INTRODUCTION

One of the outdoor activities that could give a challenging and new experience is caving. We will see a breath taking view that is very different with the world above the ground. Though it is dark you could see the mysterious beauty of the earth.

There are many objects that we could see in a cave. Such as underground river, waterfall, stalactite and stalagmite. Besides that, we could also see a lot of animals and their activities inside a cave. Before you decided to do the caving activities better to learn the basic rules and know the cave you will explore. Cave it self has various types based on its character.

With knowing and understand the type of the cave we will get the information We need and which equipment that We will need to explore that cave, because each cave will need different equipment.
OVERVIEW

Cave is a hole in the earth, on a rock or on a hill that form naturally. Man made cave could not be categorized as a cave but rather it is a tunnel. Cave is a natural formation that generally occurs due to a natural process that perforates rocks. Could form as a dark, long and curvy tunnel or an inlet.

Types of cave
1. Volcanic cave / lava: a cave formed by a volcanic eruptions inside molten pahoehoe basalt lava which the consistency similar of hot asphalt. The entrance hallway is usually a part of collapsed roof. The entire wall is dark with typical survace like stalagmite and stalagtite often color and called lava cycles. It is called vulkanospheologhy that explore the lava cave.
2. Ice cave: is a cave made by melted ice that forms a tunnel.
3. Sea cave: is a cave made by crystalized bronze.
4. Limestone cave: is a cave made by insistence of the water, it formed tunnels due to the dissolution and
crystalized water. Limestone cave naturally formed by dissolution and magnified by abration or erosion process by limestone rocks. The most important part of this process is climate change the earth above and underground water. Limestone generally solid, pure carbonate with slight mixture of other particles, platted well, flat and even.

5. Fossil cave: dry cave with no water running inside the cave.

6. Basalt lava cave: this cave formation process has nothing to do with chemical reactions, but rather related to the magma flow process coming out from a volcano.

7. Abration cave: a cave formed by erosion or abration accour to rocks generally to hard and solid rocks at a cliff or beach with big waves.

Ice cave and sand cave are a rarely type of cave because there are less than 5% of this type exist in the world.
CAVE OVERVIEW
Shape of a cave

• Horizontal cave: this type is generally flat and could be explored by walk, crawl, swim or other types of caving techniques.

• Vertical cave: the entrance hallway of this cave usually has a high rise that will need special lift equipment to explore this cave. The equipment is called SRT (Single Rope Technique).

• Underwater cave: a cave that almost all tunnels are filled with water so it will need dive equipment.

• Cave that a mixture of many types.

Cave Environment
From the adaptation level, the cave environment could be divided to:

Troglobites atau troglobion is cave animals that all its life depended on cave interior. This organism has no color, some without eyes and very sensitive senses. Form a study knewed that troglobites especially aquatic species have a long life term. Fish in this area could live around 20 – 60 years. This species have low populations because of the slow growing and breeding process. All of that is an adaptation process to a low of energy supply to the cave. Troglobites species formerly thought only could live at a subtropical and Antarctic which the area usually covered with glacier in a long period and isolated. But the Biologist proved it from United Kingdom that even in the tropical area it could be found like at Mount Sewu, Yogyakarta, Maros, South Sulawesi.

Troglophille, is a cave species which is lived at a dark cave

Troglos could live and reproduce in a cave, but most of its hunt activities is outside the cave. Not like trologbites, troglos don’t have any extreme mutations on its anathomy. On above ground environment with similar ecosystem with the cave the similar species could be found. For example at the slit of soil with name Superficial Underground Compartment (SUC).
Trogloxene is a foreign species at cave environment. This species is divided into two category: Accidental Trogloxene is a species which come to the cave accidently and usually will not live for long period (example slit or drift into the cave) and Habitual Trogloxene, is a species which regularly visit the cave (example to protect it self from predator).

Cave is a potential karst. Inside a cave contain many of different environment study. Cave could also provide an amazing adventure. Caving is an activity to indentify many things and species under the ground potential to explore and preserve.

The caving experiences in the dark and high humidity could be described as an Antareja life at Mahabarata’s Epic that many people could not experience it. The urge to know mixed with fear with the unknowed is a rarely mixture feeling You could only get at caving. Something that our ancestor experienced at their time so lets explore!!!
Cave Adventure

BANTIMURUNG
BULUSARAUNG
NATIONAL PARK
“Tower Karst” is named for Karst Mountain at Bantimurung Bulusaraung National Forest at Maros district, South Sulawesi province. This sculpture is high-rise above the ground with high cliff. Karst Maros is known as a second largest karst area in the world. The first one is at the south of China.

The karst expanse at this national park have a unique and breathtaking view. The underground river that flowed in the karst gap is sustaining the life of Maros-Pangkep community. The water supply from the springs located at the cliff is never dry even the dry season come. The unique water system that applies by the karst community could fulfill most of the water consumption.

It is not only a karst mountain; inside there are beautiful ornaments. The unique side of this cave is its vertical position. It becomes a challenge for the speleology. Some of the cave, known as a heritage from pre
historical era. The prove is the cave’s wall painting about the pre historical humans and their culture. Petta Kere Cave and Petae Cave most often visited by the people at the Leang-leang Prehistorical Park at Kabupaten Maros.

Karst is the earth surface that lay by a form with karstification process or known as a dissolution of limestone by water. This is a unique ecosystem. The environment with plants and animals has a signature (eksokarst). Even the underground life with tunnels and cave with all the components and ornaments (endokarst).

Maros-Pangkep’s Karst area has at least 400 caves, with different ornaments. For example canopy (like umbrella), gordyn (with a shape like a curtain), stalactite (dangling down) or stalagmite (protruding the surface), pilar or column (the union between stalactite and stalagmite).
Maros-Pangkep Caves are very unique, rare and often bizarre. Some of the arthropods such as insects (crickets, moths, Collembola), isopods, spiders, scorpions, amphibi, shrimps, crabs and others. Other than that also has molluscs such as water and land snails and mussels, small mammal such as mice, shrews and bats. These caves also have high archaeological value. Wall painting by the prehistoric men could reveal prehistorical life of mankind. 27 of 89 caves at the Maros-Pangkep are protected archaeological sites. Petta Kere Cave and Petae Cave are the most visited. The cave that located at Leang-leang Prehistorical Park Maros district has a wall painting, animal fossil and other relics such as hunting tools, farming tools and fishing tools.

From 90 cave that already have been explored, Salukang Kallang Cave has tunnel around 12,463 meters long with beautiful ornaments. Also there are several
underground pools and unique animals such as fish and blind shrimp. These caves connect with Tanette Cave with tunnel 9,700 meters long and ceiling above 25 meters high. If trace by one direction, these two caves has tunnels about 22 km long and considered as the longest cave in Indonesia. Bantimurung Bulusaraung National Park also have vertical cave named Leang Pute. This cave has shape like a pot (pot hole) with depth around 270 meters (single pitch). The bottom of the cave connects to Dinosaur Cave with depth around 120 meters. The Mimpi Cave has tunneled around 1,415 meters long and depth around 48
meters. Other cave that regularly visited is Batu Cave, Pattunuang Cave, Hamid Cave, Saripa Cave, Salle Cave, Baharuddin Cave and others.
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Boganinani
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NATIONAL PARK
HARGOYONO CALK CAVE

Hargoyono calk cave is located at SPTN Wil. I Suwana at Tulabolo Pinogu Resort, Kec. Suwawa, Kab Bone, Bone Bolango, Gorontalo Province. To reach this location require a special permit because located inside a national park and at a nesting area for Maleo Hungayono Bird. This cave is naturally formed from a cluster of limestone. At the entrance to the top of this cave flows a hot water river from Hungayono spring. This hot water flow formed the stalagmite and stalagmite decorate the cave that drift hot water from the river. This limestone could not be chатегорized as a cave because not a deep hole. The depth of Hungayono Cave only 3-4 meters. The beautiful view, the natural hot spring and the change to observe Maleo birds are the sensation that could only seek at this national park.

How to get there

To get to Hungayono Limestone Cave are by: Jalaluding Airport at Gorontalo – by taxi or bentor
to Suwawadi Bube SPTN I Office with fare around IDR 75,000.

From Suwawadi Bube SPTN I office to Tulabolo village with bentor (becak motor) with fare around IDR 15,000
From Tulabolo Village to TNBNW National Park with motorcycle with fare around IDR 10,000.

Take a walk from TNBNW National Park to the Hungayono Limestone Cave about an hour.

**Accommodation**
Some of the accommodation that could use is: a logdge for rest, bathroom, bird view tower and hatchery.
One of the potential tourist destinations at TNBNW is Batu Berkamar Cave. This cave spread at 5 locations around Bogani Nani Wartabone National Park. All of this cave located at Doloduo SPTN Section II, Kec. West Dumoga, Bolaang Mongondow District, North Sulawesi province. There is no definitive data about the Batu Berkamar Cave. According to the urban legend this is a manmade cave for cemetery. But there never been any fossil remain to be found. These are remaining mistery at Batu Berkamar Cave and become a culture heritage at Bogani Nani Wartabone National Park.

Batu Berkamar Cave consist several rectangular holes in different size and depth. At one location could consist from 12 to 21 holes. The depths at each cave around 2-4 meters deep. It will need special climb equipment because these cave located at a clif with 4-5 meters above ground.
How to get there
The route to get to Batu Berkamar Cave:
From Sam Ratulangi Airport at Manado (North Sulawesi) to Manado City with taxi, the fares around IDR 80,000 with 30 minutes drive.

It takes 4 hours from Manado to Bogani Nani Wartabone National Park at Kotamobagu with taxi and the fare around IDR 75,000.

It takes an hour from BNW National Park Office to Doloduo Village with public transportation and the fare around IDR 15,000. From Doloduo Village to the nearest area with motorcycle about 15 minutes and the fare IDR 15,000.
It takes about 2.5 hours to reach this area by foot.

GUA KELELAWAR TAMBUN
Located at Tambun village, Kec. East Dumoga, Bolaang Mongondow distric. This location is inside the Doloduo SPTN II, East Dumoga Resort. Called Bat Cave (paniki in Manado language) because thousand of bats live in this cave and will leave the cave at dusk to haunt. The Tambun villagers and from surroundings area take advantage of this event to capture bats at dawn. This cave is one of the vertical cave with 3 meters diameter wide but it is not know how deep is the cave because no body ever explore the cave. It becomes an advantage for the cave explorer to uncover the Bat Cave mistery. A difficult track is extra challenge to reach this location. Bat cave is at the same area with Maleo Tambun explore track so before or after visit this location visitor could do a bird watching, Maleo egg seeking and hatching.

How to get here
The route to get to the Bat Cave: Takes 30 minutes by taxi from Sam Ratulangi Airport at Manado (North Sulawesi) with fare around IDR 80,000.
Takes 4 hours by taxi from Manado to Bogani Nani Wartabone National Park at Kotamobagu with fare around IDR 75,000.

Takes an hour by public transportation from BNW National Park to Tambun village with fare around IDR 25,000. 4 hours walk from Tambun village to Bat Cave.

**GUA BATU BERKAPUR**

This cave has the beauty of stalagmite and stalagtite. Takes about 2,5 hours to reach the cave because located about 30 km from the capital of the distric or 10 km from BNW National Park. This is not a regularly visited cave because the lack of accommodation.

Some of the best and important activities could be develop at Hungayono natural forest is
the beauty of the rain forest, explore the limestone cave with stalagmite and stalagtite, animals safari around the area, bird watching especially Maleo, rock climbing, photography, cross country, swimming and camping.

**The Best Visiting Season**
July until October is the best season to visit and explore this area (please make sure with the National Park Ranger because during this time also hatching season for Maleo bird)

**How to get here**
Bogani Nani Wartabone National Park could be reach by 2 gates from Manado or from Gorontalo. From Manado: 4 hours drive by taxi from Sam Ratulangi Airport to Kotamobagu (Bogani Nani Wartabone National Park Office) with fare around IDR 150,000 (public) and IDR 500,000 (charter). For the ranger office by public transport about an hour drive with fare around 20,000.

From Gorontalo: 15 km drive from Gorontalo to Lombongo with public transportation.
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Manupeu
Tanah Daru
NATIONAL PARK
Liang Bakul Cave
Liang Bakul is one of the cave located at Umbulangang Village. The entrance hallway formed from the ruins of the cave ceiling. The dry tunnel is only a corridor to the active main tunnel filed with Underground River. There is Flowstone ornaments and stalagtite. This tunnel ends with an inlet sump with waterfall at Flowstone ornaments. There are two waterfalls at the ornaments. Caving experiences you get will be unforgetfull. With low dificulty unexperiences caver could enjoy this exploration but with the knowledge of safety procedure and guidedance from the cave guide.
Kanabuwulang Cave
Kanabuwulang located at Kambatawundut Village. The surrounding environment is highly ideal based on its condition form like a large basin and at the karst wall is the entrance. If you see from the middle will look so magnificent. This landscape often made as a photography background. Besides that, when the raining season come water will flow from the cave about 30 meters high. Could be a splendid view for the tourist.

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AKETAJAWE LOLOBATA
NATIONAL PARK
One of the interests of this object is the cave. Karst cave located inside the National Park at Binagara Village. There are at least six caves that located nearby, Melisa Cave, Paniki Cave, Semut Cave, Angin Cave, Kulintang Cave and Toto Cave. List a must visited cave:

**MELISA CAVE**
Have a 15-17 meters wide, small bats natural habitat. Have small stalagtite with triagle shape. The cave is named after a foreign researcher who explores this cave.

To explore this cave need equipment such as headlamp for light and life jacket for safety equipment during water exploration in the cave.

**ANGIN CAVE, SEMUT CAVE, KULINTANG CAVE and TOTO CAVE**
All of these cave are karst cave and the name are based on character of each cave. Named as Angin Cave (Wind Cave) is based on the sound of the wind that could be hear inside the cave. Semut Cave (Ant Cave) named
based on colony of ants live inside the cave. Kulintang Cave formed from stalagmite that could produce high pitch sound like kulintang. Toto Cave named by the villagers because this cave have shape like woman breast (toto in local languages)

**Paniki Cave**
Is a vertical cave located at Binagara village with 30 meters deep to explore this cave need a rope-climbing certificate and a lot of bats live ini this cave (bat or paniki in local language)
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