

# British Columbia Indigenous GIS

Land Claims, Management Plans, Monitoring and Enforcement

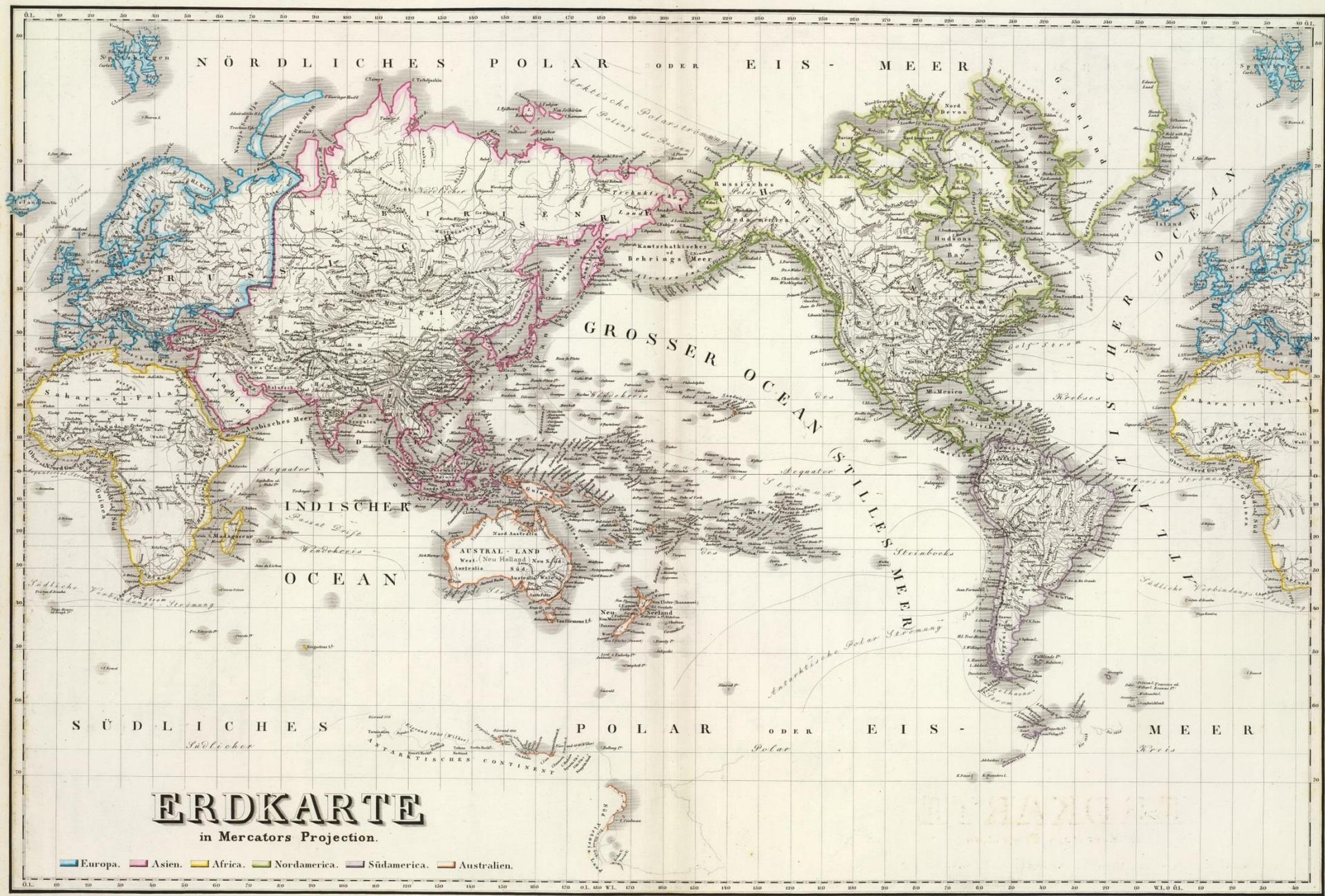
IDEAL Justice Conference 2016

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Download this presentation from

<http://gis.ubc.ca>



# ERDKARTE

in Mercators Projection.

Europa. Asien. Africa. Nordamerica. Südamerica. Australien.



Caribbean Sea in 1853 without political boundaries.

# Today's Topics

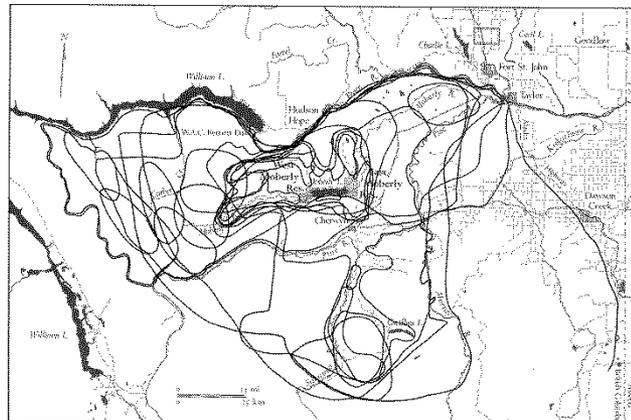
- My interest in the field
- Define GIS
- Use of GIS by native people in BC
- Land claims, management plans, monitoring\enforcement
- ArcGIS Online demo

# Community Mapping

*The hunting societies of the world have been sentenced to death. ... Would-be civilizers concluded that hunters never had, or had lost, the means to achieve a decent way of life; should welcome the benefits of trade, wage employment, and proper religion; should allow their lands to be differently used; and must accept whatever changes are brought to them, however the changes are brought. That is the death sentence.*

Hugh Brody, *Maps and Dreams*, 1981, p xi - xii<sup>1</sup>

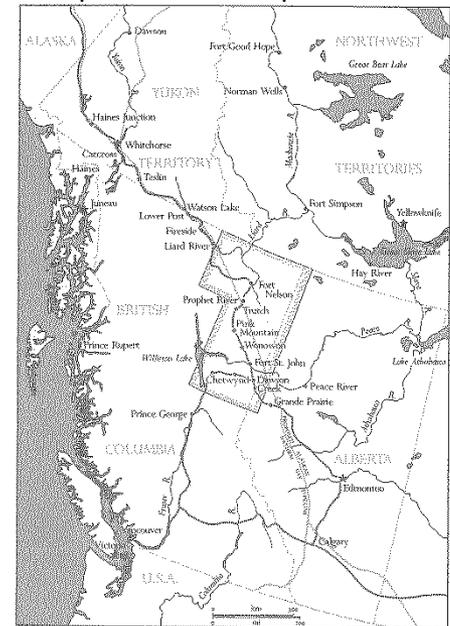
- How do communities map their communal interests?
- How can these maps influence resource development?



East Moberly Lake Reserve: Hunting map p. 165<sup>1</sup>



Proposed Alaska Pipeline Route



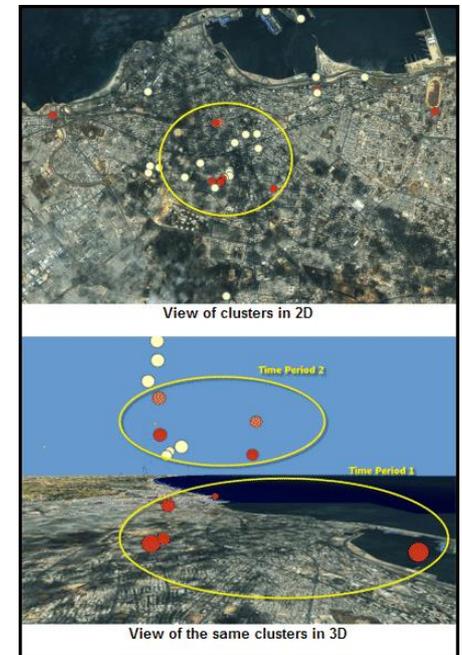
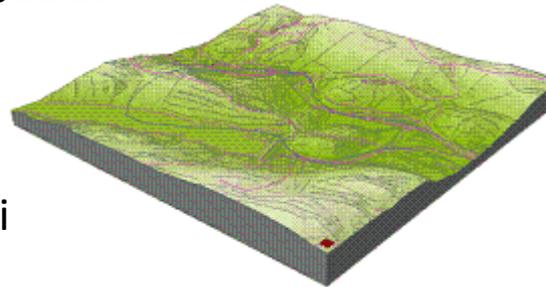
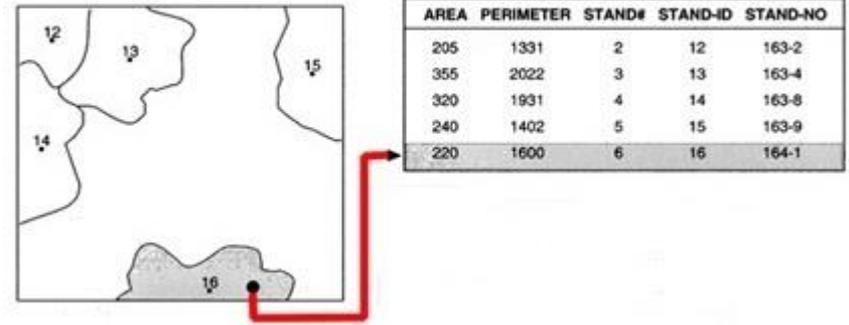
Study Area in NE BC p. xx<sup>1</sup>

# What is GIS?

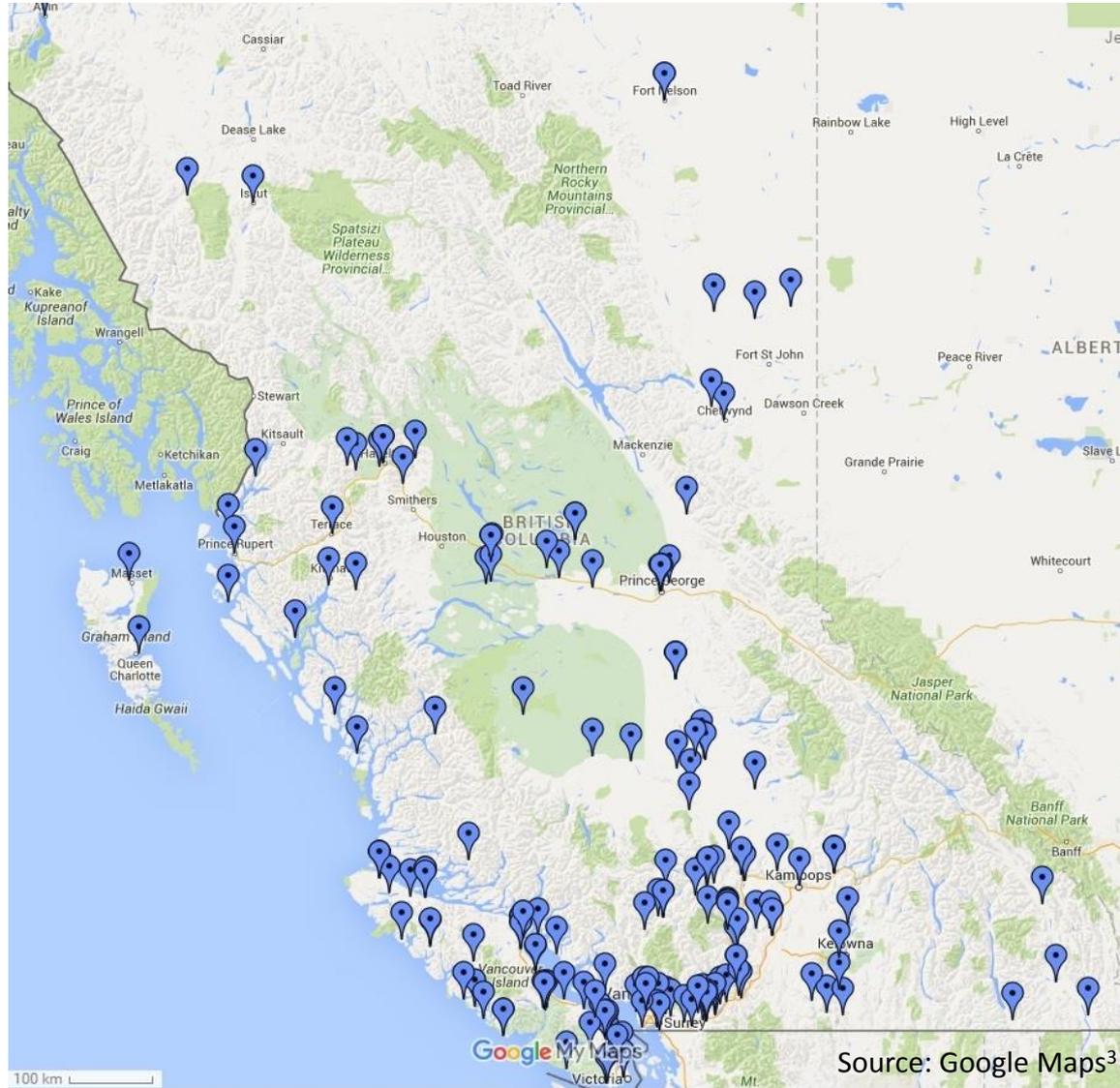
Unlike maps you see on Google or other computer maps, a Geographic Information System can be thought of as a smart map.

- Each object (point, line, or polygon) is connected to a unique line in a table
- This allows for objects to be described and then found based on their description
- For example: where are all the villages of a certain size or all the forests of a certain species or age?
- This information can then be used in complex models looking at soil capability or effects of road construction on wildlife
- Once you have the data, analysis possibilities are almost endless

Graphic data/Tabular data integration



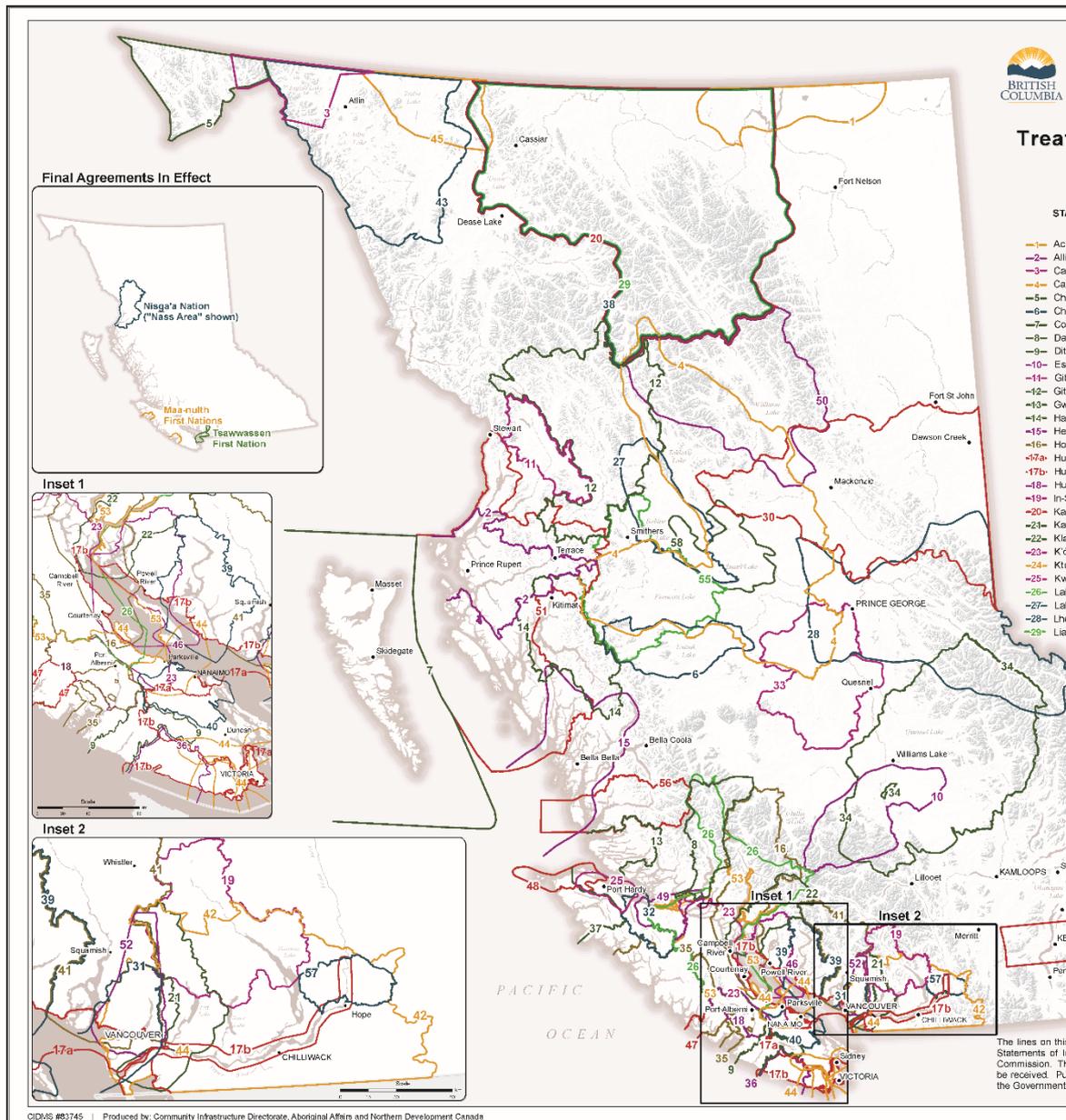
# First Nations in the province of BC, Canada



# First Nations Statement Of Interest Illustrating Overlapping Boundaries

- Only showing those First Nations intending to negotiate treaties
- Signed agreements criticized for not dealing with overlapping claims
- Map boundaries themselves considered to be provocative
  - imposed on First Nations or
  - used by First Nations as bargaining tools and may not be representative of occupancy and or land use or the narrative of genealogy and governance<sup>2</sup>
- In GIS this would be referred to as a 'fuzzy' boundary which would allow for the location to be negotiated over time
- So why make maps if they lead to controversies?
  - To inform decision making as opposed to making decisions with the map alone
  - **Maps are important tools but secondary to leadership and advocacy<sup>6</sup>**

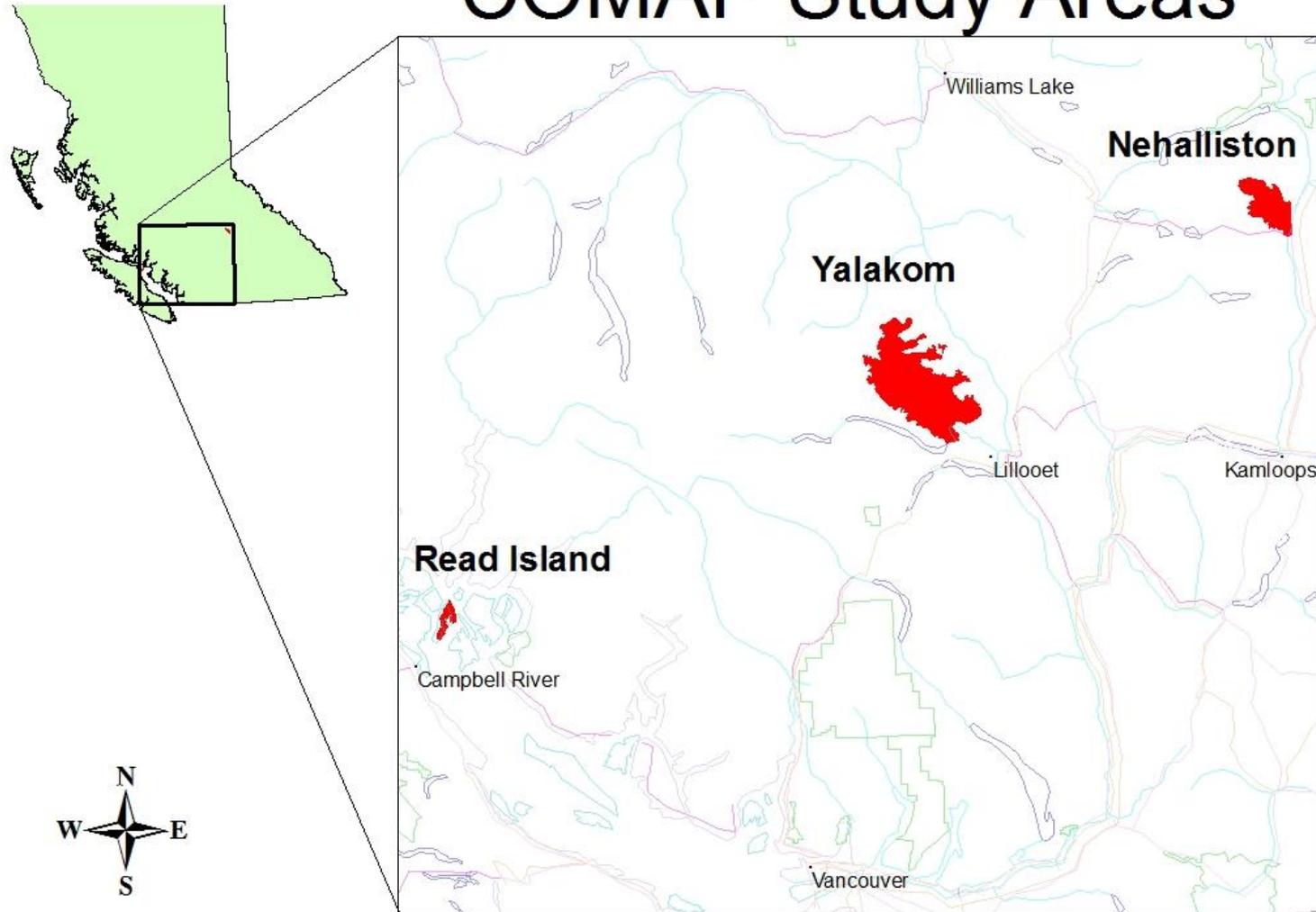
Treaty Negotiations map produced by Canadian Government<sup>4</sup> in 2015



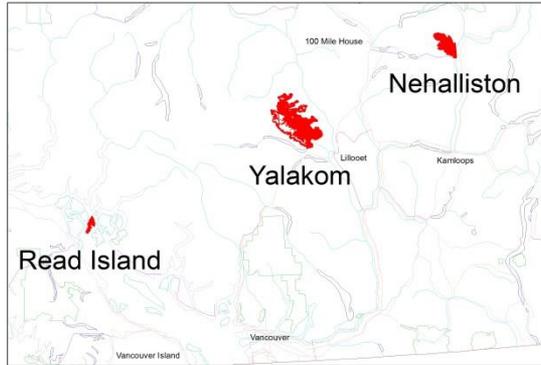
# COMAP – Community Map Analysis Project 1995 - 97

British Columbia

## COMAP Study Areas



# COMAP Study Areas



## First Nations Contacted

| Study Area/1 <sup>st</sup> Nation | GIS 1995 | GIS 2016          | Land Use Plan In 2016 |
|-----------------------------------|----------|-------------------|-----------------------|
| Nehalliston / Simpcw              | No GIS   | GIS Contractor    | No <sup>#</sup>       |
| Yalakom / St'át'imc               | GIS      | GIS Company (PGL) | Yes <sup>5</sup>      |
| Read Island / Homako              | No GIS   | GIS Contractor    | Yes <sup>*</sup>      |

<sup>#</sup> Jennifer Morrison, Professional Agrologist, DoT (GIS/RS) and Project Mgr., personal communication, March 30, 2016

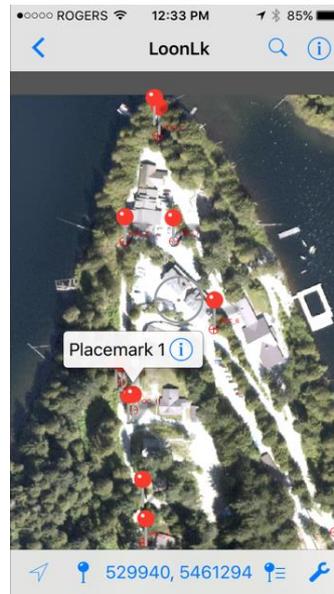
<sup>\*</sup> Gordon Atkinson, Homako Forestry General Manager, personal communication, April 14, 2016

# GIS in Customary Land Use Planning

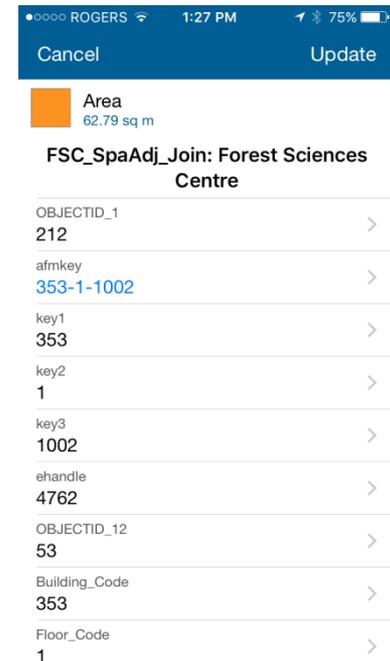
|                | Land Claims                                                 | Management Plans                                                               | Monitoring and Enforcement                                                    |
|----------------|-------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Activity       | Map occupancy, land use, governance for land claim or title | Inventory land characteristics and plan land use                               | Update plans and inspect land use, collecting ground and remotely sensed data |
| Skill Required | Minimum skill required although must be methodical          | High understanding of traditional use plus formal biology\ecology\GIS training | Basic ecology and mapping skills                                              |
| Technology     | GPS on phones\tablets<br>GIS Online                         | Full featured GIS for display and analysis<br><br>GIS Online                   | GPS and GIS Online for updating, communicating and some analysis              |

# Land Claims - GIS

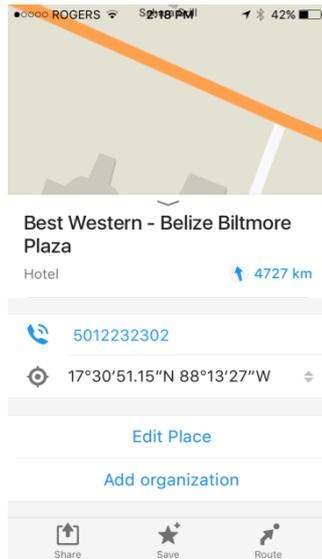
- GPS on phones and tablets
  - Define position and descriptive information
- GIS Online
  - Upload data for sharing



PDF Maps - iPhone App -Offline



Collector - Esri iPhone App – Online\Offline



Maps.Me - iPhone App – Offline\Online

# Management Plans - GIS

- Desktop GIS
  - Full analysis capabilities
- GIS Online
  - Community access to map plans and ability to locate where they are on the plans using their GPS enabled smartphone or tablet
- Forest Management Planning at UBC
  - Students create a comprehensive forest management plan
    - FRST424 Student Projects
      - <http://fresh.forestry.ubc.ca/forest-management-planning-frst-424/>
    - MSFM Masters Projects
      - <http://frst558.forestry.ubc.ca/>

## Forest Management Planning (FRST 424)



FRST 424, Sustainable Forest Management, or Forest Management Planning, is a 10 credit capstone course in UBC's undergraduate forestry program.

In this course, student teams prepare a comprehensive forest management plan for a forest estate.

Examples of forest estates include:

- Community Forests,
- First Nations Forests,
- Private Forests,
- Plantation Forests.

Mgmt. Plan video link:

<https://www.youtube.com/playlist?list=PL4817N-SfRX1Di6qSINLdUXEst0GYBX1->

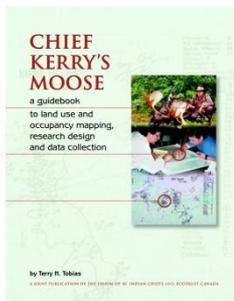


## **FRST 558- Landscape Level Forest Land Management**

Preparation of landscape-level sustainable forest management plans that integrates ecological, social and economic components.

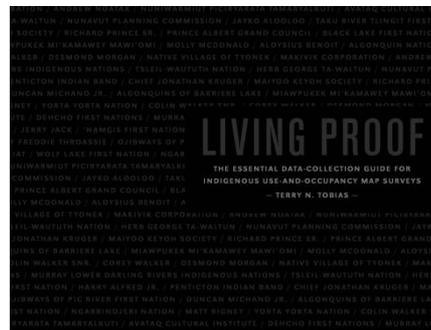
# Union of BC Indian Chiefs and Nature Trust Canada

- Identified the need for use and occupancy mapping handbooks that would allow claimants to establish that they hold rights
- Maps must serve indigenous people's purposes and be rigorously produced so that they will be accepted in land claim proceedings
- This map-biography survey methodology textbook and how-to guide by Terry Tobias is presented in two books:
  - Chief Kerry's Moose<sup>10</sup> (2000) and Living Proof<sup>11</sup> (2009)
- Aboriginal Mapping Network also has many map making resources<sup>12</sup>



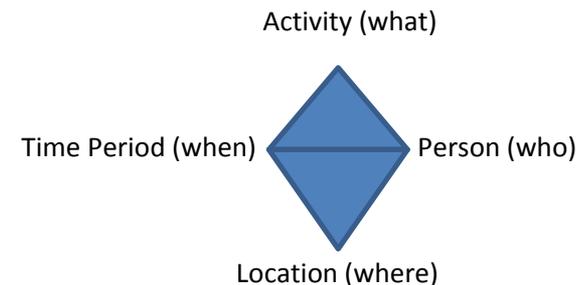
Chief Kerry's Moose<sup>10</sup>

Free PDF Download!



Living Proof<sup>11</sup>

## Data Diamond Template



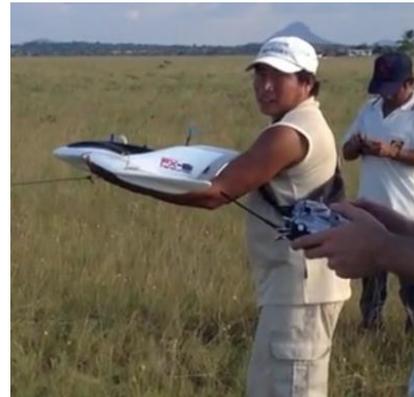
# Monitoring and Enforcement - GIS

- GPS Drones and GIS Online
  - For field updating
  - Communicate changes in plans and report illegal activity
  - Some analysis
  - Funding?



Photos: Tom Griffiths

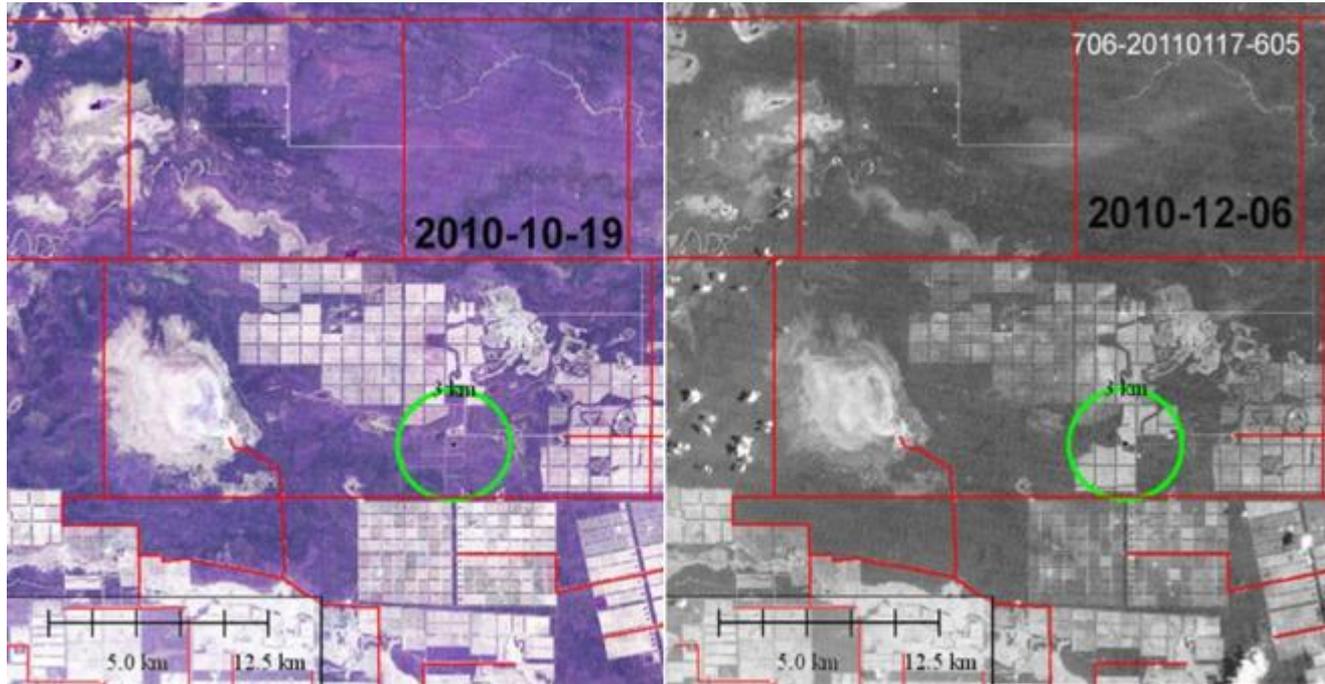
Wapichan GPS data gathering<sup>6</sup>



Wapichan drone and image capture station<sup>7</sup>

**But what can you do if you don't have any access to the land?**

**SATELLITES SPOT ILLEGAL LOGGING OF UNCONTACTED TRIBES' HOME**



Land claimed by both ranchers and the Ayorea, a tribe that lives on the Gran Chaco, Paraguay shows illegal logging by Yaguarete Pora<sup>13</sup>

## Use of Drones to Monitor Illegal Mining

Wapichan community built and flew a drone to map their lands and report illegal mining to the government of Guyana.



Aerial photo taken by a drone shows mining activity in Wapichan territory.<sup>7</sup> (Nicholas Fredericks, Wapichan community leader, April, 2016)

# Live demo of ArcGIS Online

URL of online map:

<http://arcg.is/1SBUyBB>

## **I hope I have been able to show you that:**

- Mapping and computer mapping or GIS are important in the development of self determination for indigenous people
- Community members who have a basic knowledge of computers can learn how to use GIS to make maps and do analysis
- Land use plans are an important goal for communities in their struggle to claim their land and maintain their traditional use of the land
- Distributing maps online is a powerful way to communicate land use plans and as evidence of illegal land use

# References

1 Brody, Hugh (1981). “*Maps and Dreams*”.

2 Turner, C., & Fondahl, G. (2015). “Overlapping claims” to territory confronting treaty-making in British Columbia: Causes and implications. *The Canadian Geographer/Le Géographe canadien*, 59(4), 481.

3 Google Maps. (2016). [BC Aboriginal Network, *BC First Nations*]. Retrieved from <https://www.google.com/maps/d/viewer?mid=zdO3KULMvNWE.kx-zA5G2PR-I&hl=en&usp=sharing> or <http://www.bcands.bc.ca/british-columbia-aboriginal-communities/>

4. Community Infrastructure Directorate, Aboriginal Affairs and Northern Development Canada. (2015) “*Treaty Negotiations in British Columbia*” (map). CIDMS #83745. Retrieved from: [https://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-BC/STAGING/texte-text/trynegc\\_1100100021020\\_eng.pdf](https://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-BC/STAGING/texte-text/trynegc_1100100021020_eng.pdf)

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11 Tobias, Terry N. (2009). "*Living Proof*". Ecotrust Canada.

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13. Keim, Brandon. (2011) Retrieved from <http://www.wired.com/2011/05/ayoreo-satellite-pics/>