



PAFID



Strengthening the Role of Indigenous Peoples and Their Communities in Nature Conservation:
A Project Ensuring the Full and Effective Participation of Indigenous Peoples in the
Implementation of the Expanded National Integrated Protected Areas System

LEARNING MATERIAL

Guide to Understanding Maps

DAVE DE VERA

Introduction

Map reading is an extremely useful skill for just about everybody and is very critical especially in the care of our land and our rights.

Map

A map is a photo or drawing of the location, boundaries and landmarks of a place.

Importance of a Map

It is used and practiced by everyone around the world to guide the search for direction and information about a place.

A map contains a series of information for you to know where a place is located; what is there and what it looks like in a place; how wide a place is; how to get to a place; what is the condition of a place; and, who owns the place.

Short History of Mapping

People have been making maps for a very long time. The first maps were those drawn by our ancestors on walls and caves. Examples are:

- drawings seen on the cave walls in France and Hungary that turned out to be thousands of years old; previous settlers drew it to find out where deer could be caught and was passed on to the next generation to guide them in their hunting place;

- Lascaux Cave — prehistoric sky maps of astronomical observations, 17000 B.C.; stars are used as a guide so they will not get lost in their journey; and,
- during the 14th century (Ming Dynasty), the Chinese believed that China fills almost the whole world while Europe is only a small part of it.

Different Types of Maps

Sketch Maps

First made to know the estimated boundary of an ancestral land in a Certificate of Ancestral Domain Title (CADT) application.

3D Modeling

3D model of ancestral lands made by the communities itself that better understand the boundaries and content of their areas. It is simpler compared to the paper map. An example is the 3D modeling made by the Manobos in Bukidnon.

Topographic Maps

Each line is equal to the height of one place. This is done by getting an image from an airplane and hand drawn using a stereoscope (a device by which two photographs of the same object taken at slightly different angles are viewed together, creating an impression of depth and solidity).

Satellite Imagery

Newest mapping system there is.

Mapping Methods

Sketch Mapping

This is the simplest mapping method known. Despite it being the simplest, it is the mother of all mapping. It is more viable if the one who draws the map is the one who lives in the area because the information directly comes from the person.



Sketch Maps

The maps represent salient features of the land community members draw maps on the ground and/or paper based on their and other natural resources from a community's perspective. The community members do not rely on exact measurements and do not use a consistent scale or geo-referencing. They do show the relational size and position of features.

Total Station Mapping

It is an electronic transit theodolite integrated with electronic distance measurement (EDM) to measure both vertical and horizontal angles and the slope distance from the instrument to a particular point, and an on-board computer to collect data and perform triangulation calculations. It may be complicated to use but can be learned.

A theodolite is a type of surveying instrument with a rotating telescope for measuring horizontal and vertical angles. Transit theodolite is a particular kind of theodolite in which the telescope is short enough to rotate in a full circle on its horizontal axis as well as around its vertical axis.

Global Positioning System (GPS)

A satellite-based navigation system that works in any weather conditions, anywhere in the world, 24 hours a day. A simpler term was constructed by indigenous peoples: "Gamit Pang Sukat" or "Gamit Pang Survey".

3D Modeling

Another type of mapping of ancestral lands that are usually made by the community members themselves to understand the boundaries and content of their area. 3D maps are created from the template of a topographic map where pieces of cardboard are cut in the shape of

the contour lines and pasted on top of each other. The model is then finished with wire, plaster and paint. Geographic features are depicted on the model using pushpins (for points), colored string (for lines) and paint (for areas). A scaled and geo referenced grid can be digitized through a scanner and Geographic Information System (GIS) application.



3D Modeling

Uses of a Map

Community Land-Use Planning. Enables communities to demonstrate their land protection system.

Tool for negotiation by indigenous peoples/cultural communities. Enables communities to show and demonstrate their plans and propositions to various sectors (Department of Environment and Natural Resources/DENR, local government units/LGUs, etc.) about their land. It helps people involved to grasp and understand what is being discussed (e.g., pointing out the sacred lands, farm areas etc.)

Setting the Boundaries of the Ancestral Land. Mostly used by chieftains in setting and showing the boundaries of their ancestral lands.

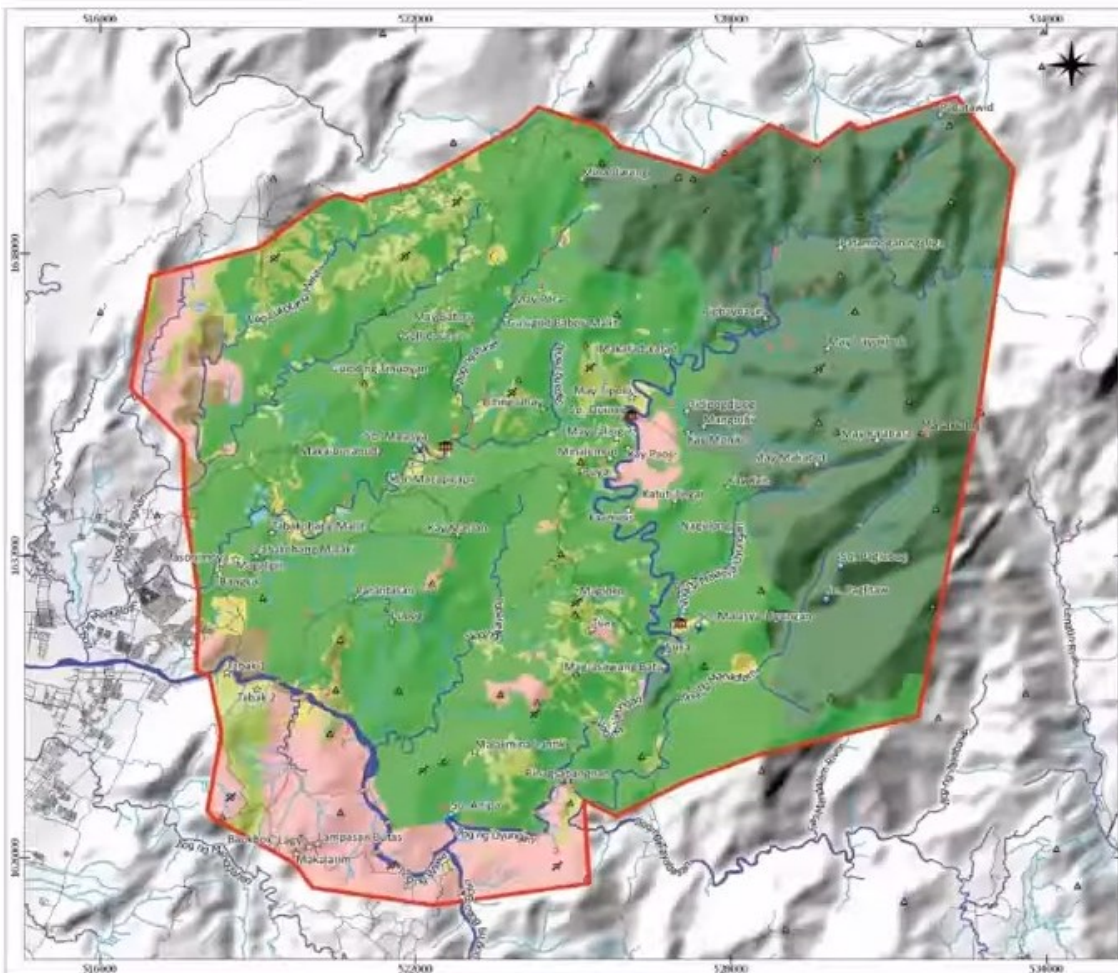


Topographic Map

Satellite Imagery

Elements of a Map

Map Theme. It sets out the primary message or information that the map maker wants to share and are usually seen in the title or in the summary of information where it states the location, land use, width of a land, land owner and the like.



Map of Traditional Use Areas (2016)
Agta-Dumagat Ancestral Domain
Located in Montalban, Rizal Province
CADT No.: R04-ROD-0512-158
 Luzon 1911 Datum
 Philippine Reference System 1992 - Zone 3
 1:100,000
 0 10 20 30 km
 CADT Total GIS Area = 19,759.19 hectares.

- Legend**
- CADT 158 Boundary
 - Kagubatan
 - Kalaanan
 - Natupas
 - Pamayanan
 - Quarry
 - Tagimagan
 - Taniman
 - Tubig
 - Kaparangan
 - Roads
 - Trails/Footpath
 - Mountain Peak
 - Tribal Hall
 - Village
 - Hunting Ground
 - Fishing Area
 - Headwater
 - Important Places
 - Sacred Place/ Ritual Area
 - Tribal School
 - River
 - Stream/Creek

Data Sources:

Jarvis, A., H. Reuter, S. Nelson, E. Guevara, "Hole-filled SRTM for the globe Version 4, available from the CGIAR-CSI SRTM 90m Database (<http://srtm.csi.cgiar.org/>), 2008.

OpenStreetMap contributors, (2016) Planet dump [Data file from October 20-23, 2016]. Retrieved from <http://planet.openstreetmap.org/> (Data obtained are Rivers and Creeks, Roads and Trails, Landmarks and Elevation Peak).

National Commission on Indigenous Peoples (NCIP), "Certificate of Ancestral Domain Titles (CADTs)," October 2011.

Dumagat Remontado of CADT 158, Community Mapping: Identification of Past and Present Land Use, Mountain Peaks, Landmarks, Traditional Use Areas, and Rivers and Creeks on October 20-21, 2016, validated on November 11, 2016 and December 4-5, 2016.

Map Production:
 PAFIE, Inc.
 October 2017
 Davao City, Philippines

Map of Traditional Use Areas (2016) | Agta-Dumagat Ancestral Domain | Located in Montalban, Rizal Province
 CADT No. R04-ROD-0512-158

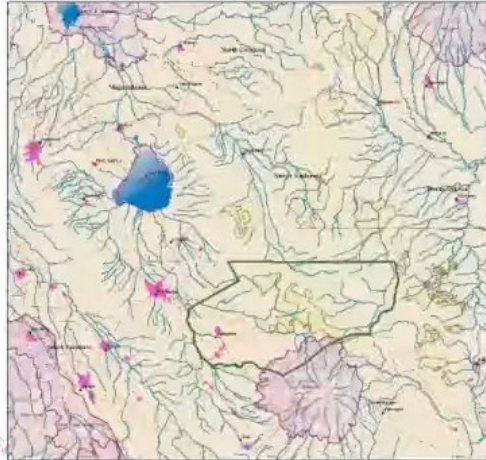
 Matandang Gubat	 Province*	 Cetacean Conservation Priority Area
 Cogonan	 City or Town	 Dugong Conservation Priority Area
 Taniman	 Road	 Reef Fish Conservation Priority Area
 Kalsada	 River	 Built-up or Industrial Area
 Trail	 Bathymetry Contour	 Forest
 Sagradong Lugar	 Protected Area	 Swidden, Agroforestry or Bru:h
 Kanto ng CADT	 DENR Community Forest Lease	
	 Ancestral Domain	
	 Zamboanga Mine Tenement	

Legend. It tells what the map contains and serves as a guide to the work of the various symbols like lines and colors to understand the information on the map.

Sustainable Development and Mining Industry in Tampakan, South Cotabato, Philippines

Potential threats to sustainable development from mining activities

Protected Areas



South Cotabato has not only a reputation for mineral resources, which produces commodities like silver, nickel, iron, and copper, but also a reputation for its agricultural products. These are approximately 80000 farms with 250,000 hectares under cultivation. Annual crops include corn, rice, and vegetables. Perennial crops include pineapple, banana, mango, rubber, coffee, rubber and palm oil, some of which are grown by agribusiness. Irrigation water comes from water catchments in the Mount Matutum area.

Concerns about the proposed mining areas were made clear during the 2008 National Super Region Project meeting. Governor Francis Ochoa of the province said that the proposed mining areas would have a significant impact on the environment and the livelihoods of the people. He said that the proposed mining areas would have a significant impact on the environment and the livelihoods of the people.

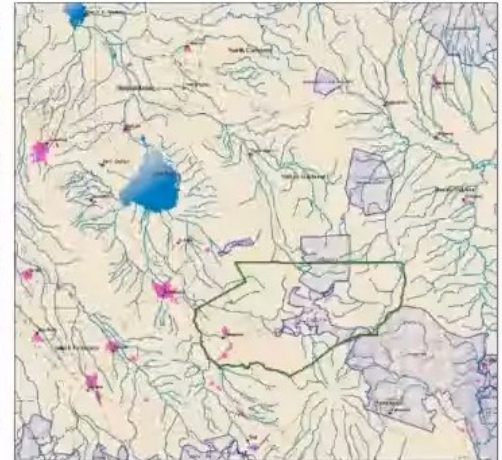
Technical and Innovation experts commissioned by the NSRM, visited the area and prepared a report "Philippines: Mining versus Food" and this map. It shows that the proposed mining areas would have a significant impact on the environment and the livelihoods of the people.

The area is highly suitable with frequent landslides. This is aggravated by many water channels and the extension logging that have placed the area in a high risk. Water channels need urgent conservation for agriculture. Mining could impact downstream agricultural areas of South Cotabato, Sultan Kudarat and Davao del Sur provinces. These areas would be at risk of pollution, siltation, decreasing fish yields and fisheries. The lakes with the highest sustainable fish production may be damaged or even destroyed by fish siltation, pollution or siltation which will greatly affect the Muslim population who depend upon it for survival.

The area is a center of armed conflict. On 28 January 2009, the military attacked the mining base camp and burned buildings. Mining of unexplored areas will have both local and national impacts on the environment and human rights issues.

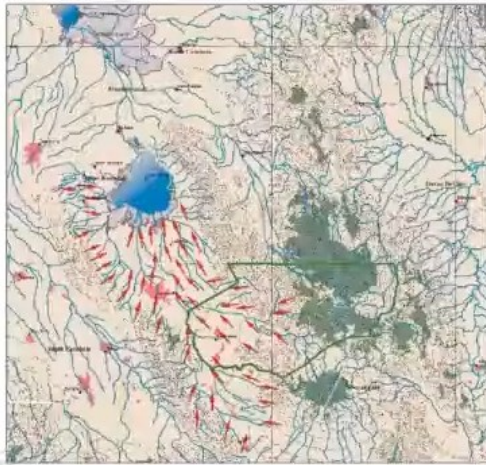


Ancestral Domains

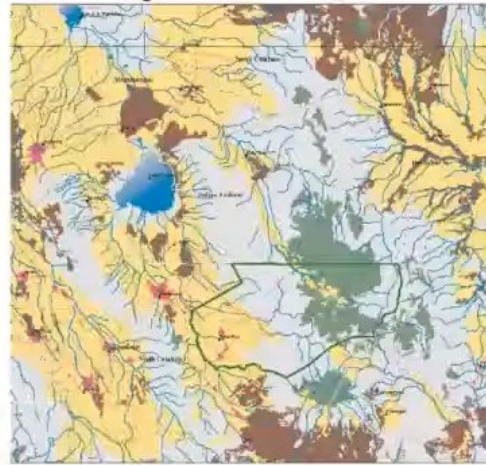


DRAFT FOR COMMENTS

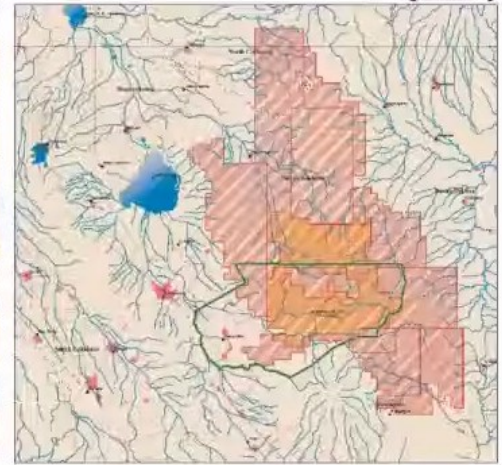
Groundwater Flow



Agriculture and Watersheds



Mining Industry



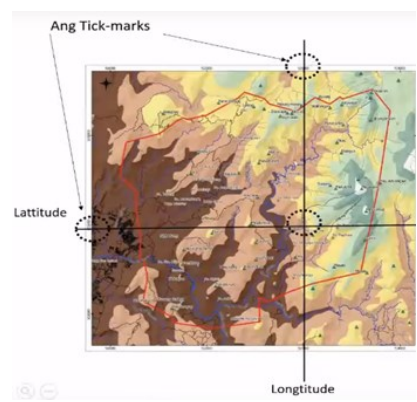
Legend



Calculation or Data. Shows how wide or big a thing is inside. This makes it easy for leaders to know the situation inside and help them understand what can be done.

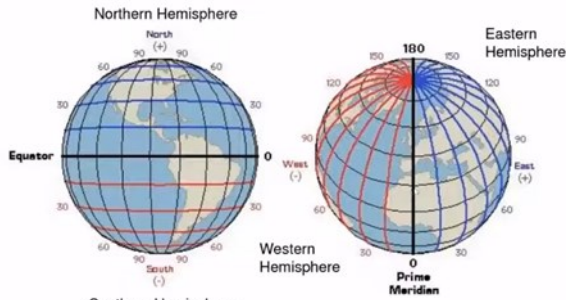
Tick Marks. These are points and ends of lines that can be seen horizontally and vertically on a map. The intersection of these lines tells the exact location of a place on a map.

Land Cover	Area, has	% CADT
Kalaanan (Mixed brush and Secondary forest)	9,946.65	50.34%
Kagubatan (Primary Forest)	5,868.62	29.70%
Taniman (Agricultural Crops and Trees)	1,812.25	9.17%
Kaparangan (Grassland)	1,357.34	6.87%
Pamayanan (Built-up/Residential Area)	295.53	1.50%
Palanas (Quarry)	209.18	1.06%
Tagangan (Limestone Forest)	25.27	0.13%
Tubigan (Ricefield)	50.6	0.26%
Natupas (Landslide Area)	185.15	0.94%
Tubig (Water Body)	8.6	0.04%



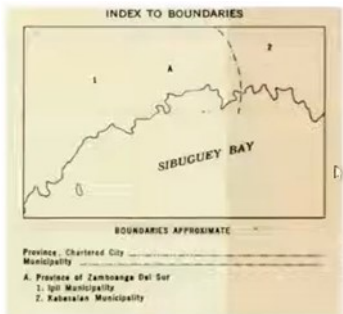
Latitude at Longitude. A coordinate system by means of which the position or location of any place on Earth's surface can be determined and described.

Latitude is a measurement on a globe or map of location north or south of the Equator while longitude is a measurement on a globe or map of location east or west of the Prime Meridian.



Latitude & Longitude

Map Title. It is an element in a map layout that describes the theme or subject of a map.

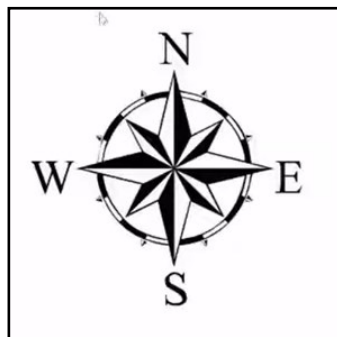


Map Coverage. Designed to indicate the areas and boundaries covered by a certain map.

Publication. It indicates who and when the map was made.

Reprinted by NAMRIA March 1989

Orientation/Direction. It is important to know where our north, south, west and east is. The orientation of the map always points to the north. In the Philippines, to know where north is, our guide would be the sun. Always remember that the sun rises in the east and sets in the west.



Scale. It shows how wide a place is.



Reference System. It indicates what formula or system was used in generating the map.

CONTOUR INTERVAL 20 METERS WITH SUPPLEMENTARY
CONTOURS AT 5 AND 10 METER INTERVALS
VERTICAL DATUM: MEAN SEA LEVEL

TRANSVERSE MERCATOR PROJECTION
HORIZONTAL DATUM IS BASED ON LUZON DATUM

HYDROGRAPHIC DATUM IS MEAN LOWER LOW WATER

Data sources. It indicates or validates where the information came from and when was it made.

SOURCES OF INFORMATION:

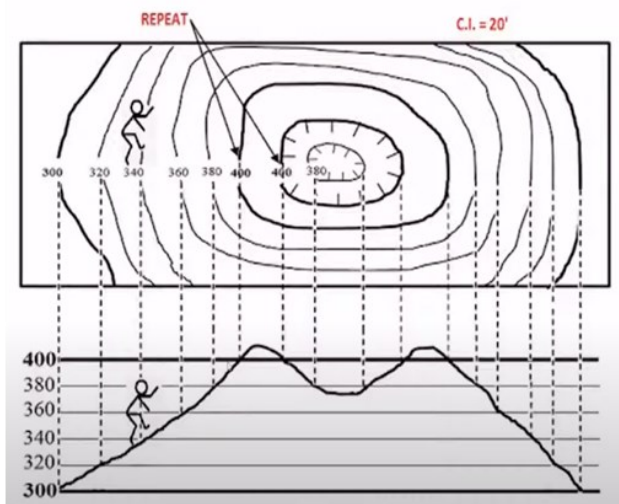
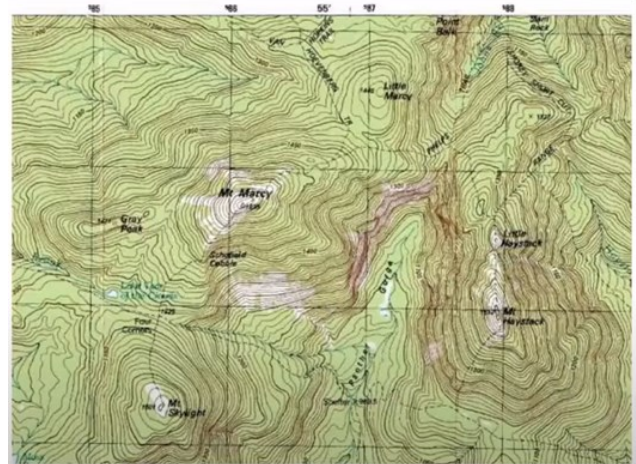
Bureau of Coast and Geodetic Survey, US Army Map Series 711 Compiled in 1956 from 1947-1953 Photographs, Department of Public Highways and others.

Users noting errors or omissions on this map are requested to mark herein and refer directly to the NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY, Fort Andres Bonifacio, Makati, Metro Manila

Map Content Study





- Topographic Map**

It is being used to understand the slope and slope of the mountain.



• **Map Information Representation**

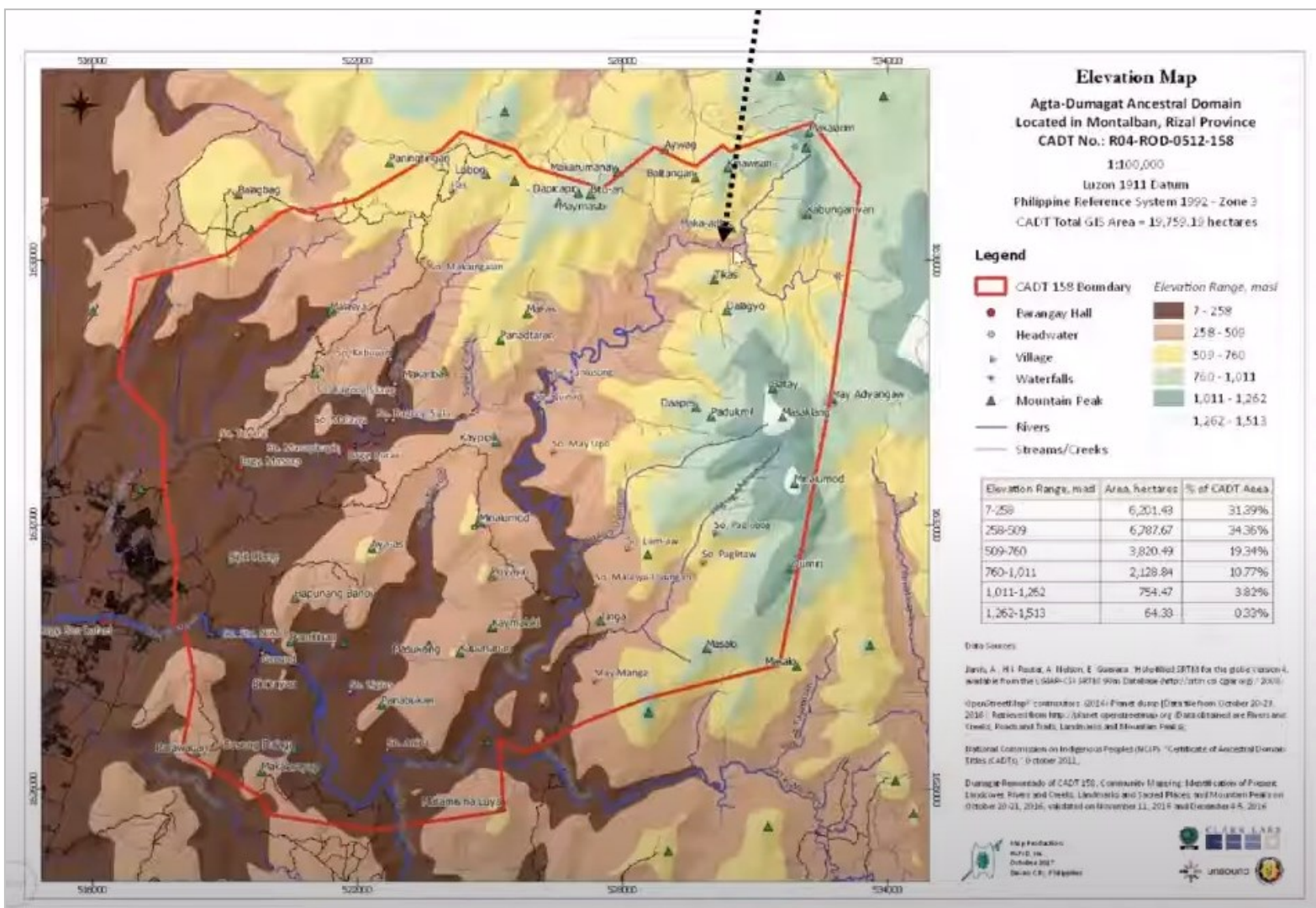
There are various signs and symbols that are found in a map and these may be periods, arrows, lines, and polygons. These are used to visually represent a real-world phenomenon or a characteristic there of on a map, working in the same fashion as other forms of symbols.

			
Period shows the location of a certain place/land	Arrows (North/South/East/West) show the direction or orientation	Line shows the length of a place	Polygon is a line the connects the length of a place

- **Period/Point** refers to a period or point that may represent a church, school, barangay and a sacred land that indicates the location and quantity.
- **Line** may represent rivers, streams, roads and contour paths (temporary roads) which allows you to measure the length or the boundary of a certain place or land.
- **Polygon** may represent an individual lot, site, plantation, etc. that allows you to measure to what extent a certain place is.

Relationship of Two or More Objects on the Map

Various information are found on a map. An example here is the Elevation Map of the Agta-Dumagat Ancestral Domain, located in Montalban, Rizal Province. On this map, we can dissect two information — the starting point of the river and the height of the place.

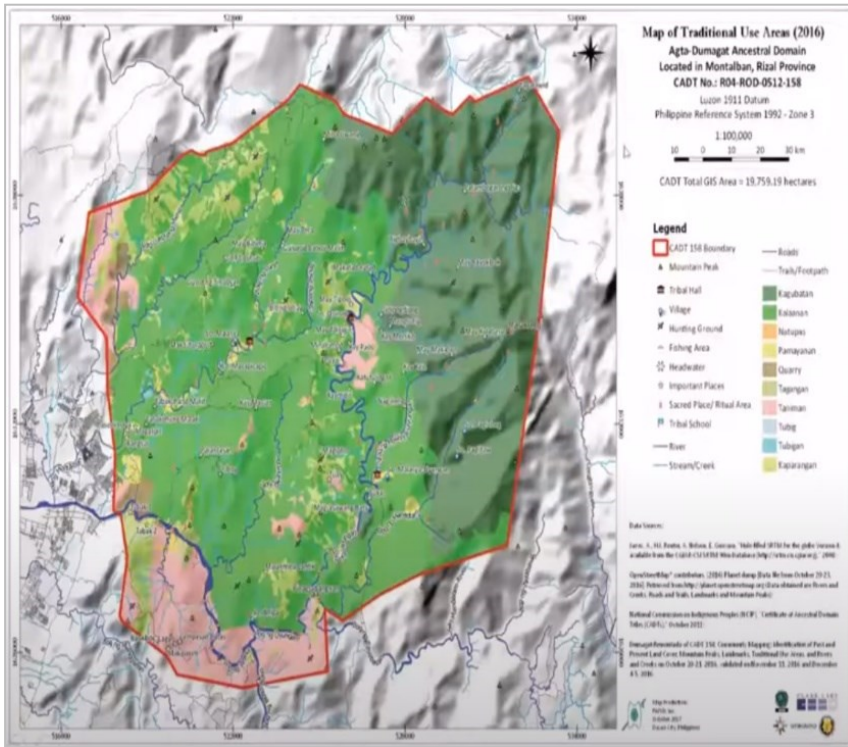


Elevation Map Agta-Dumagat Ancestral Domain | Located in Montalban, Rizal Province | CADT No. R04-ROD-0512-158

Aside from these we could see that the eye of the spring is the source of the river and is located in high places. From here, we could say that the water goes down to the plains where the plantation of the *Bisayas* are. This means that the water of those who are living in the plains are the ones benefiting from the water of those who are living in the high parts. Also, if we see the map, the area is surrounded by forests (forest cover) that also gives source of water to the *Bisayas*. This information we could see in the map can be used in negotiations with various government sectors and the like.

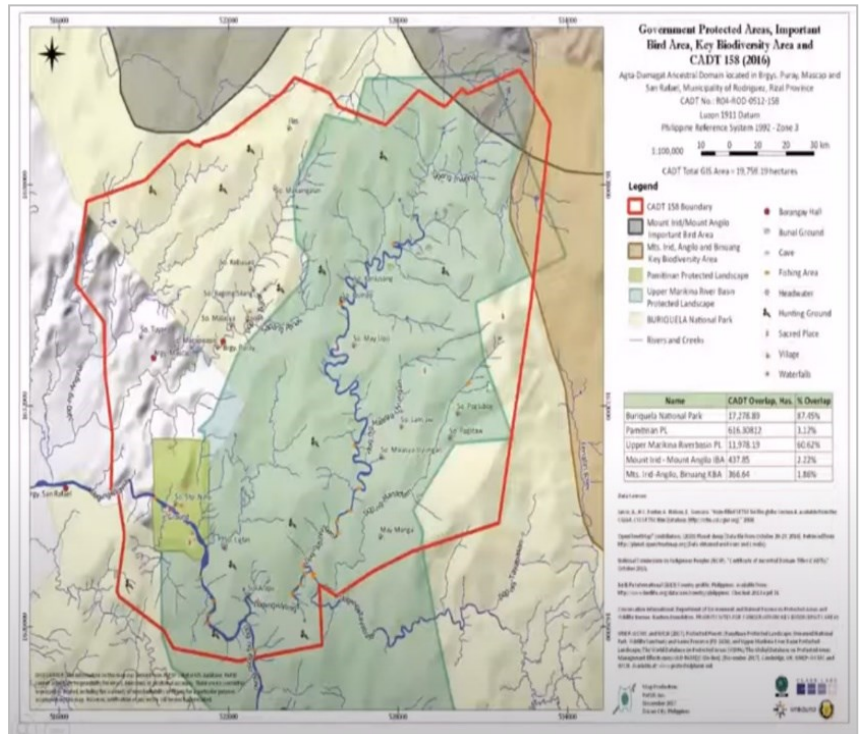
Relationship of Two Maps

Comparison of two similar maps is useful in validating an information like pointing out the sacred lands of a place. An example here is the comparison of the Map of Traditional Use Areas (2016) Agta-Dumagat Ancestral Domain made by the indigenous communities versus the Government Protected Areas, Important Bird Area, and Key Biodiversity Area made designated by DENR. IPs make it a point to show their hunting grounds and their sacred lands. Hence, these two maps are needed as references to point or validate something.



Map of Traditional Use Areas (2016) Agta-Dumagat Ancestral Domain | Located in Montalban, Rizal Province |CADT No. RO4-ROD-0512-158

Government Protected Areas, Important Bird Area, Key Biodiversity Area and CADT 158 (2016)
 Agta-Dumagat Ancestral Domain |Located in Montalban, Rizal Province |CADT No. RO4-ROD-0512-158



Studying the Map

Important Steps in Studying the Map

In studying the map it is important to:

- study the maps carefully (take note of the lines, colors etc.);
- understand the theme and message of the maps (intent of the map could immediately be seen in the title); and,
- look at different types of equipment and other information on the map.

Important Questions in Studying the Map

- What are the types of tools found on the map?
- What are the possible problems?
- What are the possible solutions?
- What are the visible opportunities?

For example:

Types of Use	Issues/Problems/Challenges	Solutions/Recommendations	Opportunities
Sacred Forest	In danger because <i>kaingin</i> farming are close together	Make the rules stronger	ICCA is the source of irrigation so it can be used as an ace to negotiate with landowners.

Important Points to Remember in Mapping

Mapping is a process that has benefits and links to strengthening the community's land tenure and land management. Second, it is the community who has the authority to decide why, for what and when the mapping will be done. Third, most communities are involved and have a role to play in mapping. Lastly, it is important to respect the community's own beliefs and abilities. □

For further readings, visit:

A Resource Book on Participatory Geographic Information System (PGIS) for Land Rights Advocates Volume 1 (see <https://angoc.org/portal/a-resource-book-on-participatory-geographic-information-system-pgis-for-land-rights-advocates-volume-1/>)

A Resource Book on Participatory Geographic Information System (PGIS) for Land Rights Advocates Volume 2 (see <https://angoc.org/portal/a-resource-book-on-participatory-geographic-information-system-pgis-for-land-rights-advocates-volume-2/>)

This learning material was prepared by Dave De Vera for the project “Recognizing the Indigenous Communities behind the Conservation of Nature: A Project Pursuing the Full and Effective Participation of Indigenous Communities in the Implementation of the Expanded National Integrated Protected Areas System.” Jointly implemented by ANGOC, Bukluran, and PAFID, this initiative is supported through the Sudden Opportunity Grant Facility of VOICE, an initiative by the Netherlands Ministry of Foreign Affairs executed in a consortium between OXFAM Novib, and Hivos.

The views expressed in this material do not necessarily reflect those of VOICE, Netherlands Ministry of Foreign Affairs, OXFAM Novib, and Hivos.

Citation:

De Vera, D. (2021). *Guide to Understanding Maps*. ANGOC, BUKLURAN, PAFID, and VOICE. [Learning material prepared for the project, Strengthening the Role of Indigenous Peoples and Their Communities in Nature Conservation].



The Asian NGO Coalition for Agrarian Reform and Rural Development (ANGOC) a regional association of national and regional networks of civil society organizations (CSOs) in Asia actively engaged in promoting food sovereignty, land rights and agrarian reform, sustainable agriculture, participatory governance, and rural development. ANGOC member networks and partners work in 10 Asian countries together with some 3,000 CSOs and community-based organizations (CBOs). ANGOC actively engages in joint field programs and policy discussions with national governments, intergovernmental organizations (IGOs), and international financial institutions (IFIs).

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Website: www.angoc.org



The formation of Bukluran Para sa Pangangalaga ng Kalikasan ng Pilipinas (BUKLURAN, Inc.) or the Philippine Indigenous Peoples Community Conserved Territories and Areas Consortium (Philippine ICCA Consortium) is a nationwide network of community membership-based indigenous people's organizations (IPOs) of all ethnographic types. It is premised on bringing together indigenous peoples who assert and utilize traditional governance to protect community-conserved areas. Common to its members is the shared view that indigenous peoples' survival depends on the protection of valuable knowledge systems and the ancestral lands on which we thrive and persist. Our community-conserved areas can become the ultimate driving force in the conservation of biodiversity when our rights to our land and resources are respected and recognized.

Our main purpose is to carry out and realize the full recognition and respect for the rights, governance and self-management of our ancestral lands.

c/o PAFID: 71 Malakas Street, Diliman, Quezon City, Philippines | Tel: +63-2 89274580 | Fax: +63-2 84355406



Philippine Association for Intercultural Development, Inc. (PAFID) is a social development organization which has been assisting Philippine indigenous communities to secure or recover traditional lands and waters since 1967. It forms institutional partnerships with indigenous communities to secure legal ownership over ancestral domains and to shape government policy over indigenous peoples' issues. PAFID works exclusively with the indigenous peoples' sector, specifically upon written or signed requests for assistance from indigenous communities or their representatives. PAFID envisions indigenous communities as responsible stewards of their resources.

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