CONVENTION ON WETLANDS (Ramsar, Iran, 1971)
CONVENTION SUR LES ZONES HUMIDES (Ramsar, Iran, 1971)
CONVENCION SOBRE LOS HUMEDALES (Ramsar, Irán, 1971)

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Technical Session / Séance Technique / Sesión Técnica

F

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Summary Report of Technical Session F

"Community-Based Wetland Management"

Chair: Mr Anderson Koyo (Kenya)
Vice Chair: Mr Gaikovina Kula, Department of Environment, Papua New Guinea

Keynote Presentation

"Involving Communities in Wetland Management," presented by Diane Buchan of New Zealand, with amplification by Tabeth Chiuta Dube, IUCN Zimbabwe

Presentations and Case Studies

Diane Buchan

1. presented the keynote paper, which was written under the auspices of the IUCN Social Policy Group and outlined the advantages and problems related to setting up collaborative management regimes for involving local people in participative management of their wetland resources.

Tabeth Chiuta Dube, IUCN (Zimbabwe)

2. illustrated those points by reference to the experience of IUCN's Southern African Wetlands Programme. It was found that, where public resources are scarce, local involvement can lead to effective management through monitoring, policing, and so on, as it is in the interest of local people to manage their resources wisely if they are made to feel that they have a stake in them. The projects described frequently became self-sustaining and therefore cheaper over time.

Dwight Shellman, President, Caddo Lake Institute (Texas, USA)

3. reviewed the evolution of the Caddo Lake Institute and the League of Ramsar Educators, outlining the principles upon which its successful initiatives are structured, including its "marginal cost" approach and the use of existing materials and volunteer personnel from educational institutions and the community. He stressed the great importance of local site-based NGOs to complement the work of governments and international NGOs.

J. Márcio Ayres, CNPq and Wildlife Conservation Society (Brazil)

4. presented a case study involving the Mamiraua Reserve in Brazilian Amazonia, where village political organization and involvement, with government guidance, is succeeding in managing a large tract of flooded forest area that is extremely rich in biological diversity.

Biksham Gujja, WWF International (Switzerland)

5. outlined philosophical and policy approaches to community-based wetland management, demonstrating why conceptual shifts were necessary in order to guarantee that the involvement of the local people may become an end in itself rather than a means to some other end. A case study from the Keoladeo National Park near Delhi illustrated the dangers and costs of ignoring the interests and abilities of the local people.

Further Discussion

6. A number of speakers echoed the importance of community involvement in natural resource management and offered a number of other proposals:

   - IUCN should discuss the issue of access rights to national parks at its Ottawa meeting;

- whereas fences can often be seen as preventing local people from enjoying the use of their heritage, at times they can encourage that enjoyment by managing access rationally;
- though participation must be real and effective, there is no universal formula for achieving it.
- there must be adequate provision made for the rights of small private landowners, who may be disenfranchised by conservation actions when in fact they often have the largest stake in sustainable use of the wetland's resources. There was a brief description of the organization and work of the Land Care movement in Australia.

7. Mention was made by BirdLife International of the European Forum on Nature Conservation and Pastoralism, which focuses on the importance of traditionally managed farmland and its importance to wildlife. Sustainable farming by traditional means has tended to be eclipsed in recent years by a move to intensive farming. It was urged that the Draft Recommendations do not exclude local people who have traditional knowledge but are not necessarily indigenous.

8. Ramsar Center Japan discovered that local participation in wetland management was actually NGO participation, and has been sponsoring the elaboration of methods to bring the wider population into greater involvement.

9. It was also observed that traditional methods are not necessarily always good; slash and burn economies which may have been sustainable 200 years ago may be devastating in the present more populous era.

10. Australia explained the motivation behind its proposed Recommendation 6.3, that local communities with close and long association with a local site can often contribution greatly to its management. The Convention was urged to seek specific ways to empower indigenous groups, and the Contracting Parties were urged to include indigenous people on their National Ramsar Committees.

11. There was some concern that enshrining preferential treatment for local communities might discriminate against the universal rights of all citizens to enjoy wetlands. Though there was some expression of feeling for greater and preferential rights for indigenous people, there was also some doubt that a narrow focus on indigenous people would be inappropriate in many circumstances, and that the words "local people and in particular indigenous people" would be preferable. There were also reminders that indigenou peoples who had been alienated from their land and were no longer local should also be provided for.

12. Australia accepted the suggestions made by Australian indigenous people's groups that their concerns be given higher consideration in the redrafting session. There were many suggestions for additions or amendments to the text, and a redrafting subcommittee was selected by the Chair.

Rapporteur: Dwight Peck

Abstracts

"Involving Communities in Wetland Management" (abstract)

by the IUCN Social Policy Group

1. From time immemorial, human communities lived close to wetlands, exploiting and enjoying their resources. Often, this has meant minor ecological interferences – people gathered products (e.g. fish, bird eggs, crustacea, reefs) in limited quantities and/or sporadically. At times, however, and increasingly so in recent times, the interference has been substantial – people exploited wetland resources on a large scale basis even to the point of modifying entirely the character of the ecosystem (e.g. replacing mangroves with shrimp farms, mining coral beds, fishing with destructive technologies, diverting large quantities of water for irrigation purposes, draining marshes for agriculture, and so on). In between the extremes, many communities managed to maintain their wetlands in reasonably sound conditions while interacting daily with them and using their products for a variety of purposes.

2. What drives these different experiences? What "makes the difference" between communities that utilize resources in a sustainable or destructive way? Have local communities anything to offer for the management of their wetlands? If yes, how can their contribution best be tapped?

3. This paper briefly reviews the interest of the Ramsar Convention in the subject and summarizes some lessons on the benefits and difficulties inherent in involving local communities in the sound management of wetlands.

4. **What is meant by "involving communities in wetland management"?** "Involving local communities in wetland management" does not mean an abdication of responsibilities of government institutions, such as forest and water management agencies, or of other stakeholders. This would imply that the wider regional and national interests are always subservient to local interests, which is unacceptable. It means, however, providing a mechanism for communities to become involved in decision-making and day-to-day management of wetland resources as appropriate to their uses and benefits. Such mechanisms need to be open and equitable so that local communities do not lose out, but voluntarily accept fair decisions for the conservation of local wetland resources.

5. **Types of community involvement in wetland management.** A variety of approaches can be taken to involve communities in management. The type of approach adopted in each case will depend on the status and nature of the area to be managed such as whether it is an area already protected by legislation or not, whether a body of some sort has already been established to manage the area, the size of the area concerned, and the complexity of the uses and issues to be addressed. As a general "rule of thumb" the bigger the area to be managed, the more levels will be required. For large areas covering several settlements, each settlement may need to have its own consultative mechanism which feeds into a district and then to a regional level of decision-making.

6. **Conclusions.** In spite of the difficulties inherent in involving local communities in the management of natural resources and the extra time, energy and funding which may be required, experience has shown that the benefits obtained through such an approach are likely to make the management regime much more efficient and effective in the long-term. Management "solutions" imposed on communities, over which they have no control and to which they have no commitment or sense of responsibility simply do not work. Experience has shown that people do care about their environment and, given the knowledge, skills and the opportunity, they will act on that concern in an appropriate manner.

"Caddo Lake Institute, Texas: a Case Study" (abstract)

Dwight K. Shellman, Jr. President, Caddo Lake Institute, USA

1. Education is a prerequisite to any meaningful community participation in Ramsar site management. Influential community members who are empowered by knowledge of wetland functions and values as well as Ramsar principles can influence community decisions that will sustain local Ramsar site functional values over time.

2. Ramsar principles provide a basis for pursuing wise use at the local level. Success requires a strategic approach but depends upon local NGOs capable of implementing this strategy with locally relevant tactics.

3. Creation of an adequate local institutional base requires looking beyond governments into local instututional arrangements which can bring together various resources at a marginal cost to implement the strategy. Few models exist to accomplish these local objectives. One, the Caddo Lake Institute, is a local NGO which focuses on the pursuit of Ramsar principles and wise use at the Caddo Lake Ramsar Site in Texas and Louisiana USA. The Institute's Caddo Lake Scholars Programme has mobilized a consortium of local educational and agency resources at marginal cost to pursue local community wetland education and useful field research. Other Ramsar communities may wish to adapt or modify this model to local conditions.

4. The Institute's programs are designed to maximize the "multiplier effect" of creating teacher trainers who will train other teachers. Teacher trainers are called MIRWETs (Master International Ramsar Wetland Educator Trainers). The international theme was reinforced in July 1995 when the Institut's master teachers created a League of Ramsar Educators with colleagues from Ramsar wetlands in Kenya, Ethiopia, Hungary and Turkey.

5. At Caddo Lake, the site level project is based upon training exceptional local teachers and students as Wetland Intern Candidates (WICs). In addition to formal training in wetland ecology, candidates receive orientation about the role of the Ramsar Convention within larger global sustainability strategies such as IUCN's "Caring for the Earth" and Agenda 21. Trained teachers become teaching fellows. They are supported by student Wetland Interns (WINs). Together they design and implement wetland curriculum enrichments at campus wetlands at their local schools and colleges, and in local Ramsar wetlands.

6. These curriculum enrichments include applied wetland science field projects which add to the local community's body of scientific knowledge about the local wetlands. These applied projects include a school-operated wetland monitoring network, ecological assessment and landscape characterization of local public and private wetlands, and maintenance of field data in GIS (Geographic Information Systems) computer mapping databases.

7. Participants also demonstrate their wetland science skills at community events and through technical management assistance for local, privately-owned wetlands. Planning is underway to extend the Institute's teaching mission by establishing at Caddo Lake the first US regional Ramsar wetland centre and the first regional academy of wetland science education. Both are designed to further Ramsar-based science training of Master wetland educators and their wetland communities, locally and internationally.

8. The League of Ramsar Educators was formed to "twin" the Institute's US educators with wetland educator trainers from Ramsar wetland communities in Kenya, Hungary, Ethiopia and Turkey. As a result, colleagues in those nations have commenced field-training initial groups of local teachers in water quality monitoring as well as the use of Ramsar criteria to describe other local quality monitoring as well as the use of Ramsar criteria to describe other local wetlands for possible Ramsar nomination. Outcomes of this effort may include recommendations to the Çontracting Parties to extend official Ramsar Bureau recognition to agreements between local NGOs and private land-owners regarding management of privately-owned wetlands under Ramsar principles.

9. Local pursuit of wise use requires Ramsar communities to work through local institutions and international community networks. The Caddo Lake Institute and Ramsar League should be encouraged to continue their initiatives, and to provide criteria and guidance for local action for consideration and adoption by the Contracting Parties.

Participation" (abstract)

J. Márcio Ayres, CNPq and Wildlife Conservation Society, Brazil

1. Flooded forests account for less than 5% of the total area of the Amazonian basin, however, 80% of the human population of the region live in this habitat. This ecosystem is vital for the maintenance of the fishing capacity in the Amazon basin. Central Amazonian inundated forests are unique because they experience floods of 12-13 metres each year and are the habitat of several endemic species of fauna and flora. A multi-disciplinary team from several Brazilian and international institutions (CNPq, ODA, WWF, WCS and EEC) are conducting several studies in order to produce a management plan for Mamirauá Ecological Station, located between the Amazon and Japurá rivers (Brazilian Amazonia), with an area of 11,200 km^2, located entirely on flooded grounds. Fishing, small scale agriculture and selective logging are the three most important activities in the area. Mamirauá has a human population of approximately 2,100 inhabitants, living in 14 communities, who actively participate in the management decision of the area as well as in the vigilance system.

2. This paper describes the achievements and the research being carried out in the area, with the most important economic resources and its biodiversity, as well as how the community participation programme is being carried out. This system has proved to be at least partially effective since the amount of large-scale fishing has been reduced in the past three years. It is also shown how the population of certain fish species may increase with the implementation of protection of the resources by local people.

"Community-Based Wetland Management: Need for a Policy Dialogue" (abstract)

Biksham Gujja, WWF International

1. More than 60% of the wetlands were lost in developed countries during the past four decades. Many wetlands in developing countries still exist and support the livelihoods of millions of people, but this may change soon since many of those countries are on the same development path. Threats to wetlands are related to the social and economic realities. Loss of wetlands is also a loss to the local community living around wetlands for centuries.

2. But the concerns and aspirations of local people are not quite integrated into the conservation efforts. In many cases, particularly in developing countries, the well-intended conservation community has promoted the rules and regulations leading to marginalization of the local communities. The national and international conservation activities often restrict, without any dialogue, the local communities from using the resources. Today the most serious threat to wetlands is not from the communities but from the policies which marginalize them from participation.

3. Community participation is to be looked at in the context of national and international policies. The Ramsar Convention, though, promotes the concept of wise use as an effective tool/policy of wetland conservation. But in practice, the declaration of a wetland as Ramsar site is viewed by the local community as the loss of their traditional rights and restrictions on the use of resources. This leads to a situation of conflicts between the management of wetlands and the aspirations of the local communities. This is increasing the world over, particularly in many developing countries.

4. WWF, while working with communities at several wetlands in different countries, has come to the following understanding.

    - Wetlands and their resources are supporting millions of people. These local people are allies in conservation provided they are part of the process. This needs a dialogue and not strict rules and regulations.
    - Declaring a wetland a Ramsar site could raise issues such as land claims and restrictions on traditional rights. These issues need to be sorted out at an early stage to the satisfaction of the

community. Joint management agreements could be initiated with clear roles and responsibilities.

- National policies on wetland conservation should take into consideration of the community and their aspirations.
- If the community has to forgo any rights or privileges for conserving the wetlands and to maintain their ecological integrity, they need to get the compensation (not necessarily monetary) to their satisfaction. This should be incorporated into the policy formulation.
- Need to build and strengthen the local institutions for the conservation of wetlands. Such institutions should be formed by the community and reflect the all interest groups.
- Community participation is not extending benefits to few members of the community nor giving some concessions to all, but it is delegation of responsibilities to them to manage and conserve the wetlands for their own benefit and the benefit of the ecosystem.

5. Based on these experiences, WWF is initiating a policy dialogue which will lead to changes, modification and amendments to the national and international wetland policies to address the concerns and reflect the aspirations of the local communities.

Rapport Résumé de la Séance Téchnique F

«Gestion communautaire des zones humides»

Président: Anderson Koyo (Kenya)
Vice-président: Gaikovina Kula, département de l'Environnement, Papouasie-Nouvelle-Guinée

Discours liminaire

«Faire participer les communautés à la gestion des zones humides», présenté par Diane Buchan, Nouvelle-Zélande, avec les commentaires de Tabeth Chiuta Dube, UICN-Zimbabwe

Exposés et études de cas

Diane Buchan

1. présente un exposé liminaire rédigé sous les auspices du Groupe des politiques sociales de l'UICN. Elle souligne les avantages et les difficultés inhérents à la participation des populations locales à la gestion avisée de leurs ressources de zones humides.

Tabeth Chiuta Dube, UICN (Zimbabwe)

2. illustre ces questions en se référant à l'expérience du Programme UICN pour les zones humides en Afrique australe, qui a révélé que lorsque les ressources publiques font défaut, la participation locale peut déboucher sur une gestion efficace passant, entre autres, par des mesures de surveillance continue et des contrôles de l'application des règlements existants. Elle ajoute que les populations locales comprendront qu'elles ont tout intérêt à gérer leurs ressources de façon avisée si ont leur fait comprendre qu'elles sont directement partie prenantes. Avec le temps, beaucoup de projets sont devenus autonomes et donc, moins chers.

Dwight Shellman, Président, Caddo Lake Institute (Texas, Etats-Unis d'Amérique)

3. résume l'évolution du Caddo Lake Institute et de la Ligue des éducateurs Ramsar, décrivant les principes appliqués par les initiatives de son institution qui ont été couronnées de succès, y compris son approche dite des «coûts marginaux» et l'utilisation de matériel existant et de personnel bénévole venant d'institutions pédagogiques et de la collectivité. Il insiste sur le fait que les ONG locales jouent un rôle complémentaire inestimable dans les activités des gouvernements et des ONG internationales.

J. Márcio Ayres, CNPq et Wildlife Conservation Society (Brésil)

4. présente une étude de cas réalisée dans la réserve de Mamiraua, en Amazonie brésilienne où une vaste zone forestière inondée, possédant une diversité biologique extrêmement riche, est gérée avec succès grâce à l'organisation et la mobilisation politiques des villageois, conseillés par le gouvernement.

Biksham Gujja, WWF-International (Suisse)

5. décrit les approches philosophiques et politiques de la gestion communautaire des zones humides, démontrant pourquoi des changements conceptuels se sont révélés nécessaires pour permettre à la participation de la population locale de devenir une fin en soi et non pas un moyen d'atteindre un autre but quelconque. Une étude de cas réalisée dans le Parc national de Keoladeo, près de Delhi, illustre les dangers et les coûts inhérents au non-respect des intérêts et des capacités de la population locale.

Autres discussions

6. Plusieurs orateurs tiennent à souligner, une fois de plus, l'importance de la participation communautaire à la gestion des ressources naturelles et font les propositions suivantes:

- l'UICN devrait discuter de la question des droits d'accès aux parcs nationaux lors de sa Conférence d'Ottawa;
- si l'on considère souvent que les clôtures empêchent la population locale de jouir de son patrimoine, il arrive parfois qu'elles aient l'effet inverse, du fait qu'elles permettent de gérer l'accès de façon rationnelle;
- on sait que la participation doit être réelle et effective, mis il n'existe aucune formule universelle pour y parvenir;
- des dispositions adéquates devraient être prises concernant les droits des petits propriétaires privés qui risquent, lorsque des mesures de conservation sont prises, risquent de se voir exclus du processus décisionnel alors que, souvent, ce sont eux qui ont le plus à attendre de l'utilisation durable des ressources des zones humides. L'organisation et les activités du mouvement Land Care, en Australie, sont brièvement décrites.

7. BirdLife International mentionne le Forum européen sur la conservation de la nature et le pastoralisme, qui insiste sur l'importance de la gestion traditionnelle des terres agricoles, et son importance pour la faune sauvage. Depuis plusieurs années, l'agriculture durable utilisant des méthodes tend à être remplacée par l'agriculture intensive. Il est instamment demandé que les projets de recommandation n'excluent pas les populations locales qui, bien qu'elles possèdent un savoir traditionnel, ne sont pas nécessairement autochtones.

8. Le Centre Ramsar du Japon s'est rendu compte que la participation locale à la gestion des zones humides se résume en fait à la participation des ONG, aussi a-t-il décidé d'appuyer la mise au point de méthodes permettant de mobiliser la population au sens large.

9. Il est observé que les méthodes traditionnelles ne sont pas nécessairement bonnes; l'agriculture sur brûlis était peut-être durable il y a 200 ans mais, aujourd'hui, elle est dévastatrice dans les régions densément peuplées.

10. L'Australie explique la motivation du projet de Recommandation 6.3, à savoir que les communautés locales qui vivent depuis longtemps en étroite association avec les sites de leur région peuvent souvent apporter une contribution importante à leur gestion. La Convention est instamment priée de trouver des moyens spécifiques de donner aux groupes autochtones les pouvoirs nécessaires, et les Parties contractantes sont invitées à inclure les populations autochtones dans leurs Comités nationaux Ramsar.

11. Plusieurs intervenants craignent que l'adoption d'un traitement préférentiel pour les communautés locales n'entraîne une discrimination envers le droit universel de tous les citoyens à jouir des zones humides. Bien que certains participants soient en faveur de droits renforcés et préférentiels pour les populations autochtones, d'autres estiment qu'une trop grande insistance sur les populations autochtones risque de se révéler inopportune dans certaines circonstances et préféreraient utiliser l'expression «les populations locales et en particulier les populations autochtones». Il est également rappelé que les populations autochtones qui ont été aliénées de leurs terres et ne sont plus locales doivent aussi être prises en compte.

12. L'Australie accepte les propositions faites par les groupes représentant les populations autochtones australiennes demandant que leurs préoccupations soient davantage prises en compte lors de la séance de remaniement. Nombre de participants proposent des ajouts ou des amendements au texte et un Sous-comité est désigné par le Président pour remanier le texte.

Résumés

"Faire Participer les Communautes à la Gestion des Zones Humides" (résumé)

Groupe des politiques sociales de l'UICN

1. Depuis des temps immémoriaux, les communautés humaines vivent à proximité des zones humides, jouissant de leurs ressources et les exploitant. Cela impliquait souvent des perturbations écologiques mineures – les gens récoltaient les produits (par ex., poissons, œufs d'oiseaux, crustacés, corail) en quantités limités et/ou sporadiquement. Parfois, cependant, et cela de plus en plus avec le temps, les perturbations ont été plus marquées – les gens ont exploité les ressources des zones humides à grande échelle, au point même de modifier profondément les caractéristiques de l'écosystème (par ex. en remplaçant des mangroves par des élevages de crevettes, en exploitant les lits coralliens, en pêchant à l'aide de techniques destructrices, en détournant de grandes quantités d'eau pour l'irrigation, en drainant les marécages pour l'agriculture, etc.). Entre les deux extrêmes, beaucoup de communautés ont réussi à maintenir leurs zones humides dans un état raisonnablement sain tout en les utilisant quotidiennement et en récoltant leurs produits à des fins diverses.

2. Quel est le moteur de ces différentes expériences? Qu'est-ce qui "ait la différence" entre une communauté qui utilise les ressources d'une manière durable et une communauté qui les utilise de manière destructrice? Les communautés locales ont-elles quelque chose à nous apprendre sur la gestion de leurs zones humides? Si oui, comment profiter au mieux de leur expérience?

3. Ce document passe brièvement en revue l'intérêt de la Convention de Ramsar à cet égard et résume certains points sur les avantages et les difficultés inhérents à la participation des communautés locales à la gestion avisée des zones humides.

4. **Comment comprendre "faire participer les communautes a la gestion des zones humides**"? "Faire participer les communautés à la gestion des zones humides" ne signifie pas que les institutions gouvernementales, telles que les organismes de gestion des forêts et de l'eau ou d'autres intéressés, abdiquent pour autant leurs responsabilités. Cela voudrait dire que les intérêts nationaux et régionaux sont toujours subordonnés aux intérêts locaux, ce qui serait inacceptable. En revanche, cela signifie que l'on met à la disposition des communautés des mécanismes qui leur permettent de participer davantage à la prise de décisions et à la gestion quotidienne des ressources des zones humides en fonction de leurs besoins et dans leur intérêt. Ces mécanismes doivent être ouverts et équitables de façon que les communautés locales ne soient pas perdantes mais acceptent volontairement des décisions justes sur la conservation des ressources des zones humides.

5. **Types de participation des communautes a la gestion communautaire.** Il existe différents moyens de faire participer les communautés à la gestion. Dans chaque cas, la démarche adoptée dépendra du statut et de la nature de la zone à gérer: s'agit-il d'une zone déjà protégée par la législation? Existe-t-il un organe de gestion? Quelles sont les dimensions de la zone concernée? Quelle est la complexité des utilisations et des problèmes à traiter? En règle générale, plus la zone est vaste, plus la gestion sera complexe. Lorsque la zone est vaste et englobe plusieurs établissements humains, chaque établissement aura peut-être besoin de son propre mécanisme consultatif, relié à un pouvoir décisionnel de district puis régional.

6. **Conclusions.** En dépit des difficultés inhérentes à la participation des communautés locales à la gestion des ressources naturelles, malgré le temps, l'énergie et les ressources financières supplémentaires qui pourraient être nécessaires, l'expérience a montré que les avantages procurés par cette participation sont susceptibles de rendre le régime de gestion plus efficace à long terme. Les "solutions de gestion" imposées aux communautés, sur lesquelles elles n'ont aucune prise et envers lesquelles elles ne ressentent aucun engagement et aucune responsabilité sont tout simplement vouées à l'échec. L'expérience a prouvé que les gens se sentent concernés par leur environnement. Avec les connaissances et les aptitudes voulues et si on leur en donne la possibilité, ils géreront leurs zones humides de façon avisée.

"Caddo Lake Institute, Texas, Etats-Unis: Etude de Cas" (résumé)

Dwight K. Shellman, Caddo Lake Institute

1. L'éducation est une condition *sine qua non* de toute participation communautaire constructive à la gestion des sites Ramsar. Les membres influents des communautés concernées, qui possèdent une connaissance approfondie des fonctions et valeurs des zones humides ainsi que des principes Ramsar, peuvent aider leur communauté à prendre des décisions susceptibles de maintenir durablement les valeurs fonctionnelles des sites Ramsar locaux.

2. Les Principes Ramsar servent de base à l'utilisation rationnelle sur le plan local laquelle, pour être couronnée de succès, exige une approche stratégique, mais aussi la participation des ONG locales susceptibles d'appliquer cette stratégie par des techniques adaptées aux conditions locales.

3. Pour édifier, au niveau local, une base institutionnelle adéquate, il convient de prendre des dispositions au-delà des instances gouvernementales, c'est-à-dire avec les institutions locales, afin de réunir, pour un coût marginal, les ressources nécessaires à l'application de la stratégie. Parmi les rares modèles permettant de réaliser ces objectifs locaux figure le *Caddo Lake Institute*, une ONG locale orientée vers l'application des principes Ramsar et l'utilisation rationnelle dans le site Ramsar du lac Caddo, au Texas et en Louisiane (Etats-Unis). Le Programme de bourses de cet Institut a su mobiliser, à peu de frais, un consortium réunissant des personnes travaillant pour l'éducation et d'autres organismes locaux aux fins d'offrir un enseignement sur les zones humides à la communauté locale et de mener des recherches utiles sur le terrain. D'autres communautés Ramsar souhaiteront peut-être adapter ce modèle au contexte local.

4. Le programme de l'Institut vise à maximiser l'«effet multiplicateur» qu'ont les personnes ayant suivi une formation pédagogique lorsqu'elles sont, à leur tour, appelées à former d'autres enseignants. En anglais, leur titre abrégé est MIRWET (*Master International Ramsar Wetland Educator Trainers*), c'est-à-dire, professeur chargé de la formation des éducateurs en matière de zones humides Ramsar. Cette vocation internationale a été renforcée lorsqu'en juillet 1995, les MIRWET de l'Institut ont créé une Ligue des Educateurs Ramsar avec des collègues travaillant et vivant dans des sites Ramsar au Kenya, en Ethiopie, en Hongrie et en Turquie.

5. Le projet établi au niveau du site du lac Caddo est axé sur la formation en matière d'écologie des zones humides et s'adresse aux enseignants et étudiants locaux les plus brillants. Les candidats sont initiés au rôle que joue la Convention de Ramsar à l'égard d'autres stratégies mondiales de durabilité moins spécifiques, telles que *Sauver la Planète* de l'UICN et *Action 21* des Nations Unies. Une fois formés, ces candidats sont appuyés par des *student Wetland Interns* (WINs) (étudiants stagiaires en zones humides), avec lesquels ils élaborent et dispensent des cours complémentaires pratiques dans des zones humides créées à l'intérieur du Campus, dans les écoles et universités locales, et dans les sites Ramsar du voisinage.

6. Ces compléments de programmes incluent des projets de science appliquée des zones humides, qui permettent à la communauté locale de parfaire ses connaissances scientifiques sur les zones humides avoisinantes. Ces projets incluent un réseau de surveillance continue des zones humides géré par une école, une évaluation écologique, une typologie des paysages des zones humides locales (publiques et privées), ainsi que la tenue à jour des données de terrain stockées dans les banques de données infographiques des GIS (Systèmes d'information géographique).

7. Les participants font également la démonstration de leurs compétences scientifiques en matière de zones humides à l'occasion de manifestations communautaires et en participant à la gestion technique des zones humides locales privées. Il est prévu d'étendre la mission pédagogique de l'Institut en établissant, au lac Caddo, le premier centre régional des Etats-Unis sur les zones humides Ramsar, ainsi que la première académie régionale des sciences des zones humides. Ces deux projets visent à développer, sur les plans local et international, la formation scientifique "Ramsar" des professeurs chargés de former des éducateurs en zones humides ainsi que des communautés vivant dans le voisinage de zones humides.

8. La Ligue des Educateurs Ramsar a été formée dans le but de "jumeler" les éducateurs de l'Institut américain avec des collègues de communautés Ramsar au Kenya, en Hongrie, en Ethiopie et en Turquie. C'est ainsi que les Educateurs de ces pays ont commencé à mettre sur pied des groupes de

formation pratique pour les enseignants locaux, portant sur la surveillance continue de la qualité de l'eau et l'application des Critères Ramsar, ce dans le but de les aider à décrire de nouvelles zones humides locales susceptibles d'être inscrites sur la Liste Ramsar. Cette initiative pourrait déboucher sur des recommandations adressées aux Parties contractantes, les priant d'étendre la reconnaissance officielle du Bureau Ramsar à des accords sur la gestion des zones humides privées selon les principes Ramsar, passés entre les ONG et les propriétaires fonciers locaux.

9. L'objectif de l'utilisation rationnelle n'est réalisable sur le plan local que si les communautés Ramsar oeuvrent par l'entremise des institutions locales et des réseaux de la communauté internationale. L'Institut du lac Caddo et la Ligue Ramsar devraient être encouragés à poursuivre leurs efforts, notamment en formulant des critères et des conseils d'action locale qui seront transmis aux Parties contractantes pour examen et adoption.

"Conservation de la Diversité Biologique des Forêts Inondées de l'Amazonie avec la Participation des Communautes" (résumé)

J. Márcio Ayres, CNPq et Wildlife Conservation Society (Brésil**)**

1. Les forêts inondées couvrent moins de 5% de la superficie totale du bassin amazonien mais 80% de la population de la région vit dans ces forêts. Cet écosystème est vital pour le maintien de la pêche dans le bassin de l'Amazone. Les forêts inondées de l'Amazonie centrale sont uniques en ce qu'elles subissent des inondations de 12 à 13 mètres chaque année et sont l'habitat de plusieurs espèces endémiques de la flore et de la faune. Un groupe pluridisciplinaire auquel participent plusieurs institutions brésiliennes et internationales (CNPq, ODA, WWF, WCS et CEE) a entrepris plusieurs études en vue de préparer un plan de gestion pour la Station écologique de Mamirauá située entre l'Amazone et la Japurá (Amazonie brésilienne) avec une superficie de 11.200 km² entièrement sur sols inondés. Dans la région, la pêche, une agriculture à petite échelle et une exploitation sélective du bois sont les trois activités les plus importantes. Mamirauá compte environ 2100 habitants, vivant en 14 communautés, qui participent activement aux décisions de gestion ainsi qu'à la surveillance.

2. Le document décrit les réalisations et les travaux de recherche menés dans la région, les ressources économiques les plus importantes et la diversité biologique ainsi que le programme de participation communautaire. Le système s'est révélé au moins partiellement efficace car le volume de la pêche à grande échelle a diminué depuis trois ans. Le document montre aussi comment la population de certaines espèces de poissons peut augmenter grâce à l'application de mesures de protection des ressources par la population locale.

"Gestion Communautaire des Zones Humides: Necessité d'Établir un Dialogue Politique" (résumé)

Biksham Gujja, WWF-International

1. Les pays développés ont perdu plus de 60% de leurs zones humides au cours des quarante dernières années. Dans les pays en développement, il existe encore beaucoup de zones humides qui procurent des moyens de subsistance à plusieurs millions de personnes. Cette situation pourrait toutefois changer rapidement puisque plusieurs de ces pays suivent le même modèle de développement. Les menaces qui pèsent sur les zones humides sont en rapport avec la situation sociale et économique. La disparition de zones humides représente également une perte pour les communautés locales qui vivent depuis plusieurs siècles dans leur voisinage.

2. Cependant, les efforts de conservation ne tiennent pas vraiment compte des préoccupations et des aspirations des populations locales. Dans plusieurs cas, notamment dans les pays en développement, des mesures de conservation adoptées avec les meilleures intentions du monde ont favorisé l'application de règles et de règlements qui ont contribué à marginaliser les communautés locales. Les

activités de conservation entreprises aux échelons national et international limitent souvent l'utilisation des ressources par les communautés locales sans consultation préalable. Aujourd'hui, la menace la plus grave qui pèse sur les zones humides ne vient pas des communautés mais des politiques qui limitent leur participation.

3. La participation communautaire doit être abordée dans le contexte des politiques nationales et internationales. Ainsi, la Convention de Ramsar recommande le concept de l'utilisation rationnelle en tant qu'outil/politique efficace de conservation des zones humides. Mais en pratique, l'inscription d'une zone humide sur la Liste de Ramsar est perçue par la communauté locale comme une perte de ses droits traditionnels et une restriction imposée à l'utilisation de ses ressources, ce qui fait naître un conflit entre la gestion des zones humides et les aspirations des communautés locales. Cette situation se rencontre de plus en plus fréquemment dans le monde, et surtout dans les pays en développement.

4. Le WWF, dans le cadre de sa coopération avec les communautés vivant dans les zones humides de divers pays, est arrivé aux conclusions suivantes:

   - Les zones humides et leurs ressources font vivre des millions de personnes. Ces populations locales sont favorables à la conservation dans la mesure où elles sont consultées. La clé du problème est le dialogue et non pas l'adoption de règles et de règlements stricts.
   - L'inscription d'une zone humide sur la Liste de Ramsar peut parfois créer des problèmes, notamment des revendications foncières ou des restrictions des droits traditionnels. Ces questions doivent être résolues rapidement en respectant les intérêts de la communauté. Des accords de gestion mixtes définissant clairement les rôles et les responsabilités de chacun pourraient être adoptés.
   - Les politiques nationales sur la conservation des zones humides devraient être axées sur la communauté et ses aspirations.
   - Des compensations (qui ne seront pas obligatoirement pécuniaires) doivent être offertes à la communauté obligée d'abandonner des droits ou privilèges au profit de la conservation des zones humides et du maintien de leur intégrité écologique. Il faudrait prévoir de telles mesures lors de la formulation des politiques.
   - Il est nécessaire de créer des institutions locales de conservation des zones humides et de renforcer celles qui existent. Cette tâche incombe à la communauté, qui doit s'assurer que tous les groupes d'intérêts sont représentés.
   - La participation communautaire n'est pas un moyen de faire profiter quelques membres de la communauté de certains avantages ou d'accorder des concessions à l'ensemble de la communauté, mais plutôt de lui confier la responsabilité de gérer et de conserver les zones humides dans son propre intérêt et dans celui de l'écosystème.

5. Sur la base de ces expériences, le WWF ouvre un dialogue politique destiné à apporter des modifications et des amendements aux politiques nationales internationales relatives aux zones humides dans le but de répondre aux préoccupations et aux aspirations des communautés locales.

Informe Resumido de la Sesión Técnica F

"Gestión de Humedales por Parte de las Comunidades Locales"

Presidente: Sr. Anderson Koyo (Kenya)
Vicepresidente: Sr. Gaikovina Kula, Departamento de Medio Ambiente, Papua Nueva Guinea

Presentación principal

"Participación de las Comunidades en la Gestión de Humedales", introducción de Diane Buchan de Nueva Zelandia, con nuevas aclaraciones de Tabeth Chiuta Dube, UICN Zimbabwe

Presentaciones y estudios de casos

Diane Buchan

1. presentó el documento principal, escrito bajo los auspicios del Grupo de Política Social de la UICN, y subrayó las ventajas y los problemas que suscitaba el establecimiento de regímenes participativos de gestión que hagan intervenir a la población local en la gestión de sus recursos de humedales.

Tabeth Chiuta Dube, UICN (Zimbabwe)

2. ilustró esos puntos refiriéndose a la experiencia del Programa de Humedales de Africa Meridional de la UICN. Se descubrió que cuando los recursos públicos son escasos la participación local puede permitir una gestión efectiva gracias a las labores de vigilancia, policía y de otro tipo que puede realizar, ya que la población local está interesada en gestionar sus recursos de forma racional si se logra que comprendan que pueden intervenir. Los proyectos sobre los que se dispone de información frecuentemente lograron hacerse autosuficientes y, por lo tanto, más baratos a lo largo del tiempo.

Dwight Shellman, Presidente del Caddo Lake Institute (Texas, Estados Unidos)

3. pasó revista a la evolución del Caddo Lake Institute y la Liga de Educadores Ramsar, subrayando los principios sobre los que se estructuran sus valiosas iniciativas, con inclusión de su planteamiento del "costo marginal" y el uso de los materiales existentes y de personal voluntario procedente de instituciones educativas y de la comunidad. Subrayó la gran importancia de las ONG locales, establecidas en los sitios, como complemento de la labor de los gobiernos y de las ONG internacionales.

J. Márcio Ayres, CNPq y Sociedad de Conservación de la Naturaleza (Brasil)

4. presentó un estudio de la Reserva de Mamiraua, en la Amazonia brasileña, donde la organización política y la participación de la población local, dirigida por las autoridades del gobierno, está logrando gestionar una gran superficie de bosques aluviales extremadamente rica en diversidad biológica.

Biksman Guja, WWF Internacional (Suiza)

5. explicó distintos enfoques filosóficos y políticos de la gestión de humedales basada en la participación de las comunidades locales, mostrando por qué es necesario introducir algunos cambios conceptuales para conseguir que la participación de la población local se convierta en un fin en sí mismo más que en un medio para llegar a otro fin. El Parque Nacional Keoladeo, cerca de Nueva Delhi, servía de ilustración de los peligros y costos que representaba ignorar los intereses y la capacidad de la población local.

Debate posterior

6. Varios oradores se hicieron eco de la importancia de la participación de las comunidades en la gestión de los recursos naturales y presentaron varias propuestas:

- la UICN debía debatir la cuestión de los derechos de acceso a los parques nacionales en la reunión de Ottawa;
- aunque se pueda considerar muchas veces que el cierre de los terrenos impide a la población local disfrutar de su patrimonio, a veces puede promover ese disfrute al regular racionalmente el acceso;
- aunque la participación ha de ser real y efectiva, no existe una fórmula universal para lograrla;
- deben establecerse disposiciones adecuadas para proteger los derechos de los pequeños propietarios privados que pueden sentirse discriminados por las medidas de conservación cuando, de hecho, frecuentemente son los más interesados en el uso sostenible de los recursos de los humedales. Se produjo una breve descripción de la organización y las actividades del movimiento "Land Care" de Australia.

7. BirdLife International mencionó la existencia del Foro Europeo de Conservación de la Naturaleza y el Pastoreo, que se centra en la importancia de las explotaciones agrarias gestionadas de forma tradicional y su trascendencia para la naturaleza. Las explotaciones agrícolas sostenibles que utilizan medios tradicionales han tendido a ser desplazadas durante los últimos años por la agricultura intensiva. Se instó a que los proyectos de Recomendación no excluyan a la población local que dispone de unos conocimientos tradicionales que no son necesariamente autóctonos.

8. El Centro Ramsar del Japón había descubierto que la participación local en la gestión de humedales en realidad se limitaba a la participación de ONG y había estado patrocinando la elaboración de métodos para lograr una mayor intervención de la población en general.

9. También se observó que los métodos tradicionales no siempre eran los mejores; las explotaciones basadas en la tala y quema de terrenos, que podían ser sostenibles hace 200 años, actualmente pueden ser devastadores en un mundo mucho más poblado.

10. Australia explicó los motivos del proyecto de Recomendación 6.3, es decir, que las comunidades locales vinculadas estrechamente y desde antiguo con un sitio pueden muchas veces facilitar mucho su gestión. Se instaba a la Convención a identificar formas específicas de delegar poderes en grupos indígenas y se instaba también a las Partes Contratantes a incluir a las poblaciones indígenas en sus Comités Nacionales Ramsar.

11. Se manifestaron algunas preocupaciones ante la posibilidad de que la consagración de un trato preferencial para las comunidades locales pudiera convertirse en una discriminación contra los derechos universales de todos los ciudadanos a disfrutar de los humedales. Aunque hubo algunas manifestaciones de apoyo a la concesión de derechos mayores y preferenciales a las poblaciones indígenas, también se manifestaron algunas dudas en el sentido de que centrarse demasiado exclusivamente en las poblaciones indígenas podía no ser lo adecuado en muchas circunstancias y que hubiera sido preferible hablar de "población local y en particular poblaciones indígenas". También se formularon advertencias en el sentido de que debía tenerse en cuenta a las poblaciones indígenas que habían sido desplazadas de sus territorios y ya no eran poblaciones locales.

12. Australia aceptó las sugerencias de los grupos representantes de poblaciones indígenas australianas en el sentido de que se diera mayor importancia a sus preocupaciones al redactarse el proyecto final de Resolución. Se presentaron otras muchas propuestas de adiciones o enmiendas al texto y el Presidente seleccionó un subcomité de redacción.

Resúmenes

"Participación de las Comunidades en la Gestión de Humedales" (resumen)

Grupo de Política Social, UICN

1. Desde tiempos inmemoriales, ha habido comunidades humanas que han vivido cerca de humedales, explotando sus recursos y disfrutando de ellos. Muchas veces, este hecho no se ha traducido más que en unas interferencias ecológicas menores: la población recogía productos (por ejemplo, peces, huevos de aves, crustáceos, juncos) en cantidades limitadas y/o esporádicamente. Sin embargo, en algunos momentos y cada vez más en los últimos tiempos, las interferencias han sido sustanciales: la población explota los recursos de los humedales en gran escala, incluso hasta el punto de modificar totalmente el carácter del ecosistema (por ejemplo, sustituyendo manglares por criaderos de gambas, extrayendo corales, pescando con técnicas destructivas, desviando grandes cantidades de agua para irrigar tierras, desecando pantanos para roturarlos, etc.). Entre ambos extremos, muchas comunidades han logrado mantener sus humedales en unas condiciones razonablemente sanas aunque siguieran interviniendo diariamente en ellos y utilizando sus productos para diversos fines.

2. ¿Por qué las experiencias son tan distintas? ¿Dónde está la diferencia entre las comunidades que utilizan los recursos de forma sostenible y las que los utilizan de una forma destructiva? ¿Pueden aportar algo las comunidades locales a la gestión de sus humedales? En caso afirmativo, ¿cómo puede aprovecharse mejor su contribución?

3. En este documento se examina brevemente el interés de la Convención de Ramsar por el tema y se resumen algunas lecciones sobre los beneficios y dificultades inherentes a la participación de las comunidades locales en la gestión racional de los humedales.

4. **¿Que significa la "participacion de las comunidades en la gestion de humedales"?** La "participación de las comunidades locales en la gestión de humedales" no significa que las instituciones públicas, como los organismos forestales y de ordenación del agua y otros interesados abdiquen de sus responsabilidades. Eso significaría que se relegaran siempre los intereses regionales y nacionales, que tienen un carácter más amplio, frente a los intereses locales, lo que sería inaceptable. Al contrario, significa establecer mecanismos para que las comunidades participen en los procesos de decisión y en la gestión diaria de los recursos de los humedales de la forma más conveniente para sus usos y beneficios. Para que las comunidades locales no les vuelvan la espalda sino que acepten voluntariamente las decisiones equitativas que se adopten para la conservación de los recursos de los humedales locales, es preciso que esos mecanismos sean abiertos y equitativos.

5. **Tipos de participacion comunitaria en la gestion de humedales.** Para lograr la participación de las comunidades en la gestión de los humedales pueden adoptarse distintos planteamientos. El tipo de planteamiento que se adopte en cada caso dependerá de la condición y carácter del área en cuestión, por ejemplo, si se trata de una zona ya protegida por la legislación, o no, si se ha establecido ya algún tipo de órgano que gestione el área, el tamaño de ésta y la complejidad de los usos y los problemas que han de resolverse. Como norma general, cuanto mayor sea el área, tanto más complejo será el planteamiento. Si se trata de zonas amplias en las que hay varios asentamientos, es posible que cada uno de ellos necesite un mecanismo consultivo propio que confluya en un distrito y, posteriormente, en un proceso de decisión a escala regional.

6. **Conclusiones.** A pesar de las dificultades que plantea necesariamente la participación de comunidades locales en la gestión de los recursos naturales y la cantidad extraordinaria de tiempo, energía y fondos que pueda ser necesaria, la experiencia demuestra que los beneficios que produce este planteamiento probablemente hacen este régimen de gestión mucho más eficiente y eficaz a largo plazo. Las "soluciones" impuestas a las comunidades, sobre las que éstas no tienen ningún control y frente a las que no tienen ningún sentido de compromiso o responsabilidad, sencillamente no funcionan. La experiencia demuestra que las personas se preocupan por su medio ambiente y, en función de sus conocimientos, cultura y circunstancias, actúan de una forma adecuada.

"Instituto del Lago Caddo, Texas, Estados-Unidos: Estudio de Caso" (resumen)

Dwight K. Shellman, Instituto del Lago Caddo

1. La educación es un requisito previo de cualquier participación significativa de las comunidades en la gestión de sitios Ramsar. Los miembros influyentes de las comunidades, autorizados por su conocimiento de las funciones y valores de los humedales y de los principios Ramsar, pueden influir en las decisiones comunitarias que permitirán mantener los valores funcionales de los sitios Ramsar, a escala local, a lo largo del tiempo.

2. Los principios Ramsar sirven de base para promover el uso racional a escala local. El éxito depende de la existencia de un plan estratégico, pero también de que haya ONG locales capaces de aplicar esta estrategia con tácticas oportunas a escala local.

3. Para crear una base institucional adecuada a escala local se necesita olvidar un poco a la Administración y pensar en acuerdos institucionales locales que permitan sumar diversos recursos para llevar a la práctica la estrategia con un costo marginal. Existen pocos modelos que sirvan de ejemplo para lograr estos objetivos locales. Uno de ellos, el Instituto del Lago Caddo, es una ONG local que centra sus actividades en la aplicación de los principios Ramsar y el concepto de uso racional en el sitio Ramsar del Lago Caddo, en Texas y Luisiana, EE.UU. El Programa de Profesores del Instituto del Lago Caddo ha movilizado un consorcio de recursos educativos y organismos locales, con unos costos marginales, para llevar a cabo actividades educativas en comunidades locales en torno a los humedales e investigaciones sobre el terreno muy útiles. Quizá otras comunidades Ramsar deseen adaptar o modificar este modelo a sus condiciones locales.

4. Los programas del Instituto tienen por fin optimizar el "efecto multiplicador" que tiene la formación de monitores, que a su vez formarán a otros monitores. Los profesores de monitores son denominados MIRWET (Master International Ramsar Wetland Educator Trainers). En julio de 1995 los profesores del Instituto realzaron el aspecto internacional del programa al crear una Liga de Educadores Ramsar con colegas de humedales Ramsar de Kenya, Etiopía, Hungría y Turquía.

5. Limitándose al sitio mismo del Lago Caddo, el proyecto se basa en la formación de profesores y estudiantes locales excepcionales en calidad de Candidatos Internos en Humedales (WIC). Los candidatos, además de un programa educativo formal en ecología de humedales, reciben orientaciones sobre el papel de la Convención Ramsar en las estrategias de desarrollo sostenible más amplias, a escala mundial, como el programa "Cuidar la Tierra", de la UICN, y el Programa 21. Los profesores ya formados empiezan a formar a otros profesores con ayuda de los estudiantes Internos en Humedales (WIN). Juntos, preparan y aplican programas de enriquecimiento de los planes de estudio en campus dedicados a humedales en sus escuelas e institutos locales, y en humedales Ramsar.

6. Entre los enriquecimientos de los planes de estudio a que hemos hecho referencia cabe mencionar proyectos de ciencia aplicada sobre el terreno relacionados con humedales, que acrecientan el conjunto de conocimientos científicos de las comunidades locales sobre sus humedales. Entre ellos podemos mencionar una red de vigilancia, evaluación ecológica y caracterización paisajística de los humedales locales, públicos y privados, y mantenimiento de bases de datos con mapas elaborados por computadora en Sistemas de Información Geográfica (GIS), a cargo de los alumnos de las escuelas locales.

7. Los participantes demuestran también sus conocimientos científicos sobre humedales en las fiestas de las comunidades y a través de la asistencia técnica que ofrecen para la gestión de humedales locales de propiedad privada. Se está planificando la ampliación de las actividades educativas del Instituto mediante el establecimiento en el Lago Caddo del primer centro regional de humedales Ramsar de los Estados Unidos y la primera academia regional de educación en ciencias de humedales. En ambos casos, se trata de promover la formación científica, a partir de la Convención de Ramsar, de profesores superiores en humedales y de dar una dimensión local e internacional a las actividades de sus comunidades.

8. La Liga de Educadores Ramsar se formó para "hermanar" a los educadores del Instituto, en los Estados Unidos, con profesores de monitores procedentes de comunidades situadas en humedales Ramsar de Kenya, Hungría, Etiopía y Turquía. Gracias a ello, los colegas de estas naciones han comenzado a formar sobre el terreno a grupos iniciales de profesores locales preparados para vigilar la

calidad del agua y aplicar los criterios Ramsar para describir humedales locales con vistas a su posible designación como sitios Ramsar. Como resultado de este esfuerzo cabe mencionar la recomendación a las Partes Contratantes de que la Oficina Ramsar reconozca oficialmente los acuerdos entre ONG locales y propietarios privados para la gestión de humedales de propiedad privada de acuerdo con los principios Ramsar.

9. La aplicación local del concepto de uso racional requiere que las comunidades Ramsar aprovechen las instituciones locales y las redes internacionales de comunidades. Debe alentarse al Instituto del Lago Caddo y a la Liga Ramsar para que prosigan sus actividades y elaboren criterios y directivas para actividades locales, que se someterán a las Partes Contratantes para su examen y aprobación.

"Conservación de la Biodiversidad de los Bosques Aluviales Amazonicos con Participación de las Comunidades Locales" (resumen)

J. Márcio Ayres, CNPq y Sociedad de Conservación de la Naturaleza (Brasil)

1. Aunque los bosque aluviales cubren menos del 5% de la superficie total de la cuenca del Amazonas, el 80% de la población de la región vive en este hábitat. Este ecosistema es vital para el mantenimiento de la capacidad pesquera de la cuenca del Amazonas. Los bosques aluviales del curso central del Amazonas tienen unas características únicas porque todos los años se ven sometidos a inundaciones de 12-13 m y constituyen el hábitat de varias especies endémicas de fauna y flora. Un equipo multidisciplinar formado por varias instituciones brasileñas internacionales (CNPq, ODA, WWF, WCS y CEE) están realizando varios estudios para elaborar un plan de manejo de la Estación Ecológica de Mamirauá, situada entre los ríos Amazonas y Japurá (Amazonia brasileña), con una superficie de 11.200 km^2 de terrenos sometidos a inundaciones. Las actividades más importantes en la zona son la pesca, la agricultura en pequeña escala y las talas selectivas. Mamirauá tiene una población aproximada de 2.100 habitantes, que viven en 14 comunidades y participan activamente en la gestión de la zona y en el sistema de vigilancia.

2. Este documento describe los logros y las investigaciones llevadas a cabo en el área, los recursos económicos más importantes y su biodiversidad, así como la forma en que se está llevando a la práctica el programa de participación comunitaria. Este sistema ha demostrado una cierta efectividad ya que, por lo menos, se ha reducido en los últimos tres años la pesca en gran escala. También muestra cómo pueden aumentar las poblaciones de ciertas especies de peces cuando la población local protege los recursos.

"Manejo de humedales por las comunidades locales: necesidad de dialogar sobre las políticas" (resumen)

Biksham Gujja, WWF Internacional (Suiza)

1. En los últimos cuatro decenios más del 60 por ciento de los humedales de los países en desarrollo han desaparecido. En los países en desarrollo aún existen muchos humedales y la subsistencia de millones de seres humanos depende de ellos, pero es posible que esto cambie en el futuro próximo porque muchos de esos países están aplicando el mismo modelo de desarrollo. Las amenazas que se ciernen sobre los humedales se relacionan con lo social y lo económico. La desaparición de humedales supone también una pérdida para las comunidades locales que han vivido cerca de los humedales durante siglos.

2. Con todo, las preocupaciones y aspiraciones de las poblaciones locales no se han integrado del todo en los esfuerzos de conservación. En muchos casos, particularmente en los países en desarrollo, la bien intencionada conservación ha impulsado normas y reglamentaciones que conducen a la marginación de las comunidades locales. Las actividades nacionales e internacionales de conservación a menudo limitan, sin diálogo alguno, el uso de los recursos por las comunidades locales. En la actualidad la

amenaza más grave para los humedales no estriba en las comunidades locales sino en las políticas que no dan cabida a su participación.

3. La participación de la comunidad ha de ser examinada en el contexto de las políticas nacionales e internacionales. La Convención de Ramsar promueve el concepto de uso racional como instrumento/política eficaz de conservación de humedales, pero en la práctica las comunidades locales asocian la designación de humedales como sitios Ramsar con la pérdida de sus derechos tradicionales y limitaciones en lo que respecta al uso de sus recursos, lo que está creando conflictos entre la gestión de los humedales y las aspiraciones de las comunidades locales. Esto va en aumento en todo el mundo y sobre todo en muchos países en desarrollo.

4. El WWF ha sacado las siguientes conclusiones en el marco de su labor con las comunidades de varios humedales en distintos países:

   - Los humedales y sus recursos sustentan a millones de seres humanos. Estas poblaciones locales son aliados de la conservación , a condición de que participen en el proceso. Para esto no se necesitan normas y reglamentaciones inflexibles, sino un diálogo.
   - La designación de un humedal como sitio Ramsar puede dar lugar a problemas como reclamaciones para hacer valer derechos sobre la tierra y limitaciones de derechos tradicionales. Es necesario resolver estos problemas a satisfacción de la comunidad en una etapa temprana. Se podrían empezar a concertar acuerdos de gestión que contemplen funciones y tareas claras.
   - Las políticas nacionales de conservación de humedales deberían tener en cuenta a las comunidades y sus aspiraciones.
   - Si para conservar humedales o mantener su integridad ecológica la comunidad debe renunciar a cualesquiera derechos o prerrogativas, es necesario indemnizarla (no siempre en dinero) a su satisfacción. Esta cuestión debe incorporarse en la formulación de políticas.
   - Es necesario establecer y fortalecer las instituciones locales encargadas de la conservación de los humedales. Tales instituciones deben ser creadas por la comunidad y reflejar los intereses de todos los grupos.
   - La participación de la comunidad no equivale a beneficiar a unos pocos miembros de la comunidad ni a hacer algunas concesiones a todos ellos, sino a una delegación de atribuciones a la comunidad de forma que administre y conserve los humedales tanto en su propio beneficio como en el del ecosistema.

5. Habida cuenta de estas experiencias el WWF está iniciando un diálogo sobre las políticas que redunde en la modificación, revisión y enmienda de las políticas nacionales e internacionales de humedales a fin de atender a las preocupaciones de las comunidades locales y responder a sus aspiraciones.

PAPERS / EXPOSES / PRESENTACIONES

(in their original language only / dans la langue d'origine uniquement / solo en el idioma original)

"Involving Communities in Wetland Management"

IUCN Social Policy Group

From time immemorial, human communities lived close to wetlands, exploiting and enjoying their resources. Often, this has meant minor ecological interferences; people gathered products (e.g. fish, bird eggs, crustacea, reefs) in limited quantities and/or sporadically. At times, however, and increasingly so in recent times, the interference has been substantial – people exploited wetland resources on a large scale basis even to the point of modifying entirely the character of the ecosystem (e.g. replacing mangroves with shrimp farms, mining coral beds, fishing with destructive technologies, diverting large quantities of water for irrigation purposes, draining marshes for agriculture, and so on). In between the extremes, many communities managed to maintain their wetlands in reasonably sound conditions while interacting daily with them and using their products for a variety of purposes.

What drives these different experiences? What "makes the difference" between communities that utilise resources in a sustainable or destructive way? Have local communities anything to offer for the management of their wetlands? If yes, how can their contribution best be tapped?

Background on Ramsar and the involvement of local communities in wetland management

Over the past decades, people have come to realize that conservation of the natural environment – wetlands, range lands, forests, coastal and marine areas – cannot rely solely upon technocratic management of natural resources, nor can it be achieved by excluding the local people living in and around an area and using its natural resources. The experience of agencies and organizations holding the responsibility for natural resource management has shown that it is extremely difficult to achieve sustainability if the communities most closely associated with the resources are left out of management decisions. At best the local people show indifference to attempts at conservation, at worst they increase their attempt at quick resource exploitation and thus accelerate the degradation of the environment.

Whilst the Ramsar Convention has been aware of the benefits of involving local communities in the management of natural resources and protected areas and has indeed played its part through the work of the Wise Use of Wetlands concept, the subject has not been, so far, a major feature of the work of the Convention nor of its Contracting Parties. This paper discusses the subject and suggests ways of promoting an appropriate involvement of communities in the management of wetlands.

In the field, a number of wetland management initiatives have involving communities to a greater or lesser extent. The degrees of success vary but do give pointers for learning from experience. One of the tasks of the 1996 Ramsar Conference technical session on community involvement is to agree on appropriate actions for the Ramsar Convention, its Contracting Parties, and its Bureau, and to make relevant recommendations.

Meetings of the Contracting Parties

It was at the 3rd Meeting of the Conference of Contracting Parties held in Regina (Canada) in 1987 that the benefits of wetlands for people was given emphasis as a rationale for the protection of wetlands. At this meeting, the term "wise use" was defined as "the sustainable utilization of wetlands for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem". This recommendation (C.3.3) pointed the way towards greater community involvement in wetland management.

At the Montreux Meeting of the Contracting Parties in 1990, this was further amplified in the Appendix to Recommendation C.4.10 ("Guidelines for the implementation of the wise use concept"). The recommendation includes provisions for:

> "the establishment, implementation and, as necessary, periodic revision of management plans which involve local people and take account of their requirements".

The emphasis was towards increasing awareness of decision-makers and the public of the benefits and values of wetlands, training of appropriate staff in the implementation of wetland policies, and reviewing traditional techniques of wise use. In other words, local people were seen as a source of information and knowledge for the decision-makers and staff to manage the resource wisely. Following this meeting, the Wise Use Project was set up to provide examples of wise use of wetlands.

The Wise Use Project reported to the Kushiro Meeting of the Contracting Parties in 1993, and in the Annex to Resolution C.5.6 ("Additional guidance for the implementation of the wise use concept") the suggestion is made that the Contracting Parties:

> "might establish procedures which guarantee that local communities are involved in the decision-making process related to wetland use, and provide local communities with sufficient knowledge of planned activities to ensure their meaningful participation in this decision-making process."

Under the section on integrated management planning. it was suggested that

> "a management authority charged with the implementation of the management process should be appointed; ... strong cooperation and participation from governmental and non-governmental agencies, as well as from local people, needs to be achieved".

The evolution of the idea of local community involvement in wetland management is clear from the wording of these resolutions and can be easily followed in the *Ramsar Convention Manual* (Davies, 1994). At the start, there was a recognition of the interests and traditional uses which local communities have in wetlands throughout the world. This developed through a need for local people to be consulted so that decision-makers and resource managers could take their interests into account, to a recognition that they need to be actively involved in the decision-making and management process along with other interest groups.

Today, there are still no requirements on Contracting Parties to ensure community involvement in wetlands management, and in spite of clear evidence of the benefits of such practices, there are numerous instances of the failure of wetland conservation initiatives due to the non-involvement or inadequate involvement of local communities.

The Wise Use Working Group

Following the adoption of expanded guidelines for the implementation of the wise use of wetlands by the Montreux Conference in 1990, the Wise Use Working Group, with Netherlands support, was extended to provide practical examples of the inter-relationship between human activities and wetlands and to provide information about the process of developing national wetland inventories and policies. A series of seventeen case studies were commissioned from all over the world, including both industrialized and developing countries. The majority of the studies focused on local projects which described the problems of wetland

conservation encountered, the approach used towards wise use of the wetland, the achievements and the lessons learned from the experience.

The problems identified included social and institutional factors, such as the poverty of wetland users, users not being in control of wetland products and not aware of sustainable alternatives, and outside vested interests as an obstacle to the sound management of many areas. Institutional and legal constraints included issues of land ownership, privatization of communal marshes, lack of trained personnel, lack of planning and uncoordinated development.

With regard to community involvement in wetland management the Group found that:

> "Social and economic factors are the main reasons for wetland loss and therefore need to be of central concern in wise use programmes.
>
> Special attention needs to be given to the local populations who will be the first to benefit from improved management of wetland sites. The values that indigenous people can bring to all aspects of wise use need special recognition.
>
> Although one agency may be responsible for coordination of national action to conserve wetlands, other public and private institutions have expertise which is of importance for effective long-term wetland management. Wise use programmes should seek to involve and, where appropriate, work through these partners".

Among its conclusions and recommendation, the Wise Use Working Group stated the following:

> "At local level, countries might establish procedures to guarantee that local populations are involved in the decision-making process related to wetland use and to provide local populations with sufficient knowledge of planned activities to assure their meaningful participation in this decision-making process. There should be working groups or advisory boards representing users, NGOs and local authorities.
>
> General wise use legislation for wetlands should consider ... the institution of a system of management agreements between relevant government agencies, landowners and land users to provide positive management measures by the latter when this is required for the maintenance of the ecosystem.
>
> Legislation for the conservation and wise use of specific wetland sites (e.g. Ramsar sites, ecologically sensitive areas, areas with a high degree of biodiversity, sites containing endemic species, wetland nature reserves) should consider:
>
> - the division of those wetlands into different zones with particular regulations,
> - the encouragement of traditional and other ecological and sustainable activities in these areas thorough incentives and advice,
> - the establishment of a management system in each area which should have legal support and of a management body to oversee the implementation and to ensure that regulations are observed;
> - the association of populations living in or close to the area with its management, through appropriate representation ...."

In general, the Group recognized that

> "wetland management should be adapted to specific circumstances, sensible to local cultures and respectful of traditional uses. Management ... needs to be adapted to suit local conditions."

The Working Group's conclusions were adopted in Resolution 5.6 by the Conference at its meeting in Kushiro, Japan, in 1993.

The Strategic Plan 1997-2002

The Strategic Plan for 1997-2002, to be discussed at the Brisbane Conference in 1996, calls for greater emphasis on empowerment of local communities, *"including indigenous peoples, and in particular women, in the conservation and wise use of wetlands"*. The specific session in which this paper will be presented will illustrate some of the ways in which community involvement can be achieved and will develop specific recommendations for future action.

What is meant by "involving communities in wetland management"?

"Involving local communities in wetland management" does not mean an abdication of responsibilities of government institutions, such as forest and water management agencies, or of other stakeholders. This would imply that the wider regional and national interests are always subservient to local interests, which is unacceptable. It does mean, however, providing a mechanism for communities to become involved in decision-making and day-to-day management of wetland resources as appropriate to their uses and benefits. Such mechanisms need to be open and equitable so that local communities do not lose out, but voluntarily accept fair decisions for the conservation of local wetland resources.

The mechanisms and degree of involvement will vary according to the specific ecological and socio-cultural context and will also vary with time (management that is responsive to on-going learning is much more of a process than the fixed application of rules). In fact, the level of involvement can be seen along a continuum, with on the one hand management invested solely in a national agency, on the other, management solely in the hands of the local residents (community-based management).

With full agency control, local interests and capacities are excluded, local actors are not involved in either decisions or activities and the project is controlled and run by specialists (national and/or expatriates). On the other hand, community-based management initiatives are fully controlled by locals (e.g. communities, user groups, associations, private owners) with no interference from national authorities. In between the extremes, there exist various models of shared control that present different opportunities for and degrees of community involvement in management.

Community-based management is often rooted in traditional management practices used by local communities to harvest and/or protect their natural resources. There are many examples of this, the world over. Increasingly, however, because of population growth and general economic developments and technological and market changes, such practices may not be as appropriate or applicable as they used to be. The cooperation in management of communities and other agencies may succeed to integrate the local knowledge and experience with modern institutional and management methods.

In this paper, the term "community" incorporates all those local people who are affected by and have an interest in the well-being of the wetland. These interests may not be common and may actually conflict. Some may be users of the wetland's resources while other members of the community are affected by that use. Examples of conflicting wetland use may be the extractor of water for agricultural irrigation purposes which diminishes the production of fish, or the discharge of sewerage from a nearby town which impairs the quality of water supply downstream, or the overcutting of wetland forests which affects the productivity and biodiversity of wetland wildlife. The major challenge for involving communities in management programmes is to ensure that all interests within the community are represented in the decision-making and that they all benefit, or are compensated for changes caused by the conservation initiatives.

Communities are not just single settlements – there may be several communities living within one village or town, for example, based upon ethnic groupings. Equally, a community of people may cover several settlements including all those with a specific interest, e.g. farmers in an irrigation scheme or boat owners taking tourists to see wetland wildlife. Some important groupings for resource management are often called community-based organizations.

COMMUNITY-BASED ORGANIZATIONS

Community-based organizations (CBOs) are formal and informal groups of local people (e.g. a user group, local cooperative, village council or residents association) established to support the socio-economic and environmental interests of their individual members or the community as a whole. The principal assets of CBOs are:

- local knowledge, skills and resources;
- initiative, responsiveness and flexibility;
- socio-cultural cohesiveness with local communities;
- confidence and trust of the local people;
- capacity to serve the interests of members and community,
- capacity to respond to local conditions.

Non-governmental organizations (NGOs) are different from "community-based groups" although they may be based and have their focus in a particular community. The NGOs' area of interest is usually wider than any one particular community.

NON-GOVERNMENTAL ORGANIZATIONS (NGOs)

NGOs are non-profit groups – staffed by voluntary and/or professional workers – acting in society on the basis of common concerns and specific capacities. They may or may not include local people within their workforce. The principal assets of NGOs include:

- specific expertise,
- capacity to establish links at various levels,
- social standing and autonomy,
- effectiveness in pursing the common concerns,
- responsiveness and flexibility.

A key role which NGOs can play is to act as facilitators and matchmakers for the effective involvement of local residents in the management of wetlands. They can help local communities identify their needs and opportunities, plan for action and find resources such as a particular expertise or source of finance. They may also be able to provide technical assistance and assist in the undertaking of participatory monitoring and evaluation exercises.

Among the stakeholders in management are also private, commercial enterprises with an interest in the wetland resources. These may be local or non-local enterprises and usually possess all the connections and facilities to promote their own interests and to be included in consultations or decision-making processes. Such interests may or may not be consistent with the ones of local subsistence and/or community-based groups.

Types of community involvement in wetland management

There are various "degrees" of possible involvement of communities in the management of their local wetlands, depending on the legal status of the resources and on the interest (economic or otherwise) the communities have in them. In fact, it is often useful to distinguish among open access, common or communal property and private property status.

OPEN ACCESS RESOURCES

Resources whose systems of control do not exist or have broken down, i.e. there are no barriers or obstacles to their access, use and exploitation. Many wetland resources that have been severely degraded in recent decades were once held under private property or common property which degenerated into an open access state.

COMMON PROPERTY RESOURCES

Resources under state control (access regulated by state laws) and resources under communal control (access regulated by community rules), but not privately owned. The access to common property resources is usually controlled with difficulty and their excessive exploitation by one or more users can damage the interests of other users.

When the state or communal system of management breaks down, the resources become in effect "open access".

When the state or communal system of management is open to include various stakeholders, the resources are said to be co-managed (or jointly managed, or managed under a collaborative management agreement).

COMMUNAL PROPERTY RESOURCES

Communal property resources are common property resources owned and managed by a well-defined community of users, who exclude outsiders and regulate the access by community members. Usually, communal property resources are managed by a local ad-hoc institution.

A variety of approaches can be taken to involve communities in management. The type of approach adopted in each case will depend on the status and nature of the area to be managed, such as whether it is an area already protected by legislation or not, whether a body of some sort has already been established to manage the area, the size of the area concerned, and the complexity of the uses and issues to be addressed. As a general rule of thumb, the bigger the area to be managed, the more levels will be required. For large areas covering several settlements, each settlement may need to have its own consultative mechanism which feeds into a district and then to a regional level of decision-making.

Protected areas may require a different organizational structure than areas which do not have legal protection. In many cases (such as national parks, which often include Ramsar sites), the legal status of the wetland may prohibit local people from living inside. Increasingly, newer protected areas have a resident local population and almost all protected areas have communities living close to them and making use of local resources (legally or illegally). An institutional mechanism needs to be found which includes these communities within the framework of the management structure of the protected area, usually by representation at the appropriate level. Protected areas have the advantage over non-protected areas in that, almost by definition, there is an expectation of explicit management planning and appropriate structures.

Wetland areas which do not have legal protection (e.g. some river catchments and extensive floodplains) will require an organizational structure appropriate to the land-ownership patterns and government institutions involved, for example, forestry, water and irrigation departments. It will probably be more difficult to create a management structure which involves the communities for such non-protected areas unless there is a strong common incentive for doing so. This may be provided by a common threat, e.g. the proposed building of a dam, a deteriorating recreational facility, or climate changes causing persistent drought which require a concerted management approach.

Whatever structure and process is adopted, community involvement in management regimes is based on the concept of "common good", the belief that it is possible to identify a course of action that harmonizes different interests while responding, at least to some extent, to all of them. The challenge of any structure and process established is to create a situation in which the payoffs are greater for collaboration than for competition. There are several models which have been used with some success for involving communities in conservation management initiatives. Some of these models are described below.

Appointment of community representatives to a management body

Appointments to a management body require a fair, transparent system for the selection of community representatives. It is important to ensure that those appointed have the standing, knowledge, experience and willingness to represent all the interests held within the community which elected them. In some societies, the appointees will be traditional leaders or people selected by them. In others, some form of election process may be used to find the most appropriate persons. In other situations, local councillors may be chosen.

For the community representation to be effective, the appointees must have equal standing on the management body, and they must be provided with the resources necessary for them to participate on an equal basis with other parties. This may require to payment of per diems and travel time as well as making available secretarial services if they are required to present reports to the meetings of the management body. This has obvious implications for budgeting and fund-raising for wetland management. There also needs to be some mechanism whereby the representatives can keep their local community informed of the activities of the management body and hence be accountable to them. The Atacames-Sua-Muisne Coastal Reserve Management Project in Ecuador used this approach in combination with the establishment of community groups for each Special Management Zone.

A management forum with working parties

Where the area is large and the issues many, the establishment of a management forum with working committees to focus on specific aspects of the wetland (e.g. mangroves, irrigation, recreation etc.) may be appropriate. Both the forum and the committees should include representative members of the affected communities. An example of where this structure was adopted is the Wise Use Strategy for the Cotentin and Bessin marshes in France.

A dual structure

Basically, this approach involves the establishment of two working groups – one representing the regulators (such as central and local government agencies) and the other comprised of community representatives (including resource users, affected parties and other key people in the community). These would report to a single core group comprising 2-3 representatives of each of the two groups to bring together the concerns and ideas and to help negotiate differences of opinions.

Unless carefully and sensitively run, the "dual approach" would aggravate conflict, so a skilled facilitator is necessary to provide a link between the two. NGOs are often chosen for this role because they can be perceived as neutral parties. Individuals with particular expertise may be made available to both groups as required.

This can be a useful strategy where there is a significant difference in the level of confidence and knowledge about the issues between the community and the regulators and technicians, or where there is some resistance from the regulators to recognizing the value of community input. As the level of knowledge and confidence in the community increases and the value of the community´s input is demonstrated to the regulators, the two groups can be merged.

Examples where variations of this approach have been used include the Chowilla Floodplain community consultation programme in Australia, the Central Visayas Region in the Philippines and the Melaleuca Floodplain forests project in the Mekong Delta, Vietnam.

Collaborative Management Agreements (CMA)

Whatever structure is used to involve the local community, the outcome of that involvement would best be a Collaborative or Joint Management regime. Such a regime can be defined as an institutional arrangement by which all parties with an interest in the wetland enter into an agreement covering its territory and all or part of the resources located within that area. The parties involved in the design and implementation of the agreement usually include the government agencies with jurisdiction over the area and/or the resources, the local users of the resources and other appropriate stakeholders (e.g. local businesses, residents affected by the resource uses, environment and development NGOs, research institutions).

The agreement usually identifies:

- the wetland area, its boundaries and resources;
- the range of functions and sustainable uses it can provide;
- the recognized stakeholders in the wetland;
- a system of functions, rights and responsibilities for each stakeholder;
- an agreed set of management priorities and a management plan;
- procedures for dealing with conflicts and negotiating collective decisions about all of the above;
- procedures for enforcing decisions; and
- specific rules for monitoring, evaluating and reviewing the agreement, and the relative management plan, as appropriate.

A collaborative management agreement gives explicit recognition to the variety of interests relevant to the management of a given wetland, and to the fact that all those interests need to be involved in identifying needs and opportunities and in deciding how to tackle them.

Two attitudes are essential to the success of a CMA:

- the recognition that **all stakeholders have something to contribute** and can in fact complement one another for the best interest of the body of resources concerned;
- the recognition that **management is a process** subject to on-going review and improvement rather than as the strict application of a set of established rules.

While these considerations are recognized in the "Guidelines on Management Planning for Ramsar Sites and Other Wetlands" (Annex to Resolution 5.7), in the plan preparation process, the guidelines refer only to the need to include technical staff. The involvement of other stakeholders, including local communities, needs to be made explicit and reference can be made to the process of establishing a collaborative management agreement. The box below shows a list of possible steps which can be taken in setting up such an agreement.

POSSIBLE STEPS TO DEVELOP A COLLABORATIVE MANAGEMENT AGREEMENT

- various stakeholders in the wetland identify themselves and agree to take part in the process of developing a CMA;
- unorganized stakeholders (especially those who are socially vulnerable and disenfranchised) are assisted to organize and agree on their own basic objectives, rules and forms of representation;
- stakeholders identify and discuss existing management arrangements in the area (formal or informal, explicit or implicit);
- stakeholders clarify their wishes and capabilities around the wetland and exchange such information with each other;
- stakeholders identify the management goals and priorities in the area;
- stakeholders develop and discuss management options to respond to the identified goals and priorities and to build upon what already exists;
- stakeholders identify and manage the possible conflicts rising among themselves;
- stakeholders negotiate an agreement around a specific management option that establishes relevant rights and responsibilities for each of them;
- stakeholders identify appropriate requirements, procedures and regulations to maintain the viability and effectiveness of the agreement;
- stakeholders fulfil requirements, implement procedures and enforce regulations;
- stakeholders monitor the process and review the agreement as necessary.

Why community involvement is beneficial

Experience has shown that management regimes which involve a community tend to be more sustainable than those which are imposed on a community. This was evidenced, for example, in the findings of the Wise Use Working Group. It is important to acknowledge that there is a limit to the contribution that technical expertise can bring to wetland conservation, and that the social dimension which community involvement can bring is as essential to management as technical soundness. It is also important to recognize that involving communities in wetland management initiatives is not "doing communities a favour". It may actually mean a substantial investment of time and resources by the individuals directly involved, which may detract from their productive work and income.

By involving local residents in:

- identifying the problems
- deciding upon the solutions
- implementing activities
- monitoring the effectiveness of agreed measures to address the problems and opportunities,

the following benefits can be expected:

Acceptance of responsibility. Communities become responsible and accountable for the sound management of the resource – there is no longer a situation of "them and us" where communities look for ways to get around the restrictions placed on them by an outside body. The "tragedy of the commons" in which natural resources become over-exploited because they belong to everybody, and nobody has the responsibility for limiting exploitation, can be avoided. Whilst arrangements for assigning responsibility will differ depending upon the circumstances (e.g. leasing, contractual agreements), the basic mechanism of joint-committees in which different groups have to account for their actions provides the means of applying pressure to comply with jointly agreed measures.

Community commitment. Communities become "owners" of the conservation process and thereby develop a sense of commitment and are more prepared to make a longer-term investment in sound resource management. If communities are likely to lose out because of the conservation measures, the mechanisms of collaborative management provide the means for negotiating compensation.

Utilization of local human resources. Local knowledge and skills are made available to assist in the on-going identification of problems and solutions. Often this information is difficult to access and special participatory process are needed to surface it out.

Effective monitoring. By involving the community in day-to-day management, the monitoring of natural resources becomes easier and more effective. Since local people live and work "on the spot", problems are more likely to be identified and mistakes corrected more quickly than if monitoring is carried out by professionals on a sporadic basis. Local people can watch out for detrimental activities (e.g. illegal hunting, polluting discharges), but social pressure may make monitoring of such activities problematic when they are generated from within the community.

Increased awareness among users. By involving the local resource users in the monitoring process, they will become more conscious of the impact of their own activities on the resources as well as the activities of others. Their involvement in the process will also help them to obtain knowledge of how to respond to, or how to avoid altogether, some adverse impacts on the environment.

Spreading of environmental awareness. Involving communities in the management of their natural resources raises the consciousness of citizens in the value of wetlands and the impact of human activities upon them. The knowledge and networks they acquire through their involvement can also increase their ability to identify and deal with future environmental problems in their region.

Reassurance. Communities are less likely to feel threatened by the restrictions on future use of the resource, if they or their representatives have been involved in determining these restrictions and the trade-offs they involve. This is particularly important when the communities are reliant on the wetland resources for their own survival.

Difficulties encountered involving communities in wetland management

- In many communities there are vested interests and historical disputes which can impede the ability of people to agree and work together. It is important that these be identified, acknowledged and addressed in the early stages of formulating management agreement.

- Especially in industrialized countries, there may be resistance to the very existence of wetlands which are often seen as unnecessary and undesirable features, particularly in residential areas. To encourage local residents to become involved in the retention and enhancement of wetlands, the first step may need to be a public education programme on their values and benefits. The draft Strategic Plan for 1997-2002 recognizes the need to raise public awareness of wetland values and functions throughout the world at all levels.

- In the case of people's representatives to a management committee, difficulties may be encountered in getting agreement from the community about who should represent them or there may be a lack of person(s) suitable for the job. Language may be an issue, particularly where the local and official languages differ. Interpretation facilities may have to be provided to enable the different interest groups to communicate effectively.

- National or regional legislation may need to be modified before any authority can be handed over to the community. This can involve substantial delays. It is important for governments to be proactive by making provisions in policy and legislation for the involvement of communities in resource management whenever this is deemed appropriate. While waiting for revision of the legislation, ad hoc consultative groups can be set up to advise the statutory authorities. These can serve as models and training groups and, when the legislation is in place, they can take on the role of official management committees.

- Before effective involvement of local communities is attempted, there may need to be an allowance of both time and funding to ensure the local people have the necessary skills and

resources, and that the appropriate management structures are in place. Conversely, many well-intentioned attempts at community involvement have failed because government and technical staff lack the facilitating and coordinating skills necessary for encouraging community participation. The recruitment of staff skilled in community relations, and/or the training of existing staff, may be needed.

Factors fostering success

As demonstrated in a variety of local, there are a variety of factors that can impact upon the success or failure of an initiative to involve local communities in the management of wetlands. While the significance of each factor varies in accordance with particular social, political and economic conditions, they should all be considered, at least to some extent, in the design of new initiatives. Such requirements for success include:

Respect for the local context. Management initiatives are undertaken within specific cultural, social and economic contexts. Traditional management systems should be respected and built upon, whenever possible. Traditional associations have many advantages over other resource management institutions. Most obvious are their compatibility with local culture and the respect and trust they are likely to enjoy among local people. Some laws and regulations may be already adapted to their presence, and they may have a tradition of dialogue with government officials and others. But care is needed. Such associations may be perpetrating undesirable practices and may preclude whole sections of the community from influencing the management initiative.

Protection for local communities. Where communities are dependent on the wetland for their livelihood, they should be given security of tenure over those resources necessary to their livelihood. Only when tenure is safely secured will motivations for care and long-term improvements emerge.

Assurance that relevant capabilities are in place. Each of the participating parties, be they individuals, groups or institutions, should be capable of performing the functions ascribed to them - this may require the provision of specific resources and training to community members.

Clear structures and processes. The allocation of roles, responsibilities and accountabilities should be clearly stated, recorded and agreed to by all parties concerned. Mechanisms to negotiate and mediate conflicts should be in place. A system should also exist for communication and coordination among all interested parties – the authorities responsible for the wetland, the users of the wetland resources, those affected by that use and other interested parties such as environmental organizations.

Real sharing of decision-making power. Government agencies should be willing to decentralize the management process and, to a significant degree, be prepared to share management authority and responsibility with the local community. Subsequent decisions by central government should take great care not to impose developments upon the area which would undermine the confidence of the local management authority as well as discredit the local planning process.

Positive attitudes and specific skills. Governmental staff involved in the initiative should be assisted to orient their approach away from that of "controlling and providing" to one of "enabling and promoting". Those in charge of the management initiative should have access to skills in participatory assessment and planning so that they have realistic expectations of the process and can recognize and respond to warning signs if and when they occur.

Realistic time-frames. Community involvement is not a short-term process. The communities have been in the locality for many years and they are there to stay. Their potential involvement reflects this. Time-frames for the management initiative should be realistic to bring about sustainable change which continues after the "project" has been completed. This has implications for the duration of funding and the allocation of support personnel from the participating agencies. The expected benefits to each of the parties and the time-frame for the realization of those benefits must be clearly understood and agreed to by all affected parties. At the same time, the importance to community confidence and enthusiasm of achieving some level of success at an early stage, no matter how small, should not be underestimated.

Realistic financing. Community involvement is not cheap and projected budgets should be prepared to reflect this. The facilitation and training required may involve extensive inputs by skilled, and therefore expensive, personnel. The efforts of the communities themselves may need to be recognized financially, particularly if they undertake specific tasks which they would not otherwise do and which detract from their normal work (e.g. sophisticated monitoring of natural resources in the wetland). Although it could be argued that the sound management of natural resources is in their long-term interest (and so they should do it for free), they would also be contributing to the wider national or regional interests and should therefore be compensated for their time and other investments.

At the outset, community involvement does not have very much in the way of "outputs" or "products" as defined in traditional projects. Planners should be aware of the importance of the process and the need to include indicators of progress in community participation and community strengthening as measures of the success of the specific initiative. Mechanisms for the continued financing of community involvement, with preferably an increasing contribution from local sources, should be developed after special funding (e.g. a project) ceases. Dependence upon outside funds should be avoided.

Conclusions

In spite of the difficulties inherent in involving local communities in the management of natural resources and the extra time, energy and funding which may be required, experience has shown that the benefits obtained through such an approach are likely to make the management regime much more efficient and effective in the long-term. Management "solutions" imposed on communities, over which they have no control and to which they have no commitment or sense of responsibility, simply do not work. Experience has shown that people do care about their environment and, given the knowledge, skills and opportunity, they will act on that concern in an appropriate manner. A study of ten resource management initiatives with extensive community involvement (Pye-Smith et al. 1994) came to the following conclusion:

> "Questions of survival and rights are at the heart of many local environmental problems. A misreading of these sentiments has led to a number of myths, for instance that communal resources are bound to end up in tragic mismanagement or that only affluent people care for their local environment. We have found this is not the case. Those who have very little other than their place of being need nature more than anyone else, and they know it. When they can benefit from local resources, when they feel reasonably sure of receiving a just compensation for their work, when they are not alone - people do care. In fact, we have found that many poor communities build their productive life and, at times, even their identity and pride, around caring for their local environment."

In order for conservation initiatives to involve communities in a meaningful way, some measures may be needed at both local and central government level, including the adoption of specific structures and procedures.

Involving communities in management does not mean handing over all responsibilities nor distributing benefits "to do communities a favour". It rather means involving those most affected in a partnership of management with external individuals and institutions. The government institutions responsible for the management must ensure they have the skills necessary to work in partnership with local communities. This requires not only familiarity with the local cultural practices and values, but also knowledge of participatory assessment and planning skills. Where these skills are not available within the governing organization, they will need to be recruited through local consultancies or through NGOs.

For the Ramsar Convention, the implications of promoting greater community involvement in wetland management include the following:

Changes in the Convention Resolutions and Recommendations to reflect a greater emphasis on community involvement in planning, management and monitoring of wetlands.

Changes in the emphasis of the Wetland Conservation Fund to recognize the importance of community involvement as a criterion for supporting projects, and the need to appropriately fund this involvement.

Contracting Parties should make specific efforts to encourage ways to empower local communities to become involved directly in the management of wetlands and especially of Listed Sites. This may mean changes in legislation (e.g. of protected areas) to allow the establishment of collaborative management regimes, changes in the recruitment and training of staff, and changes in the allocation of specific funds to facilitate community involvement.

The Contracting Parties should also recognize the value of Indigenous People's knowledge and skills in relation to wetland management and make efforts to cater for the needs and aspirations of Indigenous People in the implementation of wetland policies and programmes. This may mean the inclusion, where appropriate, of a representative of Indigenous Peoples on the National Ramsar Committee.

The Convention Bureau and its technical partners should promote community involvement in the wise use of wetlands and seek special assistance to it. In wetland projects they should encourage the development of collaborative management agreements involving local residents among other stakeholders, and provide appropriate funds to the purpose. They should develop newsletters, Internet linkages and technical publications giving examples of case studies which demonstrate the benefits and, if applicable, the difficulties of community involvement in the management of wetland resources. Last but not least, they should develop guidelines for promoting community involvement in wetland management and ensuring that it is undertaken in an effective manner.

Many of the problems encountered in wetland management in the past (some of which will be illustrated by case studies at the Brisbane Conference) can be avoided in future initiatives. The Ramsar Convention has an important role to play. By promoting appropriate procedures, processes, funding and capacity building schemes, the Convention will help to realize the full potential benefits of community involvement in wetland management.

References

Balde, Demba and Ndiaye, Abdoulaye; "Management Plans, development of the management plan of the Djoudj (Senegal); in the *Ramsar Newsletter*, no. 21; May 1995.

Datkov, Dimo et al; *Planning for Conservation; Participatory Rural Appraisal for Community Based Initiatives*; Report of Workshop held in Ostritza, Bulgaria June 1993, organized by the Bulgarian Society for the Conservation of the Rhodopi Mountains (BSCRM) and the World Wide Fund for Nature (WWF-International); Gland, Switzerland, March 1995.

Davis T J (ed); *Towards the Wise Use of Wetlands: report of the Ramsar Convention Wise Use Project*; Ramsar Convention Bureau, October 1993.

IUCN, Social Policy Service; *Social Sustainability in Conservation: a resource book to help incorporate social concerns in conservation*; draft, 1995.

OECD Development Assistance Committee; *Guidelines for Aid Agencies for Improved Conservation and Sustainable Use of Tropical and Sub-tropical Wetlands*; draft, 1995.

Olsen, Stephen et al; *Atacames Special Area Management Plan*; Technical Report 2077; Coastal Reserve Centre, University of Rhode Island and International Coastal Resources Management Project,.

Pye-Smith, Charlie; Borrini Feyerabend, Grazia; and Sandbrook, Richard*; The Wealth of Communities*; Earthscan Publications Ltd, London; 1994.

Renard, Yves: "Community Participation in St. Lucia", *Community and Environment, No. 2, Lessons from the Caribbean*; Panos Institute and CANARI; 1994

White, Alan T. et al; *Collaborative and Community-based Management of Coral Reefs - lessons from experience*; Kumarian Press, Connecticut, 1994.

"Community-based Wetland Management: The Caddo Lake Institute, Texas: a Case Study"

Dwight K. Shellman, Jr.
President, Caddo Lake Institute

Thank you, Mr Chairman & Mr Vice Chairman,

Let me first introduce the personalities involved in our delegation and the ecosystem that we represent. [Slides] Lights Please.

We are a site-based NGO Institute and Academy Program dealing with Wetlands Science Education. Caddo Lake is a 26,000 acre, or approximately 10,000 hectare, wetland on the border of Texas and Louisiana, United States. It is located in a sub-tropical region in a rural area as, indeed, most remaining wetlands are located in rural areas.

Our job is to devise strategies and bring resources to empowering the local community to take care and become good stewards of their own wetlands. Ours is a work in progress. It is only three years old. To provide more information about us, we've tried to put out a fairly detailed package. I think all of you have got it. The folder depicts the cypress ecosystem itself. I will point out a few things in the package for your further reference. There are two pamphlet items which I especially want to mention.

One is a yellow pamphlet on our letterhead that is also a technical summary of the remarks I'll be making. It describes in more detail our program and some of the techniques we use. I won't go into all of those today. It is in three languages, the three Ramsar languages. On the reverse side is a biographical or curriculum vitae-type description of the people on our delegation. We have a federal scientist, a bureaucrat if you will. He is Dr. Carroll Cordes; he was the first person to mention the Ramsar treaty three years ago. We have university professors and former public school teachers. We have a private landowner. I mention private landowners because if we talk about catchment issues (in those countries that have private land ownership) the inclusion of private landowners is very important. So I would refer you to that pamphlet.

We also have a six-language pamphlet inclusion that describes the role of our site-specific NGO, The Caddo Lake Institute. It is a creature of Mr Don Henley, who is its principle sponsor. He grew up in this area, moved away to become a well-known musician, and also an internationally known environmentalist. He is somebody whom we describe in the United States by saying that he "walks what he talks." He speaks for the environment, and he also acts for the environment. The Institute is only one of the many things he has done.

The other things in the folder I wanted to bring to your attention include Status Reports on Joint Monitoring Projects that the people in this small rural Texas community, in the southeast part of the United States, have done with people in Ethiopia and other countries. The Ethiopian project is just beginning. I hope to see the Ethiopian observer here sometime during this meeting. We have projects that are farther along with colleagues in Kenya and also in Hungary. We've been the beneficiary of some good advice from Hungarian and other central European wetland scientists that we are now attempting to apply in our local area. Those joint monitoring projects are a feature that I think is worth mentioning.

Our theme, as I think Mr Henley said this week, is "So many wetlands and so little time." My projection, considering the rate at which we're saving wetlands and the rate at which we're destroying them, is that we will never get the job of saving them done in time unless we rapidly proliferate the number of site-based local NGOs, wetland clubs, academies and institutes that will enable local people to take care of their own wetlands. It is pointless to wait for the UN, or the Ramsar Convention nations, or even national

governments in some cases, to mobilize the resources to intervene in all of our local communities to save all of our local wetlands. These wetlands may be gone by then. So the need for rapid proliferation of local NGOs is our first message.

And we have hoped that our presence here would stimulate, first an opportunity for others to look at the model, or the working example, that we're creating, so that others may adapt it to their own cultures and their own situations. Secondly, we wish to show that there is a place for small site-based wetland NGOs in the global wetland conservation effort.

In fact, this global effort will not succeed to save wetlands, or even ameliorate rapid wetland losses, unless there are many, many more site-based NGOs. One for each wetland, if necessary.

That's our plea. You will notice a pledging document going through the halls here for NGOs – primarily small ones – to pledge what they can to Ramsar objectives, in services or in funds. And we hope that many of the people here who are interested in this idea will sign that pledge with us. And we will start to keep track of what we are doing while the Ramsar Bureau and the other international agencies and governments are dealing with much bigger problems perhaps.

The issues I'm going to go through today will be discussed in summary form. We have a booth here, we even have a video tape that describes our program today. It's available to you and you need only stop and speak with us.

The idea of community-based participation in wetland management can only begin – and I don't want to sound dogmatic – can only begin, in our view, by making practical wetland scientists of the people who live in the neighborhood. So that's the theme that we deal with. In the United States we call this NIMBY Power (that's American for "Not In My Back Yard.") That's how many of us feel when large, potentially disruptive activities and the like come to our neighborhood. It's a very powerful inducement for getting local people, who know an area the best, to learn the skills they need to be good stewards of their own environment.

The Caddo Lake Institute is a local wetland institute. Its emphasis is on the wetland science "educators." Notice I do not say "education". It is the job of educators to do education. It is our job to train educators to be wetland scientists. In the process, and as byproducts, students are trained in those skills. But that is not our primary purpose. Our purpose is to create master Wetland Educator Trainers. The second thing to note is that our institute today is an institute "without walls". It has no building. It utilizes the facilities of a consortium of local public schools and local colleges and universities. These have facilities that are sufficient for our needs at the moment. And that is an intentional decision – that we don't want to get involved in the idea that we have to apply for a grant to get a building to do this, because it does not require a special building to do our program, although we may eventually have buildings when the program justifies having them.

We call ours a "marginal cost approach." I discussed this with Mr Henley this afternoon. I said "You know, when we're all through people are going to say 'There's nothing new here'." And he said, "People don't necessarily need to be instructed, they just need to be reminded."

I think that much of what we're trying to do is to remind ourselves that we may already have in every wetland community resources that we can use and that we can "re-mobilize" or "re-target" on the task at hand.

First, we have local educators, and that is what we use. We have local college educators who bring the science to the activity. One of our colleagues, as you will see in the biographical materials, is a limnologist. He has been integral in our program not only in providing limnological advice but also in redesigning curricula and teaching it.

We try not to invent anything new, so we use purchasable materials particularly in the global area. Our program is designed and based upon the IUCN document called *Caring For The Earth*. One of the most profound things that document says is "Increasingly we must teach each other." That is really what we're about: exchanging with each other what we already know and then expanding who "each other" includes, to

include the other actors in this program. In our case this involves joining local conservation resources with state or federal conservation agencies. But the idea here is, if we're going to work from the Ramsar theme, we want to make sure the people in small rural communities understand that they are world citizens, and that if they have a Ramsar site they have a common interest with all other citizens of the world who also live near or at Ramsar sites, or just in wetland areas. The beauty of that is that the IUCN material, the Agenda 21 material, and the *Ramsar Manual* have all been translated into multiple languages, so that we don't have to stop and do something (like translation) before we can begin to distill the lessons from them. I might add that *Caring For The Earth* also, if you read it. [holding up the book] – This book or one of the earlier versions of it has a series of tasks identified as those which local people can do. So one of my functions was to abstract that material and to say "Well, sure, that's what we can do as local people." There wasn't anything new. All that was needed was to be "reminded."

The other thing that we do is this: we use proven curriculum guides, and I am going to show you some of these. What we are faced with all over the world is that plenty of work and grants have been given to many people to create high quality curriculum material. Again, much of it has been translated into multiple languages. The principle one we use to train teachers with is called Project WET. It has international components.

But our program goes beyond that, because we're not just teaching students, we're teaching teachers to be wetland scientists. To teach other teachers to do that, our program must be "field based." So this is our water monitoring kit [holding it up]. I won't take it apart, but it's relatively simple, and it's relatively inexpensive, and it's readily available. We'll even help you get one if you want one. It's used to permit those teachers who are becoming wetland scientists and trainers of other teachers to actually monitor the quality of their water as a part of their instructional function but also as a part of their professional activity, of being wetland ecologists.

Another item that we use ... This kit deals primarily with what is called water chemistry, so when you test the water you test the way it is right then. But how has its quality been over time? Where is it going? So we've undertaken a local U.S. program called "Save Our Streams", which was created by the Isaak Walton League (which is a fishers' organization in our country). We understand that it has also been translated into multiple languages. It permits these teachers to do what good limnologists do, which is to dig in the mud, dig in the sediments, and find the animals, the "critters" (creatures), that are living there. This particular program allows the assemblages of species to be ranked and graded to indicate a water quality for that particular water system. Certain species are associated with certain qualities and conditions. Does this apply exactly to Texas? No, it doesn't exactly, but it is where we could begin. And very quickly our scientist, and our emerging scientists, began to say, "This is not quite right. We don't have this species or there's more complexity to it than that," and so we said, "Fine, we need to go ahead and make a local (benthic) key." That's exactly the point. So these are excellent beginnings.

There's another item that's called *Project G.R.E.E.N.* Actually there are many Australian organizations showing this now, which shows how widespread it is. It's here, on the other side of the world. This is a well-organized manual [holding it up] for the monitoring of water chemistry, water quality, benthics and even heavy metals – which is an issue in our community. Again these are good places to start.

The point here is that all of these materials are all well recognized. Here [holding up a manual] is another called *Ground Truth Studies Teachers Handbook*. This is a beginning orientation of students and teachers in the fact that modern technology has much to do with viewing the world from satellites or by aerial photography. The interpretation of that is a high level skill. But like many of these, it's only the uppermost functions that require pure science. The rest of it reflects levels of technology which local people can learn to apply to interpret this information, just like any other. I also brought another manual that a friend of mine gave me, which has to do with coral reef monitoring. I have actually found, since I have come to Australia, that there are a number of protocols the Australians have put together that deal with a whole range of coral reefs, mangroves . . . almost every kind of marine wetlands. Almost 90% of those monitoring functions could be performed by skilled teachers who are properly trained. They do not require PhDs in anything.

These are what I mean by proven curriculum guides.

The other enriching feature of our program is that we have engaged ourselves very productively by dealing with federal and state agencies that have conservation and science responsibilities in the region. That means using their map products. It means using their remote imagery. We use their GIS computer technology to do mapping and we use their landscape classifications, so we can have some sort of common idiom.

Do you need to do this in Kenya? Perhaps not yet. But actually perhaps you do and there are probably capabilities in Kenya or in Ethiopia or elsewhere, where this skill is being taught at some institution that could become accessible to educators who indicate an interest.

A subtle outcome of this is that the bureaucratic priorities may begin to change. They like to work where what they do is appreciated, where people are interested. We found that our existence began to modify the way the agencies began to work in our region. Where they may have monitored water once a year, we did it once a month. They began to inquire about what we were finding, and they became interested in the fact that there was a group of people that cared about what they did.

So our methodology is that we have added wetland science to local school and college curricula. These are small rural institutions, but they have infrastructure and capability. I would suspect every community has at least a school system and at least one person or more who has experience and engages in the profession of communicating learning to other people, i.e.: teachers.

We use the "Multiplier Effect" of "training trainers." We work on that. We train teachers to train other teachers. If you think about it, you will see that you get an exponential growth of knowledge by doing that.

The other important feature of training teachers is that the teacher generally remains in the community. A successful student may move on. We want to make the investment in the local community.

We also train students to train other students. We call them "interns." (In some languages that would be called "apprentices".) They become assistants to the teacher.

And we train both of these to demonstrate their wetlands science skills at community events. We've actually had situations where, at the Ramsar dedication of our wetland, people from our program put on for several hundred visitors demonstrations of water monitoring, sediment monitoring, bird habitat issues, and things of that nature, and did an excellent job. We use that process, maybe once or twice a year, too, at local high schools and local colleges to recruit other educators who have a common interest.

Ours is a program for exceptional people. Rather than try to force information on people who don't want it or who don't care about that now, we ask interested people to make their presence known to us and – amazingly or not – we find there are many of these people in every community.

We also use these demonstrations and information to recruit private landowners. One of our colleagues on our NGO delegation owns a very significant piece, some 3500 acres, of prime wetland in an area where, if he can improve how he deals with his wetland, his neighbors may do the same. That's where we move into true community participation. People managing their own property properly.

The participants in our program learn the wetland science of their local wetland. They maintain 15 monitoring stations in a network. We do chemistry monthly, benthics quarterly, and coliforms five times in every 30 days at selected sites.

We have a number of protocol improvements in process – like the benthics key refinements I told you about. What we found was that if you try to monitor something from the shoreline, you know you are not getting good or complete information. So we are beginning to adapt our monitoring to include what our Environmental Protection Agency calls "Rapid Bio-assessment." We are also beginning to randomize our sampling sites, which is considered to be more accurate. That improves the skill of all the people involved. We now begin to understand the difference between real science and something that might not be science. As you do that, local people are able to avoid being intimidated by those who make claims based on scientific

information. They are able to tell the difference frequently, or sense the difference, between what is good science and what is persuasion.

We are also, as a by-product of our program, developing other research projects. I'm only going to flash this [slide of bullet chart] in front of you. These research projects range from doing a biological inventory of an army base to creating a GIS mapping program. We're now in the process of designing a catchment-wide agricultural pathogen reconnaissance, because we understand that there may be a number of pathogens being introduced into the water system, and nutrients, because of local agriculture – what we call agribusiness. I won't go into that in any detail now, but it's something we can discuss for those who have an interest.

So what we're developing is a body of knowledge that is specific to this ecosystem which, if we didn't do it, would either be lost, or it would have to be retrieved from some remote government agency. In our program, it's kept in GIS format (because our bureaucratic colleagues have made that available to us) in the local colleges. The most important place where it's kept is in the minds of the college professors and scientists who have progressively acquired this information with us. It's also kept at the Institute offices and, where appropriate, it's reported to the state water agencies and health departments.

Our program has this kind of catchment objectives which we believe are compatible with Ramsar Principles.

We plan, with our Kenyan and Ethiopian and other colleagues at other sites, to do "Exercises in characterizing wetlands under Ramsar procedures." It's our hope that this technique will permit people to become aware of what the Ramsar Criteria are. At the same time it may generate additional candidates for Ramsar designation.

Maybe it isn't "Too many wetlands, too little time" – if local communities can begin to press for the nomination or protection of their own wetlands under Ramsar Principles.

We are also engaged with our landowner colleague Mr. Jones in attempting to develop what we call Partnership for "Ramsar-Compatible Private Land Stewardship." That is a process that has just begun for us. But at this point we are forced to deal with all of the issues that have to do with private property rights and how to respect those interests.

We also hope to have an international multiplier in this way.

So far, you see what we have done is to seek to bypass the whole international hierarchy in our attempt to make linkage directly with other sites, and to encourage them to do the same all over the world. Obviously, we can only handle a few sites. We ask others, if they wish, to do what we are doing. So far we have established relationships with colleagues in the Czech Republic, Ethiopia, Kenya, Hungary, Turkey, and we know from our visit here that there will be more, including a number of Asian countries.

Ideally, we will do monitoring with them on the same day when we can, and we will exchange our data. That gives us the opportunity to discuss differences and similarities with each other. This gives us an opportunity to compare what Lake Nakuru in Kenya is like, how it functions as a flamingo habitat, when it dries up and when it doesn't, and what that means chemically. We all have problems of invasive plants; water hyacinth and hydrilla. We have problems with coliforms and our Czech and central European colleagues have given us some excellent information on the use of constructed wetlands to treat pathogens of that type, but under a strategy adapted from an African strategy by Dr. Patrick Denny whereby we might indeed increase the wetlands by treating our water with constructed wetlands located around our existing wetlands. We can look at migration patterns and we are currently planning to exchange suggestions about useful bio-indicators. One colleague from Hungary has suggested dragonflies, which live in the water and reflect changes over time. Amphibians are another bio-indicator we're just beginning to consider.

It was our foreign colleagues who suggested to us that while they couldn't create a local institute today, they have schools, and they could train other teachers and that even if they didn't have that, they would be willing to form wetland clubs. In Ethiopia we're dealing with the club. Our hope is that we will be able to support and encourage others in eventually creating local academies and institutes, with or without walls, as they choose.

So in conclusion, it takes a local entity to make local wetland conservation work – especially private land conservation. True local empowerment arises, I would say, only from local lore, local scientific expertise, and locally accessible data. We are deluding ourselves if we say otherwise.

I want to deal with the local lore for a minute. It is true that peoples who live in an area over their own lives and over many generations know a great deal about it. But I have found in Texas that approximately 30% of the anecdotal information is false or not relevant. Because they are good stories, legends carry information imbedded within them; they may also have incorrect or irrelevant information. What could such lore provide persons living in a area for generations, for example Aboriginals in Australia, that would possibly say anything of value about PCBs or industrial toxins in the environment? How could their culture inform them on things that may be invisible or undetectable by the kinds of processes that their traditions are built upon. The same comment applies to Texans and indeed all Americans. While local lore is an enrichment of the ability to manage wetlands, we need the scientific data and the scientific skill to sort out that which is anecdotal and incorrect or irrelevant from that which can be used and which supports and leads us to better science.

The Caddo Lake Institute is only one working example to accomplish this goal. There are undoubtedly numerous other examples. Ours is yet to be completed. We believe there needs to be an evaluation and publication of case studies that will address the issue of how local communities at the site level can do what we're trying to do. Not to wait for permission from Ramsar to protect our wetlands; not to wait for permission from the government, but, as we say in the US, to "just do it. "

Just doing it means taking already paid-for resources, that we've already invested in – such as public schools and private and public colleges and bureaucracies, and especially public facilities – and saying to them "You live here, too. You may see your task differently, but you are our public facility, and we want to work with you in a way that makes you look good and in a way that you can make available to us the specialized knowledge that you have." In our country the state and federal government scientists are some of our most knowledgeable scientists. The same is probably true in your countries.

We believe that a proposed evaluation of case studies like ours is important. I have to say in all honesty that I value very highly – as you've seen from my reference to IUCN's work – the work that the large NGOs do. But there is no likelihood that any of the large NGOs are going to get very interested in Caddo Lake, in Texas and Louisiana, very soon. We think allowing just the large NGOs to take the responsibility for the NGO role in this is really a tactical error if we ever expect to get this job done.

So that's why we are encouraging two things. First: at this meeting there is a proposed resolution that requests that case studies be done by these competent organizations – WWF and the Kushiro International Wetland Centre being others – but that there be somebody on that study group who identifies the role of small site-specific NGOs like ours and that somehow represents the need to expand that knowledge and extend it to other sites.

Secondly, we welcome you to join us in the pledging activity for the small NGOs to create an ecology – a biodiversity of NGOs that is as biodiverse as the locally-rooted sites themselves – so that we can seek the resources that can be brought to bear there, not only from our governments, but also from the large NGOs and the Ramsar Bureau.

We again commend for your consideration the proposal that will come before you to initiate such a case study, and we would like to be a part of that if we could because I think it is our primary mission.

Thank you, Mr Chairman

"Conserving the Biodiversity of Amazonian Flooded Forests with Community Participation"

J. Márcio Ayres[1]
Sociedade Civil Mamirauá, Tefé, Amazonas, Brazil

There are few areas on this planet which are seven to fifteen meters under water six months a year. The few flooded forests that still exist in the tropical regions are located on the margins of some rivers in Southeast Asia and west Africa and mostly on the Amazonian rivers. It is estimated that the Amazon Basin, mainly in Peru and in Brazil, has over 180,000 km^2 of flooded forests. While the flooded savannas are predominant in the lower part of the basin and in the Amazon River's estuary, forests predominate on the upper stretches of the main river. The flooded forests are locally known as "*várzea*" and "*igapó*" and they differ according to their origin. The igapó areas are formed by blackwater rivers poor in nutrients (usually originating in the Amazon Basin). The várzea areas are associated with the whitewater rivers from the Andes which, contrary to the other types of river, carry large amounts of sediments.

The first areas of Amazonian flooded forests appeared at the end of the Tertiary period with the raising of the Andes and the consequent formation of the large Amazonian lake. These flooded areas were formed by sedimentation caused by annual floods. The várzeas slowly transformed themselves into "terra firme" (dry land forests), thus creating the great network of rivers and tributaries of today's Amazon Basin. The várzeas have an important biological significance: the species of plants and animals have to adapt themselves to the variations caused by the annual flood of several meters; consequently, there is a high degree of endemic species in the várzea areas (Ayres 1986, 1993).

Due to annual renewal of nutrients through the Andean rivers that bring sediments from the mountains, the várzea areas are highly productive. Thus, these lands became a focus of economic exploration by the human population of the region. It is believed that at least 80-90% of the population in the Amazon lives near these flooded areas, on the margins of the large rivers. Reports from the famous expedition led by the Spaniard Francisco Orellana (some 450 years ago), which discovered the great river, described a large amerindian population living and exploring the várzea along practically the entire Amazon River (Carvajal, in Medina, 1988). Due to the importance of the várzea to the regional economy, this ecosystem is probably the one that suffered most the impact of man's arrival in the region. Today these areas are used for intensive fishing, logging, and some seasonal agriculture. Until the 1980's, there was no conservation unit located entirely in the Brazilian Amazon várzea.

The Mamirauá Reserve

The Mamirauá Ecological Station (MES) was created in 1990 by the Amazon State government based on a proposal elaborated by J. M. Ayres in 1984 with photos by L.C. Marigo. A 1.1 million hectare area was designated as the Mamirauá Ramsar site in October 1993. The total area of the Mamirauá Ecological Station is around 11.240km^2, comprehending the region between the rivers Japurá, Solimões and Auati-paraná. Recently, in July 1996, the Amazonas State government transformed MES into the first Brazilian Reserve of Sustainable Development (RSD), a unique situation in Brazil. This new category of conservation unit now allows the coexistence of human population and efforts for protection of local biodiversity. Mamirauá is the only conservation unit in Brazil located entirely in the Amazonian flooded forests of várzea. The Ecological Station of Anavilhanas and the Jaú National Park have areas of flooded forest; however, these are originated from blackwater rivers instead of whitewater rivers. In the Peruvian Amazon the Pacaya-Samiria Reserve, with more than 20,000 km^2, is partially seasonally flooded.

[1] Assisted in the preparation of this paper by H. L. Queiroz, A. Albernaz, A. R. Alves, D. M. Lima, R. Barthen, M. Marmontel, D. Masterson, E. Moura, M. Reis, P. Santos, and R. Silveira.

The Mamirauá Sustainable Development Reserve (MSDR) várzea areas are mainly from the Holocene period. The majority of these areas are very recent in origin, less than 10,000 years of age (Klammer, 1983). The region between the Solimões and Japurá Rivers is characterized by hundreds of lakes, many of which are originated from abandoned channels, "paranas", "canos", small islands, "restingas" (levees) along the channels and lakes, and large swamps that are interconnected during the floods. A recent inventory identified 499 lakes in the focal area of the Reserve, which has 260,000 hectares (Schuster, personal communication). In the Mamirauá Reserve, there is a 12-meter difference between the lower level of the water (September/October) and the higher level of the water (May/June).

The várzea of the lower Japurá River region is composed of a great number of habitats, of which three are of great importance to the arboreal fauna. Two of these habitats are characterized by forest areas (high and low "restingas"), while the third type is the "chavascal". There are also formations on younger islands of "embaubais" (stands of *Cecropie*), "mungabais" (stands of *Pseudobombax*) and others. The vegetation physiognomy is determined by the altitude of the terrain.

The high "restingas", high grounds that are subject to annual floods of two or four months, with a water level ranging between one and 2.5 m, represent around 12% of the várzea forest type. They are structurally similar to the dry land forests (terra firme). The species composition, however, is very different. In the várzea, the high "restingas" have greater species diversity among the arboreal environments. The lower "restingas" are a transition between the forested areas of the várzea and represent around 50% of the grounds. The low "restingas" are under water four to six months a year and, in some patches, the water level may be up to five meters. The "restingas" are, in general, along channels and lakes (Ayres, 1993).

The "chavascal" are the backswamps on lower grounds, and probably represent the largest portion of the Mamirauá Reserve's várzea. They consist of low, scrubby and swampy vegetation, almost impossible to negotiate. The "chavascal" remains under water from six to eight months every year with a water level of 6-7 meters. In the middle of this scrubby vegetation there are some emergent trees and some islands of "restingas". The "chavascais" are usually located behind the "restingas".

Due to the annual floods of 11-12 meters, which cover all the várzea lands of the middle Solimões River and the lower Japurá River, the terrestrial fauna characteristic of the neighbouring dry land forests (terras firmes) do not occur in the Mamirauá Reserve. For example, among the mammals we only find aquatic species (like river dolphins, manatees and otters); good swimmers (such as the jaguar); arboreal mammals (as the primates) or flying mammals (like bats). Terrestrial mammals such as the armadillos (*Dasypus*), agoutis (*Dasyprocta*), pacas (*Agoutis*), tapirs (*Tapirus*) and peccaries (*Tayassu*), all common species to the Amazonian dryland habitats, are not found in the area. These animals are substituted by the aquatic fauna (especially fish) that enter the forest in each flood.

Mamirauá is the habitat of many rare and endangered species of the Amazonian fauna like the manatees (*Trichechus inunguis*), the black caimans (*Melanosuchus niger*), the white uakari monkeys (*Cacajao calvus calvus*), the blackish squirrel monkeys (*Saimiri vanzolinii*), and the Amazonian turtles (*Podocnemis spp.*), all of which are officially listed as endangered species in Brazil.

Among the eight known species of primates that are found in the Mamirauá Reserve, only the white uakari and the blackish squirrel monkey are endemic to the Reserve. Though the latter type of monkey is the most abundant in numbers (approximately one individual per hectare of forest), it is only found in the extreme east of the Reserve between the channel of the Jarauá River and the mouth of the Japurá River. On the other hand, the white uakari, which are found practically everywhere in the Reserve, occur in lower densities (approximately one individual per 14 hectares of forest).

The black caiman is the largest predator in the Amazon; it can reach more than five meters in length. This type of caiman almost disappeared between 1940 and the 1970s due to illegal hunting, since its skin was highly prized in the international trade. Nowadays it is at the Mamirauá Reserve that the largest known population of this type of caiman is found in the entire Amazon Basin (Silveira & Thorbjarnarson, personal

communication). This population, however, is presently under hunting pressure, because its meat is sold as fish to the State of Pará (Brazil) and to Colombia.

Among the population of five species of "quelônios" known in the Reserve, the Amazonian turtle was the most exploited species in recent centuries. Today it is much rarer than the "tracajá" (*Podocnemis unifilis*) and the "iaçá" (*Podocnemis sextuberculata*). In the middle Solimões River region, these two smaller species of the *Podocnemis* are also threatened due to their high commercial value.

So far, approximately 290 species of fish and 310 species of birds have been identified in the focal area of the Reserve. Many of the bird species are aquatic and migratory. There are also several other species of reptiles, a great diversity of amphibians, and an abundance of different types of fish with high commercial value, including those that are threatened by intensive fishing, such as the "tambaqui" (*Colossoma macropomum*) and the "pirarucu" (*Arapaima gigas*). In general, the lakes serve as a refuge for young "tambaquis" during the dry season, while the more shallow lakes supply shelter to the "pirarucus" so they can build their nests during the flood. The forested areas of the Reserve supply food during the flood to the many different types of fish which are sold in the neighbouring towns (for instance, the "matrinchã" (*Brycon* sp), "pacus" (*Mylossoma* spp., *Myleus* sp., and *Metynnis* sp.), "pirapitinga" (*Pyaractus bidens*), sardines (*Triphorteus* spp.) and the "aracus" (*Leporinus* spp. and *Schizodon fasciatum*).

The tree diversity in the Amazonian várzea is superior to other várzea regions of the middle and lower Amazon River (Ayres, 1993). More than 250 species with diameters larger than 10cm have been identified so far. Many of these trees had their population greatly reduced due to selective logging; for example, the "samaumeira" (*Ceiba pentandra).* In spite of this fact, there is still a reasonable population of "assacu" (*Hura crepitans),* "muiratininga" (*Maquira coriacea)* and "ucuuba" (*Virola surinamensis).* They are all white and light timber that have been extensively extracted by plywood industries of Manaus. Additionally, there is some noble timber like the "louro-inamui" (*Callophylum brasiliense)* and the "mulateiro" (*Calycophyllum spruceanum).* Logging industries from neighbouring towns to the Reserve have been extracting them for some decades. The timber is used in civil construction, in watercraft and in furniture-making. Recently, the "enviravassourinha" (*Xylopia frutescens)* has been in great demand for the masonries' furnaces in Tefé.

This logging activity is a major threat to the regional fauna. Many species, especially the arboreal animals and fish, depend on the fruits or seeds of these trees for their nourishment.

The Mamirauá Project

The founding of the Mamirauá Ecological Station in 1990 has brought many challenges. First, the need to change national conservation legislation. The residents of the Reserve should be able to stay and have the right to use and commercialize natural resources in a sustainable way. Historically, the communities have the right to own the lands they have occupied. Second, there is a need to integrate interdisciplinary research in a challenging process of conciliating academic, theoretical approaches with the needs of guaranteeing nature conservation and the survival of the families that live in the várzea. Third, and most important of all, there is a need to strengthen community participation, which is seen as a fundamental activity in order to make this conservation unit viable. Together with the strengthening of the communities, the creation of a non-governmental organization is important to complement governmental action by gathering financial resources and to facilitate the formation of a specialized technical crew, in order to secure, in the long run, the maintenance of the structure developed during the Reserve's implementation period.

The Wilflife Conservation Society and CNPq (National Council of Research) financed the preliminary studies that served as the basis for the proposal to create the Reserve. In 1991, a project was devised and sent to national and international financial institutions, proposing the implementation of an experimental area of 260,000 hectares between the Aranapu, Japurá and Solimões Rivers. This area is being used to implement pilot activities for Reserve management and ecological research; these activities would later be expanded to other areas. Today, the Mamirauá Project has the participation of approximately 80 researchers and extension agents. It is carried out with the financial cooperation of about 30 research institutions and financial agencies from Brazil and abroad (the most important are ODA-UK, WWF-UK, the European Union, WCS and CNPq). The general objective is to elaborate the Reserve's management plan and its

implementation. The Project is divided into five programmes of administration and development, research and extension.

Parallel to the activities developed by the Mamirauá Project, in 1992 the Mamirauá Civil Society (MCS) was created. Its objective is to contribute to the preservation and conservation of the natural renewable resources, especially in the areas of flooded rainforests, according to its statute. The creation of this society represents the search for alternatives that guarantee the implementation and maintenance of the Reserve in the long run.

The implementation model of the Mamirauá Reserve is based on the broader definition of nature conservation. It follows the most recent orientations in national and international discussions on the issue. It aims to avoid ecological sectarianism and acknowledges the importance of integrating the areas of preservation to the process of social development (Lima-Ayres, 1994).

Human life and the use of natural resources in the Mamirauá flooded forests

As in other areas of rural Amazonia, there were no census data, nor maps of the settlements in the Mamirauá region, when the project began in 1991 (Lima-Ayres, 1992). Many expeditions were done to collect data on the socio-economic reality of the region and to map and identify the communities that use the Reserve. The results of this research made possible the adequate planning of the Project's extension activities and will constitute the basic outline for the future evaluation of the impact of the Reserve's implementation. The combination of data obtained through vertical cut research and from monitoring of the economic activities and health conditions of the human population throughout the year, allows an adequate understanding of the social reality, including the identification of the effects of the seasonal variation of the environment. In the management plan, this information was integrated in the results of the biological research in a geographical information system based on the zoning of the Reserve.

In October of 1991, a demographic census and a survey on the economic production was performed in the Reserve. The objective was to identify the distribution of the human population in the Reserve and in the adjacent areas as well as their main sources of income and survival strategies.

The settlements located within the Reserve are all in the várzea areas, with variation in the height of the land including areas of high várzea and low várzea. The people that live on these settlements need to develop mechanisms of adaptation to the flooding periods, which represent four to six months in a year. Due to these environmental changes, the várzea presents certain limitations to human occupation and reduces the length of time of the settlements as well as the exploration of its natural resources by the inhabitants. In general, dense floods act as a factor of migration and limit the population of the várzea. Added to this, the geomorphological fluvial modifications – beach formations and bank debasement – lead to the mobility and extinction of most settlements, which implies the foundation of new settlements or the reduction of their numbers in the floodplain. According to data obtained from research on the history of the settlements within this area, the mean time for permanence of any community at a given place is 41 years. In spite of the important role of the environmental changes in determining the pattern of human occupation in the várzea of the Mamirauá Reserve, the characteristics of economic production and social organization (land tenure, kinship, economic production system, political system and religion) are the ones that historically and ultimately have been defining the patterns of the settlements (Lima-Ayres and Alencar, 1994).

The main economic activities of the Mamirauá Reserve users are agriculture, fishing and logging, which are conditioned to the seasonal changes in the várzea and to the alterations in the composition of the domestic groups, which are, in peasant societies, divided into units of production and consumption. Manioc (cassava) is the main agricultural product and, along with fish, is the main source of nourishment of the local human population. Manioc is cultivated as the water recedes and is harvested six months later due to the inundation. Many times families lose a significant part of their manioc crop due to the "huge strength of the waters". Other important agricultural products are the many varieties of cultivated bananas.

For the human population of the Reserve area, fish is by far the most important source of animal protein. The fish consumption per person is very high, estimated at around 500 grams of fish/person a day. This

represents approximately 240-300 tons of fish consumed by the Reserve's focal area population, equivalent to more than 12% of all the fish consumed in Tefé where the population is about 95% larger. During the dry season, when the water level is low, fishing activity has a more relevant economic role with the beginning of "pirarucu" and migrant catfish (*Siluriformes*) season. The fish is dried and salted and sold to the "regatões" (local boats that trade goods in the Amazon) by the remote communities, whilst those that are closer to the urban areas have a chance to sell their dried and salted fish, sometimes even fresh, direct to the market. The chance to sell fresh fish allows the commercialization of more species, like "tambaqui" and "tucunaré" (*Cichla* sp.), which are kept inside small ice boxes, as well as "acari-bodó" (*Pterygoplichthys* sp.), which is sold alive in the local markets.

The fish become more vulnerable to fishermen when they abandon the flooded forests during the lowering of the waters. Many species migrate to the river during the dry season, while others stay in the lakes, where they are easily captured. In the beginning of the flood, the fish return to the flooded forests, where they search for shelter and food. During this period the fishing of the "tucunarés" with "facho" (torch), which is done at night with a trident in the shallow areas, is more intense. When the forests are flooded, fish become more difficult to catch because they are scattered. The human population's knowledge of the environment helps them considerably in catching some species of fish during the flood: they look for the tree species whose fruit is used as bait (those that are important to the same fish species' diet) in order to locate and capture frugivorous fish.

The "pirarucu" is a species of high economic importance within the Reserve and its catch is highly seasonal; more than 85% of the annual catch is obtained between September and December. The size of the captured fish varies between 80 and 240 cm or 5 and 135 kg, the average size being 134.5 cm or 13.4 kg. In 1993, 1994 and 1995 the catch of the "pirarucus" in the Reserve was estimated as 63, 115 and 70 tons respectively. The frequent use of gillnets (introduced in the Amazon Basin during the early '70s) is leading to decreasing sizes of fish caught, and this may cause a future production collapse (Queiroz & Sardinha, 1996).

The catch of ornamental fish used to be intense in the Reserve area. In 1991 the existence of fish tanks used to keep ornamental fish in the Reserve was noticed. This activity seemed to have diminished the numbers of "acará-disco" (*Symphysodon* sp.) in previous years. Today the number of individuals of this species in the Reserve has been very much reduced. At present the activity is not performed in the Reserve anymore.

Timber is logged at the end of summer and carried and sold in winter. In the years of high floods (like 1993 and 1994), this activity intensified. In 1993 and 1994, for example, the extraction of timber reached approximately 20,000m^3. The extraction is highly selective and nine species constitute 85% (in number of individuals) of all the extracted timber. The white timber, which in volume represents 80% of the total extracted, is destined to plywood industries in Manaus, Itacoatiara and Belém. The heavy wood and firewood, which represents a smaller portion in volume of this extraction (although in terms of numbers of trees it represents a high portion in volume of this extracted timber) is destined to local consumption, mainly of Tefé. Approximately 330 inhabitants are annually involved in this activity in the focal area of the Reserve. The ones who are able to sell their production directly to buyers from Manaus and Itacoatiara earn about 50% more than the ones who sell their production to buyers from Tefé.

The main hunting activity involves the caimans. This activity takes place during the dry season, normally after the fishing of the "pirarucus", that is between December and March. The most persecuted species are the "jacaré-açu" (black caiman) and the "jacaré-tinga" (spectacled caiman, *Caiman crocodilus).* There is still a third species, the "jacaré-paguá" (Cuvier's dwarf caiman, *Paleosuchus palpebrosus)* that occurs in lower density and does not possess any commercial value. Tons of caiman meat from the Mamirauá Reserve and periphery are commercialized each year. Caiman is sold as "pirarucu" meat in Pará (Brazil) and in Colômbia, which makes this activity much more profitable considering that, at the source of production, the price of the "pirarucu" is much higher than the price of the caiman.

Most of the commercialized caiman meat derives from the black caiman, which is very serious because the black caiman is a threatened species. For example, approximately 6,500 kg of caiman meat displayed in markets near the Reserve between January and March of 1995 were from the Mamirauá Reserve. More than 50% was from the black caiman, 25% of spectacled caiman and the rest of non-discriminated species. The great majority of the hunted spectacled caiman were adult males (in the proportion of 11 males per 1 female),

while for the black caiman the proportion was smaller (2 males per 1 female). This indicates that in the hunting of the black caiman offspring in various points of the Reserve, approximately 955 offsprings of spectacled caiman and 14 offsprings of black caiman were found. It is estimated that nearly 250 people in the Reserve are dedicated to the activity of caiman hunting.

The caiman hunting is forbidden by law in Brazil; however, it is an important source of income to the riverine population of the middle Solimões River during certain times of the year. In the Mamirauá Reserve this activity is very intense in the periphery of the channels of the Aranapu and Panauá. Recently, some riverines were informed that Colombian merchants had started to ask for caiman skin of large and middle-sized caimans of the same value. Consequently, the riverines used to extinguish the subadult population of caimains. On the other hand, in the meat business, the bigger the animal the higher its value.

The subsistence hunting is less important in the várzea than in the neighbouring dry land forests (terra firmes) because fishing is the major portion of the animal protein consumed by its population. The communities' dependence on some wild resources cannot be ignored, however. The manatee, for example, which is a large species, can represent a good source of protein for the locals. Despite being protected by law since 1967, the manatee is still being hunted within the Reserve. The meat is usually consumed locally and distributed among the members of the community; all the parts are used, and often sausages are prepared. Small-scale commercialization of manatee meat (fresh, salted, or preserved in its own fat – "mixira") does occur in the bigger towns of the region, where it is greatly appreciated. To be a manatee hunter requires a lot of patience and skill. The present hunters are few and ageing; apparently the youth are not interested in learning the capture techniques, which may help the preservation and continuation of the Amazonian species (Marmontel, 1995).

Other species used in subsistence hunting are the red howler monkey (*Alouatta seniculus),* the curassows (*Crax globulosa* and *Mitu tuberosa)* and the wild duck (*Cairina moschata).* Besides these, many others are caught opportunistically in the course of other activities such as fishing, agriculture and logging. In three of the sampled communities, with 14 domestic groups each, in the focal area of the Reserve, 15 howlers, eight curassows and two wild ducks were hunted during one year's inventory (Santos, 1995). Out of 27 families interviewed in the Mamirauá Reserve, only three (11%) had hunted in the week previous to the interview. However, 59% of the sampled communities possessed firearms. This contrasts with the dry land forest (terras firmes) of the neighbouring Amaná Lake, in which out of 17 families only seven (37%) had hunted in the previous week while 95% of these families had firearms (Ayres, 1990).

Occasionally there is selling of hunted game to the neighbouring towns. The selling of 42 curassows, six ducks, five howlers and one manatee were recorded in approximately a 10-month inventory period, in Tefé and Alvarães, the two most important towns of the region. Offspring of many species of wild animals are captured to become pets and, apparently, they sometimes serve as trade items. In this context the parrots (*Amazona aestiva)* and the parakeets (*Brotogeris versicolorus* and *B. sanctithomae)* can be of importance in the future (Santos, 1995).

The combination of economic activities described in the previous paragraphs is the basis of the production for the market as well as the direct consumption of the domestic groups in the Reserve. The average income of the families is about US$ 907, representing an annual per capita income close to US$ 130, much lower than the average of the national income. In reality, due to the relative distance of the markets, and due to the fact that the major part of the dietary consumption is provided directly by the producers, the monetary values should not be considered as the absolute basis to evaluate the life condition of these families. However, as a baseline indicator, they are necessary to monitor the alterations in the market in relation to the commercialization of natural resources taken from the Reserve area.

In terms of the total expenses incurred in one year by the investigated households, the data show a concentration of expenses around the basic supplies to maintain the family: the acquisition of food takes almost 70% of the income. The expenses with working tools and the maintenance of equipment take 25% of the domestic income. Only the remainder of this total is used in the acquisition of domestic partimony valuables (Lima-Ayres, 1993).

According to the most recent census, the focal area of the Reserve is inhabited by 1,668 people (295 families) distributed along the banks of Japurá and Solimões rivers in 23 small communities. On the surrounding areas of the Reserve lives an additional population of Reserve users of 3,600 people (576 families) distributed in 37 communities. Thus the total population living directly off the resources of the focal area of Mamirauá Reserve is nearly 5,300 people (Mamirauá, 1996). All the activities reported in the previous paragraphs generate at least $4.5 million per year of which $2.05 million is fish production for subsistence purposes. Two species of fish, the "pirarucu" (*Arapaima gigas)* and the tambaqui (*Colossoma macroponun)* account for nearly 25% of the total income. This information based on a three-year average indicates that each hectare of the floodplain generates by means of "sustainable use of the resources" at least $17 per year (Mamirauá, 1996).

If all the exploited resources were to benefit solely the Reserve residents, these resources would generate an income of at least $15,250 per family (6-7 persons each). This value would be much greater than the average annual income of most families in the Amazon region. The invasions, however, from fishing boats from larger towns, the timber exploitation by logging enterprises and other resources exploited by non-residents remove much of this income from the area, reducing the average annual income to much lower levels. Despite the fact that the residents of the Reserve are unaware of the economic details, they are perfectly aware of the loss caused by the outsiders' activity.

Since fisheries is the primary resource to the residents of the area, the creation of the Reserve in 1990 was widely accepted by local people but rejected by those non-residents dependent upon the resources of the area (Mamirauá, 1996). The major problem faced by the residents of the Reserve before its creation was the violation of protection and sustainable use lakes. The idea of protecting lakes as resources in the Amazon dates from man's arrival in the flooded forests thousands of years ago. The idea of defining lakes for different uses, however, sprang from the work of Tefé's Catholic Church in conjunction with the communities of the Reserve in the late '80s. Today the practice of using some lakes for sustainability and others for conservation has been adopted by practically all várzea communities along the Amazon river. The right to guard these lakes gained legitimacy and became the major factor for communities' support to the creation of the Reserve.

Attained results and new challenges

The communities' participation in Mamirauá Project was defined by the members based on their own experience with community development through the Basic Education Movement (MEB) in the late '60s. The model adopted is as follows: 1) neighbouring communities constitute organized clusters that meet every two months (each community sends two representatives to these meetings); 2) nine clusters of communities cover the entire focal zone; 3) each cluster elects a coordinator who is responsible for organizing meetings; 4) representatives from all clusters meet in general assemblies annually.

To date, four general assemblies have been held. During these assemblies, two new categories were created: commercial-purpose lakes for the communities, and commercial lakes for fishermen from the nearby municipalities of Tefé and Alvarães. These two new categories complement the original categories, Subsistence and Protection lakes (Ayres et. Al., 1995; Reis, 1993).

Today the local population is primarily responsible for vigilance. Whenever a given lake is invaded by outsiders, a group of members from that village or cluster get together and encourage the invader to leave the area. If the invader persists in the area, the leader of the group radios Project headquarters in Tefé. In Tefé, IBAMA (the Brazilian Environmental Agency) is briefed and two or three authorized guards are sent to the area of the conflict. This practice has helped in banning from the area all the large fishing boats coming from Manaus, Manacapuru and Itacoatiara (three of the largest cities in Amazonas State). In addition to that there was a considerable amount of fish coming from the Reserve to the market of Tefé. Additionally, fishing pressure from Tefé was reduced 2/3 (the catch from the Reserve dropped from 20% in 1992 to 6.9% of the total catch in 1995 [Barthem 1996]). The practice of having protected and sustainable use lakes has also increased the biomass of some important commercial species of fish (Costa, Barthem & Correa, 1996).

Although logging represents a small fraction of the annual income for Reserve residents, it is an activity that requires attention due to the possible ecological consequences to the ecosystem. Many species of fish,

invertebrates and arboreal vertebrates depend directly from their fruits, seeds and leaves as important items on their diets. Because of the potential impact of timber extraction, the Mamirauá Project is trying more recently to promote conservation measures similar to those used to manage the fish stocks in the Reserve. The logging situation, however, is more complex than the fishing activity. First, the results of tree conservation are not visible in a short period of time as in the case of fishing. Second, this activity is made more profitable by the few who control the logging industry. For these reasons, improvements in tree conservation issues are more modest and more difficult to conceptualize. Selective logging was discussed with the communities' leadership during the second general assembly in July of 1993. It was decided then that logging was not to take place in the total conservation lakes' "restingas" and that it was permitted in the sustainable lakes "restingas" for community use only. Logging for business was permitted in the commercial purpose lakes' "restingas". In the third general assembly, July 1994, permissible minimum diameters for logging different types of trees in the Reserve were discussed. While the Federal law sets a minimum of 45cm diameter for any type of tree, in the Mamirauá Reserve the communities decided to differentiate the minimum diameter for tree logging according to their species.

In 1994, logging activity did not occur in the areas of the preserved lakes, with the exception of some communities in which there was dispute over the use of the lakes. On the issue of acceptable minimum diameter for logging, in general the extracted trees in 1994 had larger diameters than the ones extracted in 1993. This happened despite the fact that the communities did reach a consensus on minimum diameters for different species.

Caiman, manatee and turtle management issues were also introduced to Reserve users during the fourth general assembly, where they were invited to comment and suggest further recommendations to those offered by researchers. One of the communities recently decided not to hunt caiman anymore. As this is an illegal activity according to the Federal law, they fear that outsiders may use this argument against them in order to be able to fish in their area.

In addition to community participation, environmental education, health and nutrition, socio-economic research and monitoring (Albernaz, 1994; Maranhão & Lins, 1993; Maranhão & Silva, 1994; Moura & Lima-Ayres, 1994), a number of studies on the exploitation of natural resources, ecology and behaviour indicator and/or economically important species such as dolphins, manatees, white-uakaris, howlers, ornamental fish, arapaima and tambaqui fish are being or have been simultaneously implemented. Other studies include vegetation surveys, annual patterns of primary production of plants so that more is known about the seasonal distribution of herbivorous foods and logging long-term sustainability. Those are key multidisciplinary studies that will lead us to a better understanding of this flooded forest habitat and will certainly help us to take decisions on how to manage this important ecosystem.

After four years of scientific research and participatory community extension work, the Mamirauá Project produced a management plan based on the cumulative results. These further conservation measures are being negotiated with the residents and users of the Reserve. The project proposes reserving two large areas as strict protection zones in the interior of the focal area. Additional critical habitat areas for the management of manatees, turtles, tambaquis, pirarucus, and bird nesting sites have also been identified within the sustainable use areas. Besides that, on the outside of the core-protected zones, the locals will manage their lakes and their respective surrounding vegetation based on the principles used in the past three years by having preservation, maintenance and commercialization lakes.

The results obtained during these first four years with the involvement of the local communities led the Government of Amazonas State to the creation in July 1996 of a new category of conservation unit for the Brazilian Amazon (Sustainable Development Reserve), which envisages active community participation in biodiversity conservation and sustainable resource management. Although high human population densities are incompatible with biodiversity conservation in this ecosystem, this model seems to apply better to the Amazon flooded forests than the existing ones. It may not be the solution for the protected areas in other habitats of the region, but so far has proved to be efficient for local conditions. It is important to create ground-based models if we wish to increase the amount of less-disturbed habitats in the region. Increasing local human populations' participation in the conservation process will help to enlarge protected areas and as a result will help to maintain the biodiversity and its ecological and evolutionary processes.

Today the Mamirauá Reserve has a reasonable infrastructure when compared to other conservation units in the Brazilian Amazon. It is still insufficient to meet the research and surveillance demands. One house and six floating houses have been built in different strategic surveillance points of the Reserve. Each of these units is equipped with a solar energy system that activates six bulbs, one water-pump and one SW radio that is used to communicate within the Reserve, with the project bases in Tefé and Belém, and by a specific frequency with IBAMA (The Brazilian Environmental Institute) office in Tefé. Moreover, the Reserve has around 15 aluminium motor boats and five in-board diesel engine wooden boats (the motors vary from 22 to 124 HP). These boats are used for research, extension services, supplying the floating units and transporting of the "comunitários". There is a boat for the exclusive use of residents and users of the Reserve so they can organize community and clusters meetings as well as the surveillance of the lakes. The base in Tefé has a small library, a computer room, a studio for the production of two weekly radio programmes and videos for environmental education, lodging for researchers, an administrative sector and a warehouse to keep the equipment and supplies.

The central administration of the Project is housed in the Universidade Federal do Pará (Federal University of Pará) and in the Museu Paraense Emílio Goeldi – MPEG (Emílio Goeldi Museum of Pará), both in Bélem, Pará. The administration of finances, the geographic information system (GIS), the data base, and the analysis of the research performed in the Mamirauá Ecological Station are all concentrated in Belém. There is also a CNPq executive secretariat in the Research Units Directory (DUP) that bridges the CNPq with the Mamirauá Reserve administration in Belém.

With the foundation of the Mamirauá Civil Society, a mixed system of management was created with the active participation of governmental organs (CNPq, INPA, FNMA, SEMACT-AM, and MPEG) with the flexibility of non-governmental agencies. The MCS allows the foreign financial aid (nowadays from ODA, EU, WWF and WCS) to lend to the Reserve's activities a guarantee of continuation without the risks of interruption possible from the majority of the Brazilian governmental organs. The foreign aid does not guarantee the maintenance of the Reserve and the project in the long run, thus the need for a compromise from the Federal and State governments is important in order to guarantee the existence of the Mamirauá Reserve.

One of the Mamirauá Civil Society's objectives is to create new ways of obtaining funds, including the creation of an endowment to help the research and extension activities in the Mamirauá area. For that the selling of books, workbooks and postcards is already in place; and an agreement Aqualung (a garment industry) and the MCS was reached to gather funds in the middle and long run. Other activities to obtain funds are in their initial phase of implementation.

The most important action to guarantee the sustainability of the Reserve in the long run was taken by CNPq/MCT (The Brazilian National Research Council). At the end of 1994, the CNPq bought around 13 hectares on the bank of Lake Tefé in the outskirts of the city. On that location the CNPq will build in the near future a research centre (The National Institute of Várzea) geared towards the study and management of the flooded forests of the Mamirauá Reserve.

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References

Albernaz, R.K.M. 1994. Relatório da pesquisa sócio-epidemiológica realizada com demanda espontânea de 20 comunidades da EEM. In *Relatório Semestral n.4*. Setembro de 1993 a Outubro de 1994, p. 234-236. Unpublished manuscript.

Ayres, J.M. 1986. *Uakaris and the Amazonian flooded forest.* Unpublished Ph.D. dissertation, University of Cambridge.

Ayres, J.M. 1990. "Relatório anual de ativadades do Wildlife Conservation Society. Unpublished manuscript.

Ayres, J.M. 1993. *As Matas de Váryea do Mamirauá.* CNPq e Sociedade Civil Mamirauá editors. Rio de Janeiro.

Ayres, J.M.; Moura, E.A.F.; Lima-Ayres, D. 1995. "Estaçao Ecológica Mamirauá: o desafio de preservar a váryea amayônica". In *Trópico em Desenvolvimento: Alternativas contra a pobreya e a destruiçao ambiental no Trópico Úmido.* Série POEMA pp. 35-52. Universidade Federal do Pará, Belém.

Barthem, R.B. 1996. A pesca na região do Médio Solimões e região de Tefé. Unpublished manuscript for Mamirauá's Management Plan.

Costa, L.; Barthem, R.B. & Correa, M.V.C. 1996. Estudo de Crescimento, Reprodução e Migração de Tambaquis. Unpublished manuscript for Mamirauá's Management Plan.

Klammer, G. 1984. "The relief of extra-Andean Amazon Basin". In *The Amazon: Limnology and Landscape Ecology of Mighty Tropical River and its Basin* **(**H. Sioli, editor), p. 47-83. Dr. W. Junk publ., Dordrecht.

Lima-Ayres, D. 1992. *The Social Cathegory Caboclo: history, social organization, identity and outsider's social classification of the rural population of a Amazonian region (the middle Solimões).* Unpublished Ph.D. dissertation, University of Cambridge.

Lima-Ayres, D. 1993. "Diagnóstico estatistico preliminar e sumário etnográfico da população da Estação Ecológica Mamirauá e áreas rurais adjascentes." *Relatório Semestral n.3.* Outubro 1992 - Março 1993, p. 491-500. Unpublished manuscript.

Lima-Ayres, D. 1994. "A implantação de uma unidade de conservação em área de várzea: a experiência de Mamirauá." In *Amazônia e a Crise da Modernização***.** (M.A. D'Incao & I.M. Silveira, org.), p. 403-409. Museu Paraense Emílio Goeldi, Belém, PA.

Lima-Ayres, D. & Alencar, E. 1994. "Histórico da Ocupação Humana e Mobilidade Geográfica de Assentamentos na Área da Estação Ecológica Mamirauá". In *Anais do IX Encontro Nacional de Estudos Populacionais.,* ABEP, Caxambu, MG, Vol. 2, pp. 353-384.

Maranhão, S. & Silva, D.A. 1994. "Boletin informativo sobre o trabalho de saúde." Ano I Número I. *Relatório Semestral n.4.* Projeto Mamirauá, Setembro 1993 - Outubro, 1994, p. 361-366. Unpublished manuscript.

Maranhão, S. & Lins, A. 1993. "Relatório do inquérito sócio-epidemiológico." *Relatório Semestral n.3.* Projeto Mamirauá, Outubro de 1992 - Março, 1993, p. 378-397. Unpublished manuscript.

Mamirauá, 1996 *Plano de Manejo de Mamirauá.* Sociedade Civil Mamirauá (SMC) and Conselho Nacional para o Desenvolvimento Científico e Tecnológico (CNPq/MCT) (editors). Vários autores. 72 pp.

Marmontel, M. 1995. "O peixe-boi na Estação Ecológica Mamirauá." In *II Congresso Internacional sobre Manejo de Fauna Silvestre en la Amazonia (resumenes).* Iquitos, Peru.

Medina, J.T. 1988. *The discovery of the Amazon according to the account of Friar Gaspar de Carvajal, and other documents.* Dover Publications, Inc. New York.

Moura, E. & Lima-Ayres, D. 1994. "Fecundidade e mortalidade infantil da população de usuários da Estação Ecológica Mamirauá." *Relatório Semestral n. 4.* Projeto Mamirauá, Setembro, 1993 - Outubro, 1994. Unpublished manuscript.

Queiroz, H.L. & Sardinha, A.D. 1996. "Plano de Manejo dos Pirarucus (*Arapaima gigas)* na Estação Ecológica Mamirauá". Unpublished manuscript for Mamirauá's Management Plan.

Reis, M.B. 1993. "Relatório de atividades semestral, sub-programa de Participação Comunitária". *Relatório Semestral n. 3.* Projeto Mamirauá, Outubro de 1992 a Março de 1993, pp. 319-333. Unpublished manuscript.

Santos, P. 1995. "Relatório de atividades semestral, sub-programa de sistemas terrestres: caça de subsistência". *Relatório Semestral N. 6.* Projeto Mamirauá, Abril 1995 - Setembro 1995. Unpublished manuscript.