Mapping How We Use Our Land

Using Participatory Action Research

by
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Canada Alberta

Partnership Agreement in Forestry
Entente d'association en foresterie

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The authors of this study acknowledge the support and original idea
for this project provided by the Athabasca Native Development Corporation
ANDC.
This organization is unique in western Canada
in that it is the only organization that effectively represents
the Indian and Metis people together for one specific mandate.
The mandate is the economic enhancement
of the Aboriginal communities of northeast Alberta.

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Historical Background

The study area of the traditional land use and occupancy study profiled in this booklet is broadly speaking northeast Alberta, south of the Clearwater River, west of the Alberta/Saskatchewan border, north of the Cold Lake air weapons range and east of the Athabasca River. In this region Athapaskan, Cree, and Metis people have mixed with Euro-Canadians engaged in the fur trade since the arrival of Peter Pond in 1780. Prior to the establishment of the first trading posts, Aboriginal people had lived in the area for at least 7000 years, forming part of the great southern migration from Beringia of the Athapaskan-speaking peoples.

The Metis entered the region with the first fur traders and explorers, paddling, navigating and translating for Alexander Mackenzie, John Franklin and a host of minor traders who would have been lost without their services. After the amalgamation of the Hudson's Bay Company and the Northwest Company in 1821, surplus fur trade posts were closed and the fur market began to dry up in Europe.

Increasingly, it became evident that Indians and Metis alike would have to find other options to maintain their livelihood. In 1899 Treaty 8 was signed with the Indians of the region, and a parallel issuance of scrip (which could be exchanged for land) was made by the federal Metis Commission. During this time the Geological Survey of Canada also began a survey of the region, noting the extent of tar sands and oil seeps along river banks first reported by Alexander Mackenzie. Soon a new form of entrepreneurship began as the market for oil-based bitumen seemed possible.

The fur market also re-emerged in the Fort McMurray area in the last third of the nineteenth century, and with expansion in the twentieth century came an influx of Euro-Canadian trappers in the period 1910-1930. Trapline registration began in the 1930s and combined with the 1917 Northwest Game Act, the Migratory Birds Conventions Act, the 1922 creation of Wood Buffalo Park and overtrapping to further constrain the use of bush resources by Aboriginal people.

Historical background continued...

The area generally opened up to settlement with steamboats on the Athabasca, the Alberta and Great Waterways Railway and the impetus created by World War II to construct roads into the region. By the 1950s the industrial economy was becoming more and more established, and Aboriginal participation in wage work began to increase. Through the 1960s and 1970s with the establishment of new tar sands plants with state of the art technology, Fort McMurray became a Canadian boom town, and there was less and less incentive for Aboriginal people to maintain a full-time presence in the bush economy. Trapping, hunting, fishing and gathering became part-time activities for most, and thousand of outsiders also began to hunt and fish in the Aboriginal homelands with the assistance of seismic access roads, four-wheel-drive vehicles and float planes.

Life for regional residents continues to change at a fast pace as the Alberta-Pacific pulp mill comes on stream and tar sands projects are expanded. These factors provided the incentive for the Athabasca Native Development Corporation to undertake the traditional land use and occupancy study described in this booklet.

Mapping traditional land use and occupancy

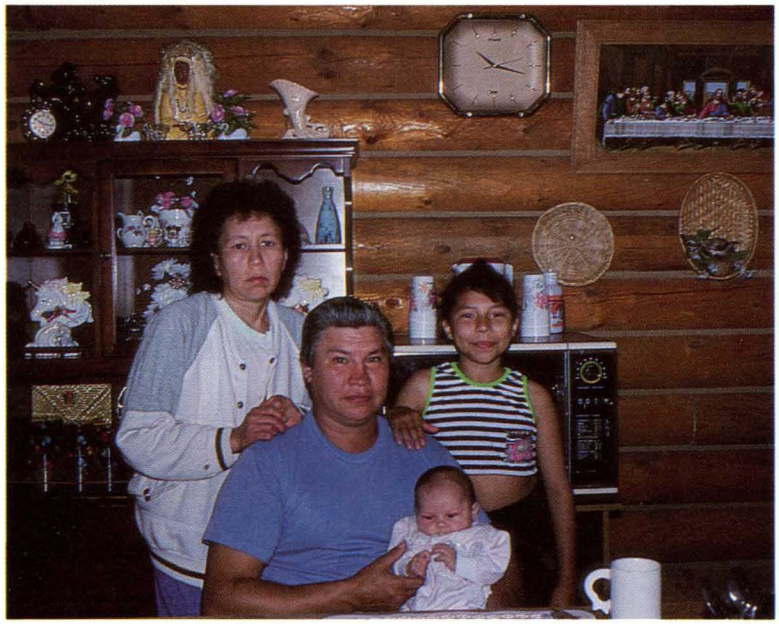
- Why do we study traditional land use and occupancy?
- Why did the Athabasca Native Development Corporation work to initiate their study?
- How do we plan for community participation in TLUOS?
- How do we collect the traditional knowledge?
- How do we organize the traditional knowledge?
- How do we co-manage the findings?
- Where do we go from here?

Why do we study traditional land use and occupancy?

We do traditional land use and occupancy studies to map traditional and current environmental knowledge for the future. A good map base of traditional land use also helps with comprehensive land claims, treaty entitlement negotiations, and resource development planning. In addition, such studies are useful for collecting and preserving cultural history for creative writing and state of the art educational purposes.

"Traditional land use and occupancy" is a term that social scientists use to describe how aboriginal people rely on the land for hunting, fishing, gathering edible plants, trapping, and generally living and travelling in the bush. This way of life still exists in many rural aboriginal communities, although it is increasingly being replaced by regionally available opportunities for work in small business, local government and renewable (for example, fishing and forestry) and non-renewable (for example, mining and oil and gas) industries.

Today many young people in the "bush economy" also have good opportunities for work elsewhere. They have to make choices about staying home or travelling to cities and towns in the search for work. Some people have made the decision to make the best of both worlds, and they continue to live at



Russel and Shirley Temblay with their children, living at Conklin. This family participates in both the bush and industrial economies, hunting and trapping in the Conklin area, and working at Syncrude in the oil sands industry, respectively.

home so that they can harvest bush food and fur, and work in a job for a local employer or run a small business. The decisions that individuals can make about where, how and for whom they work are getting more complicated all the time. And on top of this, some people are learning that they can have many different jobs in a lifetime. So they do not have to decide once and for all what they want to do after school ends.

Because of all these choices, it is important to preserve options. Just because people decide to leave home and the bush economy, does not mean that they will not one day return. If they choose to return, they may want to eat country food and consider employment opportunities in trapping, guiding, and the new field of eco- and cultural tourism. For these opportunities to continue everyone will have to work hard to preserve the bush land base. This will require careful documentation of how it was used in traditional times and how it continues to be used today. A good map of traditional land use will also help with comprehensive land claims, treaty entitlement negotiations, resource development planning, cultural preservation and education.

We do traditional land use and occupancy studies to map traditional and current environmental knowledge for the future...

When traditional environmental knowledge is combined with modern science knowledge better decisions about the future can be taken. The combination of the two types of knowledge — traditional and scientific — to make decisions about conservation, land-use planning and industrial development is called co-management.

Why did the Athabasca Native Development Corporation initiate this study?

Why do we study traditional land use and occupancy?

Why did the Athabasca Native Development Corporation work to initiate their study?

How do we plan for community participation in TLUOS?

How do we collect the traditional knowledge?

How do we organize the traditional knowledge?

How do we co-manage the findings?

Where do we go from here?

The Athabasca Native Development Corporation (ANDC) initiated the Aboriginal traditional land use study, the first of its kind in Alberta, after a meeting between the Metis leaders and the First Nations chiefs and Al-Pac (Alberta Pacific) officials to discuss a working arrangement for the northeast Alberta portion of the forest management agreement.* The leadership of ANDC essentially proposed what they called a "parallel Aboriginal process". This process would bring together the decision-makers of Al-Pac and the provincial government with the board of ANDC (First Nations chiefs and Metis leaders) to examine the impacts of the company's harvesting plans on the Aboriginal and treaty rights to use the land in a traditional manner.

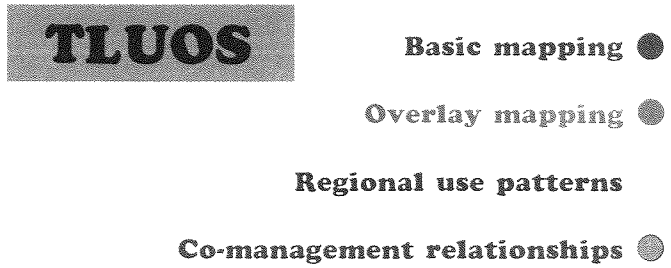
To ensure that the process would be productive the leadership proposed to carry out an Aboriginal traditional land use study. The study would clearly and precisely determine where, when and how the Aboriginal people of northeast Alberta were currently using the land. By combining the traditional land use information and Al-Pac's harvesting plans, the participants in the parallel Aboriginal process would then be able to negotiate mitigative measures to reduce the negative impacts.

Clearly, the study information and the parallel Aboriginal process can be seen as a positive step towards "co-operative management" among the province, the industry and the Aboriginal people.

*This and the following paragraphs are reproduced with permission from a letter written by Mike Mercredi, executive director of ANDC, in February of 1994.

This booklet describes a study methodology. The methodology is specific to the needs of the Indian and Metis people who are using the land in a traditional manner. This traditional use of the land is the basis of a system of economic subsistence for Aboriginal people. This economic factor must be emphasized in a traditional land use study by determining the value of country meat, vegetables and fruits that Aboriginal people harvest from the land.

The study must precisely locate each grave site, cabin and significant area. The ownership of this information must also remain with Aboriginal people. This ownership, we believe, will cause future developers of the resources to begin early productive talks with Indian and Metis people of the development area.



To formally document the content of the study, an *Agreement for the Traditional Land Use Study Between the Athabasca Native Development Corporation and the Canadian Forestry Service, Northwest Region, in Accordance with the Canada/Alberta Partnership Agreement in Forestry (1993)* was signed. The TLUOS began with clear guidelines, a $55,000 budget for five communities (Anzac, Gregoire Lake Reserve, Fort McMurray, Janvier and Conklin settlements), and a need to document aboriginal land use to enable co-management of forest resources in the planning of an enormous ($1.3 billion) pulp mill project. From the beginning of the TLUOS, ANDC and the project consultants knew that there would be four levels of data analysis possible with the research results:

1. **Basic** — The mapping of place names, trail locations, graves, cabin sites, known harvest locations (for fur bearing animals, big game, birds, fish and edible plants) and registered traplines;

2. **Overlays** — The display of individual data sets on transparent overlay maps — seven individual maps were created. Altogether the overlays show a great deal of traditional resource use all at once;

3. **Regional use patterns** — Once the overlays are assembled it is possible to focus on heavy use patterns in specific areas. These areas tend to occur in river valleys, along shores of lakes, and in key meadow and browse areas;

4. **Co-management relationships** — When the regional use patterns are understood, it is possible to begin to plan co-management strategies that provide protection for migratory species, conservation areas, heritage sites and rivers, and continued fur and country food harvests.

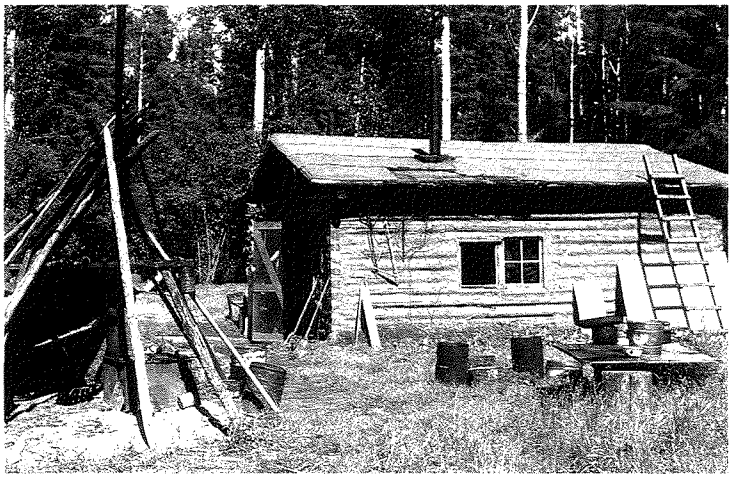
Altogether, the above four levels of data analysis provide multiple reasons for undertaking the TLUOS. Some individuals and agencies may just focus on basic data, others on the overlays, and still others on the complex interrelationships amongst all the data. Each use is valid, and all uses are important. When the TLUOS data are compared with scientific data (for example, migration routes of moose determined with radio collars and satellite tracking) true co-management analysis is possible, and the best quality conservation decisions can be taken.

How do we plan for community participation in a TLUOS project?

At their heart TLUOS projects are community-based, involve community knowledge and serve community needs. While some communities may have resident experts in interviewing, report writing and mapping, it is not unusual for Band councils, Metis settlements and land claims implementation teams to hire consultants to train local people in these skills. But before any training can occur, it is essential that the community have a well understood need for a TLUOS. It may be that land claims or treaty entitlement negotiations are underway; a major regional industrial development may be in the planning stages; or the community may desire a more effective way of making land use planning decisions. It is essential that the elders of the community support the study, and that they agree to play a central role in its planning and conduct.

Once the need for a TLUOS is confirmed, the community will have to find funding for the work. In the past budgets have been provided by the federal Department of Indian and Northern Affairs, the Department of Natural Resources Canada, provincial ministries of Energy, Mines and Petroleum Resources, and Forestry, Lands and Wildlife. In the future it is reasonable to expect greater support of this work from resource development companies which have much to gain from the success of regional co-management.

When a community agreement to undertake a TLUOS and a budget are in place, it is time to consider the training process and



Consultants engaged in participatory action research in traditional land use studies need to know the difference between the urban and bush economies. Above: trapline cabin of Raphael and Louise Cree along the Clearwater River east of Fort McMurray; right: downtown Calgary.

the mapping methodology. The authors of this booklet strongly argue for the use of a participatory action research (PAR) process, where the community hires consultants to guide the work and train some local people in the process. Good consultants in this kind of work train themselves out of a job during the contract. They should not create a dependency relationship with their client community. When the TLUOS is finished the community should have gained most of the skills to do the next project themselves. A good consultant always goes on to a new community for the next project, because local people in the first community have been trained to carry on independently. It is important to understand this concept because it is the main goal of PAR. It is also central to the success of TLUOS, because the first set of community maps are considered to be "open" for the ongoing addition of new data — and who is better to add the new data than locally trained mappers?

Finding a PAR type of consultant takes some careful work. Ideally the community will hear from others who have done TLUOS projects about how their consultants performed. Word of mouth recommendations are a good place to start. Communities should hire their consultants only after they have met them face-to-face in a pre-job interview and asked a few key questions:

- how did they prepare themselves academically to do this kind of work?
- can they demonstrate their understanding of Metis and Indian culture? Can they distinguish amongst Metis, First Nations and Non-Status Indians?
- will they live in the community during the training period?
- have they succeeded in training themselves out of a job on previous PAR projects?
- do they have experience travelling in the bush and do they have a good working knowledge of the bush economy?
- can they apply state-of-the art computer graphics technology to the work?

Beaver dam northwest of Janvier, Alberta

• can they provide the names of previous clients so that a work quality check can be performed?

When a community and its funding partners negotiate a PAR contract for a TLUOS project, they should carefully consider the issue of copyright for the products of the study. The final report and all map products of this kind of work are really the property of the community. The community is the legal owner of the data because the data themselves are a part of the community. Many non-Aboriginal people look at a bush community and see only houses, schools, administration offices and stores. They fail to understand that bush communities are really entire hunting, gathering and trapping regions, complete with their traditional environmental knowledge base. This knowledge of the land is a very important piece of intellectual property, and PAR consultants should not claim exclusive copyright for work done to map and describe its existence. Sometimes joint copyright is negotiated, but in many cases community copyright is the way to go. It is always necessary to negotiate the issue and then clearly state who holds the copyright in the TLUOS contract(s).

Once funding, consultant, and project copyright issues are settled, it is time to form a community advisory committee (CAC). The CAC will guide the work of the consultant and guarantee community control of the project. The CAC should

• make the contacts with and determine the roles of community elders in the TLUOS:
• select the project trainees;
• determine their terms and conditions of work;
• approve the (annual) budget submitted by the consultant trainer and trainees to conduct the work;
• hold meetings as needed to review work in progress;

Above: First Nations office at Gregoire Lake, Anzac, Alberta

- assess as needed the work of the consultant, and the progress of the trainees; and
- provide a liaison with funding partners.

The community will have to determine the ideal size and composition of the CAC, but it should always work to ensure that the community controls the process, and that its goals are met. In practice the CAC may include the consultant and representative(s) of funding partners to ensure good communication.

Occasionally, the CAC may need technical advice in order to fulfil its mandate. For example, does it make sense to create a community geographic information system (GIS), or should more appropriate technology be used to store and report map data? In such cases the creation of a Technical Advisory Committee (TAC) is recommended. The TAC will generally serve the CAC, and usually it does so without charge, or only with modest travel and meeting expenses.

With budget, consultant, trainees, elders, CAC and TAC in place, it is time to begin the TLUOS. The next section of this booklet explains how this is done.

How do we collect traditional knowledge?

Why do we study traditional land use and occupancy?

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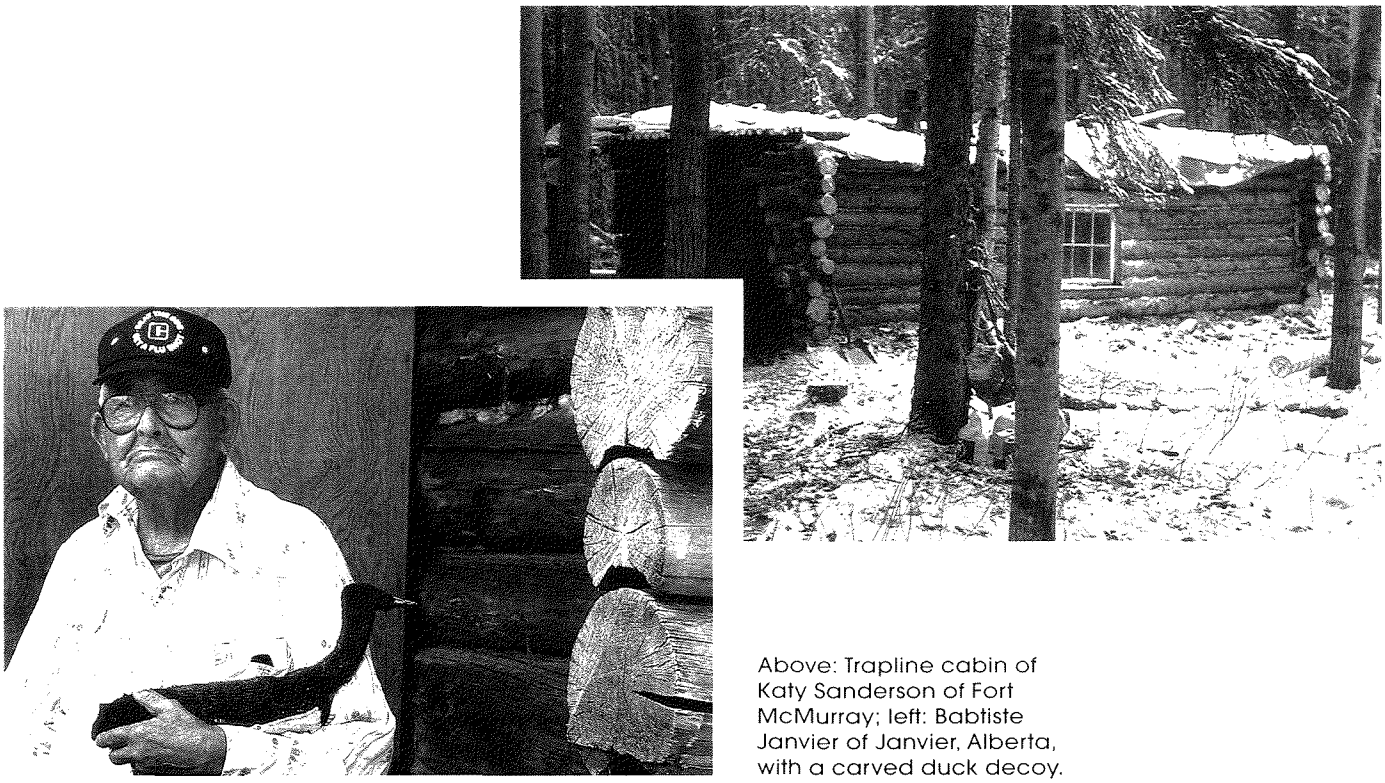
Knowledge of traditional land-use and occupancy lies for the most part in the minds of residents of the area, including not only the band elders but all the contemporary users of the resources of the region.

Very little such information exists in standard printed form, and indeed, that is one of the central reasons for carrying out a study such as is envisaged here. It is a matter of receiving shared information and making it available to all the residents of the region and to anyone else who has a legitimate claim to it. It is very important to note at this point that the fundamental issue is one of *receiving shared information* rather than *taking information*.

By way of illustration, the collected, shared information relates to recording:

1. a physical inventory, e.g., trails, food, animals, birds, fish, berries and so on;
2. an evaluation of the comparative value of bush-economy supplies, e.g., meat (a pound of moose meat in the bush as equated with a pound of quality beef in a food store), wood and so on;
3. lifestyle values, e.g., arts and crafts made from the bush resources; spiritual places; living with and off the natural environment and the natural resources of the land; and the self reliance that this gives to people who live in the bush economy.



Above: Trapline cabin of Katy Sanderson of Fort McMurray; left: Babtiste Janvier of Janvier, Alberta, with a carved duck decoy.

Before beginning a traditional land-use and occupancy study (TLUOS), it is important to search out any existing documentation before launching an intense community interview process. The material so collected then becomes part of the data base of the TLUOS.

Communities of Aboriginal people are now actively pursuing means of recording traditional land use practices with a view to overall co-management for conservation and preservation of the land, and all its cultural and environmental riches. Urgency is added to the pursuit because many bush economy communities are about twenty years away from losing — through the death of their older experienced people — the knowledge that remains of a lifestyle that sustained the communities for thousands of years.

In a typical area that might be the subject of such a study, the number of people who are able to share with the greater community their knowledge and experience is diminishing, and may now number only a few tens of people. It is these people who are crucial to the conduct of a traditional land-use study.

Traditional knowledge is oral knowledge. The process by which such knowledge is best collected is through a personal or group interview. The knowledge is obviously

Potential interview questions:
Categories of traditional land use and occupancy

- trail systems in past or current use
- bush land burial sites, individual and multiple burials
- sites or areas of spiritual significance to community members
- cabins either currently in use or available for use (i.e., still structurally intact)
- registered trapline areas
- moose, deer, elk and caribou habitat/harvest locations
- salt licks
- berry patches (blueberries, cranberries, etc.)
- waterfowl habitat/harvest locations
- upland bird habitat/harvest locations
- fish spawning areas in creeks, rivers and lakes
- fish habitat/harvest locations
- dry fish preparation areas/camps
- fur-bearing animal habitat/harvest locations
- traditional place names
- raptor nesting sites
- rat root, sweet grass and bush medicine gathering sites
- special woman's areas (e.g., puberty retreats, spiritual renewal camps)
- carving and pipestone quarries
- oft-used waterways
- observations (e.g., past and present) of wolf behaviour
- archaeological (prehistoric and historic) sites
- farming, market gardening, and grazing areas
- hay meadows
- artesian wells/spring sites

anecdotal, but every attempt must be made to capture it as completely as possible and without loss or distortion. It is only through the courtesy of the people being interviewed and their willingness to share that *anything* becomes available.

Some of the older people are not familiar with English and are much more comfortable working in their own language. Similarly, they are more comfortable working in an interview setting that includes their own friends and neighbours. Accordingly, it makes sense to conduct interviews in the local language, and it makes sense also to involve local people as interviewers. In most cases the entire interview is conducted by local people.

Traditional land-use information is augmented in the study by contemporary land-use practice, and people who use the land today also have important information to share in a TLUOS.

At the outset, people being interviewed need to feel at home and at ease. Most people willingly share their knowledge if they are assured that their contribution to the process is valuable, and that their knowledge and experience has value for the future of their family and community. They must know that their information is needed to

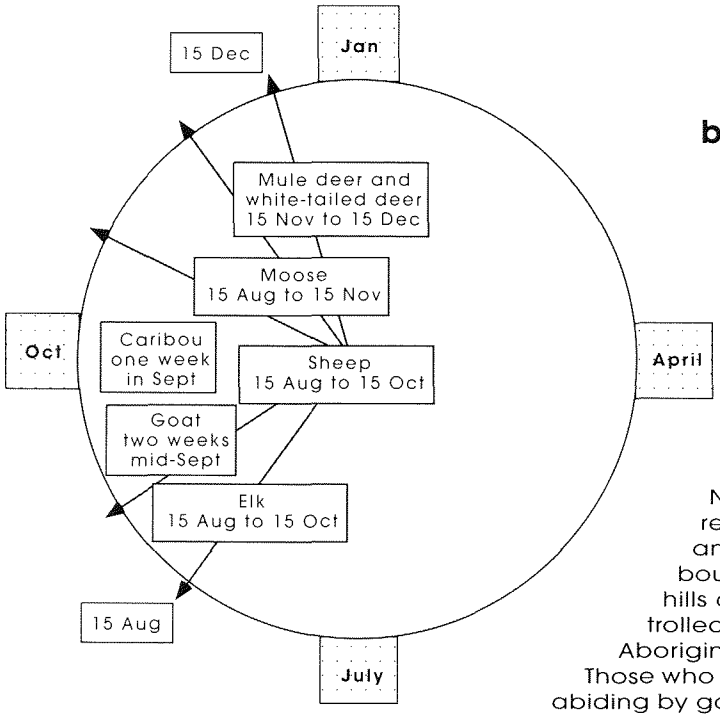
The interview process.
Above: Mary Jensen, Fort McMurray, being interviewed by Grant Golosky.
Right: Elmer Herman and Stewart Janvier, interviewers, with Babtiste Janvier, checking map locations.

preserve the integrity of their culture, and that their experience and knowledge will continue to be valuable when they are no longer able to share it. They are passing down what they know, as they always have, but this time it is being recorded. For this reason it is important that they have the opportunity to see the results of their participation.

The interview process:
The community must select interviewers who are respected and capable. The interviewers should have a practical knowledge of the bush economy and be familiar with the culture of the community. A working understanding of the local language is preferred over the use of an interpreter, but that may not always be possible.

In general practice, the local interviewers develop the interview questions and help plan an interview schedule with the assistance of the PAR consultant. In addition, they select the people to be interviewed and arrange times and places. They arrange for public space if that is required, and look after local transportation and travel costs.

Prior to beginning the interviews, the PAR consultant generally organizes a training workshop for the interview trainees. This workshop focuses on reviewing case studies



Seasonal round for bush land hunters' and trappers' big game harvest

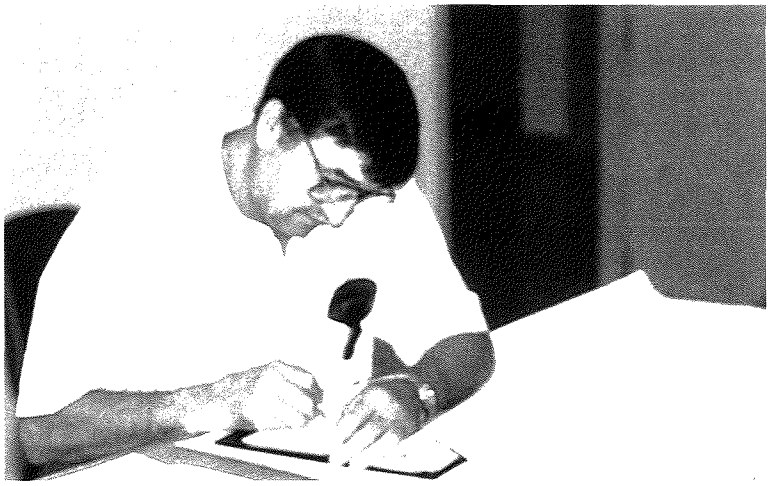
Caribou
Moose
Elk
Goat
Sheep
Mule deer
White-tailed deer

Not all species of big game pasture throughout all regions. Some regions have moose only, or moose and deer only with small herds of woodland caribou. Most caribou and elk are located along the foothills and mountain regions. Big game hunting is controlled by permit issued by each province or territory. Aboriginal peoples have special rights to hunt for food. Those who hunt and trap for a living have a vested interest in abiding by good conservation practices.

of methodology, creating a community specific methodology for the TLUOS, preparing the interview questions, selecting an appropriate map base, and explaining the technology available for presenting traditional knowledge data.

The relationship between the gatherer of the information and the person giving it is a sensitive one. The interviewer may have a stronger belief in the quantity and quality of available knowledge than the person being interviewed. Part of an interviewer's job is to encourage the person being interviewed to be confident in giving his or her information even though it may seem to be incomplete or imprecise. Part of the process is to verify such information by comparing it with that shared by other people in same the community.

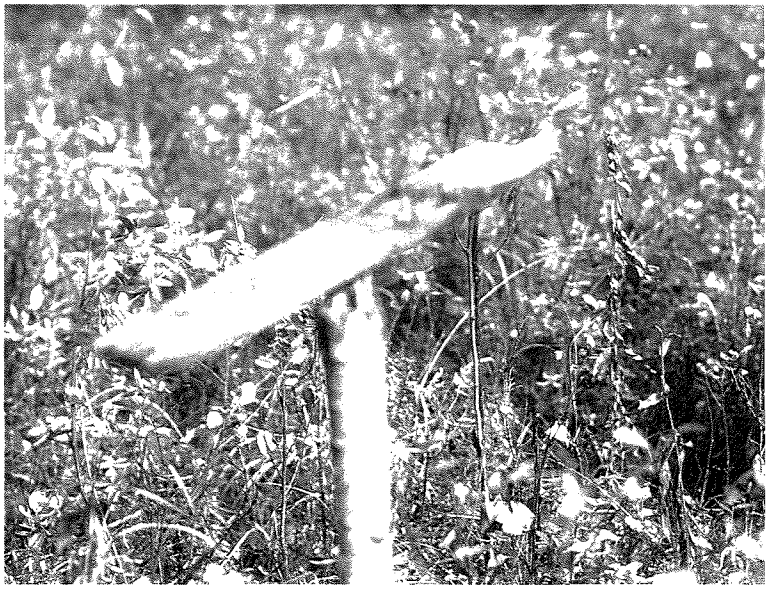
The interviewer trainees meet with the persons to be interviewed either individually or in small groups. They lead the discussion using the list of interview questions. Extensive notes are taken during the conversations, and in some cases, with permission, tape recordings are made to ensure more complete and objective collection of the information. A photographic record of the process is also a useful tool, and colour prints, slides and video footage aid in the process of map and report preparations.



Information from community interviews needs to be carefully recorded for project reports (Grant Golosky, above). Such information includes photographs of field observations such as a trapper's winter trail that can still be clearly seen in the muskeg in the summer (right).

Much of the interview process focuses on locating events and features geographically. To this end, the interviewers use a map of the area during the interview. Locations are marked on the map as the discussion progresses and notes are made of the various features. The map used is typically a base map of the whole region (at 1:250,000 scale), but in some cases a more detailed map (at 1:50,000 scale) is used when unique events or locations are involved (for example, a cabin site or a burial location). As the interviews progress, the trainees and the PAR consultant determine how they wish to organize their map data. Generally one set of 1:250,000 scale maps is maintained for each class of data, for example, trails and cabins, or fur-bearing animal harvest locations.

It is important to recognize that there are two kinds of information as illustrated by these two observations: 1. "My grandfather used to hunt moose in the fall in the meadow five miles northeast of the village of Conklin" and 2. "My grandfather died on the trail in December of 1944 and was buried on top of the low sand hill half a mile west of where the trail crosses the Beaver river southwest of the village." In the first case, the person is saying that moose ranged in and around that meadow, about forty years ago. While the hunting may have been singular events, it is more likely to



Grave sites away from communities are quickly obscured by trees and undergrowth.

Above: Morris Janvier at site of several graves near Christina Crossing northwest of Janvier, Alberta.

Right: Single grave marker near the Christina River northwest of Janvier.

have been a seasonal event for many years. The moose may continue to range in that area, but this cannot be assumed unless similar data are given by contemporary hunters.

In the first case, the observer plots a moose symbol on the map in the designated area with the meaning that moose were known to have frequented that general area in that season of the year. They may have ranged also in adjacent areas — of uncertain size and location — in other seasons. In the second case, it was a singular event that can be pinpointed precisely in location and time — with a symbol for a burial. Both are indicators of traditional land-use and occupancy, but one is a "pattern" of behaviour of wildlife, and the other a unique human event.

The principal record of the interview is the map supported by written notes. Audio tape recordings are important, as well as photographs and videos. After the interview, appropriate gifts are given, for example, tobacco — out of respect for the sharing of the information. In some instances the persons being interviewed are paid a standard fee for sharing their information. In all cases, the interviewers are paid, along with their operating expenses.

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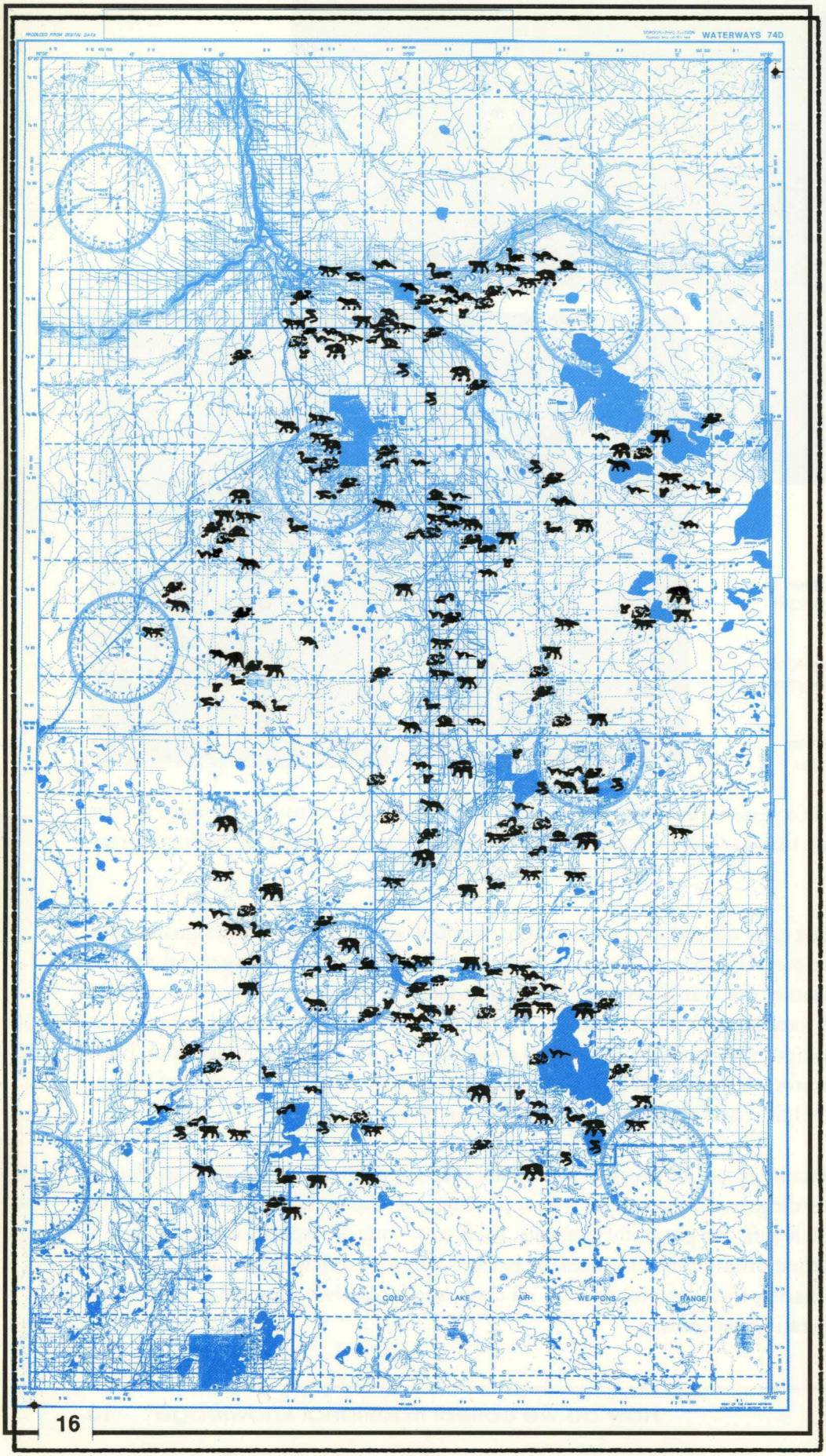
Traditional land use and occupancy study, northeastern Alberta

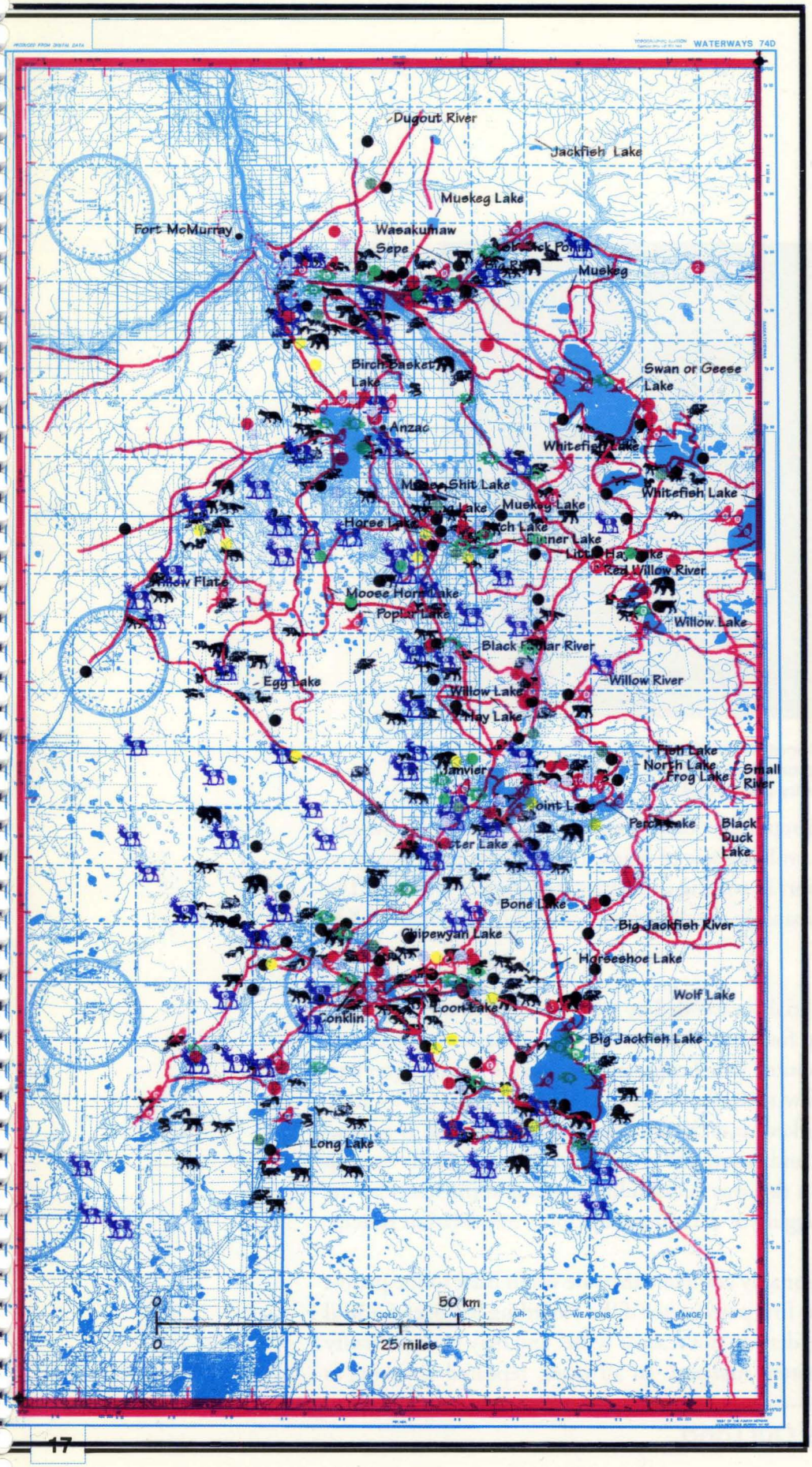


5. Fur-bearing animals

weasel	fox	coyote	muskrat
bear	porcupine	squirrel	beaver
wolf	marten	lynx	otter
racoon	fisher	mink	groundhog
hare	squirrel (f)	skunk	wolverine

Arctic Institute of North America, 1993

for the Athabasca Native Development Corporation, Fort McMurray, Alberta



Traditional land use and occupancy study, northeastern Alberta

1. Trails and graves

- trails
- graves (excluding community cemeteries)

2. Local place names

3. Cabins

4. Birds, big game and fish wildlife habitat

ptarmigan	duck	elk	whitefish	dry fish camp
pelican	goose	deer	sucker	
heron	loon	grayling	ling cod	
eagle	caribou	jackfish	brook trout	
grouse	moose	pickerel	perch	

5. Fur-bearing animals

weasel	fox	coyote	muskrat
bear	porcupine	squirrel	beaver
wolf	marten	lynx	otter
racoon	fisher	mink	groundhog
hare	squirrel (f)	skunk	wolverine

6. Berries, medicine and minerals

blueberries	rat root	hay
cranberries	mint	salt lick

Arctic Institute of North America, 1993

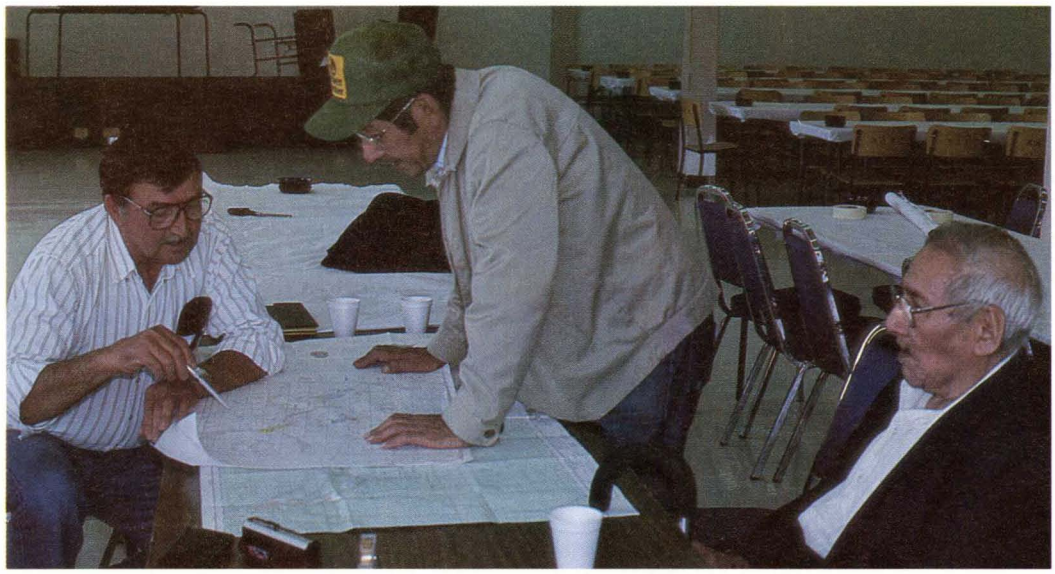
for the Athabasca Native Development Corporation, Fort McMurray, Alberta

Helicopters equipped with satellite locators are routinely used for determining precise locations in terms of latitude and longitude for detailed mapping — Stewart Janvier, interviewer with forestry personnel.

The interviewers prepare written reports of each interview, and these become primary documents along with the evolving sets of maps. Interviewers keep a written account of each interview and report in writing to a designated project manager. The interviewers are continuing participants in the project and co-author the final TLUOS report.

In many cases, the interview material is extended by trips to the field for additional information, for photography and for determination of precise locations using satellite-assisted locators routinely mounted in helicopters. The satellite locator gives latitude and longitude to within a few metres and is primarily important for locating unique subjects such as grave markers and cabins. Such instrumentation is permanently mounted in the helicopter and requires that the aircraft land virtually "on top of the site." Information gained in this way is carefully recorded in the notes by the study team and enables precise logging of data in a geographic information system.

When the interview maps are reasonably complete they are taken back to the people who shared the information in the first place to see if the recording has been faithful to the oral account. Some of the elders do not read or write, and may have difficulty checking the accuracy of the written material. In all cases, repeated checking is



It is vitally important to check and recheck the information that is being recorded in the traditional land use and occupancy studies. Above, left to right: Grant Golosky, Elmer Cree and Raphael Cree (100 years old.)

important since the underlying process is the conversion of oral anecdotal understanding to conventional written documents. This typically implies a greater precision and more rigid understanding than may be warranted under the circumstances. Checking of map data is also necessary to minimize human error on the part of the interviewer trainees.

Storage and archiving

A central principle of storage and archiving in a TLUOS project is that the traditional information is shared. It is not transferred. Ownership of the information lies with the people who provided it. The person giving information owns the information and holds undisputed rights to it, until he or she gives ownership away, or agrees to share it with others. The very best effort must be made to assure sharers of information that their recorded knowledge and experience will be respectfully stored and protected over time.

A second principle is that the information is priceless. If it is ever lost, in many cases it can never be regenerated. Accordingly, it must be archived with great care.

The primary information comprises the field notes and their interpretation, the field

Traditional hides and furs:

Left: Beaded moccasins from tanned moose hide.

Below: Katy Sanderson with beaver, fox and coyote pelts.

maps, photographs, audio tapes, video tapes and any final documentation on the TLUOS.

In a typical case, all of this "belongs" to the community and should be stored in the community. Some communities are well equipped for such archiving, others are not. In all cases great care must be taken to protect the material against loss by fire in particular, but also against loss through damage by natural causes or vandalism. Duplicate sets of all vital TLUOS records should be stored in a separate location, with an agreement for continuing access by all project partners.

How do we organize the traditional knowledge?

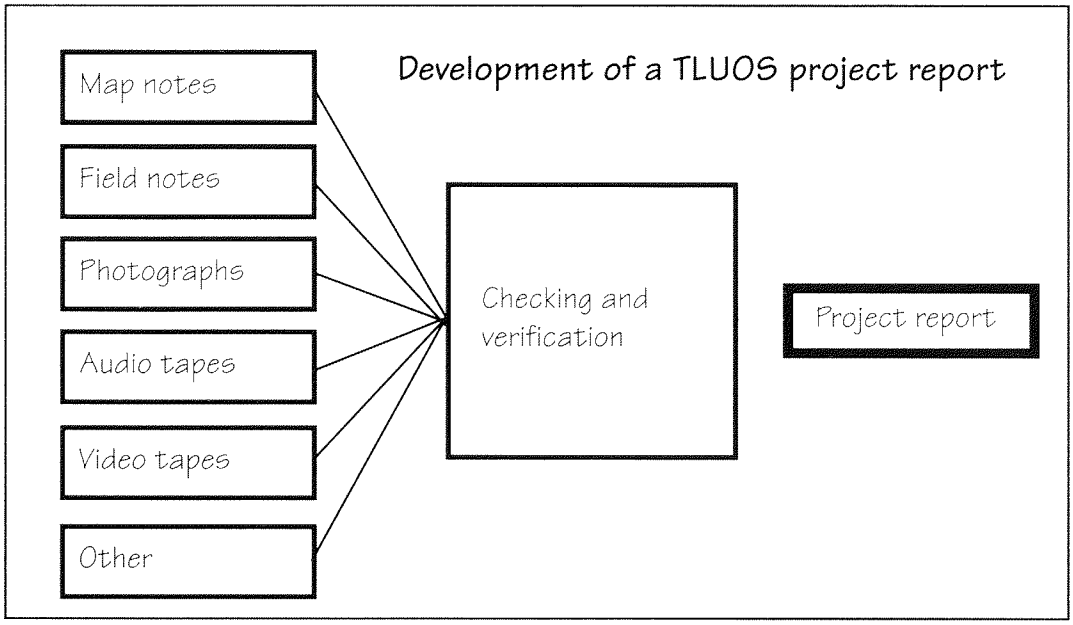
- Why do we study traditional land use and occupancy?
- Why did the Athabasca Native Development Corporation work to initiate their study?
- How do we plan for community participation in TLUOS?
- **How do we collect the traditional knowledge?**
- How do we organize the traditional knowledge?
- How do we co-manage the findings?
- **Where do we go from here?**

Traditional knowledge needs to be treated with care and respect.

Once collected, traditional knowledge needs to be archived effectively. The raw data comprise field notes and maps for the most part. In addition, photography, slides, tape recordings and video tapes may be available. Clearly all of these records, in whatever form, must be carefully indexed and stored. As we have discussed, duplicates may be made for storage in a separate location for protection against loss by fire or theft. All of this is primary archiving where the information is organized and stored.

The second step is to make use of the information. In the first instance, the traditional knowledge is used for the preparation of historical works. Typically, writers wishing to write political history, natural history, cultural history or fictional history will want access to the traditional knowledge.

People preparing educational material for schools and adult education will need access to the same information, and will want to transform it to a form that is directly useful in teaching.



Finally, those engaged in political action will want access to the information so that they can develop arguments to support the actions that they are seeking to take, for example, the co-management of natural resources and treaty entitlement including land claims negotiations.

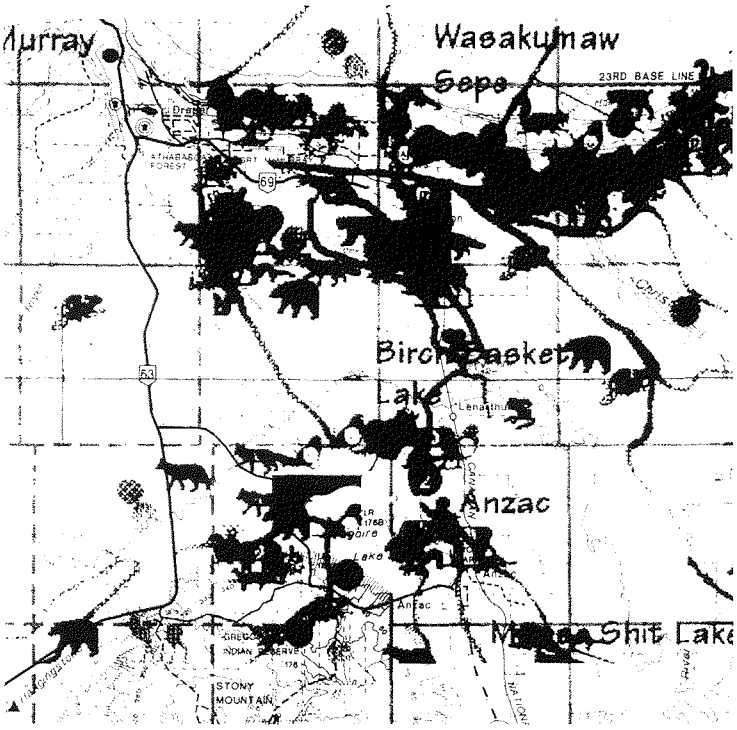
It is apparent, then, that the archived information enters a variety of processes, and care needs to be taken to make it available in the best form.

Cultural writing is done by people with a wide range of skills in information handling, but generally it is a matter of immersing oneself in the topic and then creating images either historically or fictionally to convey the message for enlightenment or entertainment. In either case, the writer is generally a solitary figure engaged in a particular task.

Cultural history is of course not only a matter of writing — it involves the visual arts of film and video as well, in which case the producers look to the traditional knowledge embodied in the archived material as both starting point and a means to an end. Again, it is a matter of individuals searching and researching the original materials.

In the case of preparing educational material from the raw traditional knowledge, the situation is much the same. Only the structure is different — with perhaps systematic organization replacing the more creative approach that might be used by professional writers and producers in the general entertainment business.

Aboriginal political organizations need to organize objective arguments to support their points of view, and to develop programs of co-management for land use planning. The use



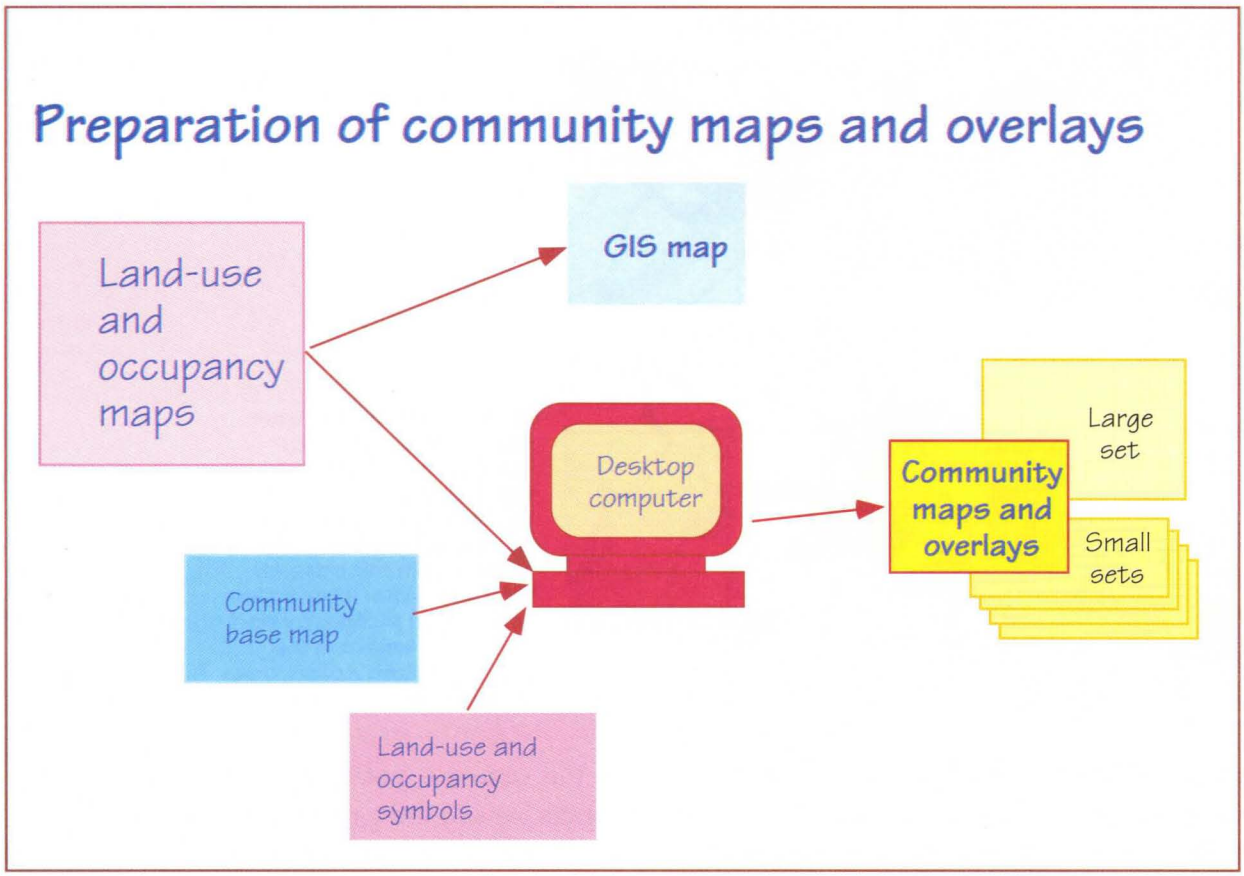
When multiple land uses are overlaid one upon another on a base map, some areas of the map appear "swamped" with extensive use and occupancy, as in this case for the Clearwater River valley east of Fort McMurray and to a lesser extent in the region around Anzac, both in northeastern Alberta.

of traditional knowledge is central to their approach. In this case, it is not a matter of collecting and preserving traditional knowledge but of organizing and using that knowledge. The use of the knowledge must be skilfully developed to demonstrate its value in planning and negotiating processes. In this way negotiators come to understand the power of traditional knowledge in taking decisions.

In the usual course of events, researchers are primarily focused on collecting the information — traditional or otherwise — and the accumulation of field notes, field maps, tapes and photographs dominates the process. However, the next stage is equally relevant and it is important to see how that stage can be developed effectively.

Technology is available for organizing large volumes of data in many different forms. It can take the form of simple data bases — tables of numbers and locations, for example — and it can take the form of maps displaying the traditional knowledge. In many cases, data bases and maps go together, and they form a kind of secondary presentation of the raw data gained in interviews. For example persons being interviewed might note that their grandmother died and was buried beside the trail between one lake and another — about this point on the map. In organizing this fact, a base map of some kind is needed to locate the event. Base maps can be developed from existing maps for the area. A good way is to redraw a standard topographic map to show only the major waterways and land forms along with local communities. A map prepared in this way becomes the reference to which all information in the study is reported. The site of the grave is then carefully located on this base map with detailed reference to relevant features on the map.

This raises the matter of the scale of the map. If the purpose of locating the grave site on the map is to protect the site, the site needs to be precisely positioned on the map —

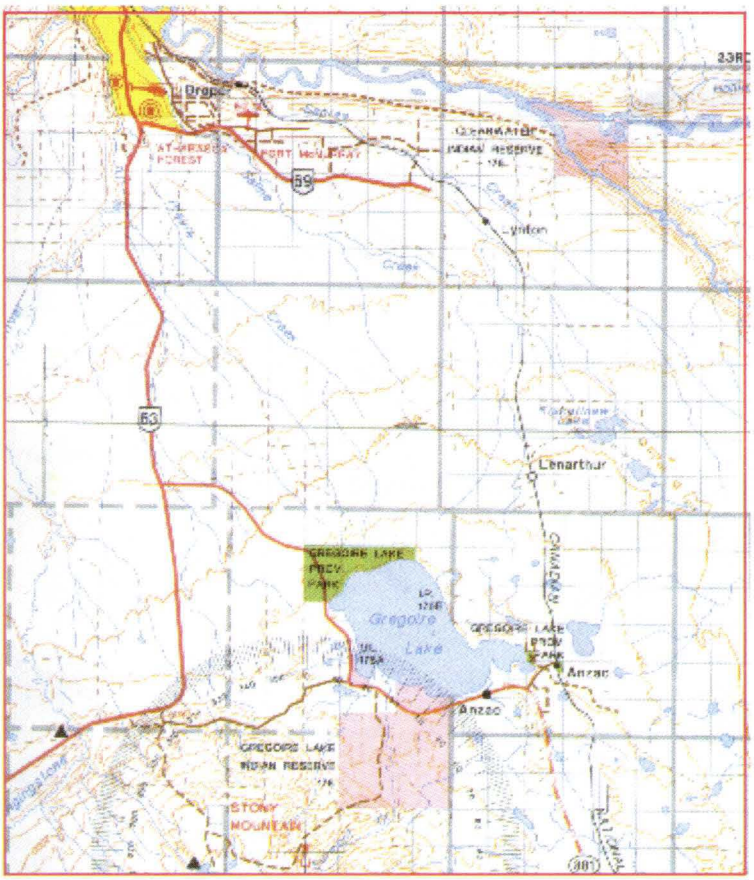


perhaps within a metre or so. This positioning is available from the satellite locator instrument used in the field. Accordingly, a symbol of the grave is placed at the right point on the map and hopefully the symbol is sufficiently focused that it occupies an area on the map corresponding to that of the actual grave site. On a base map that is 200 kilometres on the side, that provides a substantial challenge since an object two metres long in a distance of 200 kilometres is a dot or rectangle that is far too small to see — less than a thousandth of a millimetre.

Another aspect of the same challenge is that the grave site itself should have a permanent marker in the field — for identification and protection — and that marker should be identified on the base map.

This kind of mapping is best handled by a powerful computer-mapping system such as the GIS widely used in Canada. It is a natural step to "enter" the field data into such a system. In this way, all the field data can be transferred from the original collection of field notes and maps on to a substantial computer map held within a very powerful mapping system. This approach is particularly important for recording the location of events that are fixed in time and space, e.g., for a burial of a certain person on a certain date.

It is reasonable to believe that the GIS system can be used for generating maps displaying such data for whomever might wish to see them. Immediate access to such



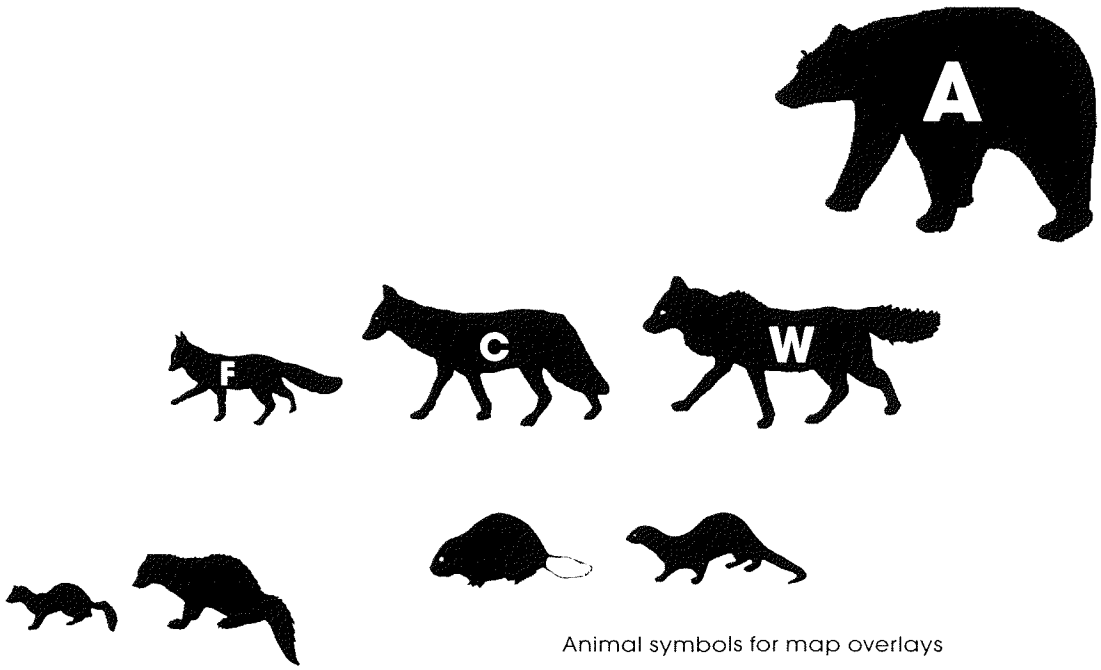
GIS maps take many different forms. This map section shows the region between Fort McMurray in the northwest to beyond Anzac in the southeast, with a base grid upon which are placed communities, roads and railways, and topographic features including lakes and streams. In addition some well-known trails are also indicated.

data would lie with the operators of the GIS system being used. Such data would be useful to the family and friends of the person involved, and they would also be useful for historical writing and for the protection of the site.

The down side is that access to the GIS data for people in the community is only indirect. While the data were collected locally, storage of the data is remote and inconvenient. Not many communities are equipped to directly access such data either from the data base or from such a computer map.

It would be preferred if the community had a map that was easier to use — one that was printed on a chart with symbols that were easy to see. To this end, in the ANDC project a base map about 32 by 42 inches in size was prepared, and on this map were overlaid a number of transparent films each showing a particular set of data. For example, one set of data showed grave sites and trails. This overlay quickly showed the general location of about 32 grave sites along trails in an area 120 x 200 km. The symbols were 8 mm in diameter — big enough to see easily but covering an area about 2 km in diameter rather than the actual 2 metres in diameter in the field. This map was a "qualitative" map — showing a grave site in that general location, and 20 km away there were two more, with 30 or 35 in the entire area — all indicated on a single easily-read "qualitative" map.

Five other overlays showed local place names, cabins, birds, big game and fish, furbearers and finally berries, medicine and minerals. Particular symbols were used in the



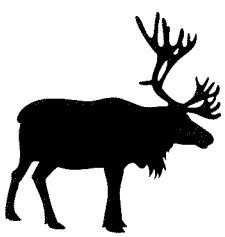
Animal symbols for map overlays

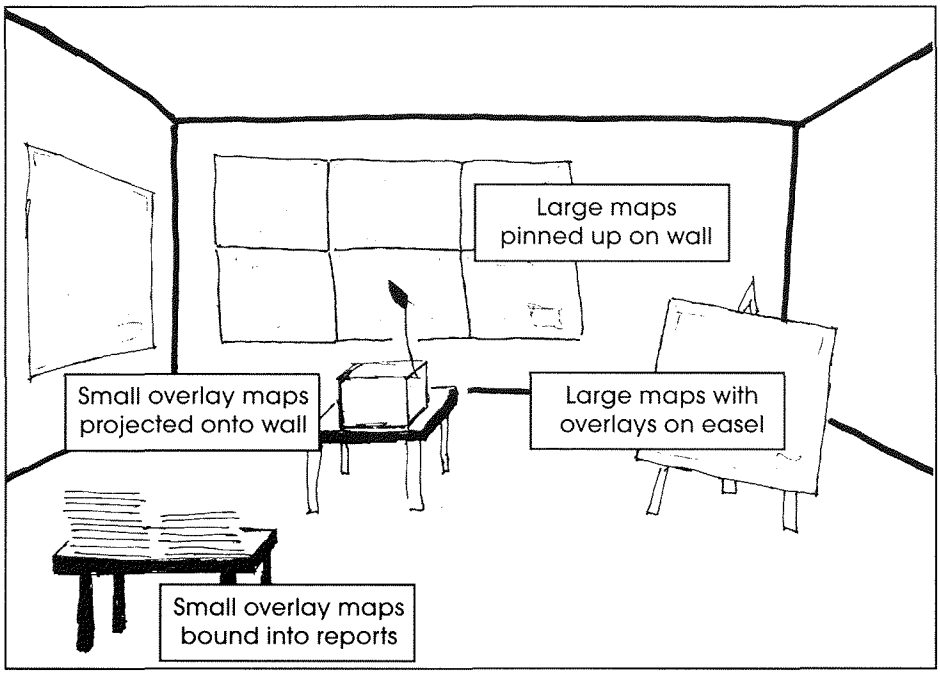
ANDC study for 50 different land use and occupancy elements. The game animals had 20 and the fur bearers had another 20 symbols. In some cases the animals were displayed in silhouette; in others they were displayed in a generic silhouette with particular labelling, for example, a generic ungulate with "D" for deer and "E" for elk. In general, the silhouettes are to be preferred.

It was convenient to display these large-scale overlay charts in a public place in the community, but they were not easily moved and a single set of overlays with the base map cost nearly $2000 in printing charges alone.

A more convenient way to go was to reduce the map set to page size — to 8 1/2 x 11-inch size. In this way, the map set became widely available because of standard page size and low cost (about $20 for the set).

A technical note: The GIS approach requires a substantial computer installation, but the small "qualitative" approach can be used with a relatively inexpensive desktop computer setup ($15-20,000). A base map can be prepared in a standard graphics program after scanning a regular topographic map suitably reduced to fit the scanner. The same graphics program can be used to prepare each of the overlay displays in turn, printing them not to paper but to transparent film. It is convenient to use colour to display the various elements of the overlays to





Map information may be displayed in a variety of ways for community use.

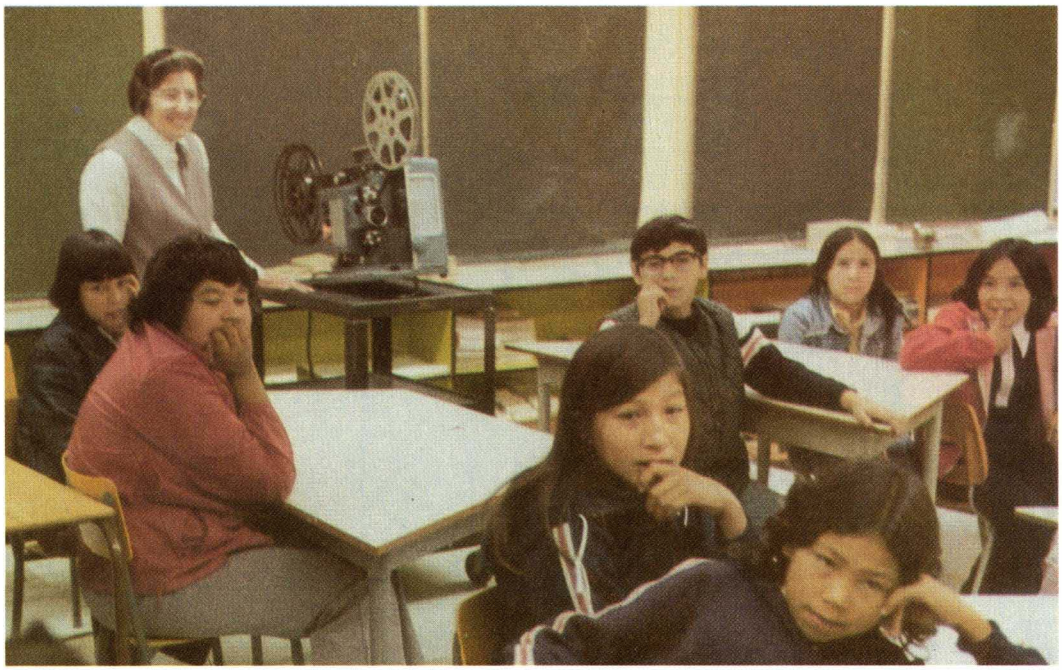
make them more readable. The overlays print readily in colour. The overlays are easily bound to the base map to permit good alignment and to show the cumulative effect of six different types of land use in a single display. Alternatively, the base map and overlays can be used unbound for examining particular combinations of land use.

The same overlay maps can also be used for "overhead" projections of the information in public meetings if desired.

In summary, GIS can be used for precise mapping and for secure storage and retrieval of information, but for community purposes the "qualitative" maps are preferred, and for widespread local use the small "qualitative" maps are even better.

The small "qualitative" maps are particularly important for argument-building for public discussion and for political processes beyond the community.

Looking ahead, in the same connection and with additional focus on the educational aspect of a study on land use and occupancy, the use of multimedia presentation of the same data is an attractive option. The technical capability for doing so has been available for nearly a decade but only now is it becoming widely used. Multimedia involves computer display of information in an effective and even entertaining way. It is used commonly now for displaying encyclopedic knowledge combining print text with illustrations, sound and video. It can be mounted on the same kind of computer



School students in 1975, Janvier, Alberta

equipment used for the "qualitative" maps and overlays, with the computer itself as the display.

The general procedure is for the land-use and occupancy information to be displayed first as a single "screen" on the computer as a graphic image, for example a map of the area with various land-use symbols. If the viewer wishes to pursue a particular line of information, the viewer (using a mouse pointer) selects a particular element of the graphic and asks for more information. For example, the viewer "clicks" on one of the "moose" and a new screen comes up with a detailed illustration of a moose along with a half a page of text describing the occurrence of moose in the area. If additional information is wanted, a "click" on the antlers of the moose will give a description of the way in which antlers grow with particular reference to this part of the world. So also, "clicking" on the word "range" in the text will result in another "screen," this one describing how moose range over the area of the map seasonally. "Clicking" on any of another 50 symbols on the map would bring up similar information for each of those sub-topics, each with its related data, some of which would be common to other elements. For example "clicking" on "seasonally" will bring up another screen on the seasons for this map, with annual temperature ranges, precipitation and other climate data, and these data would be common for most elements.

Not only would the additional screens include graphics, they could also include video animation and audio clips. It could well be that a reasonably full multimedia display for land-use and occupancy for such an area might run to a hundred "screens" or more and would provide a remarkable teaching base for educational purposes both within the area and well beyond it.

How do we co-manage the findings?

When the TLUOS is complete, the maps drawn and digitized, and the report bound and distributed, the real work begins. Now is the time to harness the findings to the process of co-management. Working with the overlays it will be possible to determine the areas of heavy traditional resource use. Certain river valleys, for instance, may be covered with harvest site locations, trails, graves and cabins. The migratory routes of big game animals and birds will probably stand out. Good fur harvest locations will be identified by species. Now is the time to add information that has been collected using western science methodology and make comparisons of data.

Government departments, companies and their environmental and socioeconomic consultants all collect information to enable resource development planning. Rarely does this information include traditional environmental knowledge. By overlaying the traditional and the western scientific knowledge we can see if there is agreement, we can add to what is already known, and we can learn more about what we need to know. All this can generally be accomplished by comparing information. Ideally the two types of information can be combined on a GIS map.

There is also an important ongoing role for the original providers of the traditional knowledge and the community trainees who are now graduate mappers. As the interaction of scientific knowledge with traditional knowledge occurs new

Traditional knowledge is a living resource that traditional mapping will preserve.

Right: Babtiste Janvier (age 83) with a traditional drum that he made from local wood and moose hide.

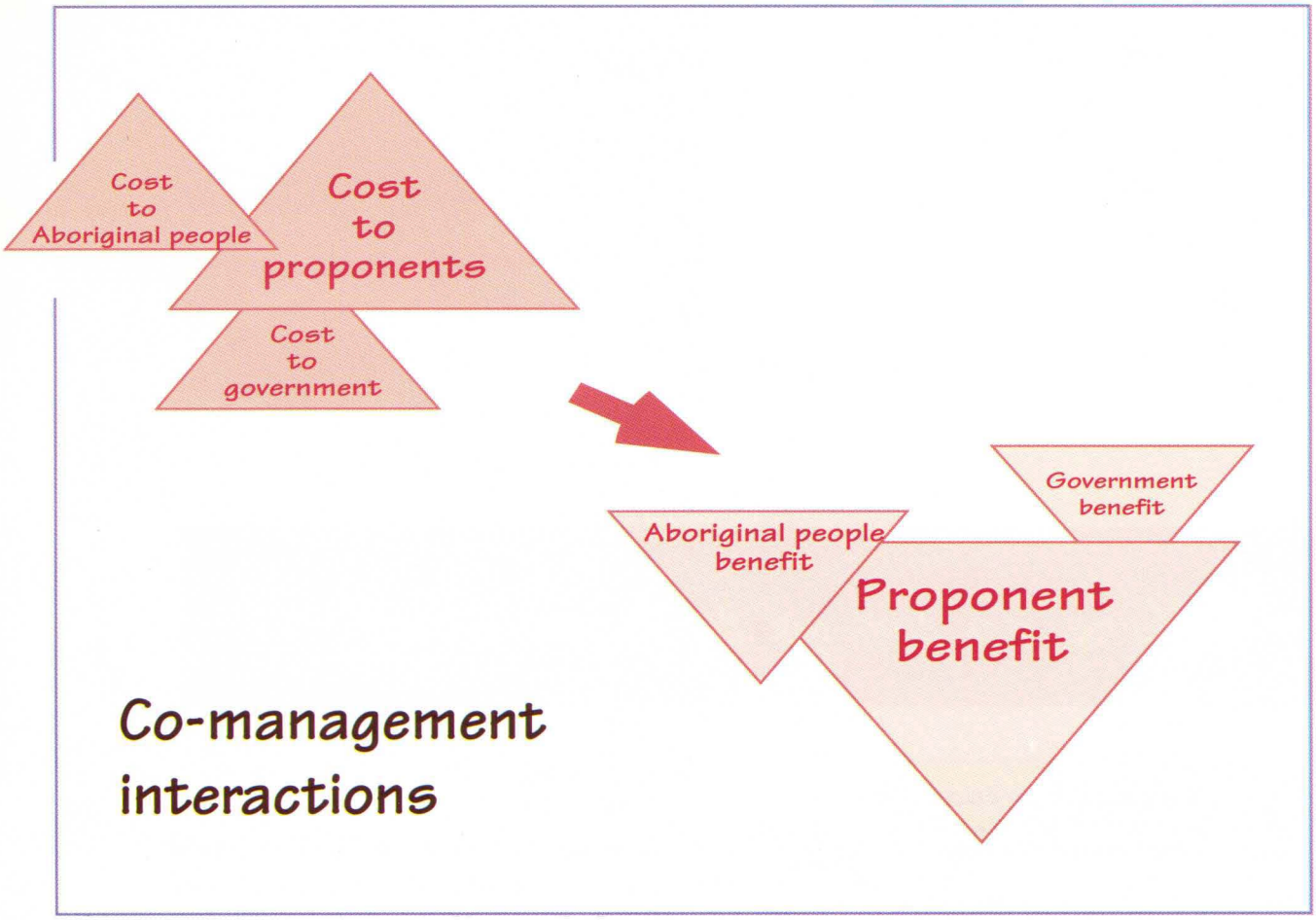
questions will arise:

- has a wolverine ever been trapped south of the Clearwater River?
- where do the cow moose have their calves?
- do the elk really migrate according to this pattern?
- what is the high water record for this river in living memory?
- has snowfall ever exceeded ten feet in this valley bottom?
- how long have pelicans nested on this lake?
- have local wind velocities increased since this clear cut was made?
- how important is country food to this community?

The answers to these questions may be local knowledge, and they may have great significance for regional land use planning, forest cut block design, access road location, conservation area designation, roof slope design on new buildings, compensation for loss-of-livelihood, or migratory species protection.

The questions may also give rise to new data for the community maps, and they should be entered by the mappers. In this way the maps themselves live on and do not become static displays.

There is an important political dimension to this work as well. The products of co-management will stimulate the processes of negotiation, mediation and compensation. If a commu-



nity has a continuing reliance on bush food (fish, big game, fur bearer carcasses, duck eggs and berries), and bush food harvest is about to be impacted, it is time to compute the potential loss of bush protein to community tables. For example:

- ten moose are harvested per year, and dress out at an average of 450 pounds;
- moose is the preferred big game meat of the community, having the highest quality taste, food value and customary appeal;
- the industrial economy food store equivalent is standing rib roast at $5.12 per pound;
- therefore: 10 (moose) times 450 (pounds) times $5.12 equals $23,040.

The above figure does not include the cost of going shopping, and the same process of calculation can be undertaken for all types of bush food. The final cumulative total will provide an excellent base figure for compensation negotiations, and will enable non-Aboriginal people to better understand just how important the bush economy is to the community diet.

While the above discussion focuses on the political uses of co-management, we cannot forget the educational value of the process in schools, universities, boardrooms and government departments. Where knowledge is enriched by other points of view, be they cultural or scientific, we all gain in our understanding. In this way co-management helps us all develop wisdom.

Where do we go to from here?

- Why do we study traditional land use and occupancy?
- Why did the Athabasca Native Development Corporation work to initiate their study?
- How do we plan for community participation in TLUOS?
- How do we collect the traditional knowledge?
- How do we organize the traditional knowledge?
- How do we co-manage the findings?
- **Where do we go from here?**

Where do we go from here?

We have now charted the course of community land use and occupancy mapping from idea to wisdom! We hope that the readers of this booklet will now consider how this process could assist them in Aboriginal communities, government departments, corporations, schools, and universities. Communities that have not undertaken TLUOS projects should speak to those who have; they can also initiate discussions with potential funding sponsors of this kind of work. The process of initiating a TLUOS really begins at home. But as we have seen, the benefits of its conduct can be shared with many people and organizations. As the co-management value of TLUOS projects is more broadly understood, it is hoped that resource development companies will become more involved in their sponsorship and application.

The references provided in the next section of this booklet describe a number of TLUOS projects that have been carried out in Canada over the last twenty years. Communities considering doing their own studies will benefit by reviewing the methodologies and mapping formats that have been developed so far. Within the overall format of

Steps to be taken in TLUOS projects:

1. A decision is reached to undertake a traditional land use and occupancy study (TLUOS).
2. An Aboriginal peoples community advisory committee (CAC) is established. Set terms of reference — assume stewardship of data collection process and ownership of the end product.
3. Selection of area to be mapped.
4. Selection of participatory action research (PAR) consultant.
5. Selection of community TLUOS interview trainees.
6. Formation of a technical advisory committee (TAC) if needed.
7. Training of interviewers — establish standard questionnaire/interview format — interview methodology and strategic work plan.
8. Preparation of base maps, mapping aids and supplies; mapping locations and rent, agreements, supplies and transportation.
9. Schedule community interviews and repeat the individual interview process for confirmation and validation as needed.
10. Schedule community review of draft maps for validation and confirmation.
11. Transfer map information to geographical information system (GIS) and/or to map overlays.
12. Presentation of final product to participating community and funding partner; trainees become graduates. Celebrate achievement with a feast.

participatory action research there is great potential for innovation and creativity. We hope that the next generation of studies will build carefully and decisively on this record.

With the experience and knowledge we now have of the application of co-management, there is no reason not to benefit from its use in resource development, planning and educational activities throughout Canada. We can only gain by the experience of gathering, comparing and understanding different ways of knowing our natural world.

Further reading...

The following publications describe previous TLUOS projects in Canada and provide useful guidance to communities designing their own research methodologies and mapping techniques.

• Anon., Banff Centre. 1989. Geographic data management for integrated resource planning: Laboratory notes and user's manual. 194 pp.

• Anon., Banff Centre School of Management. 1989. Geographic data management for integrated resource planning. Training manual, 344 pp.

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• Brice-Bennett, C. (Editor). 1977. Our footprints are everywhere: Inuit land use and occupancy in Labrador. Nain, Nfld.: Labrador Inuit Association.

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• Robinson, M. et al. 1993. Traditional Land Use and Occupancy Study: Conklin Settlement: Final Report. Fort McMurray, Alberta: Athabasca Native Development Corporation.