

**Report on the assessment of user group needs and the usability of biodiversity guides in Bolivia: 24th of October to 4th of December 1999**

**Background**

The six week trip to Bolivia constituted the first stage of fieldwork for the three year research project '**Manual for Biodiversity guides**'. The project aims to develop a methodological manual for authors of field guides enabling appropriate guides to be written for a wide variety of user groups in a broad range of contexts. These guides should effectively combine local and scientific knowledge in an accurate and usable way that is of benefit to rural livelihoods and biodiversity.

The guidelines for this manual are to be developed through a process approach involving three main activities:

- Analysis of the impact of existing guides on livelihoods and biodiversity
- Work with diverse user groups to define their user needs for field guides
- Development of guides for four specific user groups (2 in Bolivia and 2 in Brazil)

The first two of these activities have been undertaken during this research trip.

**Aims of the study**

In order to provide information necessary for the production of the manual, the initial study had three main aims:

- Identification of a broad spectrum of user groups and their needs (see list of user groups)
- Assessment of the usability, accuracy and impact of existing plant and animal guides in Bolivia, with emphasis on the Santa Cruz department
- Definition of specific guides to be produced by the project based on identification of user group needs in Bajo Paragua, the zone around El Parque Noel Kempf Mercado (PNKM).

**Definitions**

**'Impact'** can be assessed on a variety of levels;

- Does the guide fulfil its intended purpose?
- What needs does it fulfil and to what extent?
- Have there been any secondary unintended impacts?

**'Usability'** can be defined as the extent to which the guide is usable by the target group. i.e. Does the guide enable the target group to achieve the guides objective

**The Research Team**

The field work was undertaken by three collaborating institutions. Investigations into institutional needs and guide book usability in the city of Santa Cruz and Los Valles was carried out by CIAT. Work in Lomerio and Bajo Paragua involved the whole team.

<b>University of Reading</b>	<b>CIAT</b>	<b>FAN</b>
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#### Itinerary of Activities

#### **Martes el 25 –Viernes el 29**

Reuniones de Planificacion  
Entravistas Institucionales en Santa Cruz  
Con FAN, CARE, CIPCA, PROMABOSQUE

#### **Lunes el 1 de Noviembre**

Entravistas institucionales en Santa Cruz

#### **Martes el 2 de Noviembre**

Todos Santos, dia feriado

#### **Miercoles el 3- Viernes el 5**

Entravistas institucionales en Cochabamba

#### **Lunes el 8 – Martes el 9**

Entravistas Institucionales en Santa Cruz

#### **Miercoles el 10 – Viernes el 12**

Validacion de la guia de los valles en Mairana, Valle Grande

#### **Domingo el 14 –Martes el 16**

Validacion de los guias de Lomerio

#### **Miercoles el 17- Domingo el 28**

Validacion de las necesidades de los grupos de usuarios en Bajo Paragua

#### Planning Meetings

Initially, two planning meetings were held in CIAT with all the team members. This time was used to:

- choose guides for assessment
- Identify representatives of the different user groups to be interviewed.
- Complete the table of options and the list of user groups
- Define the methodologies in more detail.
- Establish a cronogram of activities including locations and dates for testing of the different guides and meeting with different user groups.

#### Selection of guides for assessment

Initially, it was decided to select 8 guides for assessment, 6 from within the department of Santa Cruz and 2 from other departments. These guides were selected from those that were available in the CIAT office. The guides selected were considered to represent a broad range of styles and focuses. **Table X** shows all the guides reviewed for the department of Santa Cruz, the first 8 were those that were selected for the study. However, in practice, due to a change from the envisaged methodology, some of the selected guides received relatively little comment whilst others not on the list were also considered (see interview format).

#### List of user Groups

The draft list of user groups was considered to be adequate. It would have been possible to subdivide it further but this was not considered to be practical. Rather than add to the list the team felt it was more practical to merge some of the groups. For example, they considered that *tecnicos*, extension workers and municipal staff could all be considered as one user group. Clearly, it is important to be aware of the potential differences between the needs of the more botanically/scientifically focused workers and those with a social focus. However, most

institutional interviews included staff from a mixture of disciplinary backgrounds and due to their limited time it was not possible to ask for separate interviews. Since most teams tend to be interdisciplinary the response from a varied group was considered to reflect the needs of rural development/natural resource management institutions in general.

The final list of user groups interviewed contained:

- *Técnicos/NGO staff/ extension workers* with a biophysical background-forestaes, agronomos
- with a social back ground
- Indigenous communities
- Village Teachers
- Village School Children
- Local promoters
- Teachers
- University lecturers
- Eco-tourists
- Consultants
- Guardaparques
- Forest Guides

There were some groups that it was not possible to interview due to time constraints. It could be interesting to complete the work by interviewing them later on:

- University students
- Coloniser communities (this is a bit hard to define, not all indigenous are indigenous)
- ASLs (timber harvesting cooperatives)

Other groups which were not specified but could be interesting to consider:

- Urban teachers and school children

Although women were not specified as a separate user group there were interviews with only women but these were placed under the heading of indigenous communities, and schoolteachers. In a similar way, hunters were not differentiated from farmers or village leaders etc but the focus of the interviewee can be seen in the interview reports. If the study had had a larger sample group it may have been interesting to make these differentiations but given the size of the sample group, it did not appear that it would lead to valid analysis.

**GUIAS PARA LA BIODIVERSIDAD EXISTENTES EN SANTA CRUZ**

**NB Los Valles guía is missing**

No.	TITULO	PROPOSITO	GRUPO META	AUTOR	AUTOR INSTITUCIONAL	AÑO PUBLIC.	FORMAS DE ACCESO	IMAGENES	FORMAS DE IDENTIFICACION
1	Numukianka axiba bukiubu auna noki.  Los mamíferos de nuestro territorio	<ul style="list-style-type: none"> <li>✓ Ofrecer una herramienta para educar a las nuevas generaciones sobre la explotación racional y sostenible</li> <li>✓ Mostrar el potencial faunístico de un territorio indígena boliviano</li> <li>✓ Proponer algunas pautas para el aprovechamiento sostenible de los mamíferos por parte de los propios habitantes de la zona</li> </ul>	<p><b>Nivel escolar:</b> Profesores y alumnos de Lomerío</p> <p><b>Nivel técnico:</b> Técnicos medios y superiores interesados en la zoología y en el manejo de la fauna silvestre</p>	Daniel Guinart S.	BOLFOR	1998	Nombre chiquitano, nombre común y científico	Dibujos en blanco y negro	
2	Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia	<ul style="list-style-type: none"> <li>✓ Ayudarle a identificar las especies más útiles y más promisorias del departamento;</li> <li>✓ Presentar información sobre las características de cada especie; su forma, reproducción, crecimiento y medio ambiente;</li> <li>✓ Presentar la información sobre los usos de cada especie y su papel actual o potencial en sistemas agroforestales</li> </ul>	Técnicos agrónomos, extensionistas, forestales botánicos y ecólogos	Mario Saldías <i>et al</i>	CIAT, MBAT, ROYAL BOTANIC GARDENS, KEW, Museo de Historia Natural Noel Kempff	1994	Índice, Nombre común y científico, familia botánica.	Dibujos en blanco y negro de la planta entera, y partes de la planta	claves
3	Las planta útiles de Lomerío	<ul style="list-style-type: none"> <li>✓ Rescatar los conocimientos tradicionales sobre la modalidad de uso que hacen los chiquitanos de las plantas</li> <li>✓ Establecer un banco de datos y establecer en el Herbario del Oriente (herbario SCZ), una colección permanente de las plantas útiles de los chiquitanos.</li> </ul>	No menciona	Ivo J. Kraljevic <i>et al</i>	BOLFOR, HERBARIO (USZ), Central Indígena de Comunidades de Lomerío (CICOL)	1996	Índice, nombres común y científico, nombre chiquitano, familia botánica.	Dibujos en blanco y negro de ramas de las plantas	Descripción botánica

No.	TITULO	PROPOSITO	GRUPO META	AUTOR	AUTOR INSTITUCIONAL	AÑO PUBLIC.	FORMAS DE ACCESO	IMAGENES	FORMAS DE IDENTIFICACION
4	Guía de campo de mariposas (insecta – lepidoptera) del parque nacional y área de manejo integrado Amboró	✓ Hacer una presentación, lo más amplia posible sobre la diversidad de mariposas del parque Nacional y Area de Manejo Integrado Amboró, y proponer a este grupo como organismos de estudios ideales para poner a prueba la hipótesis relacionada con bioindicadores, turismo, decoración, ecología, comportamiento y conservación	Investigadores	Ma. Julieta Ledezma Arias	Departamento de Entomología, Museo de Historia Natural "Noel Kempff Mercado", Universidad Autónoma Gabriel René Moreno	1998	Lista de especies por familia	Fotografías a color de las mariposas enteras y dibujos a color de las alas	Observación de las fotografías y dibujos
5	Ecología de Especies Menos Conocidas Bibosi Higuerón ( <i>Ficus spp</i> )	✓ Resumir los conocimientos que existen sobre la biología de los bibosis con sistema propio de sustento, los cuales podrán usarse como ayuda para el manejo sostenible de la especie.	No menciona	Todd S. Fredericksen <i>et al</i>	BOLFOR	1998	No corresponde	Fotografías a color de la planta y sus partes.	Descripción morfológica
6	Frutas silvestres comestibles de Santa Cruz	Conocimiento de la diversidad biológica del país	No menciona	Roberto Vásquez Ch., Germán Coimbra S.	Patrocino de LIDEMA y FAN	1996	Lista de las familias, géneros, especies y nombres comunes de las frutas silvestres comestibles; listado de los principales usos de las frutas silvestres	Fotografías a color de los frutos, dibujos en blanco y negro de las plantas y sus partes	Observación de fotografías y dibujos de los frutos. Descripción botánicas, ecológicas y sobre la distribución y usos de las especies frutales

No.	TITULO	PROPOSITO	GRUPO META	AUTOR	AUTOR INSTITUCIONAL	AÑO PUBLIC.	FORMAS DE ACCESO	IMAGENES	FORMAS DE IDENTIFICACION
7	Guía de árboles de Bolivia	<ul style="list-style-type: none"> <li>✓ Busca mejorar el conocimiento sobre los recursos florísticos, especialmente forestales, en todo el país.</li> <li>✓ El objetivo principal es producir un texto de consulta y referencia para facilitar y mejorar los inventarios botánicos y forestales en las diferentes regiones.</li> </ul>	Dirigido a biólogos, forestales o agrónomos y accesible a todos aquellos que quieran aumentar sus conocimientos sobre la vegetación y las plantas leñosas	Editores: Timothy J. Killeen <i>et al</i>	Museo de Historia Natural Noel Kempff, Herbario Nacional de Bolivia, Herbario Nacional Forestal "Martín Cárdenas", Missouri Botanical Garden	1993	Índice de nombres vernaculares y científicos, lista de familias	Dibujos en blanco y negro de ramas, hojas, flores, frutos y semillas	Mediante claves de las familias
8	Plantas útiles en la comunidad "El Recreo" y su papel en la realización del plan de manejo forestal	<ul style="list-style-type: none"> <li>✓ Contribuir al mejoramiento de los planes de manejo forestal, y al aprovechamiento diversificado del bosque a través de la incorporación del conocimiento, uso y aprovechamiento actual y potencial de las plantas útiles.</li> </ul>	No menciona	Francisco Tórres	CIAT	1999	Índice de plantas identificadas, lista de plantas útiles según su hábitat, parte usada y forma de vida.	Dibujos en blanco y negro de ramas y hojas	Observación de dibujos y descripción morfológica de la planta.
9	Estudio e identificación de las plantas útiles en la comunidad de San Miguelito de la Frontera, prov. San Ignacio de Velasco	<ul style="list-style-type: none"> <li>✓ Conocer y documentar el uso de los recursos vegetales silvestres por los chiquitanos de San Miguelito de la frontera</li> </ul>	No menciona	Francisco Tórres	CIAT	1999	Lista de productos no maderables utilizados en la comunidad, índice general de plantas identificadas	Datos estadísticos y fotografías a color	Lista e índice de especies identificadas

No.	TITULO	PROPOSITO	GRUPO META	AUTOR	AUTOR INSTITUCIONAL	AÑO PUBLIC.	FORMAS DE ACCESO	IMAGENES	FORMAS DE IDENTIFICACION
10	Notas sobre algunos mamíferos silvestres de Lomerío	<ul style="list-style-type: none"> <li>✓ Difundir los conocimientos tradicionales sobre el tamaño, hábitat y los sitios donde se encuentran 33 mamíferos de Lomerío.</li> <li>✓ Contribuir a despertar el interés en la conservación del ambiente natural</li> </ul>	Los niños de Lomerío	Benito Chuvé Palachay <i>et. al.</i>	BOLFOR	1996	Índice por nombres chiquitano, científico y común	Dibujos en blanco y negro de los animales	Observación de imágenes y descripción del hábitat del animal
11	Selección de especies para uso en cortinas rompevientos en Santa Cruz, Bolivia	<ul style="list-style-type: none"> <li>✓ Presentar la información sobre las especies recomendada (para uso en cortinas rompevientos) que permitan al productor escoger las más adecuadas a las condiciones locales</li> </ul>	Productores agropecuarios	James Johnson, José María Tarima	CIAT, MBAT	1995	Tabla de contenido	Dibujos en blanco y negro	Descripción del origen y características de la especie, su adaptación y su uso en cortinas rompevientos
12	Conociendo los animales del Amboró	<ul style="list-style-type: none"> <li>✓ Conocer la fauna silvestre del Parque Nacional Amboró</li> </ul>	Estudiantes escolares	Jenny Rouquette	CARE Bolivia, CARE UK, DFID, Proyecto Amboró	1999	Índice Listado de nombres locales y científicos	Dibujos a color y en blanco y negro	Observación de imágenes y descripción del hábitat, dieta y comportamiento del animal
13	Calendario ecológico (1999/2000)	<ul style="list-style-type: none"> <li>✓ Informativo</li> </ul>	No menciona	No menciona	CARE Bolivia, CEDICA, FONAMA	1999	Nombres comunes de animales	Dibujos a color	Observación de imágenes y descripción del hábitat, dieta y comportamiento del animal
14	Manual de la fauna izoceña	<ul style="list-style-type: none"> <li>✓ Conocer un poco más sobre los animales del Parque Nacional Kaa - Iya</li> </ul>	Niños y estudiantes izoceños	Erika Cuéllar <i>et al</i>	Capitanía del Alto y Bajo Izozog (CABI)	1997	Nombres local, común y científico	Dibujos en blanco y negro	Dibujo del animal y su huella en tamaño natural, descripción del tamaño, forma, color. Comentarios de cómo y dónde vive y qué come. Otros comentarios

No.	TITULO	PROPOSITO	GRUPO META	AUTOR	AUTOR INSTITUCIONAL	AÑO PUBLIC.	FORMAS DE ACCESO	IMAGENES	FORMAS DE IDENTIFICACION
15	Arakae Historia de las comunidades Izoceñas	✓ Recuperar y transmitir a las generaciones futuras el saber y conocimiento de los abuelos izoceños	Pueblo izoceño en general	Isabelle Combes <i>et al</i>	Capitanía del Alto y Bajo Izozog (CABI), Wildlife Conservation Society (WCS-Bolivia).	1999	Sumario	Dibujos en blanco y negro	Sumario
16	Educación Ambiental en el Izozog (Area Ciencias de la Vida, Rama Diversificada) Guía del Maestro	✓ Mejorar el sistema educativo en el Izozog y revalorizar, a nivel de la población infantil especialmente, los conocimientos y la sabiduría tradicional del pueblo izoceño en relación a su medio ambiente y su cultura	Maestros de escuelas ubicadas en el Alto y Bajo Izozog	Isabelle Combes <i>et al</i>	Capitanía del Alto y Bajo Izozog (CABI), Wildlife Conservation Society (WCS-Bolivia).	1999	Contenido temático	Dibujos en blanco y negro	Contenido temático
17	Manual de planificación curricular participativa para la educación ambiental comunitaria	✓ Que la Comunidad Educativa de Sombrerito (Segunda sección de la Provincia Andrés Ibañez) pueda controlar permanentemente el desarrollo del programa escolar de educación ambiental, actualizándolo según sea necesario	Maestros y comunidad de Sombrerito	Coordinadores: Jorge Cortés F., Milton Soto S.	CEDICA	1999	Tabla de contenidos, lista de Cuadros y figuras	Dibujos en blanco y negro	Tabla de contenidos, lista de Cuadros y figuras
18	Guía Didáctica de Educación Ambiental	✓ Documento de ayuda para el docente, para desarrollar, dentro del eje transversal de desarrollo sostenible (definido en el programa nacional de Reforma Educativa), tres temas relacionados con la educación ambiental: la basura, vedas de caza y pesca y manejo sostenible del bosque.	Docentes escolares de los municipios de El Torno y Porongo, provincia Andrés Ibañez	Jeannette Giné L., Jorge Cortés F.	CEDICA	1999	Indice	Dibujos en blanco y negro	Indice



### Methodology

In the planning meetings, TM presented the research team with guidelines for testing guide usability, accuracy and impact based on discussions with Pat Norrish and Anna Lawrence, (see appendix). These principals were used to define a simple flexible methodology based around group interviews and field work (see appendix). In reality the methodology evolved from the original plan to fit in with a variety of practical constraints:

#### Impossibility of tracing guides

Initially it had been hoped that it would be possible to trace the selected guides down their distribution chain, from author and publisher to user. This seemed an effective way of assessing a guide's impact and testing its usability with those who were familiar with it. In reality, this process proved impossible since there was no system of recording purchasers. Some institutions had lists of organisations to whom they circulated their publications but it was not possible to determine what happened to them once they were placed in the institutional libraries as there were no systems to identify who had used which book. As a result it was decided to use a bottom up rather than top down approach for assessing impact. This approach defined the form of the interviews. It also meant that the guides to be assessed were defined by the interviewees rather than the research team.

#### Problems with accuracy assessment

Assessing accuracy and usability in the field proved problematic since most people were not willing to give up time to go into the field. Also, many of the guides were not focused on identification. Due to this, most of the information collected was based on semi-structured interviews.

#### Interview Format

Each interview followed a similar format but evolved according to the responses of the group. Questions were designed to investigate all the main issues (impact, usability and user group needs) during each interview but emphasis varied according to the interest and experience of the interviewees. The interview format described below outlines the different stages of the process for assessing guides and user group needs.

##### *1. Presentation of projects objectives*

At the start of each interview one of the team members presented the objectives of the project to the interviewees and allowed time for questions to be asked.

##### *2. Presentation of a range of plant and animal guides*

The team then displayed a range of guides (see table) and asked the interview group if they were familiar with, or used, any of them.

They were then given the opportunity to show any other guides that they used, or had produced, which were not in our collection. This enabled the list of guides to be increased and allowed us to test guides, which were actually being used.

##### *3. Selection of guides for assessment*

The team attempted to ensure that the guides were assessed by the appropriate user groups. Ideally, this would have been a group which regularly used the guide in their work. Since this was not always possible, guides were selected for analysis in a variety of ways:

- Where the interviewees used guides, the table of options was used as a basis for assessing their opinions about these guides.
- Where the interviewees had written a guide, they were questioned as authors
- Where they used none of the guides, they were given time to look through the selection and then asked which guides were most interesting to them. Where there was a clear preference, they were questioned about their choice

- In some cases the interview was already focused on the testing of defined guides which had been written for the user group or zone in question. For example, in Lomerio, interviews and field work were based on the three guides written for the zone. In Los valles interviews were focused on **the Valleys guide which is not yet published**

#### 4. *Testing usability and accuracy of the guides used*

Ideally usability would have been tested in the field, giving the users specific task to carry out and observing where they had difficulties in using the guide as well as whether it enabled them to arrive at an accurate identification. In practice, this was seldom possible and questions had to be used as a substitute.

The questions about guides were based on the list of options created during the planning workshop (see appendix), however, this was simplified into 7 main categories:

**User group,  
Order,  
Format,  
Illustration,  
Language,  
Access systems  
Type of information needed**

Where interviewees were not forthcoming they were prompted to comment on specific options. Time constraints made it impossible to discuss all options in all interviews but the main issues were covered as thoroughly as possible.

Where appropriate, interviewees were asked to carry out a task with the guide as part of the interview, for example,

- find the uses of a plant for which they knew the local name
- find the plant or animal that they were interested in, in the book.

The person was observed searching for the information and any problems that they experienced were noted down. Having found the information, they were asked to comment on how useful they found it and how easy or difficult they had found the search process. Where this was not practical, comments on the guides were used. This task was always included as part of a more general interview.

**Only in Los Valles was it possible to test the accuracy of the guide in the field, asking technicians to use the guide to identify pre selected trees.**

#### 4. *Assessing user group needs*

This is really the flip side of guide usability but it can be assessed both with those who do and do not use guides. It is not really a separate process from analysing the existing guides. Looking at the different options represented in a range of guides provides the interviewees with a starting point for talking about the type of guides that they would ideally use in their work/daily lives.

Having talked about different options and interests, interviewees were asked to prioritise the guides that they were most interested in.

The questions below were written down during the planning meeting and used as a guide in the interviews. In reality the order of questions and activities was relatively flexible and depended on the responses of the interviewees:

### **Preguntas para autores:**

1. Porque usted decidió hacer esta guía?
2. Cual es el grupo meta?
3. Cuantas copias han producido?
4. Como las distribuyen?
5. Cuanto cuesta?
6. Cuantas copias han regalado?
7. A cuales instituciones?
8. Cuantas personas/instituciones tienen la guía?
9. Cuales aspectos de la guía le parecen buenos?
10. Hay cosas que le gustaría cambiar?
11. Quien estaba involucrado en hacer la guía?
12. Como decidieron que especies incluir?
13. Como se escogió la estructura y/o presentación?
14. Tenían instrucciones/pautas/guias de fuera o decidieron dentro del grupo como hacerla?
15. Un manual de pautas para hacer guías de campo le parece interesante?
16. Que es una buena guía para usted?

### **Preguntas para usuarios**

1. Usted necesita/usa guías de campo en su trabajo y para que?
2. Si no, por que no?
3. Cuales guías usa?

*Mirar las guías que tenemos.*- Podríamos mostrar diferentes opciones-fotos , imágenes etc y preguntar cuales prefieren y por que

4. Cuales aspectos le gusta/no le gusta?
5. Cuales aspectos se podrían mejorar? (basarse en la lista de opciones)
6. Si tendría la opción de desarrollar una guía del parque NKempff, que especies importantes incluiría?
7. Que información mas le gustaría tener: usos, ecología, (ver lista de opciones)
8. Usted usa el nombre científico, o cual y porque?
9. Le parece importante poder identificar con precisión la planta? por que?
10. Cual es el aspecto mas importante de la guía? identificar, conocer mas sobre la planta?
11. Que tipo de formato le parece bien? (ver lista de opciones)

### **Preguntas sobre Impacto**

1. Quien usa la guía?
2. Para que la usa?
3. Esto ha resultado en algún cambio / acción etc?
4. Alguien les ha recomendado la guía?
5. Por que?
6. Como se podría aumentar su impacto

#### Limitations to methodology and problems

- Group interviews meant that often one person would dominate the discussion. It could be unclear whether the others were uninterested or shared the opinion. If one person was asked to carry out a task the interview would often split into several parts.
- There was not enough time to analyse options in all guides mentioned in a systematic manner so each interview tended only to gain information on one or two guides.
- Lack of interest on the part of some of the key organisations led to much time wasting as they would cancel interviews at the last minute
- Where there was little response on the part of the part of the interviewees it became necessary to prompt them but this may have led to responses that were not truly representative.
- In many cases the users were unfamiliar with the guides which meant that they could not give such in depth comments. For the same reason usability testing is not certain to have been representative as they did not have time to become familiar with the guides. When asked many said that they would have been able to use the guide more easily with more time and that some of their perceptions would have changed.
- Within any interview group there was a variety of priorities on which guide to produce and on which options are important, this makes it hard to make any clear cut recommendations on user group needs.
- There is a risk that people show interest because the books are attractive and new rather than due to real interest in the subject area.

## **Results**

The results are presented in separate sections since the focus of the work was different in each zone.

### **Institutional Interviews from Santa Cruz**

In Santa Cruz, interviews were arranged with representatives from institutions which were either considered to need guides as part of their work, or which had been involved in guide production. Eleven institutions were interviewed in total. Table x shows which guides were mentioned by each institution interviewed. In the larger groups many of the members did not really contribute. Detailed notes from each interview can be found in the appendix. This section will summarise the main comments on the guides analysed as well as user needs. All of the interviewees were considered to be in the same user group. Although there was clearly variation in the focus of each institution all were in some way connected with natural resource management and the interviewees all had a similar level of education.

#### **Analysis of Individual Guides**

This section presents the comments and observations made about specific guides. The details of these guides can be seen in table x (at beginning of document). These comments provide a summary of the points made in all the interviews.

#### **Plantas Utiles de Lomerio**

- The authors said that it had been written because there was available money. It was just a way of recording information collected from farmers about uses, and was for reference rather than practical use.
- This guide was generally considered to provide incomplete information. It could not be used for identification since there were no illustrations. Those from outside the zone need pictures to aid identification.
- The descriptions are suitable for a well educated technical readership but verbal descriptions do not help identification without an image to support them. It is unclear who the guide was really aimed at.
- There was very little information about uses so the guide did not really fulfil its objective of describing plant uses. The uses that it gives are so general as to be useless. It should say which part is used and how, as well as stating the active ingredient if there is a medicinal use. If the plant is used in construction it should say what type of construction as well as what part of the wood is used. If it is edible it should say which part is eaten and how it is prepared.
- The indices were confusing since they were in the middle of the book. There were many tables showing comparative names, which were easily confused with indices but had no page numbers.
- One interviewee said it could only be useful if you already knew the zone and that it provided good plant descriptions.
- The use of space was criticised since there were a lot of half-blank pages.
- It is good to have the indigenous name but there should be a broader range.
- The local name should be the way to access the plant.
- The book seems to be to document knowledge rather than serve a purpose.
- It would be good to have a table of uses with the different plants under each section
- There is a lot of empty space-there should be pictures, even if small of the critical parts of the plant- fruit leaves flowers, bark.
- Descriptions of forest type- these should also be in Chiquitano as it may be more detailed than our own description.
- It is important to associate the different tree species with different forest types.

### **La Guia de Arboles de Bolivia**

- This was the best known and most used of all the guides.
- It is very useful in inventory to look up species, however, if you do not have botanical experience you will not be able to use it.
- It is good for getting a plant description if you have the name.
- Although it is not ideal, it is adequate and is the best reference to Bolivian trees that exists.
- Most people used it in the office rather than the field, as it is too bulky. However, it would be difficult to get all the information into a smaller guide so it is an acceptable trade off.
- It is off-putting on first sight as it looks very technical and complex, even technical people prefer more simple books.
- It is complete in terms of botanical information but it is hard to use and requires basic botanical knowledge, which not all tecnicos have.
- Nobody interviewed ever used keys to identify plants. Most said they would only use the guide to gain extra information if they already knew the family of the plant or one of its names (latin or local)
- There should be an illustration for each species but this would increase the size
- It is good to have indices by both Latin and local names.
- The guide can help when one common name covers three different scientific names.
- The illustrations should include bark and there should be more emphasis on the quality of the images.
- You cannot really do detailed identification with this guide since illustrations only go down to genus level and the key only goes to family level, you really need to know the plant's name.
- It provides good information on genus distribution, phenology and the type of forest that the trees are found in.
- The illustrations can be compared with a specimen for ID purposes
- Guides like this would be more useful if they were more specific, e.g. a guide for each different agro-ecological zone.

### **Guia para uso de arboles en sistemas agroforestales**

#### *Authors comments:*

Why did you write the guide to species for use in agroforestry?

- We saw a whole series of species being used in different situations by farmers but did not know what they were. We wanted to ID and describe how they were being used and if the information was good to disseminate it and expand on it.
- There were many timber species, which were valuable, but the farmers did not recognise them when they were regenerating and did not know their value.
- The user group was technical staff of NGOs as intermediary users ( ie they were meant to pass the information on to the farmers). In reality farmers got to know the trees through a nursery programme rather than the guide as they saw the trees growing from seedlings and learnt to recognise them in the wild.
- Farmers do not really need guides as they quickly learn to recognise things and see their value.
- The guide may have helped tecnicos more than farmers although one farmer had a copy and said it was very useful.
- They selected those species that were most broadly distributed with the highest economic potential, service and subsistence value. ( e.g. nitrogen fixing, good shade trees etc.)
- The structure was based on common sense and help from T.Pennington
- Distribution was through the CIAT department of technology transfer, copies went to all NGOs working in the area and to Kew Gardens. It was not available in commercial outlets. This may be restrictive but it depends on demand.
- The author would access the plants by common name, see range of species that conformed to this name and then use pictures to ID
- The key and glossary of terms are relatively irrelevant, the key may be useful down to generic level but not a species level.

### *Changes to improve the book*

- Remove a lot of the botanical description
- Add more description about use
- Show distribution with map ( but mentioning that it is not exclusive)
- Have a broader selection of vernacular names (this is excellent in the fruits guide as well as good use of photos)
- Provide economic information (problematic as it is very dynamic)
- Describe uses at many levels- commercial, domestic, traditional etc with more detailed info on which parts are used, how they are used and traditional uses that have been lost.

### *Users Comments*

- This guide was well known and used by many of the tecnicos
- It is a good practical guide, perhaps a little too large but if it were smaller then the pictures would not be so clear.
- Some users felt it was not really suitable for ID but is designed to provide information on species with which the readers are already familiar.
- One interviewee uses the guide to find species that will be useful, he reads the botanical description and looks at the picture, then tries to memorise it for recognition in the field.
- Others said they used it to check details about plant characteristics.
- It is useful to get a description if you know the local or scientific name.
- It is not really practical for taking into the field but is rather an office guide.
- The pictures are of good quality but it would help if there were colour pictures or quality photographs. It might be useful to have a silhouette of the whole tree.
- There is no need to have both a field description and a botanical description, the botanical description can be removed.
- One interviewee thought that the section on agroforestry was not needed since those using the book would already know about it. Another thought it was vital since it set the whole book in context.
- The key is excessive and will not be used since the guide is not for botanists but rather tecnicos interested in plant uses.
- The descriptions are unbalanced as some are detailed and others hardly have any information on use.
- It is good since it has both local and scientific names in the index and this can be used to find the plants.
- The table of contents is poor so you have to use the index
- The guide could be improved with: colour photos, an image of the whole plant, an image of the plant as a seedling so that you can recognise it when it is germinating.

### Frutas Silvestres Comestibles de Santa Cruz

- This book was considered to be well presented and useful. Few criticisms were made.
- It is a good guide for people who know nothing about tropical fruit and want scientific information.
- The level of the language is quite technical/botanical
- The photos are high quality and aid identification. They could be used by local people or tourists with great ease.
- It would be better if the guide gave the uses of the plant relative to a specific context (e.g.geographical area, rather than just in general)
- The quality of the paper is high and this is important
- Provides good background info for tesisistas etc.
- Perhaps too botanical- could add seasons for harvest and sowing- more practical info on managing the trees that can be used in the field.

## Guías de especies menos conocidas

### *Comments by authors:*

- This guide was aimed at timber companies and those involved in forest management who do not have detailed information on the species. The guides are trying to provide as much detail about each species as possible
- The level is more technical and is aimed at those with responsibility for plans de manejo.
- They have not produced guides responding to demand but rather have tried to fill the information gap left by the ley forestal and normas tecnicas, ie to provide info that will help people fulfil the requirements of the new laws.
- They have not thought clearly about format responding to users needs
- In BOLFOR format is decided by the author and by those who produce the pictures. They have recently employed a specialist in layout design and a journalist so the format is changing.

### *Comments by institutions looking at the book (there were as yet no users)*

- This has useful information for people doing a PhD or thesis. For most people it is too in depth and too technical
- It should really only highlight really useful information on the trees
- There is almost no practical or economic information.
- It should contain more pictures and diagrams.
- It is a good reference book but does not seem appropriate for practical use
- The writing is very dense and hard on the eyes
- The photographs of different parts are high quality.
- It is a good source of information but not practical but it may be useful for consultancy work etc.
- It has a lot of good ecological information
- This guide is not very useful in terms of introducing new species to the market since there is little market information It may be useful in the *plan de manejo*

### Butterfly guide

- Some liked this guide, as it did not have any writing but only images, others thought that this meant it was not really a guide since it lacked information.
- It was thought that you would ID the butterflies by flicking through it and that this would be easy for specialists to use.

## Guide to species for use as windbreaks

### *Comments by authors*

- This was not intended for ID but to give appropriate species for use according to the different geographical areas.
- The guide was written because no one knew which species to use in their *rompe vientos* and people kept asking CIAT for advice. It seemed a good idea to put the information in a book.
- The user groups were mainly Mennonites and technical staff of NGOs.
- They do not know how many sold but in terms of impact, there are no 1000's of Kilometres of wind breaks which suggests that companies have taken the book into account.
- The book was part of a course. This is a good way to increase impact as it puts the information into a context and means that the users have already had practical experience with the information and guide before they use it in their work.
- Limited distribution has reduced the impact. Copies were sent to the institutions that they worked with and others were sold in CIAT but it is not a big distribution network.



### Educational Package including teaching guide for environmental education, calendar with mammal guide and mammal guide for Amoro by CARE and CEDICA

• They are in the process of evaluating these publications with the target user groups (teachers and pupils) but it is a long and detailed process. It is being done in 18 pilot schools where they are using it to see if it is useful and what the problems that they have with it are. The guides were donated as part of an educational package aimed to support teachers in environmental education. (I have their evaluation form!)

- They want to reach the whole of the education community-teachers parents, pupils, tecnicos. They want to produce special and appropriate material for each group but at the moment they are focussing on teachers. If parents are not educated too, they may be obstacles to their children changing behaviour. The calendar of animals is for parents and to reinforce what the children are learning at school. The aim is to get people to value the animals more and feel familiar with them. Everything must be an interactive process
- The guide for teachers is structured by theme. The structure is flexible but goes from simple to complex according to the stage of the students. Clearly this is different from a traditional ID guide. The mammal guide is more of an ID guide for children.
- They will alter the guides according to the evaluation, for example in one of their evaluation workshops a pupil said that the colours of the animals were wrong, so they will try to make them more appropriate.
- It is important to know that people have understood the guide and do not only like it because of the pretty pictures etc.
- As authors they have tried to format the guide according to the user group. for example, the size of the guide varies between pupil and teacher
- They distributed the book to all schools with which they were working and there was also a training programme at the museum and on the radio.

### Options for guide production

This section groups the interviewees comments according to the various options for guide production. It gives an overall impression of the different concerns/needs of this user group.

#### General Points

- Guides are most useful for reference, when you know the plant but have some specific information that you want to find out about it.
- The users should participate in the production of the guide from the start to ensure that it fits with their needs. This ensures that users know the value of the guide and have use for it. Authors should be facilitators in the process of producing the guide
- The guide should be validated before publication so that any problems can be altered.
- The guide should be used as part of a wider programme of training and should be aimed at a specific zone and group of people. It should not then be transferred to inappropriate zones and people.
- Guides cannot impact alone, they are tools; part of a process involving support. The book should be accompanied by other material and support e.g. posters, advice on how to use the material, calendars etc - the whole package should help in forest management. They should be monitored and altered from the start.
- It is important to prioritise needs in terms of cost, e.g. quality of paper, pictures, size etc.
- You must constantly ask- what are we trying to achieve with this guide?
- guides should be easy to photocopy
- There is a problem in Bolivia that people do not have a culture of reading books – even among tecnicos.
- Simple is always better at all levels. Tecnicos do not like complex books.
- Very few institutions have a budget for publications, this limits what they can produce, producing and validating guides is very costly in terms of time, human and technical resources and money

### Illustrations

- Pictures are the most important aspect of ID
- Illustrations are particularly important if the guide is aimed at outsiders to the zone. Local technicians and promoters will be able to ID the plant with only the name and extra information will be what they are looking for.
- Colour photos are meaningless for ID but people always like them because they are pretty.
- Line drawings are much more useful for ID
- High quality photos are better than drawings for ID but the cost must be considered
- Photos do not reproduce well and since many people are too poor to buy the books, it may be better to use line drawings so that they can be reproduced.
- Good quality images should be copiable for use in meetings and demonstrations.
- Photos are only good if they are high quality, if they show real colour they are better than pictures. Colour described in words is hard to visualise.
- Black and white drawings of all parts are sufficient.
- Colour photos are too expensive
- If you are going to invest money in photos you should ensure that they are high quality or not bother.
- The key elements for ID vary between species. Fruiting bodies are the most important aspect if you want to get to species level.
- The form of the tree can be useful but it does vary greatly between trees of the same sp.
- It is very important to show plants in the early stages of development- perhaps photos of seedlings and small plants (photos are meaningful when they are of plants in the early stages, of grasses or weeds but not of trees)
- It can be good to get the users to draw their own pictures and take photos etc. This is being done in a medicinal guide with CIDOB.
- Pictures are better than photos as they have more depth. It is vital to validate them to make sure community members agree with them. They found that children are more likely to copy drawings than photos. Also are cheaper than photos.
- Colour is vital when dealing with insects and mammals.
- It is very important to have a picture for each species since it is hard to differentiate at this level using verbal descriptions.
- It is better to have more images and less written description
- The most important parts to illustrate are: Corteza, oja, forma de fuste, forma de copa, you need a lot of detail to ID.
- Flowers are not very helpful as seldom seen.
- Bark should be included as it is a major way of identifying trees
- Measures in centimetres are not useful as do not measure in the field.
- Fruit and flower should be in colour and there should be a picture of the whole tree.
- It is good to put text and images together on the same page. Written description should always be accompanied by images.
- A map showing distribution is important

### Access systems

- Order should be alphabetical by local name or by use or species, not family.
- Table of contents is very important in giving structure and index is important for fine detail..
- There should not be too many indices in a field guide, as this will make it too bulky.
- There should be at least a two-way index but as many local names as possible should be included.
- A table of contents is very important when looking things up. This is at the front but in Bolivia it is often called an index.
- The number of indices needed will depend on the aim of the guide and the user group but local and scientific names are a minimum requirement-the variation in local names must be considered.
- People do not use keys except when they are practising at university.

- Botanists do use keys but seldom.
- Access systems should be as simple as possible.
- The more indices the better. With a wide range of indices the actual order of the guide is not important since the plants can be found based on a wide range of information. In this situation the familial order can be left which will keep botanists happy.
- Too many indices are confusing but you will need more if the book aims at ID.
- Having many forms of access gives you a better chance of finding what you are looking for.
- 2 indices is the maximum, 1 scientific and 1 common

#### Materials

- High quality paper should be used
- Field guides should be waterproof.
- It could be interesting to have separate laminated sheets on each species so you can select what to take to the field.

#### Names

- Scientific names are important as they serve as a reference point when local names vary.
- How do we deal with the problem of where one common name refers to many species or vice versa?
- The most commonly used name of the plant should be used first but this will depend on the target user group.
- Teachers said it was important to know the Latin name but not too early or it may put people off. It is good not to complicate the issue.
- Higher level info should include the scientific names but when trying to make local people curious you should work on the level of local knowledge. Scientific names may scare people away.
- the local name depends on who the user group is

#### Format

- A field guide should fit into your pocket ( but there is a problem of size vs amount of info)
- A field guide should be small but then you lose out on the number of species

#### Order

- This depends on the aim of the guide. If the users have a botanical knowledge family can be used, if the guide is about use then plants should be ordered by use and not family.
- It is better to order plants by alphabetical order of their common name as only botanists know about families ( but Israel says this is a confusing order as it means that similar plants are not put together. When plants are ordered by family you can easily see similar plants by flicking through.)
- It would be interesting to order plants according to uses or characteristics (e.g. medicinal or insecticides, leguminosae), either in different chapters or separate books. Problem is that many plants may have more than one use-do you order them according to the predominant use

#### Information

- Before providing too much information (to children and rural communities), it is important to build up motivation and ethical values such as an appreciation of nature. You should work in steps, once you have gained a basic appreciation of nature you can increase the information.
- There is a danger in confusing the purpose of the book by trying to include too much information. Need to be pragmatic.
- The detail needed in description will vary between groups, botanists will clearly want more.
- The first issue is to identify the need for a guide and then define the purpose and information needs relative to this

- It is important to think about the focus of the guide since you do not want to include too much information and deviate from the objective. You should only include the information needed to fulfil your aim.
- It is important that the information promised in the title and objectives is contained in the in the guide. There is nothing more frustrating than a misleading title.
- In a technical guide to plant use it would be good to have information on the active parts- ie the chemical composition of products in medicinal plants
- It is important to have information about the importance and abundance of the plants in relation to bio-diversity monitoring.
- If you talk about uses then detailed information is needed- it is no good just saying a plant is edible-many plants are edible but not all taste good. Should only put down the use if it is really appropriate and advisable
- Perhaps there should be and indicator of the level of importance that the plant has for a given use-i.e. to what extent is it used for that purpose. What kind of person uses it and for what.
- Should say which part of the plant is used, in what state (i.e. fresco, seco), what it is used for and how to prepare it. The useful part should be highlighted in the picture. This would be good for teachers, tecnicos and doctors (if medicinal plants)
- Info needs depend on the user group. For farmers more detailed info on use would be good as this will help them to value the forest. Most comunarios only know the wood species and it would be good to help them value the broader qualities of plants.
- Geographical distribution is important for scientists and students. For promoters it is not important unless it is on a local level
- When doing an inventory for the plan de manejo you only need to be able to identify the plants not to know their uses.
- The information content all depends on the aim of the guide. The most specific guides need alot of taxonomic detail.
- If focusing on other aspects such as economic value etc then the morphological descriptions can be brief.

#### Target user groups

- You must begin by considering who you are writing for as this will define everything else.
- Farmers will not be able to use guides but promoters will, so it is better to have a guide that the promoter can use to share info with the farmers. Such a guide needs a lot of clear pictures and diagrams..
- Children in schools would be a good target group if guides are to change behaviour and attitude. The problem is that many teachers do not read either. For example, CIPCA left educational guides in La Chöre and the teachers have not used them. Any guide for children must be combined with a programme of taking them into the field and demonstration their use.
- PROMABOSQUE are working on a guide to *aprovechamiento* aimed at forest workers rather than tecnicos, for this reason they use less words and more images, they only use words where it is really necessary.
- Loggers and biologists etc will have very different views on what should be in a guide. Loggers are more interested in the economic information than environmental information.
- People working in forest management do not really need botanical features but rather information about the wood, its mechanical requirements and market information.
- It is not very useful to produce guides for Campesinos as they do not read, better to produce a guide that helps the tecnicos to communicate easily with them.

#### Language

- This is very important, should the guides be in local language or Spanish or bilingual
- If a guide is for local communities than the local language should also be used
- The level of the language depends on the target group but simple is always good. Many tecnicos do not understand botanical language.

### **Impact**

It was hard to ascertain the impact of guides during the interviews but some institutions have now incorporated impact assessment into their guide production. CEDICA and CARE were analysing the impact of their guides. Other organisations such as BOLFOR said that they occasionally heard comments via the grapevine but that there was no official system of monitoring their productions. There was a general consensus that impact would be improved if there were a better system for distribution to the target user groups and not only institutional libraries. Some tecnicos complained that it was hard to find out which books were available. It was thought that guides would always have more impact when presented as part of a course. It was suggested that new guides be presented to the target user group in promotional workshops. The main comments relating to impact are listed below

- If you want to ensure impact you should monitor sales etc with all the books on a data base
- Guides for farmers should only be considered if supported by other activities. For increased impact it would be better to give guides to tecnicos that enable them to communicate clearly with the farmers.
- If farmers do not read then there is little point producing guides for them (or they will have to be purely pictorial).
- Guides should be used as educational tools in schools, if people learn values from a young age they are more likely to adopt them.
- The Camara Sociale can help increase the spread of guides as they communicate with many people.

### **Distribution**

Clearly distribution problems limit the impact that many guides have. In many cases the user group may not be able to access appropriate guides. In the case of rural communities, they may not have the resources to obtain the guides even if they are aware of their availability.

- Poor distribution limits impact, if the target group does not know of the guide or cannot gain access to it then its impact will be severely reduced.
- There is a problem that many good productions do not get reprinted or revised.
- CIAT is a source of publications for many institutions
- Book fairs are a source of publications for many institutions
- PROMABOSQUE distributes their publications through a network of timber companies with whom they work.
- BOLFOR distributes their books to a list of institutions with which they work.
- The librarian has an important role in letting tecnicos know what guides are available.

## PRIORITIES FOR NEW GUIDES

Not all interviewees expressed their priorities for new guides, but those expressed are listed below:

- **Field Identification Guides** to the main plant species by vegetation type.
- **Useful Plants** e.g. maderables, comestibles etc
- **Medicinal plants** *Warning:* There is a tendency to be over enthusiastic about traditional medicine. People take any comment made by local people as the truth but it needs to be validated, just because something is natural does not make it safe. Uses need to be studied in much more detail to answer the questions, does it work and is it safe? It is important that knowledge is not lost but you need to be careful- people are making books without being responsible. You need guides, which you can TRUST. If you are to produce such a guide there should be detailed information on contra indications, which part of the plant is active etc. There should be a lab analysis first
- **Sistemas silvo-pastoriles**-using local rather than exotic species, e.g. what leguminous species are there in the area?
- **Plants with serious economic potential**-there are many plants of this type that people are not aware of so this guide would be very useful. For example, there is an assumption that people know all the useful wood types but in fact they do not. Only a few people know a range of useful woods and which are most appropriate for which use. (NB remember the guide to wood that was in the bank with Edwiin) It is very important to think about the quality and type of information, it may be better to have a guide with only 10 species menos conocidas but those with REAL potential and with useful practical info. Need info on the value. (others disagree and think that there should be more plants in a guide for it to be useful). It may be interesting to include very abundant plants in such a guide. Even if their use is not so important their abundance may make them valuable.
- **Guide to Manejo de fauna**-a workbook where local people can fill in details about the life cycle etc of the animals to establish hunting seasons etc. Having them involved in the production will help to motivate them to plan for themselves. Get them to talk about what information they want and why. It should help them to reflect.

Table X shows the different Institutions interviewed in Santa Cruz and the number of people attending each interview:

Institution	People interviewed	Guides known/used and <i>analysed</i>	Guides Produced	Guides commented upon
CIPCA	3	<ul style="list-style-type: none"> <li>• <i>Plantas utiles de Lomerio</i></li> <li>• <i>Guía de Arboles de Bolivia</i></li> <li>• <i>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</i></li> </ul>		Guía de campo de mariposas (insecta – lepidoptera) del parque nacional y área de manejo integrado Amboró
BOLFOR	4	<ul style="list-style-type: none"> <li>• <i>Plantas utiles de Lomerio</i></li> <li>• <i>Guía de Arboles de Bolivia</i></li> <li>• <i>Guías de especies menos conocidas</i></li> <li>• <i>Guía de frutas Silvestres Comestibles</i></li> </ul>	<p>Plantas utiles de Lomerio</p> <p>Guías de especies menos conocidas</p>	Guía de campo de mariposas (insecta – lepidoptera) del parque nacional y área de manejo integrado Amboró
PROMABOSQUE	2	<i>Guía de Arboles de Bolivia</i>		
CEDICA	8		Conociendo los animales del Amboró Calendario ecológico (1999/2000)	
CIAT	2	<ul style="list-style-type: none"> <li>• <i>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</i></li> <li>• Guía de Arboles de Bolivia</li> </ul>	Selección de especies para uso en cortinas rompevientos en Santa Cruz, Bolivia	
APCOB	9	<ul style="list-style-type: none"> <li>• <i>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</i></li> <li>• Guía de Arboles de Bolivia</li> </ul>		<p>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</p> <p>Los mamíferos de nuestro territorio</p>
Casa de la Mujer	3	<ul style="list-style-type: none"> <li>• <i>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</i></li> <li>• Guía de Arboles de Bolivia</li> </ul>		Guía de campo de mariposas (insecta – lepidoptera) del parque nacional y área de manejo integrado Amboró
FAN	5	<ul style="list-style-type: none"> <li>• <i>Guía de Arboles de Bolivia</i></li> </ul>		<i>Guía de frutas Silvestres Comestibles</i> <i>Guías de especies menos conocidas</i>
CCM				
CABI	2			
CARE	2	<ul style="list-style-type: none"> <li>• <i>Guía de frutas Silvestres Comestibles</i></li> </ul>	<p>Conociendo los animales del Amboró</p> <p>Guía de Jipi Japa</p>	Guía de Arboles de Bolivia

### Institutional Interviews from Cochabamba

A visit was made to Cochabamba in the hope of finding guides that had not been analysed in the Santa Cruz department. In practice no guides written specifically for the semi-arid mid Andean valleys were not found. Four institutions were interviewed in total. There is scope for more work to be done in this area since there was not sufficient time to interview all the institutions considered. However, in general, the institutions interviewed seemed to have less interest in plant guides than those in Santa Cruz. It was not possible to show the range of guides to the interviewees since these had to be left in Santa Cruz where other interviews had been arranged. This meant that where no guides were used there were no props on which to base the discussions about user group needs.

In terms of user groups, the Cochabamba based institutions appeared to leave plant identification etc to experts in the botanical gardens. James Johnson had authored several CIAT publications whilst working in Santa Cruz and his comments related to these are included in the section about Santa Cruz. The lack of guides for Cochabamba as opposed to Santa Cruz may well be related to the fact that there has been a much greater focus on the biodiversity of tropical forests than other vegetation types. There was not time to investigate which guides are being used in the Chapare.

Notes from the interviews can be found in the appendix. Table X shows the institutions interviewed and the guides that they used.

Table X Institutions interviewed and the guides that they used.

Institution	Interviewees	Guides used
PROMASEL -weed project at San Simon University run by the docente of botany.	Jaime Villaroel	Many international identification guides Guia de uso de arboles en sistemas agroforestales. Guia de Arboles de Bolivia Frutas Silvestre Brazilian CD rom guide
PROSANA – project looking at integrated rural development in Arque, Bolívar and Tapacari.	Margoth Cab	No guides used
PRODEVAT	James Johnson Candido Pator (in 2 interviews)	Arboles tropicales de Terry Pennington ITTO-Manual de Identificación de Especies Forestales de la Sub-region Andina. Guia de uso de arboles en sistemas agroforestales. Guia de Arboles de Bolivia
CERES – help with the production of POPs and Planes de manejo in Yukare	Rosario Leon Roberto Muyano (agronomo) Freddy Cruz (forestal) Carmin Reya (sociologa) Jose Tornico (sociologo) (in 2 interviews)	Do not use guides, work is based on IFRI methodology which focuses on inventory based on interactions in the eco-system. All plants are ID using local names and any unknown plants are sent to a botanist.

#### Other guides Used

##### *CD guide to tropical plants-produced in Brasil*

- This is better than a book for students as it is more interactive.
- The photos are high quality and there is a good variety-close up tree, distant view, floewr fruit etc
- It is easy to search either by common or scientific name
- It is easy to access all info on use, disease, manejo etc
- Main problem is that all the common names are in Portuguese so you need to know the latin name in Bolivia- needs to have common names in a range of languages.
- Clearly , it is limited to those with computer access but this is common in Unis and NGOs etc



*Arboles de Tropicales de Mexico* by Terry Pennington.

This has much relevance to Bolivia and good quality line drawings. He does not use it much for ID as he already knows plants-rather it is to gain more information if he is asked to write something on a species or group of species.

*ITTO – Manual de Identificación de Especies Forestales de la Subregion Andina*

This is very useful as it includes both photos and drawings, it shows detail of the bark and different wood cuts.

#### User needs for a consultant (James Johnson)

- The ideal guide for a consultant would also have local names (the whole range should be included),
- Distribution maps are very important and an idea of how many species there are in the same genus.
- A clear description of distinguishing features between similar species with geographical coincidence
- Information needs: Information on local value, Description of uses, Associated vegetation, Phenological data and how this varies between different zones-cycles are very site specific, Practical info on the plant i.e. seed treatments, Growth rates, Economic value

#### NGO user needs for future guides

- Lots of people are interested in local knowledge – it would be ideal to develop a guide with local people so that they can access their own information when it has been documented. It is also very important to involve the users from the start to ensure that what you are doing is needed and appropriate. When working with local people should look for the experts with deep knowledge rather than just people in general.
- It would be interesting to have two versions, one all images and one with writing. A plant guide with uses and manejo would be most interesting as the info is being lost. It would also enable the community to have a dialogue with the outside world. Botanical info would not be relevant to the communities but may be useful to tecnicos and outsiders. Such guides could be very beneficial to tecnicos working in the areas
- Best format would be SIMPLE (as people have little time to read and no tradition of it either), LESS TEXT MORE GRAPHICS.
- Good quality photos are better than illustrations unless you have a good illustrator
- Need both local and scientific name
- Need complete info on use
- Finance is a problem and many books would need to be donated. Some NGOs may be able to buy. Perhaps a subsidised price would help
- If you do produce a guide it should be very specific to the area- you cannot usefully generalise.
- It would be useful to note down the different uses of species so that the knowledge is not lost and can be shared within and beyond the community. But it is very important to be aware of diversity and specificity.
- A guide to wood species including the variety of names and scientific name as well as market information. There is a real problem with so many different names as people think that the wood is not useful because they are all using different names. Scientific names are very important for unifying information.
- A guide to plant uses aimed at both tecnicos and local people.

#### University Needs

- There is a need for more locally relevant guides since it is often impossible to get to a species level with international ones. Often only gets to genero.

- The guides that would be most useful would be TAXONOMIC GUIDES-i.e. for trained botanists.
- Since students go to work in a wide variety of zones it is not so important to have really area specific guides in terms of teaching. They need to know about all the major species of the different vegetation types in the different zones to enable them to work anywhere in the country.

### **DISTRIBUTION**

Publications should be distributed to:

All NGOs working in the area

Teachers both rural and urban

Health sector ( if medicinal)

Local promotores and tecnicos working in the campo.

### **Guides under production**

CERES are currently producing a guide to the reproductive cycle of different trees, the local people are determining it for themselves

PROSANA : A guide to 700 sp of grasses, shrubs and trees from Arque was produced by Pierre Ibisch as part of his thesis was summarised and put into the plan for Arque, they occasionally sell it to NGOs but it is not a book. It would be good to covert it into a proper guidebook format. In fact they have much raw data that they would like to convert into teaching guides. They would like to present their work in a way that is accessible to many people as currently there are only technical reports that a few people read. A MANUAL TO GUIDES COULD BE VERY USEFUL

PROMASEL want to produce 2 guides to weeds as there is currently no info in the zone. There are no guides that they know of written about plants specifically for Cochabamba. They are looking for funding for their work.

**Guide 1:** Documentation on weeds between altitudes of 2,55-4,000 m (Zonas de Morachata, Ayupaya and Tiraque)

- Info: Botanical details for ID, photos, manejo, uso, control (ecology is less important)
- User group: tecncios, university students, those who work in the field.

**Guide 2:** Produce a guide to weeds of the Chapare based on the guide produced by Morag web for Santa Cruz. They would increase the number of species in the original to make it appropriate for the Valle de Sajta where the university has 5,700ha of land.

They want to add about 1,00 species but already have much of the information, ID is no problem, information on manejo is more worrying. They want to focus on weeds of the main agricultural crops-the aim is not to destroy them but rather control them in a way that reduces competition with crops but increases soil protection on hillsides. Many weeds have uses: fodder, edible, medicinal, allopathic (i.e. can prevent invasion of other species and bugs), they may also indicate soil types.

### **Validation of the Guide to Los Valles**

Three days were spent in the the Valle grande area validating the *valleys guide* with a variety of institutions working in the zone. Some of the tecnicos were aske to use the guide to identify pre selected trees. One of the authors later said that the guide had not been desigend for ID but for those who already knew the plants but wanted to gain more information on them. In this sense the validation exercise was not the most appropriate. Only one farmer was interviewed all the rest were tecnicos.

**(All I have is the notes from Edwin which are not very thourough) I will add later**

## Lomerio – validation of the guides written for the area

The field work in Lomerio focused on validating three guides which had recently been produced for the zone (details in table):

- Plantas utiles de Lomerio
- Notas sobre algunos mamiferos
- Los mamiferos de nuestro teretorio

A total of 21 people were interviewed from four of the user groups defined.

### **Teachers**

There was great variation in the ability and educational level of the teachers. This seemed to be related to their age. The younger ones were more accustomed to books. This seemed to be the main factor influencing their responses to the books on mammals.

### *Impact*

Of the four interviewed, three of them used '*notas sobre algunos mamiferos silvestres*'. They had not seen the other mammal book but this may well be because it has not yet been presented to the community. The one teacher who was not using the guide said it was because his pupils were too young to be using books yet.

- The guide was considered very useful for intermediate and advanced pupils (10-15 years) since it teaches them about the animals, their behaviour, habitat, their use and what they eat. It can be used to teach them how to value the animals and not to hunt them indiscriminately, as part of teaching them to manage their natural resources.
- It is a good way to get them to do research as they are asked to go home and gain more information on the animals from their parents.
- Although the guide was not focused on teachers, they are able to use it as a base for adding more information.
- It is also good for teaching the local language as you can ask the pupils to copy out the information in *Besero*

### *Strong Points*

- Easy to use index/table of contents as by local name
- Pictures are realistic
- Size is appropriate-not too big
- Good size of writing

### *Improvements suggested*

- For teachers it would be good to have complementary information on importance and use of animals and the value of the environment in general. It would be good to know about the way animals control pests (i.e. because they eat certain pests) as well as the bad things that they do.
- It is better to have colour pictures for identification of animals. It is important that the colour is as accurate as possible. Photos would be even better.
- The guides should be bilingual (*Besero* /Spanish) with the text in a double column to allow direct comparison.
- There should be drawings of the animal skeleton
- Information on the animal's life cycle and how they change in appearance during their life. It is very important to know when they are reproducing and with young etc so as to control hunting
- We need info on which animals are in danger and how to conserve them.
- Guide should have info that will help people hunt more sustainably

### *Names*

- Scientific names are not useful or relevant to those in the community but they could help outsiders.
- All local names must be included as there is variation within the zone

### *Order*

- It is good to have alphabetical order by common name

### **Analysis of Mamíferos de nuestro territorio**

- They have not read it before so cannot be sure if it is useful
- The book is too large and is already falling apart
- It is good to have the different levels of information (teacher. Pupil, illiterate)
- Many people misinterpret the images that are trying to convey messages-they should have titles so you know what they are showing. The most problematic image was showing scale, not one person interpreted it correctly.
- Pictures are good but should be in colour
- Information is very complete
- Good to have names in both languages but they cannot read their own language since the writing has recently been changed.
- It is good to write from the point of view of the animal.

### *Priorities for new guides*

- General guide to the environment and ecology; e.g. pollution, chaqueo y quemas, deforestation
- Guide to main wood species, including information on whether they are threatened
- Insects
- Local history
- The importance and benefits of plants e.g. Useful plants, with details on use so that traditional knowledge is not lost, especially medicinal plants BUT SIMPLE SO THAT PEOPLE IN THE COMMUNITY CAN USE IT AND LEARN FROM IT.

### *Important Comments*

- They do not lack the information and ability to produce the guides their main constraint is lack of materials so even if there was a manual to help them with the process, they would not be able to benefit from it. (one teacher is currently trying to produce a dictionary Besero/spanish)
- The main group to focus on would be the young who are losing the information but have more tradition of reading as well as new people coming to the zone. Old people already have the knowledge. Educational books are a priority.
- It is very hard to gain access to books even if they would like them. All the mammal books are very good but they do not have access to them.

### **Plantas utiles de Lomerio**

Although this guide was aimed at a more technical/academic audience. There was a copy in the local CICOL offices. Since it had been written with the participation of the communities and was focused on their zone, we decided to ask people for their opinions. Criticisms tended to be unanimous across the interviews.

- There is no point having a guide that does not give pictures of the plant unless you are very sure that you know them well. This is not the case for most people
- Information on use is so general as to be useless. If you are going to talk about use should include details of which part is used, what for and how.
- There should be information with pictures of the life cycle of plants (so you can recognise when young) and the way they change over the course of the year (when do they flower, produce fruit and seed etc)

- It is very hard to use the index to find the plants as it is in the middle of the book. It should either be at the back or the front.
- There are too many lists that seem as if they will be the index but then have no page number, this is confusing.
- The level of language is too technical even for the promoters etc. It would be good to have a practical guide on the same theme but with simple language.
- Some of the local names used did not seem to correspond to the plants that the local people think they should.
- It is important to have pictures showing all the parts that local people use in identification...bark, roots, flower fruit, leaves. Coloured pictures are best and photos (like in guide to less well known species) would be even better.
- 
- It would be good to have a guide with the same aim but using simple language for the people from the zone.
- All local names should be included and the scientific name is good for external reference.
- There was concern that the people had been exploited by BOLFOR; apparently each informant had been paid 5bs to provide information which had then been taken from the community. They felt they were going to lose their intellectual property rights and did not want to provide any more outsiders with information without being sure that they would be the ones to benefit from their knowledge.
- The guide does not fulfil its title as it does not give plant uses in any meaningful way
- It would be good to have the guide in the local language too
- Writing should be bigger

#### *Ideal plant guide*

- *Simple easy to understand plant description (simple language), where it can be found, colour picture of all distinctive parts,, all types of use with main use in detail.*

#### School children

When presented with a selection of guides, the children naturally focused on the animal guides. This seemed to be because animals are more attractive at this age (under 13).

- Pictures are the most important aspect in the identification of animals-when asked to look for a certain animal they did not even try to use the names but flicked through page by page looking at the pictures. They focused on the pictures for discussion, noticing if it was realistic, whether the colour was correct etc.
- All the children preferred colour pictures as they were more attractive and made the animal more realistic.
- They like to have writing as well as pictures but the letters must be big.
- They liked the book to be big too
- They mostly were not interested in plants but one child commented that it would be good to know which plants the animals ate.

#### Promoters

The promoters from each of the communities have a small library of guides and technical books. Only the central CICOL had the three guides from our list and none were using them but they had seen them. The comments made on the individual guides did not vary greatly from those of the teachers. Again, there was a variety of abilities within the group although they all seemed relatively familiar with using indices etc.

#### *Animal Guides*

- They already know how to recognise the animals so do not need identification.
- It would be useful to have a guide on the animal's life cycle to help them work out when it is safe to hunt.
- Need information on which animals are in danger, when you live in a zone an animal may seem common or like a pest when in reality it is in danger.

- Animal pictures should be in colour
- Should be same size as Amboro guide not too big.
- Should provide broad information including general information on conservation and how to conserve the animals and how to hunt sustainably

#### Guide priorities

A guide to bees and apiculture

A guide to natural resource management

A simple practical guide to useful plants and how to use them (esp. medicinal plants)

#### Comments

Plant guides are only really useful if the person does not already know the plant.

## **Identification of User group needs in Bajo Paragua**

The following section summarises the user group needs expressed by those interviewed in three communities of Bajo Paragua (Florida, Porvenir and Piso Firme), located on the margins of El Parque Nacional Noel Kempf Mercado (see table X). Forty four people were interviewed in total, however, most of these were group interviews. Needs have been summarised according to user group. Detailed notes from each interview can be found in the appendix. It is not easy to decide on definite priorities for guide production since needs and priorities vary, as much within as between groups, according to personal interest and levels of education. However, there are many similarities between the needs of all the groups which can inform guide production whatever subject is chosen.

### **Guardaparques**

The 'guardaparques' work on a rotational system moving from camp to camp around the park. Two of these camps are in the communities of Florida and Piso Firme. Most of them are from the city of Santa Cruz but some are local. They have a variety of different skills and focuses in their work. Some know about plants, others about animals whilst others have technical skills such as piloting or mechanics. Their role is broad and includes patrolling the park, monitoring wildlife, as well as guiding visitors and tourists. Many felt that they lacked knowledge about the flora and fauna of the park. In terms of producing guide books for the park, there was a range of needs expressed which depended on the main interests of the guards involved. It was generally agreed that guides to both plants and animals in the park would be very useful both for monitoring and for gaining more information that can be shared with visitors. They say they really need to know a bit about everything, i.e. plants, mammals, ecology etc. They thought that one guidebook could be useful for guards, guides and eco-tourists.

### **General Comments**

- It would be good to have two types of guide, one for identification in the field and one with more details that can be kept in the office.
- The guides should be small and easy to carry.
- Both local, scientific and English names should be used. It might be good to have a whole guide in English as many of the foreigners who visit speak English
- The pages should be waterproof.
- Language should be simple and practical- when books are too complex and long they tend not to use them.
- Identification is as important as extra information as they are not very familiar with all the flora and fauna.
- Although the Guia de Arboles de Bolivia contains all the species in the park it is too complex and they do not use it.

### **Priority Guides**

#### *Guide to mammals*

- They already have quite a lot of information on mammals since there is a student who has recently done a thesis on mammals. They have been provided with sheets of drawings of a variety of mammals and birds showing their scientific and local names. It would be interesting to get a student to do a similar thesis on plants.
- As they monitor the mammals, they are collecting information on them and this could be used in the guide.
- It would be good to work with the local communities to gain more information
- External information on mammals (i.e from other books and studies etc could help them in their monitoring process. It would be interesting to compare the behaviour etc of the mammals in the park with the same specie in other countries etc)



- The guide should be attractive simple and easy to read with colour pictures, and all available information on lifestyle - e.g. reproductive cycle, habitat, diet etc. Also info on whether they are in danger etc.
- The pictures should be of the quality of the guide to British land Mammals – colour is vital for mammal identification.
- It would be good to have information on how the communities can help to protect the mammals and how the existence of animals is beneficial to man.
- Shorter simpler guides are better.

#### *Guide to birds*

- This was as popular as a guide to mammals and the requirements were the same. They would also like information on migration habits, nesting, habitat, nutrition etc
- Colour pictures of the birds are important and photos would be good.
- It is important to know about birds as they are very visible and tourists are always very interested in them

#### *Guide to plants*

- A guide should either include the most attractive plants, the most useful ones, the best known or those that are most frequently asked about by visitors.
- It is a priority to have a guide to medicinal plants.
- It would be good to note down the most asked questions when tourists visit.
- It would be good to have information on the ecology of the different vegetation types.
- It is not so important to have colour pictures for plants but it would be good.
- Some guards wanted detailed information on plant use whilst others thought that they only needed superficial information since they were generalists not specialists.
- A detailed guide would show which part was used for what and how.
- Identification is important and pictures should include, roots, copa, bark, leaves fruit and flowers. Colour photos would be ideal-like in guias de especies menos conocidas.
- If it is a guide to useful plants they should be grouped by use. Otherwise in alphabetical order of local name (although this would be harder for outsiders)
- A plant guide should include information on the timber trees

### **Tourist Guides**

These were young local men who had recently been on a training course organised by FAN. They were local, 2 from each of the community and seemed to lack confidence as well as experience with written text (despite the recent course). They claimed to know quite a lot of plants and animals but only by local name, for this reason a guide with both names was important to enable them to communicate with the tourists. As yet none of them have guided tourists round the park. They seemed less educated than the guardaparques.

#### General comments

- Both local and scientific names are important
- Identification is important
- The guide should be pocket sized
- The format of the guides for children in Lomerio suits them.

#### Priority guides

- A guide to birds and mammals is the priority as tourists are more interested in these than in plants.
- The bird and mammal guide should have all interesting information on lifestyle, habitat, migration patterns, mating patterns etc. This information would be useful to share with tourists.

- If the guide had to be about plants then it should be about useful plants, especially medicinal plants, this generally interests tourists too.
- The guide should include information on phenology
- The picture should show the useful part as well as key parts for identification; the stalk, trunk, bark, leaves flowers and seeds/fruit.
- It should say how the plant is used
- There is variation in the level of detail required. Some say they want a recipe book to medicinal plants whilst others just want to know a bit about how the plant is used to share with tourists.

### **Teachers**

There was variation amongst the teachers in terms of their level of education and therefore their needs. Some teachers focused on the need for guides as teaching materials within the school whilst others focused more on their needs as members of the community. Some teachers were familiar with plants whilst others were not.

### **Priority**

- A guide to medicinal plants (like a recipe book) would be very useful for the community, especially women, since the knowledge is being lost but they are far from medical services and often cannot afford them. There are many plants and the majority of people do not know how to use them.
- A guide that differentiates the useful plants from those without uses and shows which plants are toxic.
- They like the mammal guides written for Lomerio and feel that these would be useful in the class but should include more information on how the animals live, why they are valuable to man and how to conserve it.
- It would be good to have a general guide to the park and why it is important including the most well known/interesting plant and animal species that can be found there.
- A guide for use in lessons on farming (agropecuaria).
- A guide to animals and plants in the area explaining the importance of the environment and of natural resource management. The teachers lack resources to provide adequate lessons on environmental management.

### **General Comments**

- The guide should be small and easy to handle
- The pages should be reinforced with plastic to make them strong
- The language used should be simple and reflect the way the people in the area speak (the level of the CARE and BOLFOR children" books is good)
- The level of education is very basic and any educational guide must be aware of this and therefore be very simple.
- It is very important to have all the names, both scientific and local, there are many local names and these change from zone to zone.
- Pictures are the most vital tool for identification, colour photos are best for ID if they are high quality as you can see the colours. However, line pictures are more practical as they can be photocopied.
- In a plant guide you need the leaf, flower fruit, trunk/stalk and a picture of the entire plant.
- Many of the young people know nothing about plants or animals since they study away from the community and never go hunting or walking in the woods. When they come back from their studies, they know nothing about their own environment. We need to books that can help them to value the natural environment around them so that they do not mismanage it.

### **Students**

An interview was held with a few students home for the holidays. Although they seemed interested in the guides, they were shy and not very forthcoming. One girl said she thought the guides we showed her were nice but really she was not interested in nature.

- They spent a long time studying the books and seemed interested.
- They liked the guides produced for Amboro and Lomerio.
- They said that a guide should have simple information on the life style of important species so that people could learn to value them and not shoot them indiscriminately.
- They would prefer a guide to mammals but if it had to be plants it could be to useful plants, especially fruit trees.
- They would like a book that could educate them on the importance of the natural environment, especially the tropical forest and how they could help to preserve it.
- A guide to animals should say whether they are threatened.

### Villagers

The villagers interviewed included local woman, promoters, hunters and community leaders. One interview was held with a large group carrying out a forest inventory and they were noticeably unfamiliar with reading and showed little interest in the project although this may have been due to shyness. Their needs proved to be similar to those of the teachers and guides. There was a general consensus that young people have lost knowledge of the local wildlife and that it is very important to educate them if the future of the forest is to be protected. They felt that older people would not need guides as they had more traditional knowledge and less of a culture of reading.

### Priority

*A guide to medicinal plants*

- Like a recipe book which can be used for medicinal preparations

*A guide to the best known useful plants*

- Which parts are used, how?
- Information on regeneration of threatened plants

*A guide to birds mammals and fish for children and young people*

- Most of the older people already know about plants and animals although more information could help them to plan their hunting better. This should include information on the way the animals live-habitats food, reproduction etc whether they are threatened, how we can protect them. They need to be books, which will inspire the young to want to conserve their environment.
- They say that the guides already written are very good and only need to have the title page changed as the species are the same in PNK as in Amboro and Lomerio

*A guide to plants that women can cultivate in their gardens*

Only one person mentioned this.

*A guide to edible plants found in the forest*

- With nutritional information as well as how to prepare them.
- It could be helpful for if you get lost in the forest.
- Many people are malnourished but do not realise that there may be useful plants near to their homes.

### General Comments

- People were more drawn to guides with good illustrations-they said it was important to have good quality coloured illustrations
- Guides should be simple and easy to read with big writing (like the Lomerio guide)
- There should be a picture for each animal or plant
- Guide should be small
- The pictures should be coloured and of the quality of the English sheet guides. The name should be on the picture.
- The useful part of the plant should be emphasised in the illustration.

- It could be useful to put similar looking plants together so that they can be compared and not mistaken for each other.
- Those who commented preferred the more simple mammal guides to the bigger one (*mamíferos de nuestro territorio*), they thought it was too big and had too much writing.
- They generally know the plants and really need more information but for ID purposes, there should be illustrations of the leaves, fruit, flower, stalk, roots, bark and whole plant
- Guides should include the scientific, local and Portuguese names
- Guide to useful plants should be ordered by use
- Indices should be according to both names as well as use.

### **Ecotourists**

Only two tourists were interviewed in the park. They said that they were more interested in the scenery than knowing any details about the animals and plants. Tourist needs will depend on the level of knowledge and interest of the individuals. Clearly, some tourists will only want an attractive book with background information whilst others may be interested in detailed guides to flora and fauna.

### **Priority**

- A general guide with a bit of everything-history of the park, ecology, geology, local culture
- Practical information; how to get there, park rules, best things to see, what you need to take.
- Detailed map
- Good photos of most impressive scenery
- Most interesting plants and animals-details on use, or behaviour, interesting anecdotes

**(NEED TO PLAN QUESTIONNAIRE TO ASSESS THIS)**

### **Common Needs**

Although there is variation in needs, some were common across all user groups and it is worth highlighting them.

- The language of the guide should be simple and practical. Most existing guides were considered to be too complex by all user groups. The most popular guides were those that had been written for school pupils. **A few of the guardaparques would enjoy a slightly higher standard, this could be shared with the ecotourists.**
- Guides should be small and easy to carry around with reinforced paper so that they can survive the climate. It could be interesting to have complementary guides, one for identification in the field and one with more in depth information to be left in the office/school etc.
- Illustrations are the most important part of a guide, they aid identification (even if the plant is known they ensure that names are not confused) and also make the guide more attractive in a culture that is not used to reading. Animal illustrations need to be in colour and of high quality. Plant illustrations do not need to be in colour but it is more attractive when they are. The flower should be in colour. Photos are attractive but need to be of high quality.
- People do not know Latin names but realise that they are important in linking the information with the outside world. Both latin and local names should be used. English names are useful if tourists are involved and Portuguese names are important since the park is almost in Brasil.

### **Priorities**

A few main priorities were expressed across the groups. Mammal and bird guides were more popular for educational purposes and use in the park whilst practical guides to useful plants were very popular to improve daily life in the area:

- *A guide to medicinal plants in recipe book format that could be used to treat people;* This was popular with all groups for use in their daily lives. Guardaparques would prefer a more general guide to uses if it is to be used in their work with visitors.
- A guide to mammals

This should include all possible information on their lives and be helpful in conserving them

- A guide to birds

-

### Interviews In Cochabamba

Institution	People interviewed	Guides Used	Guides Produced			
CERES	Rosario Leon-sociologa	none				
CERES	Roberto Muyano (agronomo) Freddy Cruz (forestal) Carmin Reya (sociologa) Jose Tornico (sociologo)	none				
PRODEVAT	James Johnson (consultor forestal)	Guia de Arboles de Bolivia  Arboles tropicales de mexico (T.Pennington)  Manual de Identificacion de especies forestales de la subregion Andina (ITTO)	<b>Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia</b>  Selección de especies para uso en cortinas rompevientos en Santa Cruz, Bolivia			
PRODEVAT	Candido Pastor	Guia de Arboles de Bolivia  Manual de Identificacion de especies forestales de la subregion Andina (ITTO)				
PROSANA	Margoth Cab (agronoma)	none				
PROMASEL/ Universidad de san Simon	Juan Villaroel (docente)	Guia de Arboles de Bolivia  Guía para uso de árboles en sistemas agroforestales para Santa Cruz, Bolivia  Various international taxonomic guides				

User Needs in Bajo Paragua

	OPTIONS					
User groups	Tema/proposito	Imagenes	Idioma/language	Formas de acceso	Formato	Informacion
Profesores						
Escolares						
Guardaparques	Guia de mamiferos					
	Guia de aves					
	Guia de plantas utiles (medicinales)					
Guias						
Promotores						
Tecnicos						
Ecoturistas						
Comunarios						

List of existing guides in Santa Cruz  
Summary of usability and impact based on analysis of the interviews  
Analysis of results from Los Valles  
Usability  
Suggestions for improvement  
Analysis of Results from Lomerio  
Usability  
Impact/ comments  
Analysis of results from Bajo Paragua  
User group needs and priorities