR has helped to produce a usable structure for dialogue and the inclusion of traditional indigenous environmental management. The collaborative investigation into the lack of acceptable plant material for native weavers has produced a unique community-designed restoration project. It may also prove to be a social model that will replicate well in other communities.