



# Dolmen: Grave Coverings in Sangihe Island

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**Abstract.** Megalithic culture is one of the cultures found and spread almost throughout the archipelago. Sangihe Islands Regency as one of the islands positioned at the northern tip of Sulawesi Island also recognizes megalithic traditions through dolmen remains. The chronology of the dolmen use period began to be recognized in the second century AD, whose distribution until now only exists on the south side of Sangihe Island. This paper uses a qualitative descriptive method that aims to determine the distribution and chronology of dolmen usage period.

**Keywords:** dolmen · megalithic culture · distribution · burials

## 1 Introduction

Sangihe Island in the territory of the Unitary State of the Republic of Indonesia (NKRI), is one of the foremost or outermost islands directly adjacent to another country, namely the Philippines. Changes in natural conditions in the past, namely during the erosion (glacial age) on earth during the Pleistocene period, are believed by experts to have occurred in fauna migration from mainland Asia to the south through the Philippines and North Sulawesi. Therefore, in the Philippines and North Sulawesi, there are fossils of ancient animals such as ancient elephants (stegodon) and other animal fossils. Furthermore, according to experts from the Bandung Geological Museum and the National Archaeological Research Center, these fossils are stated to be part of the fossils of stegodon that once lived in the archipelago during the Pleistocene period around 2 million years ago. Apart from being found in Pintareng, Sangihe Island, fossils were also found in Sangiran, Central Java, in Cabenge Valley, South Sulawesi, in Napu Valley, and the latest data in North Morowali, Central Sulawesi. Stegodons in the world are thought to have lived at the same time as other ancient animals. In Indonesia, stegodon lived with other ancient animals such as Rinocheros (ancient rhinos) and ancient buffaloes, and so on. The finding of ancient elephant fossils in Pintareng, South Tabukan, Southeast of Sangihe Island, proves that in the past, elephants had lived on Sulawesi Island, especially in North Sulawesi.

The development of subsequent research found other archaeological remains as new findings for Sangihe Island, namely stone graves and dolmens. The distribution covers the southern part of Sangihe Island, several villages to small islands in South Manganitu and Tamako sub-districts. The local community calls these remains by the name of lebing

(stone graves) and the location of the distribution of the remains is called Bawuniang [1], Tatonaha, Mea (kampung tua). The presence of stone graves and dolmen remains in Sangihe is evidence that the influence of megalithic culture also reached the islands in North Sulawesi, perhaps even as a route traveled from the north to enter other regions in the archipelago. Until now in some places, dolmen is still used today (tradition), such as in the Sumba area [2]. The tradition of erecting megalithic buildings (mega means large, lithos means stone) is based on the belief in the relationship between the living and the dead and is closely related to the welfare and fertility of crops so that dead relatives are then immortalized by erecting large stone buildings. The use of dolmen can be seen in Sumatra, Java, Kalimantan, Sulawesi, Sumba, Maluku, and Papua. Dolmen is described as a stone table, which is a large stone that is worked or not that functions as a roof or table, supported by several stones that function as its legs [3] (Fig. 1)

Sangihe Islands Regency is an integral part of North Sulawesi Province, with Tahuna as its capital. It is about 142 nautical miles from the capital of North Sulawesi Province, Manado. Located in a position between  $2^{\circ}4'13''$ – $4^{\circ}44'22''$  North latitude and  $125^{\circ}9'28''$ – $125^{\circ}56'57''$  East Longitude. Located between Sulawesi Island and Mindanao (Filipina), the Sangihe Islands Regency can be categorized as a “border area”. Apart from being a border area, two other characteristics that are significant enough to distinguish it from other districts/cities are islands and areas prone to natural disasters.

Megalithic culture in the archipelago is the most universally recognized culture in Indonesia, even in some places it continues to be a tradition, such as in Tana Toraja, Batak, and other places. According to Von Heine Geldern’s concept, the spread of megalithic culture in Indonesia occurred in 2 waves, namely young megalithic and old megalithic. The old megalithic is represented among others by menhirs, stone steps and monumental symbolic statues together with supporters of the pickaxe culture, which is estimated to be from 2500–1500 BC and is included in the neolithic period. In the North Sulawesi region, megalithic remains are quite numerous and diverse. The megalithic remains include stone mortar, menhir (watu tumotowa), waruga, stone cliff grave, stone altar, and dolmen [4].

Research on dolmen is important because the issuance of gold mining licenses in the southern part of Sangihe Island, which covers more than half of Sangihe Island, has



**Fig. 1.** One of the dolmens at the Bawuniang Site (Source: Regional Agency for Archaeological Research in North Sulawesi Province, 2018)

resulted in the endangerment of dolmen sites. The focus of the problem is to find out how the distribution and chronology of the dolmen use period. Achieving the objectives of this research were carried out using an overall survey of dolmen distribution and laboratory tests regarding the period of dolmen use.

## 2 Study Rationale

Since 1998, the North Sulawesi Archaeology Center has been surveying prehistoric and colonial remains in Sangihe and Talaud islands. In particular, Sangihe Island has the potential for archaeological remains scattered in several areas including; the remains of the Manganitu king's palace building, menhirs in Mala Village, ancient elephant fossils in Pintareng Village, and Bowoleba Cave in Lesabe Village [5]. An overall survey of the potential of archaeological remains on Sangihe Island as one of the islands bordering the Philippines was carried out again in 2016 by finding several megalithic remains, including dolmen and stone tombs in the southern part of Sangihe Island, stone mortar on Penu hill in Pananekeng Village, *dakon* stone in Kauhis Village, and menhir in Mala Village [5].

In 2017 the research continued, specifically surveying the distribution of stone graves and dolmens in South Manganitu Sub-district in Lapango and Lapango I Villages. Research continued in 2018, still focusing on the distribution of stone graves and dolmens in another location, namely Tamako District. The place of taking the source of stone material for the grave was also studied. The research also sought to uncover the distribution of stone graves and dolmens on the small island around Sangihe Island, Mahumu Island.

In addition to continuing the survey, excavation research was also conducted to uncover the function of stone graves and dolmens in the Sangihe region. Research in 2019 was the first time charcoal was dated from an excavation box. Desk study research conducted in 2020 produced data on the distribution of stone graves in the Microsoft Access application, laboratory analysis of context findings, namely pottery and metal, and identification of ceramic findings.

In 2017, the Archaeology Student Association (HIMA) of Gadjah Mada University (UGM) during the UGM Maritime Culture Expedition (UMCE), reported finding hundreds of stone graves at the Bawuniang Site. The results of these activities were published in the *Naditira Widya Journal* Volume 13 No. 1 in 2019 with the title "The Potential of Archaeological Remains and Tourism in the Sangihe Islands, North Sulawesi Province" [6].

Scientific publications related to dolmen in Sangihe Island have been included in the book "Building Self in the Outer Islands" with the title "Megalithic Traces in the Sangihe Islands" [7]. Proceeding IOP Conference Series: Earth and Environmental Science 575 (2020) 012059 entitled Stone grave in Sangihe Islands, North Sulawesi [8]. Chronology And Variability of The Findings in Stone Grave Sites in The Southern Part of Sangihe Island in the journal *Walannae* [9]. Social And Religious Functions of Megalithic Culture In Sangihe Island, North Sulawesi, Proceeding The 3rd International Conference on Linguistics and Culture 2022 (on the process).

### 3 Materials and Methods

Data collection of dolmens in Sangihe was carried out using surveys and excavations using qualitative descriptive methods with inductive reasoning. The focus of the research is based on the natural environment as a source of data which is characteristic of qualitative research and is descriptive in its explanation. Inductive reasoning is used because the research is based on facts obtained in the field (empirical data). Interviews were conducted during the survey activities with community leaders or sources who had found and if possible had been involved in the burial procession using stone graves. This interview activity was carried out as an effort to reveal the social system that prevailed in the community during the use of stones as graves. Survey activities were carried out as a whole of the sites scattered along the south side of Sangihe Island, starting from Tamako District and South Manganitu District.

The beginning of the excavation was carried out by opening two test spits (TP), at the Makalekuhe 2 site which is located in the middle of a residential area to provide an overview of archaeological research activities in the data collection process and build trust in the community that this research activity is official, not illegal excavation. The excavation of TP 1 and TP 2 has not found any remains of past human culture in the soil layer. Continuing the research, excavation was carried out at the Tatonaha Site by opening excavation D10 and E10, boxes on top of stone graves measuring 1.5 m × 1 m and the depth of excavation with a spit system, the soil layer was dug 10 cm deep each spit. The soil layer was excavated to the depth of the bottom of the box and data recording continued. A sampling of charcoal and other findings in the box during excavation was carried out as an effort to reveal the chronology of the time of the use of stone tombs.

Furthermore, data processing was carried out based on the findings on the ground (survey) and the findings from the excavation activities by sorting and classifying the findings. Radiocarbon laboratory analysis was carried out on samples of findings in the form of charcoal and suspected cremation ashes obtained during excavation at Beta Analytic Florida (USA) to know the chronology of the time of use of the excavated grave. Findings associated with stone graves, namely pottery, were analyzed at the Geology Laboratory, Hasanuddin University, and the soil in each layer was analyzed at the MIPA Laboratory, Hasanuddin University.

Data interpretation is the most important part after the laboratory analysis is carried out. The stages of data analysis carried out began with typological analysis, namely observing in detail the artifact shape, size, and workmanship process. Furthermore, contextual analysis is to determine the relationship of artifacts with the surrounding environment, topographical and geological analysis, and analysis of the layout of stone graves. How the adaptation process of stone graves users is trying to be unraveled in this section as an answer to the problem.

Research on the distribution of dolmens and stone graves in the southern part of Sangihe Island until 2019 was recorded in two sub-districts, namely South Manganitu Sub-district covering Lapango Village and Lapango 1 Village, and Tamako Sub-district in Makalekuhe Village, Bebu Village, Kalinda 1 Village, Kalinda Village, Mahumu Induk Village (Mahumu Island), and Pananaru Village. The location of the source material is in Makalekuhe Village and Nagha II Village [7].

## 4 Data and Interpretation

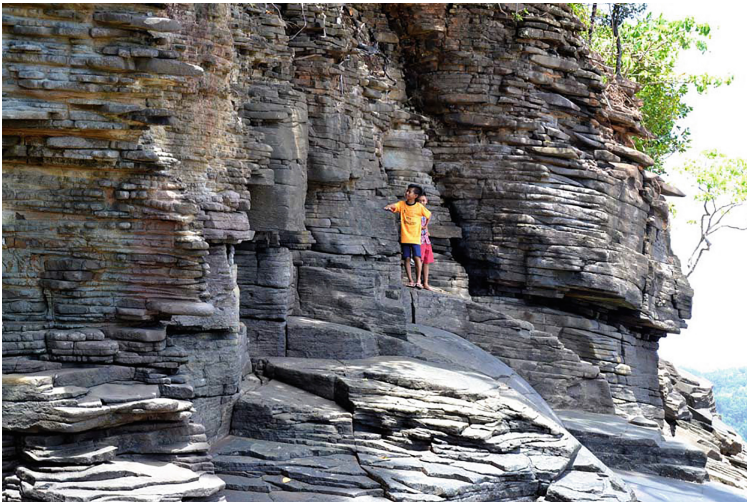
The results of the research that has been done explain that dolmen is always placed close to the location of the dwelling. Some are even placed in the yard of the house. Ayu Kusumawati tried to classify dolmen in Sumba based on the size of the height of the support legs; dolmen with short support legs or without support as an early form of dolmen, while dolmen with high pole support is a later development [3]. Haris Sukendar also divides dolmen in Sumatra, Java, and Sumba into two types: West Indonesia type, dolmen form with simple characteristics, both the roof and the support do not experience work. East Indonesia type, the shape is more advanced, and the stone slab is thick and has undergone work [3]. Based on its morphological form, Bagyo Prasetyo divides dolmen into three parts. The first type is called dolmen without support (unsupported capstone type), a piece of stone either worked or not without being supported by a supporting pole, sometimes difficult to distinguish from a natural boulder. This type is found in South Sumatra, West Java, Central Java, Sumba, Flores, and Ende. The second type is called hybrid dolmen (pseudo dolmen), which is divided into several sub-types; sub-type one is characterized by a boulder as a table (lid) supported by four stone pillars and surrounded by a wall made of stone boards. This sub-type is found in the Ende area. Subtype two is characterized by a stone slab with a lid supported by a cube-shaped stone that is hollow inside. This subtype is found in West Sumba and East Sumba. Sub-type three is characterized by a floor and walls of stone planks supporting a large half-cylindrical boulder at the top. Commonly called *pandhusa* graves in the Bondowoso region of East Java. Sub-type four is in the form of stone slabs supported by pieces of stone that are blocked to form rooms, found in Kotaraya Lembak. The third type, table-type dolmens, most commonly found in Indonesia, consists of three variations of form; sub-type one is characterized by unworked monolithic boulders with several stones as supports. The number of buttresses and height varies from Kerinci (Jambi), Bengkulu Selatan, Lahat and Pagar Alam (South Sumatra), Lampung, West Java, Central Java, East Java, Kalimantan, Sulawesi, and Maluku. Sub-type two is mushroom-shaped. This shape is only found in the Nias area. Sub-type three is a rectangular stone at the top supported by stone pillars with various stone pole decorations on it, the manufacturing technology is advanced and only found in the Sumba area [3]. Dolmen is one type of megalithic remains, and its distribution is very widespread throughout the world. Dolmen is found from the Atlantic Coast to the Ural Mountains, from the Russian border to the Pacific Ocean, and from the Siberian Steppes region to the plains of Hindustan. They have the same shape and characteristics and are built in the same way [10].

The geological conditions of the Sangihe area, especially in the research location related to environmental aspects are described by the geological structure in the research area. The folds are northeast-southwest oriented, suggesting a compressional force from the northwest-southeast, which is thought to originate from the westward subduction of the Moluccan Plate beneath the Sangihe arc. This subduction is part of a double subduction involving the Sangihe arc in the west and the Halmahera arc in the east and is also known as an inter-arc collision [11]. Seismic data show that the Benioff lane beneath the Sangihe arc is continuous downwards to a depth of more than 600 km. Subduction in the late Neogene caused the Biaro and Bukide volcanoes. Continued subduction during the Late Tertiary triggered volcanism during the Plio-Pleistocene. Some areas that had

been raised above sea level in the Late Tertiary turned into full land during the Pleistocene [11].

Dolmen material in geological terms is called *kekar*. *Kekar* (Joint) is a fracture (crack in rock) that is relatively unshifted in its fracture plane, caused by tectonic or non-tectonic phenomena [12]. There is hardly an outcrop on earth that does not show symptoms of fracturing. Brittle is not an accidental symptom but is the result of stasis or rock failure due to stress. Therefore, bridging will have properties that obey the laws of physics. The brittle structure is the most common and widely studied phenomenon but is the most difficult structure to analyze [13].

Based on the way they are formed, the braces in the study area are classified as non-tectonic braces. Non-tectonic bristles, namely bristles, are formed not due to tectonic forces, such as bristles due to cooling (cooling joints) in igneous rocks, such as sheet joints formed due to loading, such as sheeting joints [12, 13]. Based on their occurrence, the braces in the study area are classified as primary structures. Primary structures are geological structures formed at the time of rock formation, for example, sedimentary structures, brittle structures due to magma cooling (sheeting joint = sheet brittle), and layering structures [12, 13]. Based on the genesis and activeness of the forces that form them, the braces in the study area are classified as first-order braces. First-order bristles, which are bristles produced directly from brittle forming forces, generally have regular shapes and patterns and are relatively large [12, 13]. Based on their shape, the bristles in the study area are classified as systematic bristles. Systematic bristles are bristles in the form of paired directions parallel to each other [12, 13]. From the research results, especially for geological aspects, the Makalekuhe Brink is a natural formation formed during the Pliocene-Pleistocene period (see Fig. 2), and its constituent rocks come from the Sahendaruman volcanic rock formation [11].



**Fig. 2.** Sheet joint exposed along Makalekuhe Beach (Source: Regional Agency for Archaeological Research in North Sulawesi Province, 2018)

### 4.1 Distribution of Dolmen id Sangihe Island

Survey data were collected on the distribution of dolmens in eight villages and 45 sites with two collection sites. The densest dolmen distribution was found at Bawuniang Site 3, Lapango I Village, totaling 78 and the lowest at several site locations, namely, Kareta Site 3 on Mahumu Island, Makalekuhe Site 2 and Makalekuhe Site 3, Makalekuhe Village, each only one (see Fig. 3).

The other two sites are dolmen material sourcing locations. These dolmen source sites fall within the administrative areas of Makalakuhe Village (Figs. 4 and 5) and Nagha II (Figs. 6 and 7). Being along the coastline, stone slabs are very widely scattered. On the coastal cliff walls, the layers of stone are still very visible, and the sheets of brittle sheets are still in thick condition.

There are several variations in the form of dolmen in the support part, among others, supported by several stones and consisting of one plate of sheet kekar stone as a grave cover; supported by several stones and the cover consists of 2 (two) or more plates of sheet kekar stone; the cover is supported by one or more stones on one side while the other side is docked on the slope of the land; complete dolmen cover and supported by several stones, at the north and south ends of the lid using menhirs as a barrier [8].

Based on its size, dolmen is classified into 3 sizes.

1. Large, with a plan length or cover length between 150 cm to more than 200 cm.
2. Medium, with a plan length or cover length between 100 cm and 150 cm.

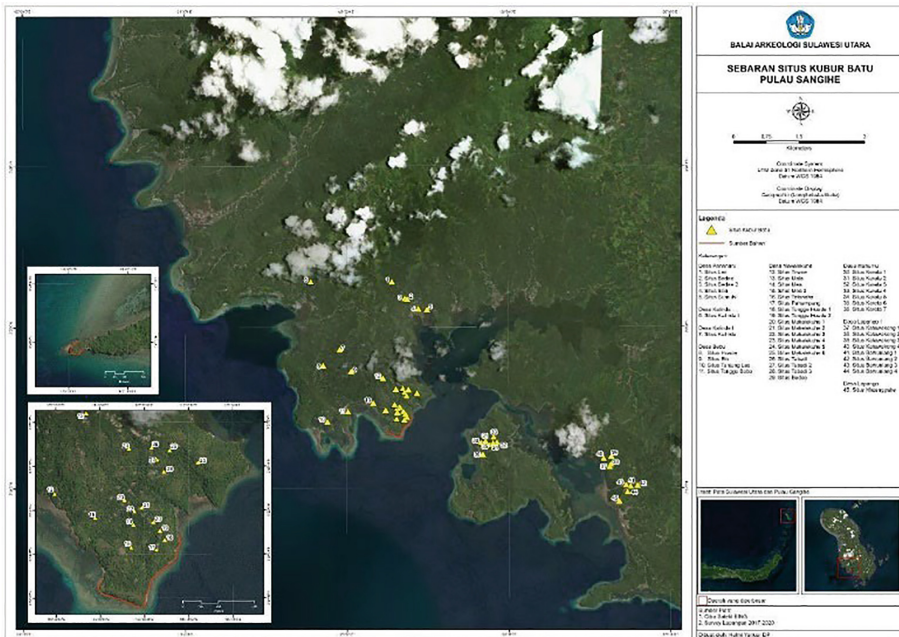


Fig. 3. Distribution of dolmens in Sangihe Regency (Source: Regional Agency for Archaeological Research in North Sulawesi Province, 2018)

3. Small, with a plan length or cover length between 50 cm and 100 cm.

Morphological analysis of these dolmen remains, most of which are in an unkempt, damaged condition, and several pieces are not in place. The distribution pattern is in hilly areas placed along the hillside to the top. Based on the technical analysis, dolmen materials are available along the seashore in Makalekuhe Village. The material is taken by piercing the boulder with an iron tool tapered at the end, after the iron enters partially into the boulder, then given oil, the boulder will break following the groove. Afterward, at the shore, the existing slab is prepared with certain rituals and then pulled together to the burial site.

There is no decoration on the stone slab, either the support or the cover slab. One dolmen is used by one individual or in other words, and one dolmen is used to bury one person. The shape of the cover is generally rectangular but not exactly and follows the shape of the support. It seems that aesthetics are not prioritized. About grave markers, none of the dolmens were marked or annotated, which is because people at the time could not read and write (illiterate). Information about who was buried was only passed on orally from generation to generation within a family circle. So that most of the existing dolmens are no longer clear who is buried.



**Fig. 4.** Source of dolmen material at Tanjung Tatonaha, Makalekuhe Village (Source: Regional Agency for Archaeological Research in North Sulawesi Province, 2018)



**Fig. 5.** Potential sources of dolmen material at Tanjung Lelapide, Nagha II Village (Source: Regional Agency for Archaeological Research in North Sulawesi Province, 2018).



Contextual analysis, related to the condition of the surrounding natural environment and other archaeological findings, the distribution of dolmens in one site location is found in both covered and uncovered conditions. The number of dolmens in one area is not always the same. The facing direction of the dolmen is not tied to one cardinal direction. There are dolmens with a north-south orientation, some are east-west, and some are even northwest-southeast.

#### 4.2 Chronology of Dolmen Use

Proving whether it is true that dolmen is used as a grave cover is done using excavation research. The results of the excavation of the dolmen from the Tatonaha Site obtained the remains of human activity in the form of charcoal samples. These charcoal samples were then subjected to laboratory tests and sent to Beta Analytic Laboratory, Miami, Florida. The results of the carbon dating analysis that has been carried out obtained a date of 1750 ± 30 BP.

In 2021, four samples were taken for laboratory testing, each from the E10 dug box at a depth of 73 cm (spit 5) as the analysis material was still the same, namely the remains of combustion in the form of charcoal. The data obtained from the laboratory test of this sample is 1920 ± 30 BP. The other three samples were taken from dug box D10, each at a depth of 89 cm, the dating obtained from this depth is 1880 ± 30 BP.

### 5 Conclusion

Dolmen functioned as a grave cover consisting of a stone slab as a cover and using a foot as a support in the form of natural stone or stone slabs. Some of the dolmen above or between the gap between the cover and the support, on the surface found the remains of ceramic plate fragments.

The abundant distribution of dolmen is possible due to the availability of raw materials along the coast in Makalekuhe Village. As a form of community adaptation, they utilize local materials that are readily available and easily obtained. The distribution of dolmens on Sangihe Island until now is only found in the southern part and the surrounding small islands, namely villages that are administratively included in the Tamako District and South Manganitu District. The dolmen findings on Sangihe Island provide evidence that the distribution of megalithic remains is not only in the heights (hills), but also known on the coast. The novelty obtained in this research is that the people in the southern part of Sangihe Island, besides burying the dead directly in the past, have also recognized cremating the bodies before burial. The evidence was obtained by the team from the excavation results in box D10, it's just that the dating obtained from the laboratory analysis of the remaining cremation ash is not too old 102.90 ± 0.38 pMC. The oldest evidence of the dolmen's service life was obtained from the results of carbon dating analysis of charcoal burning residue from box E10 at a depth of 73 cm (spit 5), obtained a date of 1920 ± 30 BP.

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