Learning to Change and Changing Learning in Environmental Management: A case study of the Kaw Nature Reserve in French Guiana

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Learning to Change and Changing Learning in Environmental Management:
A case study of the Kaw Nature Reserve in French Guiana

by
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Approved by:

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Carol Brewer, Chairperson

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Dean, Graduate School

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Date
Participation is a key component in socially just, successful nature conservation. Yet, participation can range from informing citizens to offering them decision-making power. Only participation that allows for an open, respectful negotiation of conservation planning and implementation opens the door to engaging, place-appropriate conservation, rather than conservation implemented by external agents with external agendas. However ecologically or socially correct these external agendas may be, collaboration by all stakeholders validates the appropriateness of conservation projects. One conservation tool is education, which typically assumes that the public lacks environmental knowledge and that information can create environmentally aware and active citizens. Often in environmental education programs, the leading organization defines the problem and goals prior to contact with the public. While education can enhance environmental literacy and open doors to environmental action, it is important to recognize the diverse knowledge and experiences of the audience so that they can contribute to successful conservation. My research was based on two connected ideas. First, collaboration among the broadest array of stakeholders requires an education model that is based on learning together, versus a one-way flow of information. Second, a useful way of beginning collaborative education is to recognize, respect and make the most of the diverse experiences, opinions and knowledge of all the stakeholders. I present a case study that focuses on the stakeholders of the Kaw Nature Reserve. This Reserve is eight years old and has been historically beset with conflict. I interviewed a diverse array of stakeholders involved with or affected by the Reserve to determine important themes regarding communication, conservation goals, and viewpoints on land use. The themes I identified can provide the groundwork to understanding the potential role of collaborative education and dialogue in this Reserve, and provide collaborative tools for participatory conservation in France and beyond. The analysis revealed four dominant themes: 1) historical, regulatory and communicative sources of conflict among the Kaw Reserve stakeholders, 2) the effect of external power relations on the Kaw village and Reserve, 3) the Atipa resource crisis, and 4) similarities among stakeholders and diversity within groups.
ACKNOWLEDGEMENTS

The most erroneous stories are those we think we know best – and therefore never scrutinize or question.
Stephen Jay Gould

I would like to thank the friends and professors that helped me to question some of my stories. At the end of two years, I have written a story that I both solidly believe in, but also receive enormous benefit from scrutinizing.

In particular, I would like to thank my mentor Carol Brewer, committee members Steve Siebert and Sarah Halvorson and my support network in room 308: Alison Perkins, Jen Marangelo, Josh Burnham and Brooke McBride. Beyond the University of Montana, the insights of the Kaw Reserve staff, Kaw residents and other stakeholders made this work possible.

I would also like to thank my parents, whose regular supply of chocolates and wine helped me complete this project. And, of course my husband, Raphael Notin, who has always been my favorite volunteer.
PREFACE

While working for a nonprofit conservation organization in southeastern Peru, I observed two young American missionaries trying to build a local congregation. To my surprise, I found more similarities between us than I could believe. We were passing along the ‘Good Word’, spreading the news, knowing that we had found ‘The Way’. Before then, I never realized the aspects of indoctrination in nature conservation. Instantaneously I was no longer inspired by my ‘green’ mission; I wanted to hear from ‘nonbelievers’, I wanted to engage them, learn from them and teach them, but certainly not just convert them into versions of myself and my colleagues.

Before meaningfully engaging others, it is important for individuals and/or organizations to consider their own and others’ frames of mind. When we create a frame, we define and give boundaries to an issue, determine our perceptions of the causes and solutions to a problem, and construct a worldview. Framing is how one makes sense of the truth, and allows recognition of multiple truths.

Attentiveness to frames, coupled with collaboration and social learning provides the bricks that lay the path toward effective conservation. Conservation, in my worldview, uses collaboration, defined as an open forum in which diverse ways of knowing are transformed into agreed, shared actions. Furthermore, conservation is judged on its ecological, social, political and economic implications. This requires interdisciplinary research and collaboration among all stakeholders, which include local communities, researchers, nongovernmental organizations, private commerce and management
agencies. The direction of my work was based on two connected ideas. First, collaboration among the broadest array of stakeholders requires an education model that is based on learning together, versus a one-way flow of information or propaganda. Second, a useful way of beginning collaborative education is to recognize, respect and make the most of the diverse experiences, opinions and knowledge of all the stakeholders.

The research that led me to this understanding includes a literature review of framing, environmental education, participation, social learning and adult education along with implementing a case study in French Guiana on the dynamics of people’s perspectives about a place, and the relationship of a Nature Reserve and local resource users. Through the literature review, I asked the broad theoretical question: what is the role of education in conservation, followed by these specific research questions: (1) what are people’s perspectives and realities about their place, and (2) how does this information point to areas of collaborative adult education programs for local conservation efforts?

The case study focuses on a place of biological, historical and cultural importance. The Kaw-Roura Marshes Nature Reserve is bordered in the north by a coastal mangrove and the Atlantic Ocean and to the east, south and west by rolling tropical forested hills. This area has a rich history, including dramatic land use and cultural changes created by extensive slave labor plantations in the late 1700’s. The one village in this area, Kaw, is a small Creole village of about 36 permanent adult residents that borders the west side of the Kaw Reserve.
For most scientists, the heart of this Reserve is a large inundated marsh that is inaccessible by car or foot. This isolated marsh contains adult populations of endangered species like Black Caiman, Agami Herons and Red Ibis colonies. However, for most Kaw villagers, the heart of this Reserve is the Savannah created by slaves who reclaimed the inundated land for agriculture. While in size it is only a small portion of the Reserve, *La Savanne*, as it is known locally, provides more than just food; it contributes significantly to the experience and identity of this village. Government officials view the Reserve as a way to reach the goal of saving precious tropical biodiversity. Consequently, the Kaw Reserve (the second largest French Nature Reserve) helps to appease France’s national and international pressures to protect French Guiana, “the only European equatorial forest” (Lettre des Sylves 2004).
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THE ROLE OF EDUCATION IN CONSERVATION

Education in conservation is typically a one-way flow of information that aims to build a constituency. While this type of education may have a role in conservation, broader forms of education, specifically those that embrace and use diverse knowledge while promoting reflection, should also be used and researched in conservation. Building successful collaborations among all stakeholders requires an education approach that considers learning together as a group (versus one-way teaching) and recognizes, respects and makes the most of the diverse experiences, opinions and knowledge of all the stakeholders.

Collaboration requires recognition of how an individual’s experiences, knowledge and opinions frame, and therefore legitimize, their current perspective. Understanding frames provides the fundamental perspective needed to evaluate ‘classic’ conservation education programs, and apply adult education and social learning theories for collaborative natural resource management. In this chapter, I review these topics and their role in developing a collaborative confluence of diverse knowledge, and then apply them in Chapter 2 to the design of an interview, analysis and recommendation for building a collaborative dialogue for the Kaw Reserve.

Framing: A Fundamental Concept Leading to Collaboration and Education

Framing is an approach that gives significance to the diverse opinions, experiences and knowledge of people interested in or affected by a particular place or issue. Frames are
the means of rendering something meaningful and comprehensible at the individual, cognitive level (Goffman 1974); they are the means by which we sort out reality, derive meaning and determine actions.

Our world is full of information, events, people and other stimuli. As Lippmann (1921) wrote, “we define first, and then we see.” Frames shortcut the process of assessing each bit of meaning and validity in information. This efficient assessment of information, events and people (Konig 2005) leads directly to a corresponding attitude or behavior. The act of framing and using frames may be tangible or intangible, and people may not be able to describe them easily, yet they are used to attach meaning to the world. We often overlook the daily use of our own frames to define right and wrong, true and false, and all the gray areas in between. For example, the different frames of a farmer, a rancher and a real estate developer likely lead to differences in how they assign meaning and act toward an open field (Grieder & Garkovich 1994). The farmer may see rows of wheat, the rancher may see a herd of cattle and the developer may see suburbia.

Kaplan and Kaplan (1982) conceptualized framing as the creation of cognitive maps organized by subjects and ‘filed’ in the brain. These maps summarize past experiences and thereby influence current opinions and actions. Via conversation, people determine the similarity of their frames (Gray 2003). Due to their personal nature, frames are often difficult to share effectively with other individuals (Kaplan & Kaplan 1982).
Frames are used to define whether a problem exists, why it exists, what action should be taken and by who, and peoples’ relationship and responsibility to the problem. Gray (2004) suggests that a divergence in stakeholders’ frames regarding an environmental issue can lead to conflict and failed collaboration. Therefore, discrepancies in any one of the aspects of framing can promote conflict. Table 1 shows a typology of such frames.

**Table 1. Types of frames that, when divergent, can lead to conflict** (Gray 2003).

<table>
<thead>
<tr>
<th>Type of Frame</th>
<th>Possible effects of frame</th>
</tr>
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<tbody>
<tr>
<td>Identity Frame: self-image and/or membership in a group. Can be based on demographics, location, profession or interests.</td>
<td>The actions, goals and rights of people based on with whom they identify.</td>
</tr>
<tr>
<td>Characterization Frame: how individuals understand other stakeholders.</td>
<td>Degree of blame and causality placed on others.</td>
</tr>
<tr>
<td>Conflict Management Frame: how to deal with a conflict.</td>
<td>For example: conduct more research, use a mediator, build consensus, sabotage others to realize personal goals, leave it to authorities to make decisions, etc.</td>
</tr>
<tr>
<td>Whole-story Frame: summaries of the issue that capture an individual’s experience and inform their behavior.</td>
<td>A story with a logical sequence of events that explains actions and attitudes.</td>
</tr>
<tr>
<td>Social Control Frame: classification of the degree to which decision-making should rely on others (experts) or individuals.</td>
<td>Dependence on expert decision-making&lt;br&gt;Low&lt;br&gt;High&lt;br&gt;Over decisions&lt;br&gt;High&lt;br&gt;Low&lt;br&gt;Individualist&lt;br&gt;Egalitarian&lt;br&gt;Fatalist&lt;br&gt;Hierarchist</td>
</tr>
<tr>
<td>Power Frame: how stakeholders ‘see’ power hierarchies and the use of power.</td>
<td>Power can come from authority, expertise, access to resources, personality, coercion, morality, or affiliation.</td>
</tr>
<tr>
<td>Risk Frame: how stakeholders view the type and degree of risk associated with the environmental issue at stake.</td>
<td>Assessment of cause and effect relationships or built scenario.</td>
</tr>
<tr>
<td>Gain versus Loss Frame: how stakeholders view the personal consequences of others’ actions.</td>
<td>Explanation of the interdependence of people’s actions.</td>
</tr>
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</table>

Framing also is a useful tool to explore power. If framing is the definition of one’s reality, then the most powerful frame, or framer, creates the prevailing reality, or societal truth. The process of power creating societal truths through a dominant discourse was
described by Michel Foucault (1972; 1978), a French philosopher who researched and wrote in the 1960’s and 1970’s. In his work on knowledge and power, he defined discourse as the “practices that systematically form the objects of which they ‘speak’” (Foucault 1972), meaning that the act of presenting and discussing an object may have the power to create that object. In recognition of Foucault’s research on dominant discourses, Leach and Fairhead (2000) analyzed the West African deforestation discourse created by international and national institutions. This discourse clearly contradicted local experiences and historical knowledge. Local people determined that there had been no recent loss of vegetation on the landscape because the area was never a climax lush forest. However, despite local views or goals for the landscape, scientists and politicians upheld this deforestation discourse and translated it into corresponding policies. This disjuncture led to local distrust and suspicion, and frustration on the part of those combating deforestation.

As mentioned, truth is a product of society, created and maintained by power (Foucault 1978). The dominant discourse, which creates societal truths, is constantly in conflict with other, less dominant discourses (Mills 1997). The struggles between dominant and weaker discourses create changes in the societal truths over time (Rouse 1994). For this reason, Foucault considered power relations to be constant struggles to maintain or undermine domination (Rouse 1994). He asserted that discussions on the nature of dominant power also should include the numerous points of resistance that “play the role of adversary, target, support, or handle in power relations” (Foucault 1978).
From a frames perspective, no universal truth about any one place exists and, according to Foucault (1978), power and discourse create societal truths. The role of education complements these ideas in that education is a means of transmitting truths. But reflective educators must ask, whose truth? Merriam-Webster (sixth edition 2004) defines education as “the action or process of educating or being educated.” This is not to say that education should never drive in only one direction. However, in complex, uncertain conservation issues an approach to education that solely reflects the frames of external agents, whose goal is to compel the audience to see reality as they see it, may not lead to desired outcomes. Indeed, many environmental education programs directed by conservation organizations seem to involve themselves primarily in the process of persuading or educating “the local” and are less involved in the process of being educated (Hungerford & Volk 1990; Jacobsen & Padua 1995; Foster-Turley 1996). As Angermeier (2000) stated, “conservationists will need to reach a consensus on their fundamental values and goals and to persuade society to adopt them…respect for nature must supplant the prevailing world view of human superiority.” While environmental education is often viewed as an advocacy tool (Hernandez & Mayur 1999), a more constructive view of environmental education moves away from advocacy and toward forming a collective scientific literacy, or an assemblage of the different ways of knowing a place or issue.

Baba Dioum (1968) is highly quoted by environmental educators: “For in the end, we will conserve only what we love. We will love only what we understand. We will understand only what we are taught.” Yet this view of conservation may be narrow and presumptive, ignoring other motivations or barriers to conserve nature. Indeed, this might
suggest that if someone is not conserving something, according to a particular definition of conservation, then s/he does not understand it or love the object of conservation. However, inaction may not be caused by a scarcity of information or education. Uncalled-for actions can result from frames different from the conservationist or educator.

Conservation Education: Room for Improvement

Conservation education programs typically operate on an information deficit model, assuming that public knowledge is insufficient and that attractively presented information can create environmentally aware citizens (Burgess et al. 1998). For this reason, education programs often are viewed as an important tool in solving conservation problems and therefore some form of education program exists in the majority of conservation projects (Vinke 1992) or organizations (Mansaray & Ajiboye 1997; Ford 2004). Conservation education may be a means by which conservation organizations can invest in the future by educating younger generations, while also aiming for short-term behavior changes by adults and children alike through developing awareness and understanding of an issue and stimulating action about that issue (Martin 2005). Environmental education programs typically provide information that they think will result in such environmentally friendly behaviors and will help build local, regional or global constituencies for conservation and sustainable development. The most contested issue in such typical environmental education programs is whether its actions will lead to its admirable goals. Indeed, Frits Hesselink, the former head of the World Conservation Union (IUCN), called such typical education nothing more than an attempt to sell
conservation, making it propaganda. He said, “We should forget about trying to convince people…it is more constructive to see stakeholders not as enemies, but as interest groups…We think the more facts, the easier people will be convinced. We do not realize that our expert information is not asked for by our audience” (Hesselink 2005).

Such ‘propaganda’ is based on the assumption that a lack of information is a barrier between concern and action (Blake 1999). Ironically, research has shown that information acquisition can cause fear and anxiety or it can be a substitute for more substantial environmental actions (Finger 1994). The motivation to conduct appropriate environmental actions is contextual: where an education program may lead to action in one place, it may cause unexpected or no outcomes in others (Burgess et al. 1998; Fraser & Jamieson 2003). In addition, education by ‘outside experts’ may create a prevailing forum and language for discussing a particular conservation issue, effectively excluding people without such technical knowledge from the dialogue (Goodwin 1998). Alternatively, people may lack time, interest or trust to translate their concern into action despite the presence of concern or available information (Blake 1999).

Typical environmental and conservation education programs (e.g., Cantrill 1993; Jacobsen 1995; Foster-Turley 1996; McKenzie-Mohr & Smith 1999; Dempsey 1999; Day 2002) follow a general approach to design and implementation:

1 – Gather baseline data. Data are collected that identify the audience, their beliefs and values, barriers to behavior change, opportunities to create a relevant message and goals of the project.
2 – Design the project. The design steps include creating relevant messages, removing barriers to behavior change and/or only considering feasible behavior changes, and using the art of rhetoric to communicate the message.

3 – Implement the education program. Distribute information or message.

4 – Monitor and evaluate the program. Assessment is not included in all environmental education programs (Norris & Jacobsen 1998). However, assessment can monitor what audiences learn, what they retain and whether behavior changed occurred. However, this approach overlooks important elements, particularly in the first step. The conservation organization implicitly and explicitly defined the conservation problem and ultimate goals prior to Step 1, thereby ignoring the views and perceptions of the local audience. Indeed, in such a top-down, classical paradigm, local knowledge often is viewed as part of the problem (Blakie et al. 1997).

Moreover, there is no explicit recognition of the conservation organization’s worldview. Indeed, conservationists could benefit from reflecting on how attitudes dictate their actions, why their solution seems the most appropriate, and what assumptions they may be making as a result of their frame. Communicating their view on the issue to their audience may avoid the perception that they are merely outside ‘experts’ with an outside agenda. Rather, they can be viewed as people with a stake in and opinion about the issue who are looking to local people as key collaborators in innovative, adaptive and creative environmental management (Hesselink 2005).
Educational Aspects of Collaboration

Intelligent stewardship of the planet is unlikely to be found at the individual or species level...if there is a better path, it must be found or built by human institutions, organized entities that can act beyond the reach of individuals. Kai Lee 1993

Both social and ecological systems must be capable of coping with environmental crises. According to the adaptive management paradigm (Holling 1978; Walters 1986), the ability to deal with such crises is based on the resiliency, or the ability to deal with change and surprise, of both the ecological and social aspects of a system. Two important aspects of resiliency are the ability to learn (Berkes et al. 2003) and to perform contextual, improvisational management (Blann et al. 2003). This type of management requires a shift away from conventional management practices, which assume and strive toward ecological stability, are guided by expert rule making and top down management and result in a loss of variance and resilience (Berkes et al. 2000). Explicitly incorporating social learning into management provides a path of moving out of the traditional reductionist management described above (Maarleveld & Dangbégnon 1998) by developing the ability of a socio-ecological system to respond to change (Pahl-Wostl & Hare 2004) and complexity through better understanding of social and ecological systems (Brechin et al. 2002).

Adapting to change requires a willingness to incorporate different ways of knowing by inviting the participation of stakeholders. Participation, however, can be defined in many ways. Indeed, there is a range of participation types (Table 2). Each type corresponds to a
particular amount of space available for power redistribution (Arnstein 1969) and the renegotiation of dominant ideas (Goodwin 1998).

Table 2. Eight rungs in the ladder of citizen participation in planning (Arnstein 1969)

<table>
<thead>
<tr>
<th>Degree of Citizen Power</th>
<th>Degrees of tokenism</th>
<th>Nonparticipation</th>
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<tbody>
<tr>
<td>Citizen Control</td>
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<td>Therapy</td>
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<td>Manipulation</td>
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In Arnstein’s typology (Table 2), the bottom two rungs of the ladder represent levels of nonparticipation, in which power holders manipulate or cure the participants and label such projects as participatory, even though manipulation is not participatory at all. Manipulation can occur when leaders, for the sake of public relations, ask citizens to be on committees or boards with the intention of educating those citizens or engineering their support. Moving up the ladder to tokenism, this type of participation allows the public to hear and be heard, but does not give the public the power to insure that their views will be taken into account. Meetings that emphasize a one-way flow of information or ignore the information or opinions that citizens offer, fall in this token category of participation. Similarly, surveys that restrict the type of information that can be given by a respondent also mask tokenism as participatory consulting. The top three rungs of the ladder represent participation that offers decision-making power to citizens, from
partnerships to obtaining the majority of decision-making power. Each of the rungs on this ladder is a product of the type of forum that leaders create for participation. Higher rungs are only reached when leaders are willing to relinquish a significant portion of their decision-making power.

In accordance with Arnstein’s (1969) typology, participation in some programs has been used to cover up undemocratic, expert-driven conservation initiatives (Brown 2003). For example, directive guidelines may require people to behave in a particular way (Quagheberger et al. 2004) to fulfill implementing agencies’ objectives (Hiyama & Keen 2004). Indeed, people may be asked to participate in projects that are of no interest to them (Rahnema 1992), which in turn may undermine the credibility and effectiveness of such ‘participatory’ conservation programs.

Of course, facilitating a democratic fusion of diverse people with divergent frames who gather around a table to achieve collaborative conservation is a difficult process. Yet, managers that continually and explicitly incorporate learning that leads to innovative management solutions (Pimbert & Pretty 1995) may be more successful in reaching such democratic, innovative participation. While unidirectional education has been placed in the lower rungs of participation as a means of informing or manipulating people (Arnstein 1969), collaborative teaching and learning are fundamental to participatory practices, providing the means by which parties adjust and change as a result of their interactions (Gopalan 1997).
I define collaborative learning as a process in which diverse people learn about the system or place at hand and learn how to work together. This type of approach is most commonly called social learning. The broadest definition of social learning is the learning that takes place beyond the confines of an individual’s mind (Salomon & Perkins 1998). In the realm of participatory environmental management, social learning is the learning that takes place in response to collective action (Rogers 2006). Collaborative groups share and contest different perspectives and ideas to generate knowledge about a particular system and put that knowledge into action. Put more simply “social learning is learning together to manage together” (Ridder et al. 2005). Social learning changes both individuals and social systems iteratively (Wenger 2000; Pahl-Wostl 2006) because the context causes a change in the individual, who then changes the context.

Social learning strives for single- and double-loop learning, two learning processes described by Argyis and Schon (1974). Learning, viewed as the detection and correction of error, can be distinguished as single-loop when it entails the applications of already established goals, plans and rules. Single-loop learning assesses the situation or problem within an established framework and uses the tools at hand to correct the problem. Double-loop learning, on the other hand, questions the governing variables of the system and leads to a shift in the framing of the problem and solution. Double-loop learning assesses the framework itself, questioning why the problem arose in the first place, why a particular reasoning is being used and what the role of the individual is in the problem (Argyis 1991). If it is to lead to such changes in individual and organizational frames, social learning must include several methods of reflection (Keen & Mahanty 2006) that
question and create an opportunity to redefine frames. Such reflection would ask, “what am I doing that causes this to happen”, “why do I think that this action will lead to the expected outcome” and “why do I want this expected outcome over other possible outcomes.”

Conventional decision making tends to overlook diversity, thereby possibly oversimplifying issues. Consequently, this approach often leads to winners and losers, generating suspicion and forcing people into entrenched positions (Elcome & Baines 1999). To avoid adverse consequences, a social learning approach entails the creation of knowledge and understandings via interaction, as opposed to mere knowledge transmission (Solomon & Perkins 1998). Roth and Desautels (2004) have developed the approach of collective scientific literacy, which specifically addresses the creation of collective knowledge. Collective scientific literacy, asserts, “All citizens have the competence to enter whatever knowledge they have into the public discourse.” They view science as one thread in building the rope of collective knowledge about a particular place or issue, in which “experts [are] on tap, not on top” (Elcome & Baines 1999). In this approach, a scientific perspective can be introduced into the community without allowing it to overshadow other ways of knowing. Collective scientific literacy is understood as a community practice that emerges from human interaction (Roth & Barton 2004), thereby forming a body of knowledge that is much greater than the sum of its parts. Roth and his colleagues recognize the limits of, and move beyond the scale of, an individual’s skills and knowledge, focusing instead the collective level of available knowledge and skill (Roth & Barton 2004). They argue that society should allow for the
emergence of scientific literacy as a collective property (Roth & Lee 2002) because “learning begins with the admission that you don’t know everything” (Walker & Daniels 2001). After all, in situations with high uncertainties, conflicting values and illegitimate authorities, no one expert can dominate (Ludwig 2001).

Social learning tools allow groups to generate collective actions that satisfy both human and non-human needs and values. Berkowitz et al. (2005) extend this to the concept of environmental citizenship, whereby an individual understands social and ecological systems and has the self-confidence, values and skills to translate these understandings into environmentally positive actions. While environmental citizenship is presented as an individual quality, it can be built within a group and even expressed as a group quality. Indeed, an effective collaborative group must be able to function with the same qualities of environmental citizenship defined above.

**Reaching Adult Audiences in Conservation and Environmental Education Programs**

While the social learning framework creates the forum and direction for collaborative learning, it lacks an emphasis on how adults learn individually. Adult education literature provides a useful framework to give further direction of how and why adults learn. As in the social learning approach, effective teaching of adults assumes that “all learners come with both experience and personal perceptions of the world based on that experience, and all deserve respect” (Vella 1994). Table 3 describes the major theories of adult education, also referred to as andragogy (Knowles 1968; Knowles 1980; Vella 1994; Knowles et al. 1998). Consideration of the research on how adults learn provides useful insights into
achieving collective knowledge during collaborative natural resource management. It also provides a framework to design, implement and evaluate conservation education initiatives focused on adults. In particular, adult learning should (Courtney 1992; Vella 1994; Knowles 1998; Smith 1999; Merriam 2001): (1) be collaborative, (2) equally consider both the content and process of learning, (3) give attention and respect for the experiences and current issues in the learner’s life (i.e. their frame), and (4) recognize that the learner’s motivation to learn results from how s/he perceives the learning outcome.

| **Learner-Teacher relationship** | Adult learners need to know the how, what and why of learning. They need to collaborate with the teacher to define the learning process. This relationship is:  
- nonjudgmental, trusting and respectful  
- and relies on the actor’s accountability of entire process. |
| **Role of learner in learning** | Adult learners are self-directed and must have some sense of ownership of learning. Learners are subjects, not objects, of learning. The teacher must offer choices in the educational setting. Engagement of the student in the learning process is correlated to quality of learning. |
| **Background of the learner** | Adults bring a pool of experiences and a unique worldview to the situation and often need to overcome the natural tendency to resist new learning. |
| **Learner’s readiness to learn** | Adults are ready to learn when their life creates a need to know something, therefore understanding the learner’s life situation is critical to the teacher. |
| **Orientation of learning** | Adults learn best when learning is oriented towards problems and the emerging knowledge is put to immediate action. Teaching should be based on what the learner wants, needs and the prevalent themes in his/her life. |
| **Motivation to learn** | Adults’ motivation to learn is internal, comprised of their success as learners, their perception of choice in the learning environment, if they value the subject and if it is an enjoyable experience. |
| **Educational Methods** | Methods include:  
- Reflection built into learning  
- Learning goes from simple to complex and from group-supported to individual effort.  
- Cognitive, affective, and psychomotor aspects of learning should be involved in teaching.  
- Teamwork creates a more realistic learning environment |
Challenges in Collaborative Learning

Many of the challenges that impede collaborative learning are based on the societal power imbalances inherent in most human endeavors. However, the social learning approach requires that people are open to a renegotiation of their own and society’s dominant ideas and actions (Keen & Mahanty 2005). The conflict that will inevitably arise due to such renegotiation is part of change and therefore part of the process. Conflict is not an outcome or reason to avoid collaboration (Keen et al. 2005). The challenge is to “facilitate democratic conversations among individuals with different expertise and with different locations in social space” (Roth & Lee 2002). In this regard, recognizing the frames of individuals will help to avoid conflict in such challenges (Gray 2004). Moreover, the commitment of managers to social learning can increase the capacity of group members to be aware of their own and other’s perspectives and to incorporate those perspectives into an action plan (Finger & Verlaan 1995). The process of social learning allows stakeholders to learn more about the social-ecological system at hand, about each other and about how to work together, which allows them to pull themselves out of conflict (White et al. 2005). Conflict bounded by rules (Lee 1993) that focuses on concerns and interests, not just positions (Walker & Daniels 2001), is essential to social learning. One available tool to combat reoccurring conflict is to make a contract stating the values, objectives and processes that participants will engage in or share during social learning and environmental co-management (Keen & Mahanty 2006).

In order to overcome conflict through social learning, a socially and ecologically acceptable middle ground must exist. However, irreconcilable differences may block the
formation of a common ground. Nonetheless, social learning pushes stakeholders to define the conflict, consider their and others’ role in the conflict, and explain what they think should be done and by whom. In other words, stakeholders present and reflect on their frames and recognize that the divergent frames among them lead to conflict. Intentionally changing these frames, often through mediation, can lead to conflict resolution (Lewicki & Gray 2003). Conflict can be overwhelming and lead stakeholders to assume that it is not reconcilable. Social learning avoids such assumptions and allows them to change their frames through social learning methods, like joint problem solving, public participation, dialogue and a joint desire to maintain or improve a place (Eliot et al. 2003).

In addition to managing conflict and embracing diversity, transforming multiple opinions into actions and decisions while avoiding overly dominant decision-making (Gopalan 1997) is another challenge in social learning. The emphasis of social learning is on dialogue and debate, which recognizes stakeholders’ contributions and strives to find an acceptable way of fitting those diverse contributions together (Bouwen & Taillieu 2004). Organization and leadership are vital to success of such collaboration. An agent or organization must be responsible for monitoring the participatory process and making it a success. However, devolution of power can still be achieved by training others to lead, forming action groups (Gopalan 1997), hiring a facilitator or changing leadership throughout the process.
How can organizations interested in conservation overcome the expert/lay person divide?

The public may feel unqualified to take responsibility or, conversely, may feel that *they* are the experts (Blake 1999). Conservation leaders can help overcome this divide by recognizing that local people may hold a diverse array of knowledge about not only their environment, but also about local culture, politics, language and history (Russel & Hershberger 2003) and therefore provide useful input in conservation programs. At the same time, scientists and managers must not abandon their perspective and discount the value of their knowledge. The collective group must recognize the role of both science and other sources of knowledge.

Knowing where to direct time and effort also can be a challenge in complex conservation issues. During planning, conservation educators must distinguish, from a pragmatic perspective, what things can and should be changed and what things cannot be changed. Identifying what can be changed focuses energy on realistic targets. Gopalan (1997) identifies unchangeable things as: (1) the physical structure and associated resources of the community, (2) history and (3) other opportunities or approaches available to the community created by other organizations. Changeable things include: (1) program design, (2) ambivalence, mistrust and fear, (3) weak leadership and (4) poor infrastructure.

Social learning, as previously mentioned, rests on the ability to converse and debate issues of common concern. However, such open dialogue may not be appropriate or even possible in cultures where most community members defer to elders, avoid confrontation,
or do not allow the inclusion of certain members based on age or sex. In such situations, the basic idea and goal of social learning may still be achieved through the presence of mediators or facilitators willing to interview individuals and groups separately and propose appropriate actions based on their data. In addition, where deference to community leaders is present, such facilitators may be able to strategically present other views and ideas to elders or leaders and facilitate actions that consider the situations of community members.

**Pulling It All Together: Collaborative Learning and Participation in Environmental Management**

Environmental managers open to collective management have the opportunity to create a participatory forum that encourages mutual learning. Indeed, the creation of an appropriate forum is the first step toward achieving the targeted type of participation. Involving a community in co-management certainly has challenges that necessitate material and nonmaterial resources to solve. An important nonmaterial resource is the diverse knowledge people bring to a complex system. Social learning has an ethical prerequisite that leads to a technical benefit: humility, respect and diversity sprouts innovation in problem solving, even in the face of complexity.

How can social learning be operationalized for participatory environmental management and education? One model (Figure 1) illustrates an iterative process that has two outcomes: learning about the system to manage it and learning how to work together to learn about and manage the system (Pahl-Wostl 2006). This model begins with the recognition of a stakeholders’ frame with respect to a place or issue. Associated
stakeholders gather around this particular common concern and enter into participatory learning, which has a number of characteristics and methods taken from the social learning and adult education literature. The result of participatory learning is participatory action. This action begins with the decisions and goals resulting from the stakeholders’ dialogue. Such decisions and goals may include environmental management actions, such as the need for research or the application of a management strategy, or internal actions such as the need to write a plan or sign a contract among all stakeholders. Monitoring and evaluation of these actions results in further learning about the place or issue of common interest, while monitoring and evaluating the participatory process results in learning about how to work together. Within this process, individuals and groups acquire new knowledge and perspectives.
Figure 1. Knowledge formation and transformation in participatory environmental management (Vella 1994; Knowles 1998; Elcome & Baines 1999; Maarleveld & Dangbégnon 1998; Graham & Kruger 2002; Pahl-Wostel & Hare 2004; Keen et al. 2005; Ridder 2005)

Experiences and/or learned information form an individual’s **frame**, thereby creating knowledge, identity and attitude

**Frames are brought to the table, and are likely to be changed by learning**

**Participatory, Adult Learning**

- Systems approach, encapsulating all stakeholders’ circumstances
- Reflection
- Integration of multiple ideas and knowledge
- Transparency
- Innovation, creativity
- Openness to change
- Identification of a common interest, often based on vision of the system’s future
- Based on a specific place or issue

- Collaborative design of learning process
- Awareness of past and current circumstances
- Use of diverse learning methods
- Establish clear roles of stakeholders
- Create relationships and trust
- Understanding the interdependence of stakeholders

**Learning leads to, and includes, action**

**Participatory Action:**
Goal setting, contracts, management, citizen science research, outreach, or experimentation

**Monitoring and Evaluation** of both the participatory process and actions, comparison of reality to expectations

**Some available methods for learning:** focus groups, interviews, group model building, public hearing, role playing, scenario building, mapmaking, conferences and workshops.
Collaboration is needed when there is a history of conflict, disparities in power and resources, or unequal access to expertise and information (Bouwen & Tailleu 2004). Furthermore, external agendas that do not fit local realities will create barriers to effective, long-term conservation. Shifting to inclusive conservation projects that operate within a learning perspective can overcome these barriers. Figure 1 presents an approach where stakeholders own and validate conservation projects, while strengthening their ability to work together to manage the environment. This approach is used to examine the issues that surround the Kaw Reserve stakeholders.
SOCIAL, POLITICAL, HISTORICAL AND BIOLOGICAL CONTEXT OF FRANCE, FRENCH GUIANA AND THE KAW VILLAGE

The social learning framework can be used to understand and act on complex, multi-stakeholder environmental issues. In this chapter, a case study of the Kaw Reserve stakeholders, who include residents of the Kaw village, Kaw Reserve staff (who also live in the village) and management, local government officials and scientists, reveals both the sources of conflict among these stakeholders and issues of common concern. Learning from conflict, recognizing each player's unique frame and creating a common vision can allow this group to enter into collaborative learning to manage the Kaw Reserve. This chapter presents the results of an analysis of 23 interviews, 8 weeks of field notes and numerous archives that collectively tell Kaw’s story and the following chapter contains a recommended approach for collaborative learning in the Kaw Reserve.

Nature Protection in France

French Guiana, being a department of France, is subject to the same environmental policies implemented on mainland France, and therefore the Kaw Reserve is located in the larger scheme of French nature protection policy. Land and species protection in France is defined by expert-driven programs who’s most significant conflict involve the dissimilarities between urban and rural populations (Finger-Stich & Ghimire 1997), who implement conservation and are impacted by conservation, respectively.
The first official French protected areas were created in the late 19th Century for relaxation and the enjoyment of nature, as well as natural history research (Finger-Stich & Ghimire 1997). However, in the 1960’s French natural scientists added an alarmist drive to protect nature to their research. At the same time, an environmental movement grew and the government created the Ministry of the Environment (now called the Ministry of Ecology and Sustainable Development) in 1971 (Bess 1995). Since the creation of the first protected area in 1853, France has developed three major categories of nature protection: National Parks, Nature Reserves and Natural Regional Parks, all of which are under the jurisdiction of the Ministry of Ecology and Sustainable Development. Currently there are seven National Parks created to conserve areas by restricting human uses that could alter the unique ecology of the site (Droit de la protection de la Nature 2005), 156 Nature Reserves created to manage ecologically rare or exceptional sites (Les Reserves Naturelles de France 2005), and 44 Natural Regional Parks created for the sustainable development of rural areas (Federation des Parcs Naturels Régionaux de France 2005).

Most protected zones in mainland France were established by urban governments or scientists in rural zones that were abandoned or depopulated (Finger-Stich & Ghimire 1997) due to the rapid, intense mechanization of agriculture and urbanization after World War II (Bess 1995). Thus, the most common cause of conservation conflict in French nature protection projects is the profound divide between urban and rural lifestyles and institutions. Currently, urbanites (scientists, government administrators and conservation organizations) assert their rights and expertise to manage fauna, flora and habitats for the
‘common good’ while the remaining rural people, having had their previous responsibilities to care for their place taken away and their practices and ways of knowing marginalized, typically view conservation as another top down injustice (Finger-Stich & Ghimire 1997). Ironically, urbanites are both nostalgic and concerned for rural people, but impose top-down management that strives to end rural lifestyles (Bess 1995). For urbanites, protected areas are utopias where only they can decide how to give value and conserve rural areas. In addition, protected areas are conceived and managed in such a way that only scientific calculations and administrative power can direct conservation, which effectively takes responsibility away from residents who cannot place themselves in the protected area nor propose other management plans (Finger-Stich & Ghimire 1997). While the rural/ urban dichotomy may be overly simplistic, the numerous conflicts surrounding protected areas in France often stem from divergent conceptions of who has legitimacy over nature and from nervous or cautious sentiments that these different groups hold for one other (Alphandéry & Fortier 2001).

**Participation Rhetoric in French Policy**

French nature protection has maintained a power hierarchy in which scientists, government administrators and conservation organizations direct most of the nation’s conservation projects. These groups, recognizing the conflicts they have with many rural people, extol considerable rhetoric regarding the need for participation of other governmental organizations and of civil society. Such rhetoric is prevalent on the Ministry of Ecology and Sustainable Development internet site and publications, which promote a new sustainable development approach to conservation in France
(www.ecologie.gouv.fr). Such development requires the conservation of biodiversity and considers that “participation is at the heart of the issue of sustainable development, it constitutes the principal action and key” to achieving sustainability (Comité Interministériel pour le Développement Durable 2006). France’s national strategy for sustainable development contains objectives such as “to encourage and facilitate the participation of citizens in the public debate” on development that “is founded on the respect of man and his environment.” Other objectives include “engaging in new ways to develop rural territories and natural spaces by involving and giving responsibility to local actors and privileging co-management” (Stratégie Nationale de Développement Durable 2003). These objectives are aligned with European Union policy which is comprised primarily of two programs, the Natura 2000 network aiming to protect wildlife and habitats of European importance and the initiative to halt the rate of biodiversity loss by 2010 (European Union Commission on the Environment 2006), both of which use considerable participation rhetoric.

While the trend in European and French environmental policy often favors, to a degree, citizen and interdisciplinary participation in environmental programs, some academics and politicians recognize the inequalities in power that cause nonparticipatory nature conservation in France. Géraud Gilbert, a member of the National Counsel, describes the current government stance on the environment as “attractive ecology and sustainable development rhetoric as far as the eye can see and ambitious long term commitments, but a near total absence of concrete decisions.” In agreement, Christian Barthod, from the Ministry of Ecology and Sustainable Development, recognizes that the dialogue
regarding nature protection in France is primarily a dialogue between conservation organizations and government administrators, with little political will to enlarge the perspectives on nature protection (Barthod 2004).

In accordance to the apparent absence of concrete citizen participation, Bess (1995) describes the trend of environmentalism in France as a continued expansion of state intervention and funds, “dragging the state into ever-closer involvement in citizens’ lives despite the relative hostility to ‘Big Government’.” He goes on to say that nature protection in modern France is defined by sophisticated, meticulous interventions on the landscape creating “a national space permeated by human artifice” even in protected areas that “depend on their daily existence on all manner of legal and practical decisions made by human beings.” This illusion of control merely masks the political, economic and cultural complexity inherent in many conservation programs.

Florence Pinton and Christian Barthod see the need to break out of France’s traditional conflicts between the widely differing universes of local and outside actors to form coalitions that recognize power differentials, focus on the future, share knowledge, and negotiate and compromise goals (Pinton 2001; Barthod 2004). Their problem identification and recommendation echo my analysis of French Guiana’s Kaw-Roura Marshes Nature Reserve, thus making the Kaw Reserve an example of the conflicts that are apparently common in French nature protection. Furthermore, such conflicts may be even more pronounced in France’s overseas territories and departments, where rural people’s context is considerably disconnected from the Parisian scientists and
administrators that have a role in the management of some rural landscapes. This is evident both in my research, and that of Zia Moumenee (2004) who found that residents in French Polynesia did not understand French goals of marine protection, and resented the French ‘mind’ and technical language spoken by scientists and officials.

**Biological and Social Context of French Guiana and Kaw**

« Le contexte historique, social et cultural dans lequel évolue la population du village de Kaw doit être pris en compte dans toutes les actions et les évolutions envisagées et souhaitées pour cette zone humide par l’ensemble de la société. En particulier, ce très lourd passé a, bien évidemment, des implications en terme d’appropriation et d’efficacité des décisions prises en termes de protection, de conservation et de valorisation. A ce titre il est et il sera indispensable de faire appel a l’ensemble des sciences de l’homme et de la société qui, malgré l’existence de conflits potentiels et d’un contexte sont encore très peu présentes à Kaw » K. Phillipe, Y. Fremon, and F.J. Meunier, Musée National des Histoires Naturelle

The historical, social and cultural context in which the [Kaw] village evolved must be taken into account in all of society’s actions and developments that are considered and wished for this wetland. This profound evolution has implications in terms of the ownership and effectiveness of decisions taken in terms of protection, conservation and valuation. To this end, it is and will be indispensable to call for social scientists who, despite the existence of potential conflicts, are still rare in Kaw.


**Biogeography of the Guiana Shield and French Guiana**

French Guiana is a Department (i.e., state) of France, located between 2° and 6° North latitude. The annual rainfall in the wettest regions is nearly 4 meters and the average annual temperature is 26° C (Morrison 1995). According to the World Wide Fund for Nature (2005), one of the largest continuous tracts of relatively pristine lowland and submontane tropical rainforest in the world exists on the Guiana Shield. By geologic
definition, shields are tectonically stable parts of continents made up of Precambrian rock with little to no sediment cover (Condie 2005). French Guiana contains not only extensive tropical rainforest, but also marshes, savannahs, mangroves and beaches (DIREN Guyane 2002). Collectively, these habitats have remarkably high biodiversity: 5400 species of plants, 480 species of fish, 110 species of amphibians, 187 species of reptiles, 716 species of birds and 186 species of mammals in nearly 91,000 square kilometers (Delafosse 2004), about one quarter the size of Montana.

Figure 2. Map of South America and French Guiana (Perry-Castañeda Library Map collection 2006).

Colonization and Growth of French Guiana

The first inhabitants of Guiana Shield entered the region up to 10,000 years ago (Versteeg & Bubberman 1998). Today, the Amerindian population in French Guiana is
comprised of six nations: Kalina, Wayana, Wayampi, Emerillon, Arawak and Palikur, which reside mainly in the isolated, inland regions of French Guiana (Musée Departementale 2005) and comprise only 3% of the population in French Guiana (CDPER 2000).

Beginning in 1498, the Spanish and the English were the first Europeans to explore the muddy coast and rivers of French Guiana, both in search of El Dorado (Morrison 1995). The European settlement of French Guiana passed from the hands of the Spanish, to the English, to the Dutch and finally to the French in 1677 during the monarchy of Louis the 14th (Auzias & Labourdette 2006). While it remains an overseas French Department today, numerous hardships burdened the establishment of the French colony. In fact, nine attempts by the English, Dutch and French to settle the land failed due to conflicts with other European colonists, the inhospitality of the mangrove-lined coast, malaria and yellow fever and famine caused by inappropriate agricultural methods (Morrison 1995; Zonzon & Prost 2002).

Despite these hardships, the French persisted in their attempts to colonize Guianan land, which was especially favorable for plantations of sugar cane, cotton and annatto (a fruit that produces a red dye) (Morrison 1995). Plantations were the only means of economic growth for the colonists. However, the native Amerindians were neither numerous enough, nor accustomed to the work necessary for successful plantations. Consequently, in the 17th century, the French followed the example of the Spanish and Portuguese by obtaining a labor force from Africa, thus giving rise to the slave trade in France’s West
Indian colonies (Zonzon & Prost 2002). The advent of slavery finally brought stability to the colonists of French Guiana. Meanwhile, the King of France gave free land to French people willing to settle in the French West Indies, including French Guiana (Mantabo 2004). By 1789, the population of French Guiana was 12,800; 11,000 of these inhabitants were slaves working on about 100 plantations (Zonzon & Prost 2002).

The Abolition of Slavery and Abandonment of Plantations

After the independence of Haiti in 1804, slaves in other French colonies began to escape or revolt by burning their owners’ plantations or homes. At the same time, labor-intensive plantations (especially the small-scale operations in French Guiana) could not compete with modernizing agriculture and the industrial revolution. Furthermore, an ideological shift favoring democracy and workers’ rights began the French Revolution in 1789. These three factors led to the abolishment of slavery on August 10, 1848, on all French West Indian colonies (Zonzon & Prost 2002). Following abolition, French Guianese became ‘assimilated’ via a colonial government ruled by Napoleon III. He and his overseas ministers carried out policies that emphasized French culture, education and economy in all overseas territories (Morrison 1995).

Despite the wishes of the colonial administration and former slave owners to maintain the production of the plantations after abolition, the 15,000 newly freed slaves aspired to work their own small farms (locally called abattis). Many of these former slaves claimed a piece of the extensive, virtually untouched tropical forest. Abattis provided subsistence agriculture as well as some surplus to be sold in the local markets. In addition, some freed
slaves were attracted to Cayenne, the capital of French Guiana, and began taking up civil servant positions (Mam-Lam-Fouck 1995). Meanwhile, many younger white colonists returned to mainland France. This opened up opportunities for the few Creoles that were educated in mainland France to position themselves for colonial leadership and inclusion in the middle class (Mantabo 2004).

**Creole Culture and Language**

The French term *Creole* initially referred to white people born in the colonies (Bernabe 1995). However, the Creole culture and language, as we know them today, arose in the 1700’s from the mix (genetically and culturally) of Europeans and Africans. During the time of slavery, the white colonists began using two languages: French among themselves and Creole to speak to slaves. However, because native languages restricted their communication, French Creole quickly became a language among slaves. French Guianese Creole evolved from a mix of thirteen African languages with a dominant influence of French. The abolition of slavery allowed for the growth of Creole culture, whose unique origins are revealed through women’s’ dresses, music, dance and myths and, most of all, in the yearly two-month celebration of *Carnaval* which mixes Christianity, African mythology and the life of the slave (Zonzon & Prost 2002).
Today only about 30% of the population in Cayenne speaks French Guianese Creole as a first language, though it is the chief rural language. All educated people can speak it but try to avoid speaking it due to its ‘low status’. Furthermore, schools do not teach Creole, which has created a degree of decreolization (Gordon 2005). Indeed, today’s younger generation speak a more French-infused Creole than older generations (Notin, personal observation).

**Departmentalization and Economy in French Guiana**

On March 13, 1945, the French national assembly voted unanimously to convert four colonies, French Guiana, Guadeloupe, Martinique, and Reunion, into overseas departments. This gave the former colonies the same status as the 96 other departments in France, meaning that the citizens had the same rights and responsibilities as all French
citizens on mainland France (Zonzon & Prost 2002). The new departments were led by a
State-appointed Prefect (i.e., from Paris). However, in 1982, France decentralized its
government; the Nation maintained itself as the sole regulatory power, but created
legislation that gave certain administrative responsibilities to sub-national bodies
(departments) allowing them to direct funding according to local needs (OECD 1997).

While lawfully French Guiana is one of the 96 French departments, a common perception
is that overseas departments occupy the ambiguous status of “forgotten but never
abandoned” (Schwarzbeck 1986). These overseas departments still “represent the third
world, consigned to the margins of history, the world of the excluded, of those who have
to fight for a place in the sun” (Manville 1998). Beyond maintaining the exclusive right
to create and change policies, Manville (1998) argues that France enforces
marginalization primarily through economic power, expressed in the daily influx of
French products to French Guianan markets and the presence of the European Space
Center. In 2002, French Guiana imported 332,000,000 Euros worth of goods from
France, while exporting only 86,000,000 Euros worth of goods to France (Barret 2004).
The largest contribution (25%) to the Gross Domestic Product of French Guiana is the
European Space Center located about 160 kilometers west of Cayenne (CIA 2006).
Indeed many have argued that the space center and its Ariane program are the principal
interests of France in French Guiana (Schwarzbeck 1986). The French state also provides
social services (e.g., medical, unemployment benefits), controls primary and secondary
school curricula, and initiates the establishment of universities (OECD 1997).
One of French Guiana’s most prevalent issues is high population growth and subsequent unemployment. The population consists primarily of young multicultural people spread out over the Department, which creates infrastructural demands on the State and increases competition for jobs. In 2003, the unemployment rate was 19.2% (CIA 2006) a dramatic increase from 9% in 1990. In addition, 10% of the population benefit from a French form of social welfare, Revenue Minimum d’Insertion, (CDPER 2000), meaning that over 30% of the French Guiana labor force is inactive and receiving government aid.

Past to Present: History of Kaw and the Kaw-Roura Marshes Nature Reserve

Due to the global importance of its extensive tropical forest, French Guiana is a priority in France’s National Biodiversity Strategy (Narquin-Bachelot 2004). With 80% of the population (157,000 people) living along the coast and 92% of the Department covered in dense forest, it represents France’s largest piece of tropical forest, and makes France the only European country to have a forest of such size and quality in its possession (CDPER 2000). Indeed, at the Rio Conference in 1992, the French President declared that France would create a National Park covering the southern one-third of the Department (Hughes 1992).

French Nature Reserves are defined as a space containing a remarkable natural heritage protected via regulation adapted to the local context. Nature Reserves are designed to carry out the following functions (www.reserves-naturelles.org):
• Protect rare, unique or threatened species or geologic areas; and representative or functional environments through a wide variety of projects and approaches;

• Aim toward long-term conservation;

• Create an area for locally-based, competent conservation-oriented planning;

• Draw on a local consultative committee to orient and evaluate the management;

• Develop understanding of biodiversity, nature protection and environmental education; and

• Focus on sustainable development.

While each Reserve, including Kaw, has certain characteristics that differ from the broad structure and function of Nature Reserves, Figure 4 illustrates the general organization and creation of French Nature Reserves. The Prefect (State-appointed representative in the department) creates Reserves in consultation with local authorities and experts. The Prefect then forms a consultative committee composed of all Reserve stakeholders, who identify a management group. The management group implements the laws and activities of the Reserve. The committee meets annually with the management group to discuss the previous year’s efforts and to plan for the next year, especially in terms of budgeting and funding, which comes primarily from the government.
Figure 4. Organization of a nature reserve
(Article L332-2 2002; Les Reserves Naturelles de France)

Consultation with local authorities and regional scientists

Administrative authority = Prefect of the Department initiates Reserve creation

Consultative Committee
Made up of all stakeholders: governmental agencies, local officials, property owners, representatives of local user groups, conservation NGOs, and scientists

The consultative committee meets once per year with the Management Group to discuss directions, tasks, approve plans, etc.

Management Group
Usually a conservation NGO, but could also be a governmental agency or a local community group. (In the case of the Natural Reserve of Kaw-Roura, the management group is the Association Aratai.)

Whose job is to
• Patrol and enforce rules
• Conduct ecological research
• Write and carry out management plans to maintain or restore natural resources (every five years)
• Promote ecotourism and interpretation
• Carry out all administrative activities

Government Funds

Funds via grants

Consultation with local authorities and regional scientists

Patrol and enforce rules
Conduct ecological research
Write and carry out management plans to maintain or restore natural resources (every five years)
Promote ecotourism and interpretation
Carry out all administrative activities
In 1975, a national research institution, *Institut de recherche pour le développement*, conducted the first preliminary scientific study of the Kaw region. This was part of a Departmental project to identify zones for future protection. Fourteen Reserves were proposed (there are currently five Reserves in French Guiana). The Kaw region, noted for its unique Palm Groves (*Euterpe oleracea*), Hoatzin (*Opisthocomus hoazin*) and Black Caiman (*Melanosuchus niger*) populations, as well as a distinctive composition of swamps and mangroves, was listed as a priority for national protection (Granville 1975).

**The Founding of Kaw until the Mid-Late Twentieth Century**

Modern habitation in the Kaw region began with the cultivation of its hills in the early 1700’s (Joly 2000). However, an analysis by a Marine general and a Swiss engineer led to a recommendation for the polderization (method of Dutch land reclamation) of the low, fertile marshland along the Kaw River in 1776 (Figure 5). Completed entirely by slaves, this draining of the marsh allowed for the establishment of large plantations of sugar, cacao, spices, manioc and annatto (Merlande-Adelaide 1986; Joly 2000). In 1789, the population of Kaw consisted of 96 white people, 1,521 slaves and 32 Amerindians (Zonzon & Prost 2002). However, the 1848 abolition of slavery caused the abandonment of these plantations. The freed Creole villagers that stayed in the region built small farms, hunted and fished for self-sustenance and thus created a lifestyle that, to some extent, still exists today.
Until the mid 20th century, the only access in and out of the village was to travel to the ocean via the Kaw River and then along the coast to Cayenne. This took two to three days of rowing in each direction and, therefore was only done a few times a year to sell *Atipa* (neotropical armored catfish) in Cayenne (Kaw resident, personal communication). The 1950’s saw the construction of a village medical post, police barrack (later to be abandoned), mayor’s annex and a small post office. Electricity came to Kaw in the early
1960’s (La Radio-Presse 1962). The population in the village in 1954 was 200 (Joly 2000).

1980s-1996: Modernization Begins

In 1982, a road from Cayenne to Kaw was built (Joly 2000). However, it was only usable by vehicles with 4-wheel drive. Due to the nearly 4 meters of rain a year falling on the hilly section of this road, it was not used regularly (Kaw resident, personal communication). Although it was still virtually isolated, the village began to experience some changes with the advent of this road.

Beginning in the 1980’s, there was an exodus toward Cayenne, especially by families who wanted their children to attend school past the primary grades (French primary school is equivalent to American grades 1-5). As one villager, Diane, said, “There is no work, so the young have to go to Cayenne. Also, there is no secondary school here, so the kids have to go to Cayenne to continue school. Then they take the rhythm of Cayenne, and don’t come back here.” By the 1990’s, the village had only about 50 people (Joly 2000). Today the permanent population is 36 adults and 8 children.

1996 to Now: Creation of the Kaw Nature Reserve

The paving of the road from Cayenne to Kaw in 1996 had a dramatic effect ecologically and socially on the Kaw savannah and village. Today, after an hour and a half drive from French Guiana’s capitol of Cayenne, the road to the Kaw region dead ends on the Kaw River. The landscape is wet and green, filled with herons, egrets, caiman and aquatic
plants. Kaw village, a few miles downriver, is accessible only by boat. Upon arrival to Kaw village, one finds a sense of rural isolation mixed with satellite dishes to receive French television. The small population has access to a primary school, a medical post and an annex for the Mayor (who resides in Regina, a larger town to the South). There is electricity 24 hours a day, thanks to a noisy gas-powered generator just outside of the village. While all residents are fluent in French, people mainly speak French Guianese Creole. Most homes have a telephone, many of which connect with mainland France, though shouting is the preferred method of communication across town. Palm trees and gardens house a wide variety of wildlife, including various hummingbirds, lizards, bats, frogs and beetles. There are three cars in Kaw, used mainly to carry large or heavy materials from the dock or small nearby farms to people’s homes. The most conspicuous feature of the town that one sees when arriving to the Kaw Village is a large, new building that houses the Kaw Reserve offices and visitors’ center (see Appendix D for a diagram of the village).

**Figure 6. A Street in Kaw Village (left), the Kaw Reserve office and visitor’s center at entrance to Kaw Village**

One negative impact of the paved road on the Kaw region was the start of car and boat motor theft that continues today (Kaw residents, personal communication). Rightly or
wrongly, illegal immigrants from Brazil are blamed for these crimes, and several villagers claimed the recent loss of security as one of their biggest concerns. Indeed this concern was so great that the village organized a collectif to defend the interests of the Kaw villagers. While it is an informal association, the villagers are free to express any concerns to the head of this association, who then communicates these concerns to the appropriate regional administration (Kaw resident, personal communication). The threat of even greater insecurity and an increase in future illegal immigration haunts many villagers. In addition, the economic impact of theft is noteworthy: according to one interviewee, the cost of a boat motor is approximately € 5,000. Other than occasional patrols, the virtual absence of police in the village increases the feeling of insecurity among the villagers.

Another negative impact of the road on the region has been poaching. Locally, Black Caiman meat was commonly eaten and occasionally sold in Cayenne (Kaw residents, personal communication). However, with the paving of the road from Cayenne, easy access by outsiders caused an increase in Black Caiman hunting in the Kaw marshes. Black Caiman, once common throughout tropical South America, have dwindled to an estimated 1% of the original population due to excessive poaching in the early to mid 20th century to feed the Western demand for Black Caiman skins (Thorbjarnarson 1999). Fortunately, today the marshes of Kaw are still home to one of the largest populations of Black Caiman in the world (Thoisy 2000).
Despite the 1975 listing of Black Caiman on CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), which strictly prohibits international trade, and a 1986 French law prohibiting destruction and capture of Black Caiman (Arrêté Ministeriel 15 Mai 1986), poaching of Black Caiman in the Kaw region increased dramatically in the mid 1990’s. In response to this increase in poaching, the villagers closed the road from Cayenne and approached Departmental officials to ask for a measure of protection (Kaw residents, personal communication).

On October 24, 1996, a prefectural hunting decree came into law (Arrêté 1663 1D/4B) which prohibited hunting on the Kaw River. This meant that all species of caiman, as well as any other wildlife living in or on the edges of the river could not be hunted by anyone. Two days after the law was signed, a political delegation came to Kaw to inform the villagers. Additionally, the Prefect declared this measure of protection to be the first step in the creation of the Kaw Reserve. The Kaw Nature Reserve, he told them, “would be an authentic planning tool permitting the planning of a pilot project in Guyane for conservation, tourism and sustainable development.” The residents were told repeatedly that the Reserve would be implemented with dialogue between the government and the village, that it would not halt the activities of Kaw residents and that it would permit the State to organize tourism and promote the emergence of local tourism projects (Lacoeur 1996).

On March 13, 1998, the Kaw Reserve was created (Decret 98-166). On April 11 of the same year, government representatives visited Kaw to explain the regulations. Less than
five minutes into their presentation a villager shouted, “We don’t want your Reserve” while another said “Here everyone lives from hunting and fishing... we feel threatened [by the regulation]...it is those from the exterior who hunt the Black Caiman.” A few others joined in the opposition, while the majority stayed silent (Cicural 1998).

Figure 7. Canal entrance to Kaw Village from Kaw River
KAWS RESERVE CASE STUDY

Methods

Objectives

The establishment and continuing controversy of the Kaw Nature Reserve presents a unique opportunity to explore how conservation efforts affect local people and, inversely, how local people affect conservation efforts. The primary purpose of my research was to understand, as holistically as possible in the time available, how stakeholders experienced the Kaw landscape and how they perceived efforts to conserve that landscape. Specifically my research questions were: (1) how do stakeholders view the Kaw region on dimensions of the landscape, history, future, protection, and (2) how can this information reframe conservation programs to avoid misdirected content and/or goals, and point to possible areas of collaboration.

Approach

The fundamental basis for this study was to investigate how people understand, process and perceive the Kaw Reserve and Village. In this context, I used a qualitative case study for the research design. During nearly eight weeks of fieldwork (36 days spent in Kaw village and 20 days in and around Cayenne) I conducted long and short interviews. Nineteen long interviews with 12 villagers, four Reserve employees (two of whom also were Kaw residents), two scientists (who worked for local conservation organizations), a tourism operator, and 2 government officials involved in Reserve management ranged from 30 to 90 minutes. Five short interviews of less than 30 minutes were also conducted with four residents, one of whom was a Reserve employee, and one government official.
involved in Reserve management. These short interviews covered only one or two topics listed in the interview guide (Appendices A & B), often due to a lack of time or information of the interviewee. The residents interviewed ranged from 15 to 68 years old and were equally representative of men and women. Beyond age and sex, I strove for interviewees that held a variety of opinions toward the Reserve and had different uses of the Marsh. Interviewees were offered a choice of being audio recorded or having the interview recorded by hand. Eleven long interviews were tape-recorded; eight long interviews and all short interviews were transcribed during the interview by hand. All interviews were conducted in French. Handwritten interviews were transcribed partly in French, and partly in English; taped interviews were transcribed in French. Analyses were done on original transcriptions.

Interviews were conducted following McCracken’s long interview method (1988) and the analysis primarily followed Miles and Huberman’s (1984) qualitative analysis methods. With the McCracken approach, the goal of the interview is to reconstruct a person’s view of the world. The semi-structured interview process has four elements: (1) literature review to establish the domain of the interview and the topics to be addressed, (2) reflection by the researcher to examine his/her own associations and assumptions that surround the topic and to ‘see yourself’ in the topic to create distance, (3) development of the questionnaire and (4) conducting the interview. Planning the interview entailed organizing and directing it along topics, allowing control of “the kind and amount of data without also artificially constraining or forcing their character.” During the interview, the “interviewer is to remain a benign, accepting, curious (but not inquisitive) individual who
is prepared and eager to listen to virtually any testimony with interest.” Individual interview records were kept anonymous and, when cited in this paper, are cited only by the random assignment of several pseudonyms given to each interviewee.

The presence of three key informants, the low number of stakeholders and the diversity of data sources lead to valid data and, subsequently, the base for an accurate analysis. The low population of the village, and the small number of organizations and government officials involved in the Reserve made it possible to encounter nearly all the stakeholders by the end of the third week of fieldwork. In encountering all of these stakeholders, I made my reasons for being in the village and French Guiana clear, I described how I would collect information and what I planned to do with this information. Furthermore, a Reserve staff member, a resident and a government official confided in me on more than one occasion and often confirmed and enhanced information gained from other sources. Lastly, the themes that emerged from the analysis were present in interview transcripts, archives and field notes.

**Transcript Analysis**

Rather than the rigorous numerical coding used in a content analysis, I used the coding methods of discourse analysis to organize similar concepts in which outlying cases are included and some cases may appear in more than one code. In discourse analysis the detail of a text is examined, while critically interrogating preconceived ideas of the researcher and looking for consistencies and differences in the content of the text (Miles & Huberman 1984; Tonkiss 1998). Before the analysis, I reflected on my own biases of
critically assessing the power hierarchy that places the government and powerful NGOs on top, my sympathy with local people who pay the cost of conservation projects, and my subsequent drive to look for authentic local involvement in conservation. I strived to be aware of unintentionally introducing these biases into the analyses.

The qualitative data analysis procedures of Miles and Huberman (1984) were used for the analysis of 24 interview transcripts, eight weeks of field notes and 19 archival documents collected on site. These documents included scientific reports on Kaw, newspaper articles, laws, newsletters and brochures from local conservation groups and the Kaw Reserve managing association, and other archive material such as letters and reports.

One-hundred forty six descriptive codes (Appendix C) were generated, which allowed me to group the data into similar concepts without discarding outlying concepts or cases (see Appendix D for data sheet). These codes were then grouped according to reappearing objects and themes. Groups of codes were checked against the original transcript to affirm or disaffirm intuitions and affirm or disaffirm the clustering of similar objects into general concepts. This was an iterative process of reading the data, coming to preliminary conclusions, and then verifying or rejecting those conclusions through several subsequent rereadings of the data. The goal of this process was to reduce researcher bias and confirm the classifications (Patton 1980).
Analysis and Discussion

Through this project, I looked for the most diverse array of perspectives to identify important themes to understand the role of education and dialogue in conservation. My analyses revealed several prevalent themes, four of which are applicable to the framework of multiple perspectives and diverse knowledge. These four themes were: (1) historical, regulatory and communicative sources of conflict among the Kaw Reserve stakeholders, (2) the effect of external power relations on the Kaw village and Reserve, (3) the *Atipa* resource crisis, and (4) similarities among stakeholders and diversity within groups (e.g., managers, residents, scientists, government officials and business people).

**Historical, Regulatory and Communicative Sources of Conflict among Kaw Reserve stakeholders**

At the onset of this project, I predicted that the economic impacts of protected areas would create the dominant conflict with resource users. However, this was not the case for the Kaw Reserve. The interviews showed that the main sources of conflict over the Reserve were: 1) the lack of dialogue with Kaw villagers during its creation, 2) the impact of regulations on the hunting and eating habits of Kaw villagers and 3) ineffective communication between the Reserve and villagers. The Reserve has minimal direct economic impacts on the villagers and, in fact, serves as a tourist attraction thereby bringing some revenue to a few residents.
Lack of dialogue with Kaw villagers during its creation

In my experience, nature conservationists adhere to a common theme of urgency to make a case for protecting land and resources. While environmental degradation always seems to be several steps ahead of protection or preservation efforts, the results of this study point to the negative repercussions of hasty ‘land grabs’ in an effort to protect areas of conservation value.

My interviews and archives showed that the conservation measures of the local and Departmental governments were not well received in the Kaw Village. Many residents misunderstood the Reserve regulations, had questions about certain details of the Reserve, stated that their views had not been taken into account and felt that the Prefect was “more interested in the marsh and the caiman than the villagers” (Angosto et al. 1996). Janet told me,

They implemented their laws, instead of consulting with the population, of working with the population. That is why there is this type of conflict between the Reserve and the villagers, because no one knew, they did it [implemented laws] like the commune belonged to them, it is like we had just arrived, like we had just arrived in the Reserve, when there are generations and generations that have lived in Kaw. Kaw has been here since the time of slavery, we had the largest plantations, and then now to have us believe that we are new here, it is not normal. We do not agree.

Similarly, Edward said, “It [the reserve] is a good thing but it has to approach the villagers some more. To make a reserve and then ask what must be done, can’t do that. Can’t create a reserve and then ask the villagers ‘what do you want?’ now that it is already done.” More to the point Jean commented that, “The Reserve came with its big hooves and installed itself at the entrance of the village to dominate everything.” Indeed, two professionals in the Kaw region said the Reserve was “implemented by force”, “without consulting local people.”
Clearly, these viewpoints illustrate the longstanding effects of excluding people from conservation planning. The time spent healing old wounds would be better spent engaging as many stakeholders as possible from the beginning. In the social learning framework, people come together to explain their perspectives, visions and knowledge and then attempt to combine and negotiate these ideas into a management plan. In the case of Kaw, most stakeholders had a serious concern for Black Caiman poaching, but defined its causes and solutions differently. Unfortunately, this lost opportunity may have been an occasion to create collaboration rather than division. As may be true for many protected areas worldwide, Kaw must consider how to overcome past conflicts to move forward in building trust, participation and an equitable, ecologically sustainable use of natural resources (Pimbert & Pretty 1995; IUCN council 2000).

**Interpreting and Enforcing Regulation**

The Kaw Reserve is divided into three different regulatory zones (Figure 8). These zones define the type and extent of acceptable activities within Reserve boundaries. Core regulations of the Reserve (Table 4) are summarized from the decree 98-166 which created the Reserve in 1998. Numerous villagers disputed some or all of these regulations, in particular the hunting law. As stated in the 1996 hunting decree, no hunting is allowed from the river and there are several places on the river where carrying firearms is prohibited. This decree banned the hunting of not only caiman, but also capybara and ducks. All three of these species were hunted regularly, providing some income, but more importantly, a source of meat. The Reserve’s hunting regulations have had more significant impacts on the diet of villagers than on the village’s economy.
Table 4. Some key regulations of the Kaw Reserve

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hunting</td>
<td>Allowed outside of Reserve and in dark orange zone. Only species <strong>not</strong> listed in international and national laws</td>
</tr>
<tr>
<td>Fishing</td>
<td>Allowed everywhere but yellow zone; gill nets can be used. Can only be for local consumption, ‘local’ is defined by the guards as within Guyane borders (i.e., exportation not allowed).</td>
</tr>
</tbody>
</table>
| Navigation| Upriver of the Kaw Village: 45 horsepower maximum  
            Downriver of the Kaw Village: 65 horsepower maximum |
| Fire arms | Can only be on boats when the person is on his/her way to a hunting zone. |

The only two resources with direct economic benefit in the Reserve are fishing and tourism. Both of these activities are unregulated and therefore the Reserve has limited direct economic impact on the residents. Hunting, a highly regulated activity, has more often been for food, not money. While Black Caiman once was sold in the market in Cayenne, it was reported only as an occasional activity (residents, personal communication). And even without the Reserve, the growing concern for endangered species and the increased influence of the National Hunting Office in French Guiana in the 1990’s would have led to a ban on hunting caiman eventually. The extent to which Reserve regulations have affected the village economy or the extent to which villagers connect their economy to Reserve regulations is not completely clear. However, Reserve regulations have affected their diet and subsistence lifestyle.
Figure 8. Kaw Nature Reserve zonage

- **No access**
- Movement and fishing allowed, hunting prohibited
- Movement, hunting and fishing allowed

- Atlantic Ocean
- Road to Cayenne
- Kaw River
- Kaw Village
- Cayenne
- Kourou
Comments from two residents, Denis and Jacques, illustrated the influence of the reserve regulations on the diet of residents: “Before there was the Reserve, we ate them [caiman]. And now we can’t eat them anymore. Before we would eat them and then let them reproduce. Now we can’t kill them, before we ate lots of caiman...it changes the habits of people.” Another resident, George, said “People here have the habit to eat locally...they can’t keep us from hunting ducks...we can’t eat only fish.” Indeed, the prohibition of caiman hunting was one of the first conflicts mentioned by several people, both from the village and from the Reserve, during the interview.

The typical diet of Kaw villagers consists primarily of fish or meat and is supplemented with couac (manioc or cassava) or rice. By French Guiana standards, they live rather inexpensively because they eat locally grown, hunted or fished food. In response to the question, “what do you like about living in Kaw?” five villagers answered that it is cheaper to live in Kaw than Cayenne. Clearly their food comes from investments of time and energy but not much money. Jennifer told me “Except for gas...you don’t need much money here, you hunt and fish, you spend nothing.” Because most villagers rely on self-subsistence, the impact of Reserve regulations on their diet may be significant, primarily in the increased consumption of fish. Consequently, the fish population also may be negatively affected by the possible change in caiman population (part of young caiman diet is fish) and the increase in reliance on fish for food.

In addition to the strict regulation on hunting, another significant conflict between the villagers and Reserve management is the prohibition of rifles on certain parts of the Kaw
River. Many villagers reported a feeling of insecurity due to the high incidence of car and boat motor theft in recent years and the increase in illegal immigrants, some of whom are feared to be violent. To address this fear, villagers felt the need to carry a rifle anytime they left the village for the purpose of self-defense. Indeed, the Reserve staff recognized this regulation was difficult to enforce and understood the desire to carry a rifle for personal security while on the river. At the same time, one guard recognized the conservation implications of being armed: “It [rifle] is for defense, but if a capybara passes by, it will go in the pot. Really, we should not dream [that they won’t shoot capybara if rifles are allowed on the river].” Adding to the severity of this problem, two staff members of the Nourages Nature Reserve, just south of Kaw, were shot and killed by illegal Brazilian immigrant gold miners at a biological research station in May of this year (Huet 2006).

A general theme of the interviews was that beyond the specific impact on hunting and eating habits of villagers or the increased desire to carry rifles there was an overall objection to outside regulation. For example, Xavier remarked, “there is too much regulation, they are protecting anything”, while Alain said, “there are places we can’t go” Why? “Because they prohibited everything, I don’t know, it’s the Reserve, I don’t know why they put this. They are the only ones to know, because me, I do not see the usefulness of stopping us from going there [savannah].”

Beyond the residents’ general disdain for regulations, Reserve staff expressed the difficulty of enforcing regulations on neighbors and family members. In a small village,
there clearly was a conflict when law enforcement agents had to enforce laws on family or friends. Consequent tension arose between these dual roles and discomfort occurred when enforcing some laws. Therefore, law enforcement was either inconsistent or flexible, yielding regulations that did not hold their lawful power. As a Reserve staff member stated, “you have to be a bit flexible, because if not, it’s miserable.” The Reserve staff, including the Head of the Reserve, all live in the village and therefore often faced this dilemma. While it was positive that the Reserve hired some local people, and that non-local staff have the chance to integrate into the village, it also put several employees in compromising positions. When law enforcement was needed, the Reserve asked for support from the few available agents of the National Hunting and Wildlife Office.

How can a Reserve meet its conservation and management mission when there is a certain disregard for regulations by locals and Reserve staff alike? Social learning theory suggests that an equal, open, and possibly brokered, conversation among stakeholders is needed to avoid inoperative or unproductive management strategies. Furthermore, social learning is adaptive in nature, allowing on-the-ground changes in management plans as stakeholders recognize inefficient efforts. In the case of the Kaw Reserve, even though local authorities did not have the power to change regulations, managers still had the opportunity to engage in productive conversations with stakeholders.

The Reserve staff recognized that there was an inherent problem with communication and meaningful engagement of villagers. A Reserve staff member stated,

They (villagers) must be involved (in the Reserve). Now, it is not easy to do, because it is constraining for us, forcibly it demands more work for us, and as we
are a small team it’s restraining. It’s heavy to manage. I’ll explain myself. If every time I have a project, I must meet everyone in the village during 3, 4, 5 meetings. It is already hard for me to manage the project, if in addition I must take the time to go to people and explain why, how. Because maybe they won’t agree. Forcibly, it is constraining. But it must be done, it’s actually at this level that we must reflect. How to attempt communication that takes place in the best possible way, without us losing too much time and that the project advances without taking 20 years to have results. It is at this level that everything depends, meaning that if we are able to do the method, to take the time to include them more in the projects, consult with them more on the projects, and that we realize that there is a return, it will work, we will take the time to do it. But if we realize that every time, the tone raises, it’s tense and that it doesn’t rest on concrete arguments, I am scared that the team will wind down at one point or another. So for it to work, everyone has to make an effort.

Clearly, this individual identified communication with villagers as a hurdle to be overcome, both in terms of when to engage locals in Reserve projects, and in terms of how to explain science to them. He/she commented that villagers think that science is “another planet, it brings nothing and they have no interest in it.” Neither side recognizing the value of the others’ knowledge has been a major hurdle for most of these stakeholders to overcome. Moreover, the Reserve is concerned about how to deal with the perception that when villagers do not understand they will not listen. Trying to present issues or concepts in ways that fit into people’s frames could be one productive, new way of engaging them in the conversation. In addition, establishing a project and then informing people or asking them to be involved is very different then inviting them to help define and decide on a project.

One Reserve guard expressed frustration that the people in the village did not understand the importance of Reserve, the regulations of the Reserve or even the job of the guards. This guard did not know how to explain all these aspects of the Reserve in a way that was
relevant to villagers. However, this guard clearly appreciated the value of clear communication with residents. When communication from the Reserve was irrelevant or misunderstood, the guard expected that the villagers would say, “Ah, as usual, I don’t understand because when the Reserve talks we don’t understand.” Similarly another Reserve staff member explained, “they had not yet found the key” to efficiently communicate with villagers. These comments illustrate the difficulties that arise out of stakeholders’ divergent frames.

The Politicization of the Kaw Village and Reserve

A highly prominent theme that arose from the analysis of the interviews was that Kaw villagers appreciated their tranquil, isolated, independent lifestyle. Understanding the historical context of Kaw was vital in this regard, especially with respect to the state of this region after slavery and long before the Reserve was established. Because the influence of the outside world was minimal until the 1990’s, the village experienced a sense of freedom many of us cannot conceptualize due to the modern rarity of isolation and disconnection of people from state or national laws. During most of the Twentieth Century there were only a few French law enforcement agents and the only means of enforcing environmental regulations was to send an agent from the National Hunting and Wildlife Office in Cayenne. This agency established an office in French Guiana in 1993 (Richard-Hansen & Hansen 2004) and even today has only 11 agents for all of French Guiana. In essence, Kaw villagers were free to construct a subsistence lifestyle in an isolated, biologically rich region. The geographic isolation that they experienced until 1996, coupled with their slave heritage and the subsequent drive of freed slaves to be
self-sufficient (Mam-Lam-Fouck 1995), may partially explain the conflicts and negative attitudes on the part of many villagers towards external groups who became influential, enforced their goals and regulations and, consequently, affected the lifestyle of the village.

Although most villagers did not participate in the creation of Reserves in French Guiana, local politicians played a significant role. The Arataï Association was created to manage the three Reserves in the northeastern region of the Department. This Association, which now makes most of the daily management decisions for the Kaw Reserve and has significant influence in Reserve planning, is comprised of local politicians. Therefore, the priorities of this Association, whose president is also a vice-mayor of the Kaw region and a native of Kaw village, often were politically motivated and focused management power among local politicians. For example, while scientific information is vital to the conservation of Nature Reserves, scientific studies in Kaw have, over time, been taken out of the hands of scientists with expertise in the area and into the hands of the Reserve staff, who are not trained for scientific data collection and interpretation. Over time, significant animosity of stakeholders for the president of Arataï resulted in less and less involvement by both environmental organizations and scientists, as well as in a high turnover of Reserve staff. As one particularly frustrated interviewee said, “He (the president) uses cronyism and does not know anything about nature...he does what he wants in the Reserve and keeps his power.” Others who were more closely involved in the Reserve said, “There has been some dysfunction internally (in the Aratai Association) so there are days that aren’t too easy...I can’t get into the details” and “The Aratai
Association isn’t…it isn’t easy, there is a rather authoritarian president, it isn’t a structure that works easily all the time.” Although the State admirably attempted to place power lower down the governmental hierarchy, placing the Kaw Reserve management in the hands of local politicians has not led to democratic decision making. ‘Local participation’ in the form of a local government’s position to manage French Reserves disregards the possibility that such governments may not be transparent or representative of the diverse interests of the population (Finger-Stich & Ghimire 1997).

The struggle to control and access resources in Kaw, to determine how resources should be managed, and the fight for legitimacy (Alphandery & Fortier 2001; Wilshusen 2003) over the Marsh are all acts of people maintaining and struggling for power. Clearly, the highly politicized nature of the Kaw Reserve has facilitated a polarization of stakeholders. The opposite of such politicized protection is democratic decision-making that could enhance both the conservation mission and local support.

Beyond the boundaries of French Guiana, the physical and cultural distance between the Department and France has played an incredibly important role in the management of the Kaw Reserve. According to some interviewees, a Reserve in mainland France would never experience the current situation in the Kaw Reserve, where the staff are not given adequate resources, often are not trained for their position and management goals are defined by a highly political local association. A Kaw Reserve staff member, referring to the French Nature Reserve system, expressed “we are part of the network without being part of the network”, meaning that they are officially a French Nature Reserve but operate
in a very different context and scale. While they have a similar budget and quantity of staff members, fewer opportunities for training or national planning are available to Kaw Reserve staff. Clearly, the results of my interviews suggest that Reserves in French Guiana, as a whole, seem to be stuck in a difficult political situation: this Department, and all its entities, certainly is better off economically and ecologically than neighboring South American countries, yet they tend to be overlooked by the French government. The result is that these constraints and issues lessen the ability to conserve land and species effectively.

A Growing Resource Crisis: The Case of Atipa Fishing

Fishing was the primary activity of many Kaw villagers, and Atipa (*Hoplosternum littorale*) and Kaw are nearly synonymous, especially for regular visitors to Cayenne’s fish market. For at least the past 40 years, these small, meaty, scrumptious fish have been caught in the Kaw savannah and sold in Cayenne (Desbois 1996). In the past, fishermen only fished *Atipa* in the dry season, recognizing the importance of the rainy season for reproduction, and avoiding the added effort of fishing over a larger space created by significantly higher water levels. However, today villagers use new fishing practices. Some still adhere to past traditions, while others fish *Atipa* using smaller gill nets, thereby yielding smaller fish. A few also fish during reproduction periods. Easier access to the fish market and family pressures, both of which are tied to modernization and the building of the road, may provide the reasoning behind this change in fishing practices.
Before the 1970’s, up to 1000 Atipa per day per fisherman were caught in small, round nets and taken, alive, by boat to Cayenne. However, fishermen switched methods in the 1970’s by using large, line gill nets. The fish were harvested dead and sold frozen in Cayenne. It is not known if this change in method has affected Atipa populations, yet many villagers and nonvillagers alike report a marked decrease in the Atipa harvest in recent years. Indeed a study by Desbois (1996) reported a 30-fold decrease in Atipa harvest in the past 30 to 40 years in Kaw. More recently, a governmental report on fishing in French Guiana identified Kaw as one of two regions targeted for future fish research, management and regulation (Balland & Roux 2005). Furthermore, this report recognized that “Guianese fish have nearly no legal regulations and, consequently, nothing can be opposed to the abuses already noted.” The report goes on to recognize an increased demand for Atipa, leading to overexploitation as evidenced in the reduced average catch and fish size. Overexploitation, caused by the use of smaller gill nets by Kaw residents, has led to a “downright massacre” of Atipa and other species caught in

Figure 9. An adult Atipa
The case of Atipa serves as a window into the complexity of managing resources, regardless of who is in charge of them. There is a need for some type of management, though many obstacles stand in the way. Fish are a major natural resource in Kaw, yet fishing remains unregulated in the Reserve. Experts advocating for fishing regulation were not particularly involved in on-the-ground Reserve management. Local managers would like to believe that local people know what they are doing, thereby relieving the Reserve staff of management and enforcement responsibilities. Indeed, in the case of Atipa, the Reserve essentially left management of the fisheries to local fishermen; the unfortunate consequence is an ever-decreasing harvest. So what really is happening to fish populations? Without research to inform all the stakeholders about Atipa and the
numerous variables that may affect its population dynamics no one can make an informed
decision about future management, nor enforce regulations and practices that would
protect the resource for future conservation and fisheries benefits.

How might this case be resolved? The Reserve does not have the scientific, financial or
communication resources to deal with *Atipa* fishing, but external pressures (e.g.,
government, fish merchants in Cayenne) will likely force the Reserve to adhere to its
statutory obligations to protect unique or threatened species and focus management on
sustainable development. As Jane told me, “*there are no more Atipa...it is a very difficult
subject, one of the worst I think, not to mention if there aren’t anymore.*”

There are common elements related to caiman and *Atipa* management in the Kaw
Reserve. They both represented common issues among diverse stakeholders and,
therefore, had the potential to gather diverse people in collaborative management. In the
case of caiman poaching, the government failed to take a risk on developing a solution
collaboratively. Numerous villagers explained their distress at seeing dead Black Caiman
whose tails had been cut off floating in the Kaw River. For example, Janet reported,
“There were people who came and killed them [caiman] and left them floating on the
water and we didn’t know what to do.” Several villagers and two Kaw Reserve staff also
stressed that villagers, though they hunted caiman as well, did not abuse the right to do
so.
Rather than embracing Kaw villagers’ request for help, the government reacted to the situation by creating a Reserve without consulting Kaw residents, thereby disenfranchising many of them. Today some residents and other stakeholders are concerned about reduced harvests of Atipa. This may be the moment to build local resiliency and to collectively learn how to manage this species through a social learning process that engages the diverse stakeholders to confront this issue.

A case study of adaptive collaborative management in the Mafungatsi Forest in Zimbabwe exemplifies the potential of diverse stakeholders to overcome their conflicts through what the authors of this case study call collaborative monitoring. New participatory actions are made possible by collectively monitoring various forest uses, analyzing and sharing the results, reflecting on the results and, if necessary, changing their practices (Mutimukuru et al. 2006). The Mafungatsi Forest went from a protected area inundated with conflict among a wide array of local stakeholders, to a protected area that used collaborative monitoring and learning to enhance participation and resolve conflict. First, a common definition of collaborative monitoring and terms of reference for all stakeholders were negotiated. Then, learning platforms were created that allowed “for sharing and reflecting on monitoring results…for collective sense-making by stakeholders and for generating insights to feed into decision-making processes.” In this social learning case study, gathering both ecological and sociological data provided a tool to interpret their relevancy and collectively take action.
Another case study of feral goat management on rural private property in southwest Queensland (Andrew & Robottom 2005) showed that social learning was a vehicle to move from a situation of distrust among stakeholders (in this case, grazers, researchers and the government) to collaborative management and learning. In-depth interviews at the beginning of the process showed that the stakeholders had different types of knowledge that provided a wide array of solutions and all the ideas were necessary for successful management. Landowners “anchored things in reality”, while science provided a useful view of the “outside looking in.” After accomplishing this first step of knowledge recognition and appreciation, social learning was used as the process to integrate this diverse knowledge. The stakeholders, via facilitated discussion and debate, expressed multiple project goals and values, collectively defined the problem, planned a learning agenda, implemented management trials monitored the results, then collectively evaluated those results and reflected on their new knowledge to create new learning agendas.

These case studies point to the significance of seeking and valuing alternative perspectives of diverse stakeholders. Perhaps by collectively learning more about Atipa, both from biological and sociological perspectives, Reserve leaders can create a platform for collective decision-making that moves the dialogue between the village and Reserve forward. The Atipa issue involves numerous stakeholders that share a common interest, and provides an opportunity to be proactive in the conservation of Kaw, rather than reactive to government regulations or resident distrust.
**Similarities among Stakeholders**

The first three issues that were identified in my analyses (1) historical, regulatory and communicative sources of conflict among the Kaw Reserve stakeholders, (2) the effect of external power relations on the Kaw village and Reserve and (3) the *Atipa* resource crisis, showed a certain dichotomy of local versus nonlocal perspectives. Yet the interview analyses also showed that it is somewhat misleading to create false dichotomies. These issues in the Kaw region are not entirely Parks versus People, or the Local versus the Nonlocal. My analyses revealed some similar opinions and concerns voiced by diverse stakeholders as well as diversity in opinions within similar groups. Because of the small populations involved, it was possible to interview, or at least converse, with the majority of local stakeholders, allowing me to document a wide diversity of individual opinions.

In terms of the Reserve, the most prevalent opinion expressed by interviewees was that the Reserve had good and bad aspects. From one perspective, the Reserve is good because it stops caiman poaching, it serves as an attraction for tourists and/or it protects the land. However, at the same time, the Reserve has imposed regulations and restricted the lifestyle of the village. It was not surprising that many interviewees tended to group stakeholders as either for or against the Reserve, yet only a small minority of interviewees actually fit neatly into these two groups.

Similarities among many local stakeholders included an appreciation for the beauty, uniqueness, wealth of resources, or biological importance of the Kaw marshes. This
appreciation could be the basis of a shared vision to protect the marsh, though different
types have different ideas of what protection means or entails.

The issue of personal security certainly was prevalent, with nine interviewees and five
others discussing it both during interviews and in casual conversation. Perceptions of
personal security and resource use can affect one another depending on whether a
resource use is concentrated in safe areas or is spread throughout the landscape (Haro et
al. 2005). The direct effect of feeling personal insecurity on resources in the Kaw Marsh
is not known, but the lack of security has restricted the area that the guards census and
patrol. Because they are not allowed to carry firearms, guards do not enter potentially
unsafe regions of the Reserve and prefer to stay closer to the village, particularly at night
(guards, personal communication). Clearly, the issue of insecurity touches residents, the
Reserve, researchers and tourism operators.

Seven of the interviewees noted that poor job prospects in Kaw have resulted in an
exodus of young people from the village, leading to the concern of a negative future for
the village. Some stated that if tourism could develop, then Kaw might have more income
and will survive. While it is doubtful that tourism can create enough equitable income to
support the village, it is clear that without more income (which currently is derived from
Atipa fishing for four families) the village will slowly become a vacation or weekend
spot, as it currently is for several families. In addition to tourism, one solution according
to Desbois (1996) is Atipa fish farming. In his report, he explained that such farming
would be a relatively uncomplicated process. He provided the template for setting up
such farms and suggested that they could not only restock the Kaw Marsh, but also provide extra fish to sell in Cayenne.

The four similarities among stakeholders, (1) admiration for the Kaw marshes, (2) insecurity, (3) unemployment and (4) concern for the *Atipa* population have very different contexts, but acting on these issues will require collective environmental citizenship. Furthermore, the fact that stakeholders can see both positive and negative elements of the Reserve suggests an opportunity for creating a collective scientific literacy about a place based on points of common interests and concerns.
A STARTING PLACE: HOW THE KAW STAKEHOLDERS MIGHT BEGIN SOCIAL LEARNING

Social Learning must begin with openness to new ideas and to change. Elcome and Baines (1999) urged “those who want to achieve their professional objectives with the active support of residents and neighbors” to begin by being honest about their comfort level in truly participative projects. Some of the personal traits and professional mannerisms that both foster and inhibit participation are listed in Table 5. Reflection of the questions listed in the table allows stakeholders to accentuate their useful attributes and modify their less constructive traits. This may provide a useful starting place for Kaw Reserve managers.

Table 5. Self-questionnaire to assess, prepare and reflect on one’s ability to participate (Elcome & Baines 1999)

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes/No</th>
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<tbody>
<tr>
<td>1. I like listening to alternative ways of doing things.</td>
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<tr>
<td>2. I expect other people to accept my opinion when I know more than they do about a subject.</td>
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<tr>
<td>3. I enjoy arguing my point.</td>
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<td>4. I celebrate diversity of opinion as much as diversity in the environment.</td>
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<tr>
<td>5. I accept change as part of life.</td>
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<td>6. I like situations where I can be flexible</td>
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<tr>
<td>7. I respect other people’s opinions, even if I disagree with them strongly.</td>
<td></td>
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<td>8. I can accept that I am sometimes wrong.</td>
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<tr>
<td>9. I do not believe you can compromise on environmental issues.</td>
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<tr>
<td>10. I do not like uncertainty.</td>
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<tr>
<td>11. I lack confidence in unknown situations.</td>
<td></td>
</tr>
<tr>
<td>12. I accept that people need to use nature’s resources.</td>
<td></td>
</tr>
<tr>
<td>13. I can accept decisions which I do not necessarily agree with.</td>
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</tbody>
</table>

Yes to questions 1, 3, 4, 5, 6, 7, 8, 12, 13 and No to the others encapsulates an ability to enter into participatory conservation.
As already mentioned in Chapter 1, when considering the goal of a conservation project, it is important to consider what is changeable and unchangeable. It also is important to reflect on one’s own goals and determine which are negotiable which are not. Listing aims or objectives, rating their ‘negotiability’ and determining the ‘bottom line’ for each objective is a helpful process in defining one’s needs and wants in a collaborative project (Elcome & Baines 1999). Furthermore, reflection is inherent in social learning. Anyone aiming to create a collective knowledge base must become conscious that they are bringing a particular set of experiences and knowledge to resolve a problem. The reflective questions to ask include:

- What are my assumptions and experiences regarding this issue?
- How have I defined and bound the problem?
- What is my role in the problem and its resolution?
- What are my goals?
- Why do I think that my proposed actions will lead to this goal?
- Why do I have the goal I have?

Stakeholders can begin by conversing about their individual answers to these questions, and reflect on the diversity and validity of different ways of knowing.

Using some of the methods for dialogue and deliberation represented in Figure 1, participants can begin to find commonalities and points of negotiation. Figure 10 exemplifies some of the starting places for how and where Kaw villagers can begin social learning. The green boxes represent the unique sets of knowledge, perspectives and skills of each group. The ovals connected to the boxes represent the dominant concerns or
interests of the particular group. The connectedness of these ovals shows some commonalities among stakeholders. In particular, Atipa populations and the threats of insecurity or encroachment represent concerns of the majority of stakeholders. Conversation that promotes stakeholders’ perceptions of problems can further define their concerns, assess resource availability (skills, time, money) (Ridder et al. 2005) and begin setting ground rules of engagement and learning plans to lead Kaw into collaborative, social learning conservation.

**Figure 10. Knowledge and concerns of Kaw Stakeholders.** Boxes represent expertise and skills, ovals represent associated interests or concerns.

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**From Theory to Practice: Social Learning about Atipa**

Clearly, the Kaw stakeholders have a starting place to begin collaboration. Whether they focus on security issues, growth and resource uses outside the Reserve, or the Atipa
population within the Reserve; social learning can provide the forum to conduct relevant, local knowledge production that bridge, and include, social and ecological aspects of conservation.

Several methods for social learning exist, including drawing flow charts that describe the issue at hand, pie charts that describe the weighted roles of people or variables, building scenarios, conducting interviews and focus groups, providing workshops, creating citizen committees, organizing field trips and conducting role playing and mapping activities to clarify resource use, needs and concerns (Ridder et. al. 2005; Urban Research Program Toolbox 2006). Such methods create new forums for communication that develop dialogue and allow each stakeholder to tell a part of the story.

**Using Citizen Science to Create Valid, Participative Research**

The specific research conducted as part of social learning may also be called citizen science. Citizen science, as defined by the Coastal Cooperative Research Centre (www.coastal.crc.org.au)

*is a participatory process for including all sectors of society - general public, government and industry - in the development and conduct of public-interest research in order to bridge the gaps between science and the community and between scientific research and policy, decision-making and planning. Bridging these gaps involves a process of social learning through sound environmental research, full public participation, the adoption of adaptive management practices and the development of democratic values, skills and institutions for an active civil society.*

Citizen science clearly falls into the realm of social learning in its inclusion of all stakeholders in developing questions, designing, and conducting research. Data collected in citizen science can be social data, local knowledge, and/or western ecological
knowledge. Citizen science increases citizens’ knowledge of science, provides important data (Trumbull et al. 2000) and offers a tool for scientists to dialogue with citizens and make science relevant to the public.

Citizen science can provide the framework to propose and conduct participatory research. For example, in order to tackle the issue of Atipa, all stakeholders must first generate research questions based on discussions and speculation about participant-generated variables that may be causing a population decline. Recognizing that the experiences and knowledge of all stakeholders are required to develop questions and collect data creates the forum for citizen science research. Possible variables that could be collectively researched include invasive plants in the marsh that may effect Atipa nests, nearby ranches whose zebus (horned cattle) roam the nesting sites of Atipa, hunting regulations of the Reserve that may increase fish consumption, ecological relationships among caiman and Atipa, demand for Atipa in Cayenne and the availability of other economic activities for residents.

**Conclusion. Social Learning: a Path to Collaboration**

Participation, often regarded as a key component of people-centered conservation (Brown 2003), is a mantra in conservation and sustainable development planning documents (Davies 2001), making it dangerously available for marginalization via institutional lip service or paper participation. As Skillington (1997) points out, European Union governments are under pressure to change institutions toward more participatory decision-making. However, applying participatory decision-making on the ground has
not yet matched government ideals. Indeed, historic practices for top-down management and decision-making can simply be reframed using participation rhetoric. According to Blangy (1999), “Nature Reserves (in France) offer a narrow judicial framework that does not leave much room for the practices of traditional activities or participatory management.” Yet, French Nature Reserve objectives include the “creation of an area for locally based, competent conservation-oriented planning.” Creating competency via a social learning framework that fosters both ecosystem management and participation can help Nature Reserves achieve this objective.

In order to be competent, participation should create space for renegotiation and reinterpretation of the conservation issue (Goffman 1998) that challenges current ideas and transfers some power to local levels to define and implement conservation. The institutional barriers to this devolution of power make it is easy to imagine why the Kaw Reserve managers send an invitation for participation, throw their hands up when people do not show up and then repeat the ineffective effort: “well, it does not stop us- we will still try to involve them!”, as stated by a Reserve staff member. Clearly, participation in Kaw exists on the lower rungs of tokenism on Arnstein’s ladder (Table 3) of citizen participation (1969). Tokenism represents the ‘Three I Model’: Invite, Inform, and Ignore (Walker & Daniels 2001). In Arnstein’s (1969) view, the means of moving up the ladder of participation is to give power to previously underpowered citizens. Of course, this requires building leadership to create organizational and rule making institutions throughout the stakeholder communities so that people are able to use the power given to them to produce collective knowledge and effective management.
There is a strong link between openness to a diversity of perspectives, experiences and knowledge, and the extent to which marginalized stakeholders participate. Moving towards collective scientific literacy requires that diversity, in people, viewpoints and backgrounds, is valued. Valuation necessitates an acknowledgement and use of knowledge. As Moote et al. (2001) insist, “respect for diversity and different ways of knowing” and “broad representation” of diverse voices are the means of legitimizing community-based processes. Recognizing peoples’ perspectives and realities about their place is the stepping-stone to collaborative adult education for local conservation. Social learning is about educating and being educated, and therefore hinges on respect, humility and trust of stakeholders. Trust can be built and maintained when there is both solidarity of individuals’ interests or concerns and solidarity of sentiments that include a sense of common norms or affection. Moreover, trust arises when people “believe that their relationship is based on more than the narrow calculation of self-interests” (Bell 1998). Therefore, small initial projects or advances that show the ability of managers to move beyond their self-interests can foster trust in collaborative conservation.

Recent literature provides an array of case studies that describe a learning approach to environmental management (e.g., Keen et al. 2005; Ridder et al. 2005; Keen & Mahanty 2006; Lauber & Brown 2006; Mutimukuru et al. 2006; Pahl-Wostl 2006; Rogers 2006) that opens the decision-making arena to diverse ways of knowing and diverse ways of attaining knowledge. In particular, Keen and Mahanty (2006) focus on learning in two community-based marine management projects, the Fiji Locally Managed Marine Area Network in the Fijian Islands and the Arnavon Community Marine Conservation Area.
Management Committee in the Salomon Islands. These projects brought government officials, local communities, conservation organizations and researchers together to manage local coastal resources. To begin, all stakeholders agreed upon a contract stating how they would engage with one another and the values, objectives and processes that the participants shared. Working together to make management decisions that the wider community, whom they represented, would agree upon forced the stakeholders to listen to one another. Furthermore, they created a management plan that could be adapted as they attained and analyzed data from system monitoring. These methods allowed for learning about management and learning about the system. To increase their impact and learning, each group of stakeholders shared their new knowledge with other groups in the network, thereby linking local and regional scales of marine management. Stakeholder engagement was maintained, in part, due to the value placed on their individual knowledge and experiences and the inclusiveness of involved stakeholders.

How can the Kaw Reserve come to fit into the local community more seamlessly? All of the stakeholders need to learn to see the entire system, including caiman and Atipa, all stakeholders from Cayenne to Paris, and the influence of funds and the pressure to protect tropical land and species. The history of Kaw cannot be changed, but it must be considered in the planning of future programs. Managers must engage the village to be accepted and to move forward as a collective group for the protection of their place. The history of negative perceptions, objections toward regulation and poor communication created conflicts that made the Reserve staff feel they were neck deep in a marsh and could not move forward. However, by focusing on some common interests and using a
learning approach, trust may eventually be built and positive collective management actions taken. The rich knowledge of every individual whom I interviewed or spoke with undoubtedly has a contribution to make to the dialogue about the place to which they are uniquely connected. The biggest barrier may be the institutional backing at higher levels of Reserve management and the French government. While the French institutional rhetoric may support collaborative learning and other forms of participation, only time and proven success will close the value-action gap.

The future, as noted by all interviewees, is uncertain. Will Kaw continue to decrease in population only to become a weekend getaway? Will the Atipa population decrease, creating even fewer economic opportunities for Kaw villagers? Will government officials be open to innovative solutions to managing the Kaw marsh? Will nearby gold mining or road building plans encroach on the region? Though uncertain, a vision of the future based on common concerns and achieved through a learning process can be the means of proactive collaborative conservation.

Though social learning cannot be imposed or coerced, devoted leaders can draw in stakeholders and provide images of success (Wondelleck & Yaffee 2000). As Courtney White, who directs the Quivira Coalition, a collaborative range management project of ranchers, scientists, land managers and environmentalists in New Mexico, said, “There was no choice between hard-headed ranchers and hard-headed environmentalists…we’re not going to take on anybody, we want to help foster change.” Rather than using tools of coercion, which can “right a wrong, but are ineffective for chronic afflictions”, the
Quivira Coalition creates a neutral, collaborative third place where ranchers and environmentalists can seek out common ground (Davis 2005; White 2005).

While a common ground exists in the case of Kaw, it is easily overshadowed by their various sources of conflict. Using dialogue to find, debate and nurture this common ground will allow these stakeholders to bridge their divisions while maintaining each person’s unique contribution to the whole. In the words of Jane Goodall (2002), “Change happens by listening and then starting a dialogue with people who are doing something you don't believe is right.”
Figure 11. Kaw River and Savannah
BIBLIOGRAPHY


Goodall, J. 2000. Interview in Johannesburg during the Sustainable Development World Summit.


Appendix A.
INTERVIEW GUIDE FOR KAW RESIDENTS
Questions in italic were asked if necessary or appropriate

We’ll start with some information about you and the village
1a. How long have you lived here?  
(So you were born here/ Where were you born?)

1b. What do you do? (What are your daily activities?)

1c. How long have you ---

1d. Before ---, what did you do?

1e. Without being nosy, who old are you?

2a. What changes have you seen during the time that you have lived here?

2b. When you go in the forest, the savanna, on the river, have you seen any changes?

2c. Have you seen any changes in the village?

2d. What changes had the most consequence for you?

3a. What do you like here, what do you like about living here?

3b. What don’t you like here? If you could change anything, what would it be?

3c. Can you tell me your favorite story or memory that you experienced in nature (the forest, river, savanna)?

3d. What is the most important place in the village and its surroundings? (For you? For the village?)

Now I have a few questions about the environment and the Reserve
4a. What do you think about the protection of this place?  
(Does it need to be protected? Why, by whom and how?)

4b. Does the Reserve have, or had, consequences for you?

4c. Where they any positive (negative) consequences? (opposite of response to 4b)

4d. Have you ever spoken about these topics to the people who work for the Reserve?
4e. What would you like from the Reserve?

5a. How do you imagine this place in 50 years?  
\textit{(How do you imagine the life of your children or grandchildren?)}

5c. Is that what you would like to see?

5d. If not, what would have to happen to achieve what you wish?

And the last topic is tourism here in the Village and the Savanna.
6a. About how many tourists visit here? (Maximum, minimum in a week)

6b. In your point of view, if that a lot or not enough?

6c. What do they do while they are here?

6d. Do you have any ideas of what else they could do here?

6e. How do you feel about the presence of tourists here?
Appendix B.
INTERVIEW GUIDE FOR PEOPLE WORKING FOR OR WITH THE RESERVE

First I would like to start with some background information about you and your profession.
1a. Where are you from?
1b. How long have you lived here?
1c. You are a ----, what does that mean exactly, what do you daily?
What is your tie or link to the Kaw Nature Reserve?
1d. How long have you been doing this?
1e. What did you do before that, what is your educational background?

2a. Can you tell me about the story of the Kaw Reserve, how is was created and why?

2b. During the time that you have worked for or been involved with the Reserve, what change have you seen?

2c. Why do you work for the nature conservation? Why do you work for the Reserve?

2d. What are the strengths and weaknesses of the Reserve? Of the management of the Reserve?

2e. What are the most important issues in the protection of this space?

2f. Is this space well protected right now?

2g. Do the villagers talk to you about the Reserve?

2h. How does the Reserve communicate with and inform the people in Kaw?

2i. I saw that the Reserve invites the villagers to go in the field with the guards. What do you invite them? Do they go?

3a. How do you imagine this place in 50 years? (How do you imagine the life of your children or grandchildren?)

3b. Is that what you would like to see?

3c. If not, what would have to happen to achieve what you wish?

4a. What do you think about the presence of tourism in the Reserve? What is its role, possible impacts?

4b. Would you like to see tourism grow or diminish? How, Why?
### Appendix C. DESCRIPTIVE CODES

The right-hand column shows the codes derived from the transcripts and used for analysis.

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| Effects/consequences of Reserve Regulations | REG-KR-ef/con |

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<td>What he/she likes most</td>
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<td>Collective</td>
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<td>Kaw River</td>
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<td>School</td>
<td>V-Sch</td>
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<td>Relationships</td>
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<td>Aratai with Residents of Kaw</td>
<td>At-Res</td>
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<td>Scientists with Tourism operators or Tourists</td>
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<td>Aratai-Scientists</td>
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<td>DIREN-Residents</td>
<td>DN-Res</td>
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<td>Among guards of Reserve</td>
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<td>Guards with Residents</td>
<td>G-Res</td>
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<td>DIREN and Ecology Ministry</td>
<td>DN-EcoMin</td>
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<td>Guards-Tourists</td>
<td>G-Tour</td>
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<td>Relationship with nature (not resident)</td>
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<td>Hopes</td>
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<td>No Change</td>
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<td>Future plans (individual level)</td>
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<td>FUT-R-Pos</td>
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<tr>
<td>Negative</td>
<td>FUT-R-Neg</td>
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<tr>
<td>Dependent on other factors</td>
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<td>Hopes</td>
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<td>Recommendation by interviewee</td>
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<td>Participation in Reserve Management, or any other decisions from bodies exterior to village</td>
<td>Par-Res</td>
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<td>Residents participate</td>
<td>Par-res-yes</td>
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<td>Residents do not participate</td>
<td>Par-res-no</td>
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<td>Collaboration (recommendation for future, or current state)</td>
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<td>Cayenne (any reference to)</td>
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<td>Gold Mining</td>
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<td>Politics</td>
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<td>Pol-Pow</td>
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<td>Duties of a political position</td>
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<td>Illegal Immigrants/Illegal Immigration</td>
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<td>Metropolitan France</td>
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<td>Roura</td>
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<td>Regina</td>
<td>Rg</td>
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Appendix D.
DATA SHEET FOR RECORDING DESCRIPTIVE CODES.
Each sheet represents one code, and lists a location and explanation each time that code was found in transcripts, field notes or archives. These sheets created a more coherent summary of the data and therefore served as the basis for the explanatory analysis.

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Appendix E.
DIAGRAM OF KAW VILLAGE

AB Abandoned
Vac Used during Vacation or on Weekends
I. Vivre dans le passé ou choisir le futur

L'histoire et le passé sont gravés, ils ne peuvent être changes. Mais la future peut être (imaginé), créé à travers les décisions d'aujourd'hui.

Kaw est chargé d'une histoire extrêmement riche et compliquée à la fois ; les plantations et le dur travail des ancêtres, la vie isolée et tranquille du village, puis l’arrivée de la route, le braconnage des caïmans, la création d’une des plus importante Réserve Naturelle de France. Malgré une transformation rapide, Kaw reste un village chaleureux et plein de vie. Le futur, bien qu’incertain aux yeux de beaucoup, reste à être crée par toutes les personnes qui aiment, vivent, travaillent, étudient dans la savane. Que vous l’appeliez la savane ou le marais, chacun d’entre vous a un lien particulier avec cet endroit.
Pendant que on ne peut pas changer l'histoire, on peut changer la manière de faire la protection d'une espace, on peut changer les sentiments d'ambivalence, de frayeur et de méfiance. On peut changer la direction insuffisante.

Il est difficile d'oublier le passe, les querelles mais pour créer un meilleur futur et sortir de l'impasse, apprendre les leçons du passe et adopter une attitude positive, sont essentiel.

Il existe aujourd'hui deux manières de créer le future, soit en travaillant tous ensemble, soit en s'opposant les uns les autres. Les désaccords peuvent être enrichissants, si chacun sait apprécier la valeur de l'autre et utiliser toutes les connaissances tout en étant capable de comprendre et changer sa propre perspective. Imagine que il faut trouver une solution d'un problème et que il faut que tout le monde soit d'accord avec la décision. Il s'agit négocier aboutir à un compromis. Il s'agit d'écouter, pas seulement entendre.

La contrainte ne marchera pas. La contrainte fonctionne bien pour les moments des crises, mais ne la fonctionne pas pour les problèmes récurrent ou chronique.

II. Les résultat de notre visite

Nos objectifs étaient de conversé avec le maximum des gens que représente les groupes varies impliquée dans la Réserve de Kaw. Les questions concentrées sur les perspectives de chaque personne autour de l'histoire de Kaw, les forces
et les faiblesses de la Réserve, et leurs visions pour la future. Le buts de notre travail était de trouver une manière pour collaboration entre les gens implique.

Par ailleurs, on a trouve des quelques thèmes récurrents qui sont : 1) les conflits sont causées pour l'histoire de la création de la Reserve, le régulation sur la rivière de Kaw, et problèmes de communication, 2) le effet de les puissances extérieur du Kaw qui influence le village et la Réserve, 3) le crise d’atipa, et 4) les similitudes au sein des divers groupes.

III. Les similitudes au sein des divers groupes

Quand on regard au-delà notre différences, on peut-être trouve qu’on est plus similaire qu’on a pensé. En dépit d’apparentes différences entre les nombreuses personnes impliquées autour de Kaw, notre rencontre avec plusieurs personnes représentant les divers groupes d’intérêt, révèle qu’il existe de nombreuses similitudes, nombreux points d’intérêts communs a tous. (Bien que nous n’ayons pu rencontrer tout le monde, les perspectives sont représentatives des groupes existants.) Les exemples ne manquent pas :

*Le beauté et exceptionnalité de la Savanne du Kaw*

Plus que tout, l’incroyable beauté et la profusion de vie de Kaw et sa savane est reconnue et appréciée par tous. Chacun reconnaît la nécessite de maintenir (garder) et protéger ce patrimoine, cet héritage.

*L’Atipa*

L’emblème du village, l’Atipa, devient une préoccupation grandissante pour beaucoup, il est évident pour tous qu’il est en déclin, les prises sont moindres et les poissons plus petits. Il ne semble pas y avoir de solutions dans l’immédiat.

*Le manque travail*

Plus proche du village, l’absence de travail est une préoccupation et nombreux se demandent si les jeunes resteront ou pourront vivre au village. Les gens, et la culture sont d’importants composants de cet endroit et tout le monde reconnaît et apprécie cette richesse culturelle locale.
Le manque de sécurité et le menace d’empiètement

Aujourd’hui, du à des événements récents, tous sentent ou reconnaissent une menace grandissante pour la vie des utilisateurs de la savane ou la propriété des habitants du village.

Le recognition des aspects positifs et négatifs de la Réserve Naturelle

Peu de personnes sont absolument contre ou totalement pour la présence de la Réserve, la plupart reconnaissent des aspects négatifs et des aspects positifs de la Réserve.

III. Travailler ensemble : des stratégies pour avancer

Chaque personne a une expérience unique, un passe, une vie qui lui donne son savoir et sa vision du monde qui l’entoure. Chacun d’entre nous perçoit le monde en fonction de ce qu’il sait, et le savoir de chacun est différent. Toutes nos expériences passées, nos opinions déterminent nos attitudes, réaction ou réponse face a une nouvelle situation ou rencontre.

Personne ne sait tout, personne ne détient la vérité au sujet d’un endroit. Chacun a sa propre vérité. En conséquent si chaque personne est honnête et sincère, alors l’ensemble des personnes devraient écouter et recevoir leur savoir et opinions. Ecouter sincèrement dans le sens ou celui qui écoute comprends et intègre ce qu’on lui transmet. Une réflexion sur nos propres croyances est tout aussi essentielle, pourquoi mon savoir serait-il meilleur, plus important qu’un autre ? D'où vient mon savoir et opinion, pourquoi ? Si parfois il existe des mensonges ou des malhonnêtetés, c’est souvent du a une peur de dire la vérité, une peur que les autres nous entendent dire cette vérité et peur de leur réaction. La malhonnête peut aussi naître d'intérêt privé ou personnel (avidité/désir) dans le but d'un bénéfice personnel, individuel. C'est pour cela qu’il est essentiel de construire la confiance, même au sein d’un groupe de personnes variées.
V. Au Travail ! Par où commencer ?

Pour arriver à une vrai participation, il faut commencer avec des petits projet et avoir des petits succès. Il faut donner de puissance à tous les gens qui sont dans la conversation. Et les gens que converse, il faut qu'ils sont honnêtes, qu'ils exprime ses opinions, mais qu'ils donnent l'espace pour tous les gens a parler. Ca va a prendre des temps pour apprendre a changer, pour apprendre participer. Mais le choix c'est de apprendre a changer ou rester dans le marais jusqu'à cou.

Au sujet de Kaw, ces divers groupes incluent la totalité des personnes affectant de près ou de loin la vie de Kaw et ses environs. Le ministère de l'écologie et du développement durable, l'administration des réserve naturelles de France, La direction régionale de l'environnement, les élus et techniciens régionaux et départementaux, l'association Aratai et son personnel, l'ONCFS, les scientifiques et les organisations de protections de la nature, les opérateurs touristiques et les touristes, les utilisateurs de la savane et tous les habitants de Kaw, résidents ou non. Au sein de la quantité et la complexité de tous ces groupes, chacun a une perspective différentes, un agenda, des ressources différentes pour agir. L'atout de cette diversité est la somme des connaissances qu'elle représente. Cependant, alors qu'il y a toutes ces savoirs et expériences, il existe aujourd'hui encore des difficultés pour trouver stabilité et harmonie dans la gestion de cet environnement. Au cœur de tous ce savoir persiste également de nombreuses inconnues, des lacunes importantes. La réussite autour d'une problématique commune est généralement définie par la capacité de l'ensemble du groupe à apprendre. Apprendre ensemble à vraiment connaître l'endroit, et apprendre comment travailler tous ensemble. Les situations telles qu'à Kaw sont nombreuses dans le monde, les solutions existent. Une préoccupation grandissante et importante aujourd'hui a Kaw concerne l'Atipa. (Tous le monde parle) de l'Atipa, tous le monde sait quelques chose a son sujet, des connaissances dispersées et inutilisées. Il y a aujourd'hui une seconde chance, une possibilité de travailler ensemble sur une préoccupation qui touche tout le
monde. Au delà du cas de l'Atipa, il s’agit de commencer a travailler ensemble, une question a la fois, avancer ensemble pour le bénéfice de tous. Voici un futur possible autour de la problématique de l’Atipa :

Personnes ne sait il semble quelle direction prendre avec l'Atipa. Plusieurs personnes ont collecte des informations a ce sujet, chacun sait que « ce n'est plus comme avant » et ne sait pas vraiment quoi faire. Xavier Dubois en 1996, conclue son travail en disant « la quantité de poissons captures aujourd’hui est faible : de l’ordre de quelques milliers pour l’ensemble des pêcheurs, ce qui est pêché en i mois (5 sacs) par certain pêcheurs était pêché en 1 jour il y a 30 ou 40 ans ! » Est-ce que c’est vrai ? Aussi, dans un report de l’année passe, deux ingénieurs de la ministère de l'écologie et du développement durable, a dis que l’atipa du Kaw « entraînant dorénavant une surexploitation dont on peu voir les conséquences au travers de la taille moyenne, en diminution, des prises...des nappes de filets de 500 à 1000 m de long sont ainsi disposées sur chaque rive, aboutissant a un véritable massacre des population d’atipas et des autres espèces piégées dans les filets ».

Tout aussi préoccupant, l’insécurité grandissante au village, pour les personnes et les biens. Tout le monde est concerne. Alors que ce problème va au delà de la juridiction de la réserve, une solution peut être développer a travers d’un groupe, divers mais unifie, capable d’attirer l’attention au niveau national. Chaque question peut être adresse avec tous les acteurs concerne. Honnête et confiance restant les clefs d’une vraie participation. Quand on dis « vrai participation » on voulait dire le création d’une forum pour donner de puissance a décider a tout le monde. C’est relativement commune pour les gens avec puissance dans notre société de parler autour de la participation, pour inviter les citoyens et donnent les temps pour les citoyens a parler, mais jamais changer leu direction. Cet type de « participation » s’appelle : inviter, informer, et faire la sourde oreille. Mais dans le vrai participation, les citoyens aussi a une responsabilité de travailler pour un vision de la future, pas rester dan le passe.
Alors qu’il y a de nombreuses difficultés pour qu’un groupe aussi varié travaille ensemble, la protection de la nature a besoin du support de toutes les personnes affectées par cet environnement. Sans le support de toute la protection de la nature reste un apport externe, un projet non intégré localement et auquel il manque la totalité nécessaire pour sa réussite au long terme. Le bénéfice est clair pour tous, qu’ils s’agissent de participer activement à la gestion de son endroit ou de trouver une certaine stabilité dans la gestion

**Conclusion**

Nous souhaitions aider d’avantage. Mais seulement vous, tous, ensemble pour le faire, seulement vous pouvez choisir le futur.

« La change arrive quand on écoute et puis commence une dialogue avec les gens qui font quelque chose que on ne croit est droit ». Jane Goodall
I. Living in the Past or Choosing the Future?

History cannot be changed. But the future can be envisioned and created through decisions made today. Kaw has an extremely rich and complicated history, including the plantations, slave labor, the life in an isolated and tranquil village, the arrival of the road, caiman poaching and the creation of one of the largest Nature Reserves in France. In spite of a rapid transformation, Kaw remains a welcoming village that is full of life. The future, while uncertain, remains to be defined by all the people who love, live, work and study in the Savannah.

While history cannot be changed, we can change the way we protect a place. We can replace feelings of ambivalence, mistrust and fear. We can change insufficient leadership. It is difficult to forget past conflicts. But to create a better future, it is essential to learn lessons from the past and adopt a new, positive outlook.
Today, there are two choices to either create the future together or oppose one another. Conflict is not necessarily a bad thing. We are all different and some conflict is inevitable. But, if every person appreciates the diverse knowledge of others and is willing to understand and change some of their own perspectives, then conflict can help us change. Imagine having to find a solution to a problem that everyone must agree to. It would require listening, not just hearing. It would require people to think carefully about what they need and want and why. I would require openness to change, the ability to negotiate and find common ground. Such participation is the opposite of coercion. Coercion may work well in moment of crisis, but it does not work in longstanding or chronic problems.

II. The Results of our Visit
During eight weeks in December of 2005 and January of 2006, we interviewed 24 people made up of Kaw residents, Reserve staff, representatives of the DIREN, the Regional and Departmental advisory boards, scientists and tourism operators. In addition, we visited many libraries and offices to obtain scientific reports and historical archives of the Kaw region. Our objectives were to talk to as many people who represented these groups of stakeholders as possible. The interview questions concentrated on the of each person’s perspectives about the history of Kaw, the strengths and weaknesses of the Reserve, and their visions for the future. The aim of this work was to find a way that these diverse groups can collaborate to manage the Kaw Reserve together.

Through the interviews and documents, I found four recurrent themes: 1) there are historical, regulatory and communicative sources of conflict among the Kaw Reserve stakeholders, 2) there is an effect of external power relations, from local politicians to administrators in Paris, on the Kaw village and Reserve, 3) there is an Atipa resource crisis, and 4) there are similarities among stakeholders.

III. The similarities within these diverse groups
To move towards collaboration, we must focus on common ground. Indeed, when we look beyond our differences, we find that we are more similar than we think. Despite the differences between the numerous stakeholders in Kaw, our meetings with some of them revealed several similarities. While we could not meet everyone, the perspectives obtained are relatively representative of these groups. The similarities among diverse people include:

**The beauty and incomparability of the Kaw Savanne**
More than anything, the incredible beauty and profusion of life and resources in Kaw and its savannah is recognized and appreciated by all. Each recognizes the necessity to maintain and protect this natural heritage in some form.

**Atipa**
The emblem of the village and an important economic resource, *Atipa*, has become a worry for some. It is evident by many that there are less *Atipa* caught, and those that are caught are smaller.

**Lack of work in village**
The absence of work is a worry of residents and nonresidents alike, and many wonder if the young people will be able to live and work in the village. The possible decline of the village would cause a decrease in local cultural richness, and would change the region significantly.

**Insecurity and threat of encroachment**
Due to recent events everyone feels or recognizes a large threat for the life and property of the people that live in Kaw or use the resources of the Kaw Savannah.

**The recognition of both negative and positive aspects of the Reserve**
Few people are absolutely for or against the presence of the Reserve. Many recognize negative aspects, such as the forceful way it was created or the regulations that restrict local use. Many also recognize the positive aspects, such as the decrease in caiman poaching, the creation of jobs for local people and the attraction it provides for tourists.

**III. Working together: strategies to advance**
Every person has unique experiences that give him/her knowledge and a worldview. Each of us sees the world in function of what we know and feel, and each person has their unique set of knowledge and attitudes. These knowledge and attitudes form our response to new situations.

No one knows everything; no one holds the absolute truth about a particular place. Each of us has our own truth, our own way of seeing the world. Given any problem or topic ask yourself, why do I think my way is better and how have I arrived at this opinion? Answering reflective questions like this helps us see that our way is just one way of knowing.

If you are honest and sincere, then others should value your truths. If at times people are dishonest or exaggerate, it may be due to fear of voicing their opinion and of others’ reaction. Dishonesty can also be born out of self-interest. For these reasons, it is essential to build trust and a common ground, even in a group of many diverse people.

True participation means that leaders must create the opportunity for citizens to help plan and implement conservation. Sometimes more powerful people in society may ask for participation, but never let other people’s voice change their direction or they may plan and design a project, and then ask for opinions from citizens. This type of participation is: invite, inform, ignore. However, in true participation, everyone has a responsibility to work towards a vision of the future and all stakeholders are involved from the beginning.

So to summarize, participation means:

- Inclusion of all stakeholders
- Integration of multiple ideas and knowledge
- Honesty and transparency
- Openness to change
• Identification of a common interest, often based on a vision of the system’s future
• Awareness of each person’s or group’s needs and wants
• Creation of trust
• Understanding the interdependence of all stakeholders.

IV. Getting to Work! Where to start?
To begin real participation, one must begin with small projects and have small successes. This can include engaging in discussions to find commonalities and allowing people to voice their perceptions of the problem and their ideas for a solution. This may build trust and help people learn how to work together. Power must be distributed relatively equally among all stakeholders. All stakeholders must have an opportunity to express their opinions, but also give space for others to talk. It will take time to learn to change and learn to participate. But the choice is: learn together or remain neck deep in the marsh.

In Kaw the stakeholders include everyone, near or far, to the life of Kaw. This includes the Ministry of Ecology and Sustainable Development, the Administration of French Nature Reserves, the Regional Environmental Department, local officials, the Aratai association and its staff, the National Hunting and Wildlife Office, scientists, nature conservation organizations, tourism operators, the users of the Savannah and all the residents of Kaw village. Within this large, complex group is the sum of all the knowledge about Kaw. These experiences and knowledge create difficulties in finding stability and harmony in the management of this environment. And despite all this knowledge, there also exists some unknowns. Overcoming a problem or a gap in information rests on the groups’ ability to learn. There are 2 ways of learning: gathering and discussing information about a place or species and learning how to work together.
It is important to gather people around a common, somewhat specific issue. In Kaw, *Atipa* is a concern. There are still some unknowns about *Atipa*, like what the demand is in the fish market, how many are fished and where, the distribution of *Atipa* in the Savannah and the effect of nearby cattle on the *Atipa* nests. Xavier Dubois in 1996 wrote that there is a 30 fold decrease in *Atipa* today compared to 30 or 40 years ago. Also, two engineers in a 2005 report by the Ministry of Ecology and Sustainable Development, said that “due to exploitation, the average size of *Atipa* caught in Kaw are smaller…using nets of 500 to 1000 meters long deposited on each side of the river, leads to a true massacre of *Atipa* and other species caught in the nets.” Are these statements true? The people who have an interest in *Atipa* fishing must work together to provide information and collective opinions about *Atipa*. This is essential if these stakeholders want a voice in the dialogue about this species.

Everyone is also worried about the growing insecurity in the village. While this issue goes above and beyond the jurisdiction of the Reserve, a solution may be to create a diverse, unified group that is capable of obtaining national attention. The murder of 2 guards in a nearby Reserve, the continued theft of cars and boat motors, and an encroaching goldmine is certainly worthy of French media and political attention. It is all the more powerful when a group of united stakeholders fight for their safety and security.

In other places in the world, groups have dealt with conflict similar to the conflicts in Kaw by working together. Groups have often begun such collaborative projects by making a contract that states their common values and plans of action. Tools used during the process include gathering data about certain species or habitats and then using that data to decide, together, what actions to take. Role playing to see things from other people’s perspective, having conferences and workshops to gather information and discuss learning possibilities are also tools for collaborative learning.
While many of you may think that the French Government or the Reserve administrators in Paris would not support such participation, I would like to quote part of the Environmental Rights, added to the French Constitution in 2004:

**Article 2:** All people have the right to take part in the preservation and betterment of the environment

**Article 6:** Politicians must promote sustainable development. To this effect, they must accommodate the protection and enhancement of the environment, economic development and social progress.

**Article 7:** All people have the right…to participate in the elaboration of public decisions that impact the environment.

**Conclusion**

While there are numerous difficulties for such a diverse group to work together, nature protection needs the support of everyone affected by the environment. Without such support, nature conservation remains an external contribution that may not be successful in the long term. The benefit of participation is local ownership, validation, and stability in conservation projects.

We hope that we have helped. There are appendices and references attached that provide methods, tools and further explanations to help you achieve participatory environmental management, if you so choose to make such a change.

“Change happens by listening to people and then starting a dialogue with those you don’t believe are doing something right.” Jane Goodall