

# Is there life after tenure mapping?

by PETER POOLE

## Introduction

Tenure maps are made with the intent of producing legally acceptable evidence of prior land use and occupancy, to be used in national or global negotiations. Two strategies for organising tenure mapping projects are in play. One builds local capacities in gathering traditional knowledge via interviews and sketch maps – but out-sources the computerised aspects of map-making to official cartographic agencies.

The other uses the community requirement for a tenure map as a context to initiate a graduated training process aimed at competence in – and control of – the entire mapping process. Community-based teams learn to use GPS to produce geographically accurate field maps. A simple computer plus printer set-up has enabled some indigenous associations to set up their own mapping units.

Official reaction varies from denial to criminalisation. But the most serious problem is sustainability. Tenure maps are one-shot affairs: they get things going but cannot **keep** them going. What can community mapping teams do next and who will support it? To this point, community mapping has followed the development parable about teaching fishing instead of giving fish. But what if there are no fish?

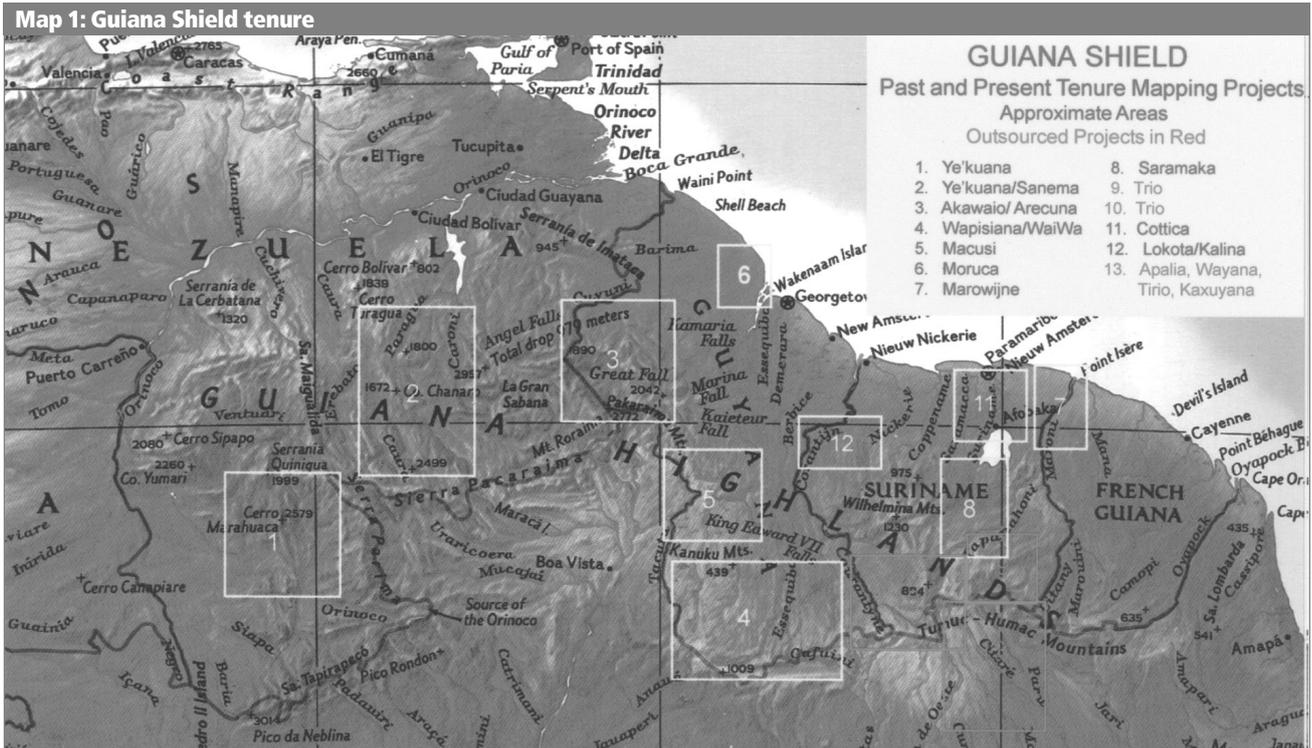
**“Official reaction varies from denial to criminalisation. But the most serious problem is sustainability. Tenure maps are one-shot affairs: they get things going but cannot keep them going. What can community mapping teams do next and who will support it?”**

## Tenure mapping

This article focuses on community mapping projects, initiated and controlled by indigenous communities and their associations. The production of geographically accurate ‘tenure maps’ assists a graduated process of capacity building – aiming to enable communities and associations to control the entire map-making process and to produce maps that both rival official cartography and are accepted legal tender.

‘Tenure mapping’ is a distinct genre of community mapping. It is rooted in the cartographic evidence assembled by indigenous communities in northern Canada, initially, Inuit, Cree and Settler peoples, in preparation for negotiating the formal recognition of their ancestral territories. Two landmark combinations of maps and supporting documentation define the genre:

- *The Inuit Land Use and Occupancy Study* (Milton et al,



1976), which covered Inuit territory; and,
 

- *Our Footsteps Are Everywhere* (LIA, 1977), which covered the lands occupied by Inuit and Settlers in Labrador.

Tenure mapping was developed by the Inuit and Cree in Arctic Quebec, to oppose a land settlement by the impending James Bay Hydro-Electric Project (Kemp and Brooke, 1995). Indigenous peoples in Yukon and the western sub-arctic soon adapted it, and tenure mapping is now a mandatory component of over 50 territorial negotiations in British Columbia.

**Two map-making strategies: self-sufficiency or outsourcing**

The distinctive attributes of tenure maps include:

- the restoration of indigenous place names;
- signifying ownership;
- the symbolisation of hunting and gathering 'map biographies';
- signifying land use; and
- spiritual and ancient sites, as evidence of occupation 'since time immemorial'.

Gathering this essential data constitutes the first phase of tenure mapping. The second phase is scaled map compilation. This includes transferring field data to a scaled base

map and producing a final tenure map – a process that requires a computer, printer and appropriate software.

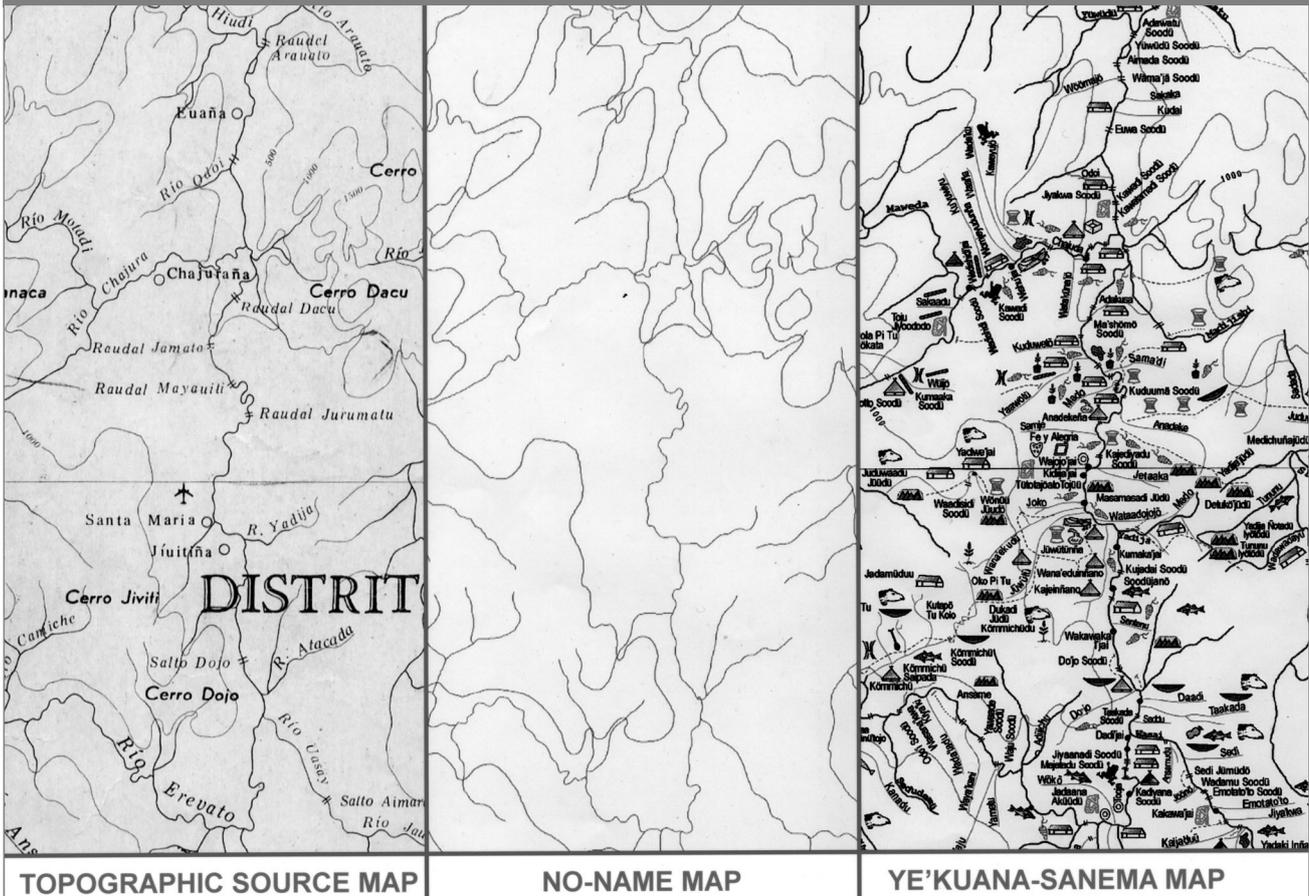
The essential data in those early Arctic examples of tenure mapping were all contributed by community members. But the final conversion of reams of sketch maps and notebooks into scaled and printed maps was out-sourced to a group of experts, mostly geographers and anthropologists, and to commercial printers. During the early 1970s, this was unavoidable. But by the 1990s, the costs and versatility of computer graphics systems and software meant that map production was a feasible proposition, if not directly to communities, then to their associations or support NGOs.

Nevertheless, some mapping projects continue to outsource this phase, usually to government cartographic agencies, or universities, e.g. the Maya Atlas (Chapin and Threlkeld, 2001; TMCC, 1997).

During the 1990s, an alternative approach used these technical advances to explore whether the entire map-making process could be localised. This methodology evolved from a series of tenure mapping projects in the Guiana Shield countries of Venezuela, Guyana, Brazil and Suriname, supported by the Forest Peoples Programme (FPP) in collaboration with community associations (see Map 1).<sup>1</sup>

<sup>1</sup> See [www.forestpeoples.org](http://www.forestpeoples.org)

Map 2: Making a tenure map in three stages



**Past and present tenure mapping projects**

To maximise community engagement, use robust manual methods instead of those requiring sophisticated equipment, climate control or a stable energy supply. For example, tracing was chosen over digitisation, and simple graphics software over geographic information systems (GIS). Since accurate tenure maps can be produced without GIS, this was not an imperative: some mapping groups used it; some didn't. With these objectives in view, a complementary two-phase map-making methodology evolved.

**A localised methodology for tenure mapping**

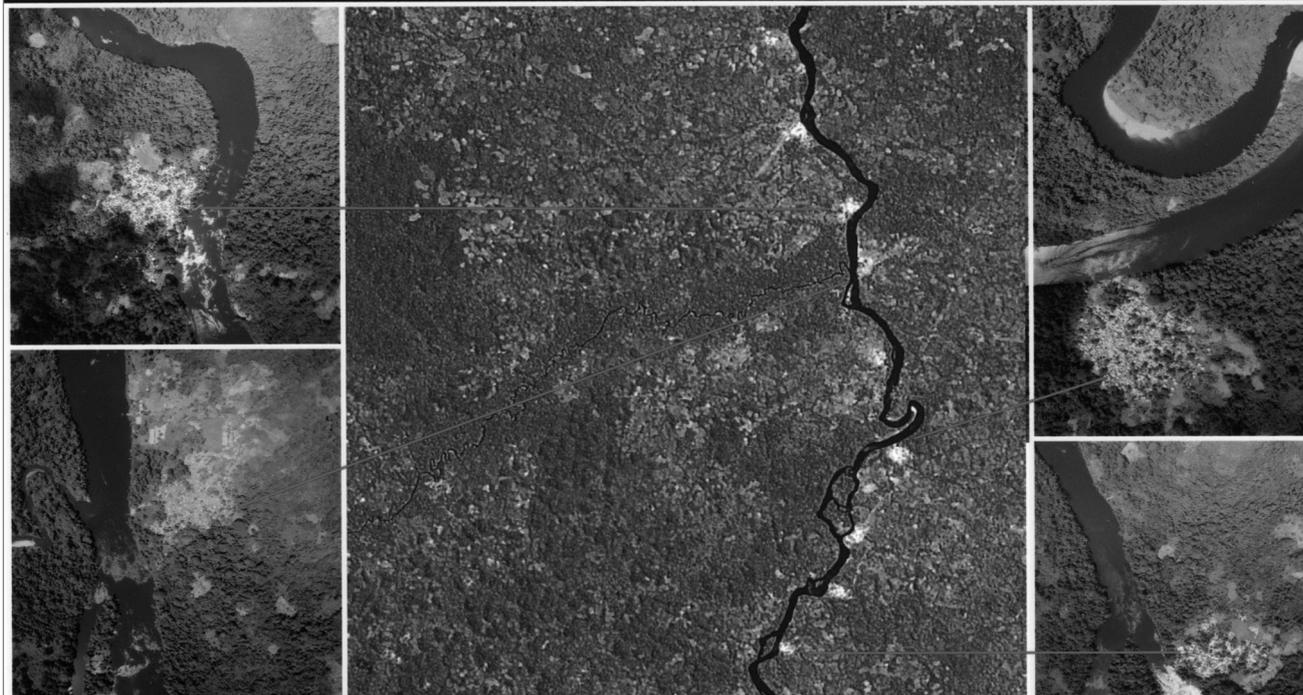
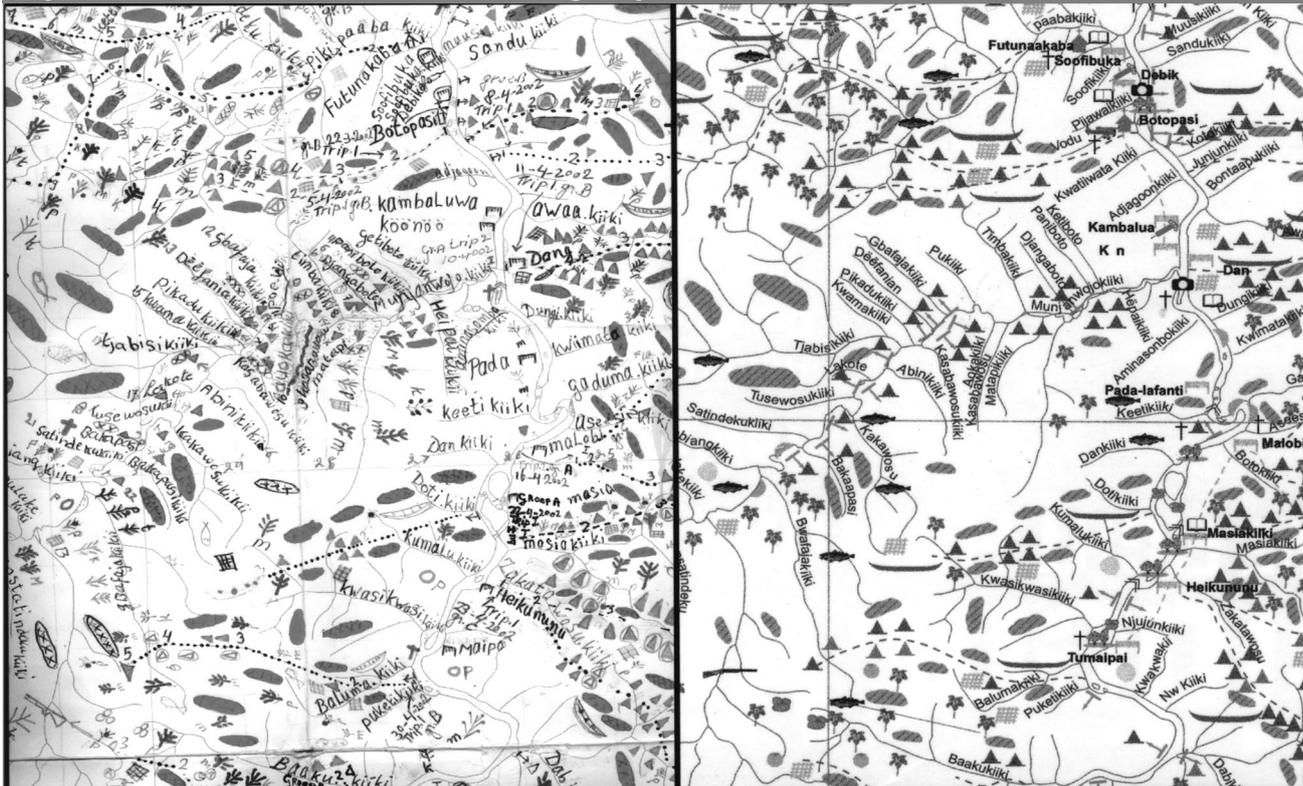
This methodology is illustrated in Map 2, where FPP and Kuyujani, a Ye'kuana-Sanema NGO, collaborated to map their adjoining territories in the Caura watershed of the Venezuelan Amazon.

In the first phase, project partners roughly defined the 'survey area' and selected the most useful 'topographic

source maps' from the official cartography. These maps were then cut and pasted together. A major factor in choosing source maps was that the mosaic to be traced was slight less than 36 inches (90cm). This width matched both standard large format scanners and printers. The resulting field map was printed in two halves and taped together. By tracing only the rivers and contours, official names and infrastructure were effectively deleted from the source maps. This produced a 'no-name' map, ready to receive data gathered by the field-mapping team (see Map 2, left and centre panels).

In the second phase, a community-based mapping team (usually 6-12 people) is trained to do interviewing and sketch-mapping with informants, map reading and log-book keeping, navigation with global positioning system (GPS) units, and how to develop an appropriate map legend. After four- to six-weeks training, the teams spend several months gathering field data and manually placing it on the no-name field map. In the final phase the legend symbols and names

Map 3: NaturalVue 2000 rectified Landsat-based image map of Saramaka



Wanhati Mapping team, Saramaka informants

are placed, in appropriate layers over the base map layer in the graphics file (see Map 2, right panel).

As this methodology improved during the Guiana Shield mapping projects, a complementary organisational arrangement evolved. This reflected how mapping technologies and skills could be localised. Community-based mapping teams learnt to gather and map original and unique field data sets, and association-based mapping units; were able to produce field base maps for the teams and then to transfer and print final maps.

In Venezuela, the Ye'kuana-Sanema tenure-mapping project led to the Kuyujani mapping unit, which has since assisted other peoples to map their territory. In Guyana, the Akawaio-Arecuna Upper Mazaruni tenure-mapping project led to a mapping unit operated by the Amerindian Peoples Association, which then went on to train community teams to complete the other Guyana mapping projects shown in Map 1, as well as the Marowijne mapping project in Suriname. In Suriname, although there are no association-based mapping units as yet, the teams trained in the Marowijne and Saramaka and tenure mapping projects continued to train other community mapping teams – in the Cottica and West Suriname projects respectively.

But this method works best in the landscape where it originated. In tropical rainforests with dense drainage patterns, the mapping teams can easily track themselves on the no-name field maps. Maps of barren landscapes have few location clues. A new generation of satellite-based image-maps now offers an affordable alternative, not only for barren landscapes. Map 3 compares a NaturVue 2000 image map ([www.earthsat.com](http://www.earthsat.com)) of a section of Saramaka territory (Box 1) with its field and final map versions, and compares satellite-derived visual data with that gathered by airborne cameras, to a ground resolution of 5cm.

### Self-sufficiency and outsourcing: for and against

Some argue that outsourcing will prompt government officials to favour claims to territory or resource access arising from tenure maps. But this has yet to be widely demonstrated. In Suriname, for example, government cartographers collaborated on the production of two tenure maps of adjacent Trio territories (Map 1: 9 and 10) even though the government has yet to accept the principle there is anything to negotiate. In fairness, neither have any of the ten self-sufficiently produced tenure maps prompted formal negotiations over these ancestral territories. The Venezuelan projects (Map 1: 1 and 2) have come closest, as they have at least become the subject of negotiations.

#### Box 1: Mapping to prevent asset stripping in Saramaka Territory

Saramaka Territory in central Suriname is experiencing asset stripping from two quarters: old-fashioned loggers from the north; and newly fashioned conservationists from the west. The 20,000 Saramaka, from 63 communities along the Suriname River, recently discovered that the government had let concessions to their forests to Ji-Shen, a Chinese logging company. The Saramaka mapping project's strategy is to ensure that the government respects **treaties that already guarantee tenure**. Then a few weeks after the Saramaka map was published, Conservation International Suriname (CIS) announced an initiative to extend the Central Suriname Nature Reserve into the territory. While awaiting a decision from the Inter-American Court of Human Rights, Wanhati, the Association of Saramaka Authorities, has taken counter-measures to both threats. One is a high-resolution aerial survey of the impacts of the Ji-Shen logging. The other is the development of a conservation and management plan which challenges that produced by CIS – and will be based on the high resolution aerial images of villages and their surrounding lands shown in Map 3. For both environmental impact assessment and biodiversity conservation, image maps at both levels of detail are superior to topographical maps.

Outsourcing means there is no training beyond the gathering of local data through interviews and sketch maps. Although important aspects, this process stops short of transferring this data to final maps, as well as printing them. Should the communities wish to make another map, or revise their completed map, or should other communities wish to make a similar map, they would be again need assistance from official cartographic agencies and raise the funds needed.

When communities depend on external map-making agencies, issues of map ownership may arise. The agency may want to restrict the circulation of the maps. The communities may claim that not all their collected data appears on the final map. In Suriname, some of the Trio informants, to Projects 9 and 10 in Map 1, claim that some of their campsites in the Central Suriname Nature Reserve did not appear on the final, printed versions (author). If these maps had been produced by an indigenous mapping unit, this could have been rectified in a few minutes.

The Apalia-Tirio-Wayana-Kaxuyana map in the Brazilian sector of the Guiana Shield (Map 1:13), coordinated by the Amazon Conservation Team (ACT) is an excellent tenure map.<sup>2</sup> But the Brazilian government retains strict control over its distribution. Printed maps can only be obtained with official permission. There are also high costs: the million dollar Apalia-Tirio-Wayana-Kaxuyana map costs more than the other 12 Guiana Shield mapping projects combined (author).

<sup>2</sup> See [www.amazonteam.org](http://www.amazonteam.org)

In fact, the costs for self-sufficient projects have gradually declined – as local mapping units assume larger responsibilities. This suggests a comparative advantage for locally based mapping groups.

### Tangible and intangible results of tenure mapping

The capacity-building approach to tenure mapping produces more than just a tenure map. The two most tangible results are:

- a traditional knowledge database of the territory; and
- community-based field mapping teams qualified to maintain and expand that database.

Alongside these are other important intangible results. One is the confidence that flows from being able to make maps as accurately as the official cartographers. The other is that the community and the mapping teams are the **authors** of the map – which in some countries is likely to aggravate the mapping establishment: surveyors and officials.

Although often hostile, both official and surveying industry reactions to community mapping are a testament to its effectiveness. For example, in Malaysia, the Sarawak government criminalised community mapping after the Iban community of Rumah Nor used GPS mapping to win a case against Borneo Paper and Pulp.<sup>3</sup>

### Problems of marginalisation and sustainability

Negotiations over ancestral lands usually take place either at national government level, or in global forums. Such negotiations can last indefinitely. They also take place in distant cities and require the kind of legal and political expertise that communities rarely possess, and minimise the possibility of active community participation. Communities, once central to the tenure-mapping process, become marginalised.

Self-sufficiency in community map-making does not automatically trigger sustainability. Tenure mapping can be inspirational and build capacity. But it is typically a one-off activity. And communities who want to continue developing local capacities in resource management or conservation often encounter a funding vacuum. Human rights-oriented donors that support tenure mapping are often unqualified or uncomfortable about supporting resource management projects – especially when ‘too technical’. Environmental donors rarely support indigenous projects, unless embedded in ‘community-based-conservation’ projects managed by global conservation NGOs.

One key to sustainability is to shift the focus from the

short-term production of a one-time tenure map to long-term capacity development in environmental data gathering. This approach would address practical problems of stewardship and turn tenure maps into databases, combining traditional knowledge with direct observation – and which inform local agendas that compete with those of outside agencies.

Sustainability lies not in the distant prospect of a land settlement, but in how communities can immediately capitalise on the potential which emerges during the time it takes to train community-based mapping teams. The information-gathering process also reflects an intense local curiosity: about alternative ways to generate income from traditional resources, and about the motivations and agendas of outsiders with an evident interest in their territory. Both community leaders and mappers are inspired by the realisation that they have acquired skills that could be put to work immediately.

### Funds for sustainability – and who gets them

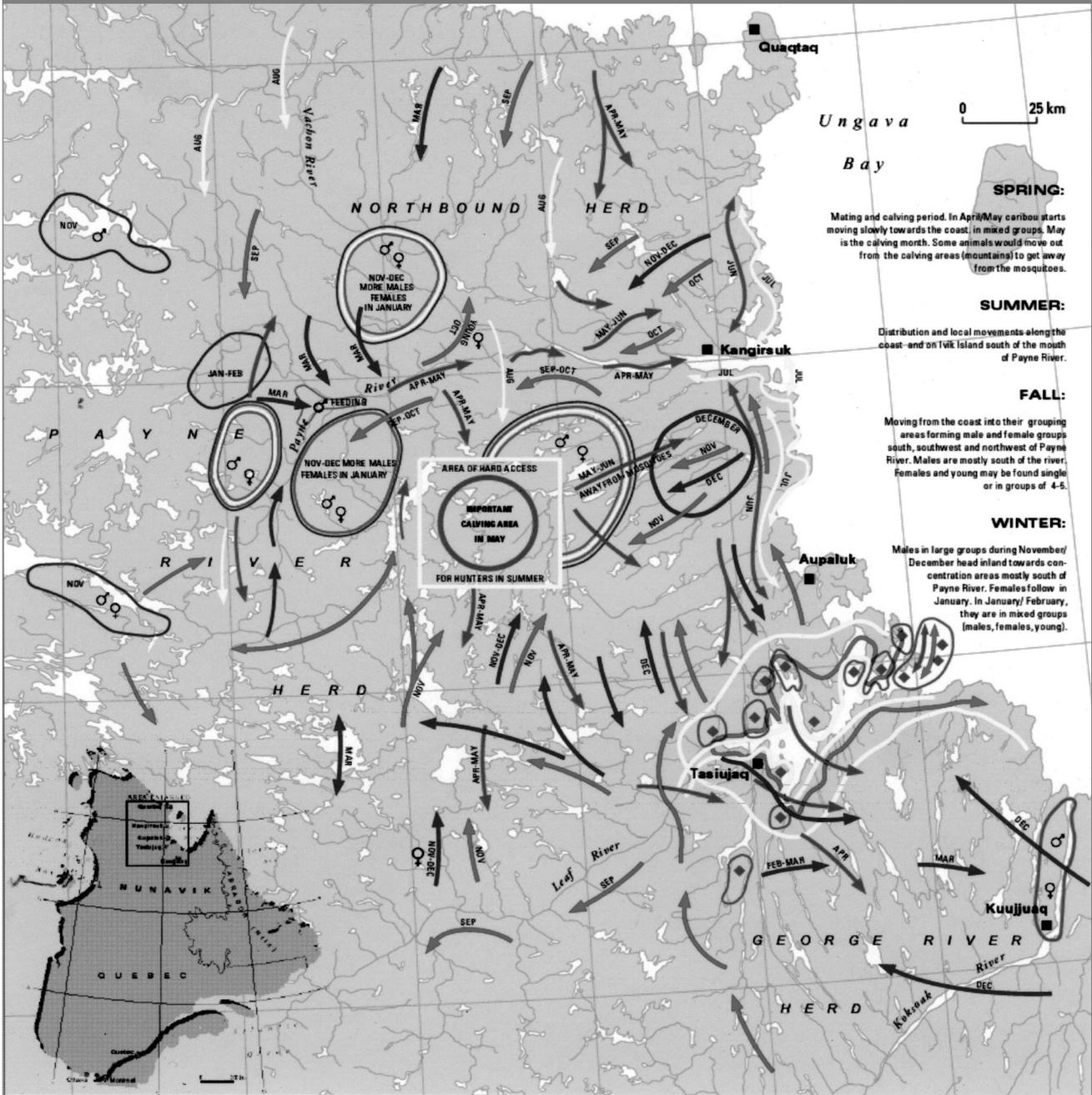
The global conservation community has convincingly demonstrated the funds various donors will give, not for specific projects but for managed programmes. Substantial sums are given to global conservation organisations. For example, the World Wildlife Fund (WWF) Amazon Region Protected Areas Programme (ARPA), committed to protect 12% of the Brazilian Amazon, received US\$370 million over 10 years. But indigenous groups and communities receive only relatively meagre amounts allocated to ‘small grant funds’: such as the World Bank Indigenous Peoples Fund, with a maximum of US\$30,000. However helpful, such funds are not geared for sustainability.

But few indigenous peoples’ organisations and support NGOs elect to compete for them. Over the last few years, some indigenous organisations and their support NGOs have embarked on a global-scale effort to change the relationship between the global conservation community, through interventions to advance ‘rights-based conservation’, e.g. at the Biodiversity Convention COP or the World Conservation Union (IUCN) meetings. But like tenure negotiations, this campaign is conducted in distant forums – beyond the reach of communities.

Indigenous communities are clearly disadvantaged. Although regularly featured in conservation proposals, communities have not yet organised amongst themselves to generate the kinds of large-scale, long-term proposals and programmes that donors are willing to support. Such funding could give communities the prospect of real long-term sustainability. However, there are a number of comparative

<sup>3</sup>See [brimas.www1.50megs.com](http://brimas.www1.50megs.com)

Map 4: Caribou movements in Nunavik



**INUIT ECOLOGICAL KNOWLEDGE  
CARIBOU ECOLOGY FOR WESTERN UNGAVA BAY**

**LEGEND:**

- Migration routes
- Major Distribution
- Males
- Females
- Major concentration Areas

**KEY TO SEASONS:**

- Spring
- Summer
- Winter
- Fall

**Box 2: Lessons from Inuit and Cree Territories**

*The most important lesson learned from the Nunavik experience is that the Indigenous peoples must first and foremost have control of their own information (Kemp and Brooke, 1995).*

These following examples indicate what can be accomplished when raw data is collected and converted into applicable information.

In 1975, the Inuit organisation Makivik, created by the James Bay Agreement, Quebec established the Kuujuac Environmental Research Centre. It was committed to training Inuit in wildlife field research and to ensuring that traditional knowledge is combined with scientific field data in environmental management.<sup>4</sup> The Centre stipulated that visiting scientists must employ qualified local field assistants and consult with hunters over their intentions. Map 4 shows 20 years of hunters' observations of seasonal caribou movements, gathered by the centre.

Then in the 1990s, the Grand Council of the Crees in Quebec created a GIS archive to oppose the James Bay II Hydroelectric Project (James Bay I led to the 1975 settlement). Hydro Quebec had insisted that the land to be flooded was unused. The next day, the Cree Hunter Support Programme GIS printed reams of maps and records based on the hunting records. This was evidence that the forests had been in active use for 20 years.

advantages that communities could use as building blocks towards developing their organisational and institutional capacities.

**Comparative advantages of land-based communities in conservation practice**

Conservation is an information-intensive activity. Its ultimate purpose is to enable communities to maximise their control over the flow of environmental information that affects their territories. These information skills qualify community mapping teams to assume a broad spectrum of responsibilities in on-the-ground conservation.

Most science-based conservation focuses on biodiversity inventories, and the assessment and long-term monitoring that informs the planning and management of protected areas and endangered species. And it requires specialised analysis done by universities and zoological and botanical gardens.

But gathering the data required needs different and more practical talents and capacities. This is a comparative advantage for community-based groups that have learnt to gather and map geographically accurate environmental data. It should also enable communities to capitalise on other advan-

tages: their intimate familiarity with their territory, and knowledge of their traditional assets. This localised capacity – acquired in the course of tenure mapping – is pivotal in stewardship, for protected area and species conservation and also in dealing with other external resource interests.

Some indigenous groups are starting to think on larger scales, in order to match, or pre-empt, the landscape-scale conservation projects being proposed for their territories. Both the Wapisiana in Guyana and the Saramaka in Suriname (Map 1: 4 and 8) are currently motivated to contemplate such 'counter-proposals'.

In the Philippines, many coastal communities have set up locally managed marine protected areas, such as the Balian-gao Protected Landscape and Seascape dedicated to mangrove and coral reef recovery (Guzman, 2004). Recognising the need to coordinate actions with their neighbours, communities sharing a common coastline are joining up to become coastal conservation regimes (Christie et al, 2002).

One doctrine driving global conservation is that people and biodiversity conservation are inherently incompatible. Conservationists hold the main cards: access to funds, scientific expertise, and a largely uncontested reputation as planetary saviours. But, ten years ago, the World Watch Institute estimated that the current process of territorial negotiations in America would lead to 13% of the continent falling under some measure of indigenous control – including 33% of the Amazon (Alan Therberge, pers. comm.). But what indigenous peoples elect to do with their recovered territories is of great consequence for biodiversity conservation. **That** is their card.

**Increasing security of tenure: rights-based and asset-based strategies**

These two strategies have essentially the same goal: security of tenure and control over territorial assets. Rights-based strategies seek comprehensive legal recognition of communal title to ancestral lands through state-level negotiations. Asset-based strategies are more pragmatic and incremental, extending control asset by asset.

There are other differences. Asset-based strategies are locally controlled and invite all community members to engage directly. They are dynamic while rights-based strategies can be limiting – for example by halting resource development until a settlement is reached. And land rights negotiations can take a long time; it took Inuit twenty-five years to negotiate Nunavut. Asset-based strategies can be put into effect immediately.<sup>5</sup>

<sup>4</sup> See: [www.itk.ca](http://www.itk.ca)

<sup>5</sup> See [www.nunavut.ca](http://www.nunavut.ca)

Asset-based strategies do recognise the crucial importance of secure tenure (Adamson et al, 2005). But they treat the existing asset control regime as a starting point from which to gain community control over assets. This promotes community-scale asset development, impact assessment, shareholder activism, financial leveraging, exercising intellectual property rights, limiting the extraction of resources, and securing community assets by setting up protected areas.

Rights-based strategies also depend upon a **readiness to negotiate** by the state. For example in America, some campaigns that were initiated by tenure maps (Map 1) started over ten years ago. But governments have yet to recognise

those indigenous peoples, let alone agree to negotiate over their territories. And outside America, this is the exception rather than the rule.

Interestingly, in Africa, where the chances of negotiating indigenous land title are slight, community and participatory mapping is now enabling communities to respond more effectively to perceived threats to their lands, sometimes turning the instruments of global conservation to their own advantage.

If there is life after tenure mapping, perhaps it is likely to be found in countries where the chances of negotiating indigenous land title are virtually zero.

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# theme section

## ISSUE-BASED CASE STUDIES