Samarah: Jurnal Hukum Keluarga dan Hukum Islam
Volume 9. No. 3. November 2025
ISSN: 2549 – 3132; E-ISSN: 2549 – 3167
DOI: 10.22373/sjhk.v9.i3.26954

The Calendar Systems of Sulawesi Ethnic Groups from the Perspective of *Falak* Science

Muh Rasywan Syarif
Universitas Islam Negeri Alauddin Makassar, Indonesia
Sippah Chotban
Universitas Islam Negeri Alauddin Makassar, Indonesia
Hikmatul Adhiyah Syam
Universitas Islam Negeri Alauddin Makassar, Indonesia
Nurfadillah Surya
Universitas Islam Negeri Alauddin Makassar, Indonesia
Mohd Hafiz Safiai
Universiti Kebangsaan Malaysia, Malaysia
Email: hafizsafiai@ukm.edu.my

Abstract: The calendar systems of the ethnic groups in Sulawesi highlight a gap in understanding regarding the extent to which these traditional systems align with, differ from, or complement contemporary astronomical and Islamic time-keeping practices. Despite these communities' rich, culturally embedded knowledge of time-division based on celestial movements, there has been minimal research on how these indigenous systems engage with scientific astronomy or are shaped by religious influences. Furthermore, there is a lack of comparative studies examining how each community's calendar system reflects their unique cultural identities, cosmologies, and adaptations to environmental changes. This study examines the calendar systems of popular Sulawesi ethnic groups which are the Bugis, Mandar, and Toraja through the lens of *falak* science. This study employs a qualitative approach, utilizing document analysis, interviews, and observations as its primary methods. The findings indicate that these Sulawesi ethnic groups hold a rich repository of traditional knowledge on calendar systems, which aligns closely with foundational astronomical principles. Addressing these gaps could deepen insights into the preservation of cultural heritage and the potential integration of traditional knowledge with contemporary scientific and religious calendar practices.

Keywords: Calendar system, Sulawesi ethnic, *Lontara*, Islamic astronomy

Submitted: November 22, 2024 | Accepted: December 31, 2025 | Published: December 31, 2025

DOI: 10.22373/sjhk.v9.i3.26954

Abstrak**:** *Sistem kalender kelompok etnis di Sulawesi menyoroti adanya kesenjangan pemahaman terkait sejauh mana sistem tradisional ini selaras dengan, berbeda dari, atau melengkapi praktik penentuan waktu astronomi dan Islam kontemporer. Meskipun komunitas ini memiliki pengetahuan yang kaya dan tertanam dalam budaya mengenai pembagian waktu berdasarkan pergerakan benda langit, penelitian tentang bagaimana sistem asli ini berinteraksi dengan astronomi ilmiah atau dipengaruhi oleh kerangka agama masih minim. Selain itu, kurangnya studi komparatif yang meneliti bagaimana sistem kalender masing-masing komunitas mencerminkan identitas budaya, kosmologi, dan adaptasi mereka terhadap perubahan lingkungan turut menjadi permasalahan. Studi ini menganalisis sistem kalender kelompok etnis populer di Sulawesi, yaitu Bugis, Mandar, dan Toraja, melalui lensa ilmu falak. Penelitian ini menggunakan pendekatan kualitatif dengan metode utama berupa analisis dokumen, wawancara, dan observasi. Temuan menunjukkan bahwa kelompok etnis Sulawesi ini memiliki kekayaan pengetahuan tradisional tentang sistem kalender yang sangat selaras dengan prinsip-prinsip dasar astronomi. Mengatasi kesenjangan ini dapat memperdalam wawasan tentang pelestarian warisan budaya dan potensi integrasi pengetahuan tradisional dengan praktik kalender ilmiah dan agama kontemporer.*
Kata Kunci: *Sistem kalender, Etnis Sulawesi, Lontara, Astronomi Islam*

Introduction

When discussing time, one inherently addresses events that have occurred in the past, are happening in the present, or will unfold in the future.[1] The systematic organization of time, used to document phenomena and significant events for personal or public benefit, involves observing and utilizing the regular motions of celestial bodies, a practice commonly referred to as the calendar system.[2] Universally, evidence suggests that calendar systems hold vital importance for human civilization.[3] The study of calendar systems aligns with *falak* science, which focuses on the trajectories of celestial bodies such as the sun, earth, and moon to determine their positions and relationships to one another, particularly for religious observances.[4]

[1] Zico Farlin, "The Utilization of Time for Humans in Graphic Art Works," *Similar: The Journal of Art Education* 6, no. 2 (2018), p. 2-4.

[2] Hendro Setyanto and Fahmi Fatwa Rosyadi Satria Hamdan, "Criteria 29: A New Way of Looking at the Compilation of the Hijri Calendar," *Al- Ahkam Journal* 2, no. 5 (2015), p. 206-220.

[3] Ilham Ibrahim, Principles of Global Islamic Calendar According to Prof. Syamsul Anwar, Tarjih Centre, (2019), Retrieved from https://pusattarjih.uad.ac.id/prinsip-prinsip-kalender-islam-global-menurut-prof-syamsul-anwar/.

[4] Achmad Mulyadi, *Falak Science Hisab Qibla Direction and Prayer Times,* Madura: Madura State Islamic Institute, 2022, p. 9.

DOI: 10.22373/sjhk.v9.i3.26954

The development of *falak* science in Indonesia has led to a rich diversity of approaches, reflecting the country's ethnic, racial, and cultural variety across its regions.[5] The concept of the calendar system is deeply rooted in the traditional knowledge of community groups and has evolved as a cultural artifact, preserving the legacy of past generations who established guidelines for societal life. The calendar system is a system of organizing units of time, for the purpose of marking and calculating time in the long term, which in classical and contemporary literature is called *tarikh*, *taqwim*, and almanac. *Tarikh* means the destruction of a nation with the occurrence of various natural events, such as storms, earthquakes, violent epidemics, migration of a population, the change of religion, or the occurrence of other major events, while the word *taqwim* means repair, balance, and limit.[6]

One notable community that continues to uphold this knowledge is the Sulawesi ethnic community.[7] The island of Sulawesi lies between the Indonesian and Pacific oceans. The people of Sulawesi are scattered along the coast, inhabiting inland areas, mountains, and upstream rivers, each organized into tribal groups based on kinship. The ethnic groups on the island of Sulawesi represent a blend of various races and ethnicities, primarily comprising the Bugis, Mandar, and Toraja peoples.[8]

For the Bugis community, the moon's cycles hold mythological significance and impact daily activities which is known as *pananrang*. It is a reference or sign for the Bugis ethnic community as a guideline name to determine whether a day's name is good or bad in carrying out daily activities such as farming, moving houses or travelling.[9] The traditional practice of observing the moon to create a calendar is commonly referred to as *mappabaja*. This process, particularly vital for marking the start of a new month, involves observing the moon through a thin black cloth.[10]

Additionally, the Bugis community relies on *Lontara* manuscripts. *Lontara* comes from the word 'lontar', the name of a tree used as a medium for

[5] Vega Febry Yanty, "Diversity and Social Tolerance of Junior High School Students in Jakarta," *Nusantara: Journal of Social Sciences* 6, no. 2 (2019), p. 146.

[6] Amirah Himayah Husna, Siti Tatmainul Qulub and Shirly Ardini, "Unification of the National Hijri Calendar in the Perspective of Muhammadiyah and Nahdatul Ulama Organisations," *Al Afaq* 3, no. 2 (2021), p. 171-178.

[7] Rilmi Eptiana, "Patterns of Community Social Behavior in Maintaining Local Culture (Case Study of House Making in Minanga Village, Bambang District, Mamasa Regency," *CV Eureka Murakabi Abadi* 1, no. 1 (2021), p. 21-45.

[8] Dinda Aulia, *Warna Nusantaraku*, Yogyakarta: K-Media, 2021, p. 2-3.

[9] Hikmatul Adhiyah Syam, "Harmonisation of Arabic and Bugis-Makassar Calendar," *El-Falaky: Journal of Falak Science* 2, (2018), p. 109-121.

[10] Syarifuddin Yusmar, "Bugis-Makassar Calendar in Determining the Beginning of the Kamariah Month According to Shariah and Science," *Hunafa Jurnal Studia Islamika* 5, no. 3 (2008), p. 265-286.

DOI: 10.22373/sjhk.v9.i3.26954

writing using *lidi* (a pen made of rough fiber). Based on research, the *Lontara* manuscripts was designed by Daeng Pamatte, the *Syahbandar* of Gowa during the time of Karaeng Tumaparisi Kallona (1511-1548) and then perfected by the Bugis people.[11] *Lontara* manuscipts contains *Lontara Kutika* and *Lontara Bilang*. The *Lontara Kutika*, an ancient manuscript from South Sulawesi dating back to the 15th century during the Gowa Kingdom's golden age contains a calendar, daily predictions, auspicious months, and it also outlines the phases of the universe's creation. At the beginning of this manuscript, the phrase includes the statement *tallasana allo tujua* meaning the universe was created over seven days from Monday to Sunday.[12] While *Lontara Bilang* is a manuscript that contains several elements about events that occurred in the kingdom of Gowa, whether it is an event that talks about the royal family environment, events about the government or events outside the Kingdom of Gowa. Overall, it is all about important events that were recorded during the reign of the Kingdom of Gowa.[13]

Similar to the Bugis community, the Mandar ethnic group also utilizes *Lontara* manuscripts as a guide for various daily activities, with a focus on the passage and cyclical nature of time. The *Lontara* manuscripts in the Mandar region include records detailing auspicious days, reflecting practices that emerged with the advent of Islam. The spread of Islam not only transformed the region's original religious practices but also profoundly shaped the civilization, embedding Islamic teachings and cultural influences within the community.[14] The Mandar people believe each day carries both auspicious and inauspicious periods. These are determined through the use of *putika* or *kutika*, a tool for determining good and bad days to start an activity which classify time into three main types based on purpose which are *kutika* for warfare, *kutika* for seeking prosperity, and *kutika* for social activities. All of which are informed by the phases of the moon's orbit around the earth.[15]

Like the Bugis and Mandar communities, the Toraja ethnic group also relies on natural phenomena, specifically the positions of celestial bodies, to determine dates and times. For the Toraja, timekeeping is guided by the *tomina* decisions that take into account the moon's phases and position. In the Torajan language, *tomina* translates to wise or intelligent and it is a term reserved for

[11] Ahmad Musonnif, "Intellectual Relationships, Islamic Java, Islamic Bugis, and Ottoman Turkey," *Contemplation of Ushuluddin Science Journals* 6, no. 1 (2018), p. 63-78.

[12] Fathur Rahman Basir, "Paccini Allo, Lontara Kutika, and Islamic Science," *Tribun Timur* 16 February 2021.

[13] Apriana Kartini, "Lontara Bilang as a Historical Source of the Kingdom of Gowa," *Journal of Social Knowledge Education* 1, no. 3 (2020), p. 76-87.

[14] Rahmatia and Abdullah Maulan, "Bugis Science-Sufistic Thought in the Manuscript of Kutika Ugi' Sakke Rupa," *Journal of Religious LECTURE* 19, no. 2 (2021), p. 481–520.

[15] Hikmatul Adhiyah Syam, *Sistem Penanggalan Empat Etnis Masyarakat Sulawesi Perspektif Astronomi*, Semarang: Universitas Islam Negeri Walisongo Semarang, 2023.

DOI: 10.22373/sjhk.v9.i3.26954

individuals of high social status or those who hold traditional leadership roles within the upper caste. These *tomina* serve as cultural leaders, often presiding over ceremonial functions. In traditional Torajan ceremonies, they chant words of gratitude in a specialized language distinct from everyday Torajan speech. This *tomina* language, used exclusively by select individuals, is reserved for specific ritualistic contexts, reflecting the deep respect and reverence held for cultural heritage and ancestral traditions.[16]

Many Toraja people adhere to *Aluk*, their traditional religion, which emphasizes the significance of the moon's changing shapes. *Aluk* also referred to as *Alukta* or *Aluk Tondolo*, is a belief system centered on spirits and supernatural forces, holding that certain days can bring prosperity, while others may invite misfortune. Within *Aluk Tondolo*, it is believed that all elements of nature, including humans, chickens, buffalo, iron, and rice, descend from the heavens. This belief system emphasizes a strict code of honesty, governed by rules that remain impartial, extending beyond considerations of kinship, close relations, or friendship.[17] These lunar phases inform decisions on auspicious days for major events, such as weddings, agricultural activities, and travel. The system of identifying favorable and unfavorable days is known as *ma'pebulan* meaning selecting the correct month. This tradition is deeply rooted in religious belief rather than scientific methodology, reflecting a connection to the divine. Within this system, the 18th day of each month, known as *patang sappe*, is considered particularly auspicious. By contrast, initiating any endeavor on the first day of a month even if it is generally favorable is believed to bring future misfortune. This cultural practice is particularly relevant in house building, where all construction is traditionally paused on the 12th day before the full moon, in a custom known as *ma'panginna*.[18]

The presence of the calendar system as a means of timekeeping, rooted in traditional knowledge, demonstrates that the Sulawesi ethnic communities possessed insights into this field long before the advent and growth of *falak* science in Indonesia.[19] This knowledge, integral to daily activities and inherently linked to natural phenomena, represents a significant aspect of local cultural heritage. However, this traditional wisdom is frequently overlooked and perceived as irrelevant to contemporary and future contexts, leading to the gradual erosion, neglect, and even abandonment of valuable cultural legacies.

---

[16] Steviyani L. Rampa, *Singgi' in Rambu Tuka Ceremony' at Pangala Rindingallo, North Toraja, South Sulawesi*, Makassar: Makassar State University, 2020, p. 10.

[17] Febrianti Parrang, *The Shifting Meaning of Ma'nene' Ritual in the Buruppu Parodo Community of North Toraja Regency*, Makassar: Makassar State University, 2020, p. 15.

[18] Kees Bujis, *Ancient Traditions of the Toraja House of Mamasa, West Sulawesi* Makassar: Ininnawa, 2018, p. 126-127.

[19] Rosyadi, "The Local Knowledge System of Cidaun Society (South Cianjur) as a Form of Cultural Adaptation," *Patanjala* 6, no. 3 (2014), p. 431-446.

DOI: 10.22373/sjhk.v9.i3.26954

Timekeepers of Sulawesi: The Calendar Systems of Ethnic Communities

1. Bugis Ethnic Community Calendar System

The calendar system of the Bugis ethnic community is documented in the *Lontara Bilang*, while the significance of specific days is detailed in the *Lontara Pananrang* manuscript. The *Lontara Bilang* is divided into two main components which is the calculation of months and days, comprising the *Bilang Uleng* (lunar cycle) and the *Bilang Esso* (day cycle). The Bugis ethnic community has a calendar period divided into 12 months for a year, with a total of 365 days starting on May 16 based on Gregorian calendar. In addition, this calendar system refers to the circulation of the sun.[20]

The *Bilang Uleng* consists of twelve months which are *Sarawanai* (30 days), *Padawaranai* (30 days), *Sujiari* (30 days), *Pacingkai* (31 days), *Pociai* (31 days), *Mangasirai* (31 or 32 days), *Mangasetiwi* (30 days), *Mangalompai* (31 days), *Nagai* (30 days), *Palagunai* (30 days), *Besakai* (30 days), and *Jettai* (30 days).[21] Similarly, the *Bilang Esso* encompasses seven categories of daily cycles which are *Katakan Tellu*[22] (three-day cycle), *Katakan Eppa*[23] (four-day cycle), *Katakan Lima*[24] (five-day cycle), *Katakan Pitu*[25] (seven-day cycle), *Katakan*

[20] Nor Sidin, *Bilang Taung*, Jakarta: Turikalengna Foundation, 2020, p. 13-18.

[21] This description is also found in the *lontara* manuscripts Code VI 18 (containing twelve-month calendar texts and contains historical accounts relating to several kingdoms in South Sulawesi) and Add MS 12345 (a diary manuscript or *Sure Bilang* of the King of Bone, *La Tenritappu* Sultan Ahmad Al-Salih calendar from 1775 to 1795 CE), which provides a comprehensive account of the Bugis calendar. See Sidin, p. 26-35.

[22] The three-day cycle is *Telluna Juruwatta-Pong Juruwatta*; *Telluna Banawa-Pong Banawa*; and *Telluna Bisaka-Pong Bisaka*. This three-day cycle is related to the livelihood of the Bugis ethnic group. See Sidin, p. 67.

[23] The four-day cycle is *Tuoi* (alive), *Matei* (dead), *Engkai* (coming) and *De'i* (absent). The four-day cycle is the *Esso Pasa* (market day cycle), also called the market calendar. See Sidin, p. 67-70.

[24] The five-day cycle also includes the category of *Esso Pasa* or market days which refers to the twenty-day cycle or *Duappulo*, namely *Rialai* which refers to agricultural activities such as *Marengngala* or harvesting rice; *De'i* which has a meaning related to the symbol of animal husbandry; *Masara Ininnawa* consists of the words *massari* (associated with the activity of tapping nira trees to produce brown sugar), and *ininnawa* (a representation of the goodness of the soul and feelings as a symbol of the image of the sweet taste of *nira*); *Mappoleanggngi* which refers to market days in *Bajoe* (fish-producing village); and *Palai* which has a positive meaning and mentions the name of *Barebbo* toponymy as a market day. See Sidin, p. 70-78.

[25] The seven-day cycle is *Patigai*, *Lanra*, *Katiwi*, *Wuju Tunru Belai*, *Waji To Aramei*, *Pole Jiwai*, *Penno Ekke'i*, and *Telle Pusuei*. See Sidin, p. 79-80.

DOI: 10.22373/sjhk.v9.i3.26954

Asera[26] (nine-day cycle), *Katakan Duappulo*[27] (twenty-day cycle), and *Katakan Telluppulo*[28] (thirty-day cycle). Additionally, the *Lontara Bilang* describes two other calendar systems used by the Bugis community which are:

a. The *Parengki* Calendar

This calendar, also known as *Parengki* or *Pariangki*, corresponds to the Gregorian calendar. It is utilized by the Bugis ethnic community to manage time for maritime activities, particularly through the annual wind seasons, which align with the twelve months of the Gregorian calendar. The wind season in the Flores Sea is divided into two which are *bare* (west) and *timoro* (east), specifically used by the Balobaloang people (inhabitants of the Sabalana Islands who are descendants of Bugis, Maros-Pangkep). Besides, Bugis Muslims particularly those engaged in seafaring, also incorporate the synodic lunar calendar into their timekeeping practices.[29]

b. The *Pariyama* Calendar

The *Pariyama* calendar is based on the Windu system of the Javanese calendar and shares similarities, particularly in its eight-year cycle. The term *Pariyama* is also known as *Separiyama*, which means a long time ago or is difficult to count. This means that the early Bugis ancestors did not know the year, only the alternation of day and night, so that when asked about the time of an event or incident, the answer was 'a long time ago'. The term *Separiyama* is still used by the Bugis-Makassar people after knowing the civilisation led by King I Manurungnge ri Matajang for four *Pariyama*, as the forerunner of the kings in South Sulawesi. Four *Pariyama* is approximately 32 years old (period of reign of King Bone I 1330-1362 AD).

---

[26] The nine-day cycle is known as *Pong Batu Paonro* (*Patenre Rukai*, *Laleng Koari Latui*, *Tessisumpala Timui*, *Mangasetti Kerai*, *Marummameng Sibaui*, *Pattiro Datui*, *Palele Keanui*, *Panoreng Mullingi*); *Pong To Senrijawa* (*Patenre Pisesai*, *Laleng(Koari) Kabui*, *Tessisumpa' Totoi*, *Mangasetti Punnai*, *Marummameng Takaui*, *Pattiro Mamalai*, *Palele Mutamai*, *Panoreng Mpungae Cawai*); and *Pong Ale' Karaja* (*Patenre Temmakabangi*, *Lalengkoari Tenrijompangi*, *Tessisumpala Ajui*, *Mangasetti Pujai*, *Marummameng Turubelai*, *Patiro Congai*, *Palele Tenrisui*, *Panoreng Matterui*). See Sidin, p. 77-78.

[27] The twenty-day cycle in *Naksah Lontara* consists of three parts: *Pong Juruwatta*, *Pong Banawa*, and *Pong Bisaka*. Each section consists of 20 days (*Pang*, *Lumawa*, *Waji*, *Wunga-Wunga*, *Tallatu*, *Anga*, *Webbo*, *Wage*, *Ceppa*, *Tule*, *Arieng*, *Beruku*, *Panirong*, *Mauwa*, *Dettia*, *Soma*, *Angkara*, *Jeppati*, and *Tumpakale*), hence the entire cycle totals 60 days. See Sidin, p. 79-80.

[28] The thirty-day cycle consists of *Camengkarai*, *Esso ma(mumu)ngi*, *Esso waléalai*, *Larumang Memmungi*, *Matu(mumo)bii*, *A(ngke)mpamésui*, *Sarampalu Walui*, *Katiwi*, *Cegosoi*, *Sampéampalui*, *Nawessoma(mamu)ngi*, *Juruwatai*, *Esso Tentibaliwi*, *Punna Wai*, *Mapurai*, *Tingkelengkara Anrai*, *Esso Tenri Sumpalai*, *Cekkara Langii*, *Esso Maruai*, *Esso Patenrengi*, *Esso Patelengi*, *Esso Paroi*, *Tali Kera Langii*, *Goarii*, *Congka-Congkangi*, *Lelebiritai*, *Pole Katiwi*, *Esso Arajai*, *To Tenri Rukkai*, and *Calikera Bessiwi*. See Sidin, p. 137.

[29] Gene Ammarell, *Bugis Navigation*, Makassar: Ininnawa, 2016, p. 103.

DOI: 10.22373/sjhk.v9.i3.26954

This calendar differentiates between long and short years, which are compared to the Hijri calendar in terms of the number of days. Long years, consisting of 355 days, occur in the second year (Ha هـ), fifth year (Dal د), and seventh year (Wau و). Short years, with 354 days, correspond to the first year (Alif ا), third year (Jim ج), fourth year (Za ز), sixth year (Ba ب), and eighth year (Dal د). This calendar is also related to the *Pattaungeng* or calculation system related to the basic concept of the agriculture season in the Bugis ethnic society. This is like the content of the *Lontara Pananrang* manuscript related to the season or meteorological conditions in the *Sapariyama* period (eight-year cycle period) in several cities and districts such as Barru Regency, Sidrap Regency and Bone Regency of South Sulawesi, which has a connection with the Hijri calendar.[30]

The quality of days in Bugis culture is detailed in the *Lontara Pananrang Esso* (Days Manuscript), which calculates the new month sequentially from the 1st to the 30th, referred to as *aoPo aulE* (the circulation of the moon) or *ompo* (cycle). The mention of *ompo* is a term used in calendar systems, especially the lunar calendar or knowledge of the appearance of the moon. Furthermore, the choice of day names tends to be adjusted to the quality of the day with human or animal characteristics. Animal names were used because Bugis society is like Hindu culture and animist beliefs.[31] The knowledge conveyed through *Pananrang* is presented in various forms, including *Paddisengeng* (general wisdom), oral and written messages known as *Pappaseng* (instructions), and advisory texts called *Pappangaja* (counsel and guidance). This diverse body of knowledge serves as a critical guide for understanding and applying timekeeping in Bugis culture.[32]

2. Mandar Ethnic Community Calendar System

For the Mandar ethnic community, their calendar system is adapted to both the Gregorian and Hijri calendars. Muhammad Ridwan Alimuddin explains:[33]

[30] Nur Hasanah, "Correlation of the Eight-Year Period of Lontara Pananrang with the Period of Moon Movement in Characterising Weather Conditions in South Sulawesi," *Proceedings of the National Physics Seminar Makassar*, 2015.

[31] Nor Sidin, *Astrology of the Makassar Bugis Book of Divination*, Takalar: Pakalawaki Institute and All Grafika, 2014.

[32] Tina Erdiana, *Manuscript of Sure' Pannesai Esso (Letter of Day Explanation) in Teluk Serdang, Marga Mulya Village, Rantau Rasau Sub-district, Tanjung JabungTimur Regency*, Semarang: Walisongo State Islamic University, 2019), p. 4-6.

[33] Interview with Muhammad Ridwan Alimuddin, (Writer, Journalist, Photographer, Librarian, and Freelance Researcher) on Thursday 29 August 2024, at Muhammad Ridwan Alimuddin's residence, Tinambung, Polewali Mandar.

DOI: 10.22373/sjhk.v9.i3.26954

The Mandar people do not recognize a calendar system akin to the Javanese Pranatamangsa, as they lack such traditions. Instead, they align their practices with the Islamic (Hijri) and European (Gregorian) calendars.

However, the Hijri calendar, as the framework of the predominant religion Islam, holds significant influence over the Mandar community. The Mandar people believe that the movement of the moon and other celestial bodies affects human activities and fortune on a daily and even hourly basis. Based on these celestial movements, they developed a system for identifying auspicious days, known as *kutika*.[34]

The Mandar community adopts the Hijri calendar's months, with slight phonetic variations in their local language: *Muharrang* (Muharram), *Sapar* (Safar), *Rabiul Awwal* (Rabiul Awal), *Rabiul Ahir* (Rabiul Akhir), *Jumadil Awwal* (Jumadil Awal), *Jumadil Ahir* (Jumadil Akhir), *Rajjaq* (Rajab), *Saqabang* (Sha'ban), *Ramadang* (Ramadan), *Sawal* (Shawwal), *Solokaidda* (Dhul Qa'dah), and *Solohajji* (Dhul Hijjah). Similarly, the days of the week are named *Ahaq* (Sunday), *Sineng* (Monday), *Salasa* (Tuesday), *Arabaq* (Wednesday), *Kammis* (Thursday), *Ayumaq* (Friday), and *Sattu* (Saturday).

In Mandar tradition, each day and month serves as a weather indicator and a guide for choosing favorable days for various activities, such as starting new ventures or performing specific ceremonies. To identify auspicious or inauspicious times, they use a tool called *putika*, which helps determine good or bad days.[35]

One deeply rooted belief among some Mandar Muslims is the notion that the month of Muharram, particularly from the 1st to the 10th, is an ill-fated period.[36] Consequently, it is considered taboo to engage in significant activities during this time, such as marriages, construction projects, traveling, initiating businesses, or climbing expeditions. If 1 Muharram of a particular year for example 1418 AH falls on a Thursday, so every Thursday of that year is deemed ill-fated, and the year is referred to as the ill-fated year. They believe and are haunted by the delusion that performing desires at that ill-fated time will result in undesirable things, strictly speaking, causing harm in its various manifestations.[37]

---

[34] Muhammad Munir, Kutika (Putika), (2022), Retrieved from https://galerikopicoqboq.blogspot.com/2016/06/kutika- putika.html.

[35] Muhammad Ridwan Alimuddin, *Orang Mandar Orang Laut: Kebudayaan Bahari Mandar Mengarungi Gelombang Perubahan Zaman*, Jakarta: Kepustakaan Populer Gramedia, 2005.

[36] Nurul Fitrah Yani, "The Tradition of MakingCipi' and Sapu Lidi to Welcome the Month of Muharram for Mandarese People in Campalagian District, Lematto Village, West Sulawesi (Semiotic Review)," *Deiktis: Journal of Language and Literature Education* 1, no. 2 (2021), p. 146.

[37] Ibrahim Abbas, *Approaches to Mandar Culture*, Ujung Pandang: Sipattau, 1999, p. 113.

DOI: 10.22373/sjhk.v9.i3.26954

In contrast, some days are considered auspicious, such as *Seneng* (Monday), *Kammis* (Thursday), and *Ayumaq* (Friday). Conversely, certain days, particularly *Salasa* (Tuesday) and *Cappuq Arabaq* (the last Wednesday of the month), are regarded as inauspicious.[38] Muhammad Ridwan Alimuddin added the following explanation:[39]

About one of the days that is considered bad, which is when a family member dies, it is considered a bad day. For example, if the mother dies on Tuesday, then Tuesday is a bad day throughout the year. This will change if the father dies on Thursday and the bad day moves to Thursday or if a family member gives birth on Thursday, then Thursday is no longer a bad day.

Other months that are also considered unlucky are Safar, Jumadil Awal, Rajab, and Dhulkaidah for reasons that are imagined with an irrational, follow-the-follow mindset:

a. Muharram is considered a *mukarraq* (dangerous) month
b. Safar is considered the month of *balaq* (the descent of misfortune)
c. Jumadil Awal is considered a month of *sala* (not subject to favour)
d. Rajab is considered the month of *tarataranjaq* (customers will jump up and down due to calamity or danger)
e. Dzulkaidah is considered a month sandwiched by two *khutbah*; Eid al-Fitr in Syawwal and Eid al-Adha in Dzulhijjah

3. Toraja Ethnic Community Calendar System

The calendar of the Toraja ethnic community was governed by the *tomina*'s decision. In the Torajan language, the word *tomina* means smart, so *tomina* is intended for Torajans who are in the upper caste or who have high positions.[40] However, by paying attention to the circulation of the moon, this is in accordance with Tappi Pondan's explanation:[41]

> *If you want to carry out the activities, you can see the position of the Moon in 30 days. That iswhy the house here faces north, in order to make it easier to see the moon when it starts toreappear (observing the position*

[38] Suradi Yasil, *Encyclopedia of Mandar History, People, and Culture*, Makassar: Lembaga Advokasi dan Pendidikan Anak Rakyat, 2004, p.78.

[39] Interview with Muhammad Ridwan Alimuddin (Writer, Journalist, Photographer, Librarian, and Freelance Researcher) on Thursday 29 August 2024, at Muhammad Ridwan Alimuddin's residence, Tinambung, Polewali Mandar.

[40] Interview with M. Bakri (Toraja Muslim Community) on Wednesday 7 August 2024, at M. Bakri's residence, Rembon, Tana Toraja.

[41] Interview with Tappi Pondan (*Ambe Tondok* or elder in the village) on Wednesday, 14 August 2024, at Tappi Pondan's residence, Mengkendek, Tana Toraja.

DOI: 10.22373/sjhk.v9.i3.26954

of the moon from the west and east) adjusted to the end of the roof of the house.

The practice of observing the moon, known as *ma'pebulan*, translates to determining the appropriate month and is closely tied to identifying auspicious and inauspicious days.[42] This specialized knowledge is traditionally passed down through generations within specific families or individuals. The determination of *ma'pebulan* is not arbitrary but deeply rooted in religious practices. Consequently, it is common for community members to seek guidance from those proficient in interpreting the moon's phases to select favorable days for significant events, such as wedding ceremonies, initiating house construction, and other important occasions. This practice holds even greater significance when a noble family plans to build a traditional custom house.[43]

Within the context of house construction, two months of the year are deemed particularly auspicious which are the first month *ma'dika*, and the sixth month *lambu' ma'dika*. These are collectively referred to as *indona bulan* or main mother moon, a term also used to describe the full moon and the days immediately before and after it. However, ordinary individuals are prohibited from utilizing these two *ma'dika* months, which are regarded as noble months.[44]

Among the auspicious days, the 18th day known as *patang sappe*, is considered the most favorable for commencing construction. Starting on the first day of any month, even during a *ma'dika* month, is believed to invite misfortune, particularly financial hardship for the household. This concept is encapsulated in the term *mekkapadang*, meaning the return of one who will never arrive. Additionally, on the 12th day of the month two days before the full moon, all construction activities must cease. This day, called *ma'panginna*, is considered suitable for building a pigsty. Construction can resume a few days later, typically two days after the full moon.

For the Toraja ethnic community, the selection and application of auspicious and inauspicious days are intricately aligned with the phases of the moon, demonstrating the profound cultural significance of lunar observation in their traditional practices. This is explained in detail by M. Bakri:[45]

---

[42] Riha Kholidiyah, The Universal of Tana Toraja, 2023, Retrieved from https://kotakilmurihalidiyanugroho.blog.spot.com/2013/04/kebudayaan-tanatoraja.html?sc=1673529205484&m=1#c4352796948663322890.

[43] Kees Bujis, *Ancient Traditions of the Toraja House of Mamasa, West Sulawesi* Makassar: Ininnawa, 2018, p. 126-127.

[44] Kees Bujis, *Ancient Traditions of the Toraja House of Mamasa, West Sulawesi* Makassar: Ininnawa, 2018, p. 126-127.

[45] Interview with M. Bakri (Toraja Muslim Community) on Wednesday 7 August 2024, at M. Bakri's residence, Rembon, Tana Toraja.

DOI: 10.22373/sjhk.v9.i3.26954

When the position of the moon has entered the final phase, Tomina calls it the tellu temmatena moon which means three more days of the moon sinking (changing to the new moon). When the full moon phase is called melolinna bulan, which means the position of the moon is leaning to the west, if interpreted according to the Toraja language, the moon descends. In determining the entry of the beginning of the month, it is done by looking at the appearance of the hilal on the horizon, the second until third day after is considered a good day, but when the position of the moon is approaching the ma'petangga bulan (full phase), the day is considered bad as the position of the moon when the moon will end is called pu'pu month.

The description above is evidence that the Toraja community focuses on the shape or position of the moon, and the Toraja ethnic community also uses market days according to M. Bakri's explanation:[46]

> *Toraja people do not recognize numbers or even names of days, but the calculation is adjusted to the number of six markets. The calculation of the market determinesgood and bad days. The determination of market days has been a reference for the Toraja ethnic community since ancient times before the separation of the provinces of Tana Toraja and North Toraja. Therefore, the determination of good days can be determined by paying attention to the position of the moon, day, and market day.*

The market days are *Makale*, *Rembon*, *Bittuang*, *Ge'tengan*, *Rantetayo*, and *Sangalla*. Furthermore, some of the names of the markets that coincide are:[47]

a. *Sangalla* Market or *Ulusalu* Market,
b. *Rantetayo* Market or *Buntu* Market or *Rantelemo*,
c. *Bittuang* Market or *Buakayu* Market.

The names of the markets on fixed days are *Pasar Bolu* (every Tuesday & Saturday) and *Pasar To'Dama'* (every Wednesday). Once a market is integrated into a group, it obtains a name according to the day it opens. The Torajans do not have names for the days of their six-day week as there are only names for market locations, and they mark sections in time by calculating the distance between one market day and the next, from one group to another.[48]

[46] Interview with M. Bakri (Toraja Muslim Community) on Wednesday 7 August 2024, at M. Bakri's residence, Rembon, Tana Toraja.

[47] Interview with Tappi Pondan (*Ambe Tondok* or elder in the village) on Wednesday, 14 August 2024, at Tappi Pondan's residence, Mengkendek, Tana Toraja.

[48] Terance W. Bigalke, *Social History of Tana Toraja*, Yogyakarta: Ombak, 2019, p. 29-30.

DOI: 10.22373/sjhk.v9.i3.26954

Sulawesi Ethnic Community Calendar System from the Perspective of *Falak* Science

Falak science has two primary interpretations. Etymologically, it derives from the Arabic term *falak*, meaning the path or orbit of celestial bodies. In English, this term is commonly referred to as orbit.[49] Terminologically, *falak* science is the study of the trajectories of celestial bodies such as the moon, sun, stars, and other heavenly objects, aiming to determine their positions and their spatial relationships with one another. Fundamentally, *falak* science aligns closely with the field of astronomy.[50]

This discipline is regarded as one of the oldest and rarest branches of science, dating back to the formation of the universe. In Indonesia, its historical presence is evident in the Islamic Javanese calendar system introduced by Sultan Agung. The 19th century saw the emergence of notable *falak* scholars, such as Sheikh Abdurrahman al-Mishri, who arrived in Jakarta (then Batavia) in 1314H/1896CE, bringing with him the Ulugh Beg astronomical tables and disseminating this knowledge. Among his notable students were KH Ahmad Dahlan as-Samarani (also known as at-Tarmasi) and Sayyid Uthman Betawi.[51, 52]

Theoretically, *falak* science contributes to the advancement of science and technology, with the goal of cultivating a new generation of Muslim *falak* scholars and astronomers. Practically, it serves purposes directly linked to Islamic worship, including determining the qibla direction, establishing prayer times, setting the beginning of lunar months, developing calendar systems, and predicting celestial events such as eclipses.[53] Thus, the role of *falak* science is both tangible and essential, particularly for the Muslim community. The determination of time and calendar systems represents a crucial aspect of its broader scope, which intersects with the study of astrology.[54, 55]

---

[49] Taufiqurrahman Kurniawan, *Falak Science and Global Matlak Review*, Yogyakarta: MPKSDI Yogyakarta, 2010, p. 1-2.

[50] Kusitana Arisanti, "Falak Science in Historical Perspective," *Journal of Islamic Education Research* 3, no. 2 (2021), p. 2-4.

[51] Nur Hidayatullah, "Network of Falak Scholars of the Archipelago (Geneological Study of the Falak Science of Sheikh Muhammad Yasin Al-Fadani)," *Al-Afaq: Journal of Falak Science and Astronomy* 1, no. 1 (2019), p. 33-66.

[52] Nurul Wakia and Sabriadi HR, "History of Development and Scope of Falak Science Curriculum," *Hisabuna: Journal of Falak Science* 2, no. 3 (2021), p. 195-209.

[53] Zulfiyah Zulfiyah, "An Explorative Study of Hadith as a Source of Islamic Law on Falak Science," *Al-Mizan Journal* 14, no. 1 (2018), p. 19-40.

[54] Muhammad Rifqi Hasan, "Astronomical Interpretation of Early Prayer Times (Study of Differences inDetermination of Early Prayer Times From the Text and Astronomical Prespective)," *Al-Hilal: Journal of Islamic Astronomy* 2, no. 2, (2020), p. 194-213.

[55] Arbisora Angkat, "Global Hijri Calendar in the Perspective of Jurisprudence," *Al-Marshad: Journal of Islamic Astronomy and Related Sciences* 3, no. 2 (2017), p. 1-17.

DOI: 10.22373/sjhk.v9.i3.26954

The reference used to compile the calendar is the cycle of movement of two celestial bodies that have a huge influence on human life on Earth, namely the moon and the sun. The calendar system that is organised based on the synodic cycle of the moon is called the lunar calendar,[56] the calendar which is organized based on the tropic cycle of the sun is called the solar calendar,[57] while the calendar that is organized with reference to both is called the lunar-solar calendar.[58] Based on the above discussion, the calendar system of the Bugis, Mandar and Toraja ethnic communities briefly has several links with the calendar system in the perspective of astrology, as shown below:

Table 1: Sulawesi Ethnic Community Calendar System

Elements	**Bugis**	**Mandar**	**Toraja**
Epoch	1 *Sawaranai*	-	-
Reference	Sun	Moon	Moon
Day/Month	30, 31 and or 32 days/month	29 and or 30 days/month	30 days/month
Day/Year	365 (*basitah*) or 366 (*leap*) days/year	354 (*basitah*) or 355 (*leap*) days/year	-
Name Day	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday and has seven market day names	*Ahaq, Sineng, Salasa, Arabaq, Kammis, Ayumaq and Sattu*	Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday and has six market days names
Month/Year	12 months/year	12 months/year	12 months/year
Month Name	*Sarawanai, Padawaranai, Sujiari, Pacingkai, Pociai, Mangasirai, Mangasetiwi, Mangalompai,*	*Muharrang, Sapar, Rabiul Awwal, Rabiul Ahir, Jumadil Awwal, Jumadil Ahir, Rajjaq, Saqabang,*	-

[56] Muhammad Himmatur Riza and Ahmad Izzuddin, "The Update of the Delambre Gregorian Calendar and Its Implications for the Prayer Time Schedule," *Ulul Albab: Journal of Islamic Legal Studies and Research* 3, no. 2 (2020), p. 163–184.

[57] Muhammad Himmatur Riza, "Supermoon Phenomenon in the Perspective of Fiqh and Astronomy," *Elfalaky Journal* 4, no. 1 (2020), p. 1-19.

[58] Muhammad Himmatur Riza, "Horizontal Sundial in Determining the Javanese Pranata Mangsa Calendar," *Ulul Albab: Journal of Islamic LegalStudies and Research* 2, no. 1 (2018), p. 119-142.

DOI: 10.22373/sjhk.v9.i3.26954

	Nagai, Palagunai, Besakai and Jettai	*Ramadang, Sawal, Solokaidda and Solohajji*	
Determination of the beginning of the month	Based on the calculation pattern of days in each month	Adjusting the Hijri calendar system	Performing moon observation or *ma'pebulan* to see the *hilal* and using a thin black cloth
Calculation Pattern	Based on the moon cycle and market day cycle	Based on the Hijri calendar system	Calculate based on month position and market day
Function	Livelihood activities and implementation of daily activities	Livelihood activities, weather conditions, and implementation of daily activities	Implementation of daily, customary, social, and, religious activities

Conclusion

The calendar systems of the Sulawesi ethnic communities-specifically those of the Bugis, Mandar, and Toraja-constitute traditional knowledge that predates the rapid advancements in astrology and technology. Each ethnic group demonstrates a unique perspective shaped by its cultural practices, beliefs, and traditions, resulting in distinct characteristics across their respective calendar systems. The Bugis ethnic calendar system was undeniably aligned with the Gregorian calendar during the pre-Islamic era. Following the advent of Islam, the Bugis calendar system transitioned to referencing the Hijri calendar. The pre-Islamic calendar was based on a solar cycle, which was further divided into a lunar cycle (comprising 12 months in a year) and a day cycle, categorized into seven distinct market day cycles, each with its own significance. Meanwhile, the Bugis calendar linked to the Hijri system became instrumental in organizing daily activities, particularly for determining prayer times. Conversely, the Mandar ethnic group traditionally lacked a specific calendar system but adopted one that aligns with the Hijri calendar. Additionally, the Toraja ethnic calendar system was determined by several factors: the phases of the moon (ma'pebulan), decisions made by tomina' (community or family leaders), market days, and natural phenomena. Collectively, the calendar systems of the Bugis, Mandar, and Toraja ethnic communities exhibit a notable connection to astrological principles. All

DOI: 10.22373/sjhk.v9.i3.26954

these calendars serve essential functions as tools for timekeeping and guidance. As such, the preservation and study of these indigenous calendar systems are vital to ensure their continued relevance alongside contemporary scientific advancements.

References

Journals and Books

Abbas, Ibrahim, *Approaches to Mandar Culture*, Ujung Pandang: Sipattau, 1999.

Alimuddin, Muhammad Ridwan, *Orang Mandar Orang Laut: Kebudayaan Bahari Mandar Mengarungi Gelombang Perubahan Zaman*, Jakarta: Kepustakaan Populer Gramedia, 2005.

Ammarell, Gene, *Bugis Navigation*, Makassar: Ininnawa, 2016.

Angkat, Arbisora. "Global Hijri Calendar in the Perspective of Jurisprudence." *Al-Marshad: Journal of Islamic Astronomy and Related Sciences* 3, no. 2 (2017).

Arisanti, Kusitana, "Falak Science in Historical Perspective." *Journal of Islamic Education Research* 3, no. 2 (2021).

Aulia, Dinda, *Warna Nusantaraku*, Yogyakarta: K-Media, 2021.

Basir, Fathur Rahman. "Paccini Allo, Lontara Kutika, and Islamic Science." *Tribun Timur* 16 February 2021.

Bigalke, Terance W, *Social History of Tana Toraja*, Yogyakarta: Ombak, 2019.

Bujis, Kees, *Ancient Traditions of the Toraja House of Mamasa, West Sulawesi* Makassar: Ininnawa, 2018.

Eptiana, Rilmi. "Patterns of Community Social Behavior in Maintaining Local Culture (Case Study of House Making in Minanga Village, Bambang District, Mamasa Regency." *CV Eureka Murakabi Abadi* 1, no. 1 (2021).

Erdiana, Tina, *Manuscript of Sure' Pannesai Esso (Letter of Day Explanation) in Teluk Serdang, Marga Mulya Village, Rantau Rasau Sub-district, Tanjung JabungTimur Regency*, Semarang: Walisongo State Islamic University, 2019.

Farlin, Zico. "The Utilization of Time for Humans in Graphic Art Works." *Similar: The Journal of Art Education* 6, no. 2 (2018).

Hasan, Muhammad Rifqi. "Astronomical Interpretation of Early Prayer Times (Study of Differences inDetermination of Early Prayer Times From the Text and Astronomical Prespective)." *Al-Hilal: Journal of Islamic Astronomy* 2, no. 2, (2020).

Hidayatullah, Nur. "Network of Falak Scholars of the Archipelago (Geneological Study of the Falak Science of Sheikh Muhammad Yasin Al-Fadani)." *Al-Afaq: Journal of Falak Science and Astronomy* 1, no. 1 (2019).

DOI: 10.22373/sjhk.v9.i3.26954

Husna, Amirah Himayah, Qulub, Siti Tatmainul and Ardini, Shirly. "Unification of the National Hijri Calendar in the Perspective of Muhammadiyah and Nahdatul Ulama Organisations." *Al Afaq* 3, no. 2 (2021).

Kartini, Apriana. "Lontara Bilang as a Historical Source of the Kingdom of Gowa." *Journal of Social Knowledge Education* 1, no. 3 (2020).

Kurniawan, Taufiqurrahman, *Falak Science and Global Matlak Review*, Yogyakarta: MPKSDI Yogyakarta, 2010.

Mulyadi, Achmad, *Falak Science Hisab Qibla Direction and Prayer Times,* Madura: Madura State Islamic Institute, 2022.

Musonnif, Ahmad. "Intellectual Relationships, Islamic Java, Islamic Bugis, and Ottoman Turkey." *Contemplation of Ushuluddin Science Journals* 6, no. 1 (2018).

Nur Hasanah. "Correlation of the Eight-Year Period of Lontara Pananrang with the Period of Moon Movement in Characterising Weather Conditions in South Sulawesi." *Proceedings of the National Physics Seminar Makassar*, 2015.

Parrang, Febrianti. *The Shifting Meaning of Ma'nene' Ritual in the Buruppu Parodo Community of North Toraja Regency*, Makassar: Makassar State University, 2020.

Rahmatia and Maulan, Abdullah. "Bugis Science-Sufistic Thought in the Manuscript of Kutika Ugi' Sakke Rupa." *Journal of Religious LECTURE* 19, no. 2 (2021).

Rampa, Steviyani L. *Singgi' in Rambu Tuka Ceremony' at Pangala Rindingallo, North Toraja, South Sulawesi*, Makassar: Makassar State University, 2020.

Riza, Muhammad Himmatur and Izzuddin, Ahmad. "The Update of the Delambre Gregorian Calendar and Its Implications for the Prayer Time Schedule." *Ulul Albab: Journal of Islamic Legal Studies and Research* 3, no. 2 (2020).

Riza, Muhammad Himmatur. "Horizontal Sundial in Determining the Javanese Pranata Mangsa Calendar." *Ulul Albab: Journal of Islamic Legal Studies and Research* 2, no. 1 (2018).

Riza, Muhammad Himmatur. "Supermoon Phenomenon in the Perspective of Fiqh and Astronomy." *Elfalaky Journal* 4, no. 1 (2020).

Rosyadi. "The Local Knowledge System of Cidaun Society (South Cianjur) as a Form of Cultural Adaptation." *Patanjala* 6, no. 3 (2014).

Setyanto, Hendro and Hamdan, Fahmi Fatwa Rosyadi Satria. "Criteria 29: A New Way of Looking at the Compilation of the Hijri Calendar." *Al- Ahkam Journal* 2, no. 5 (2015).

Sidin, Nor, *Astrology of the Makassar Bugis Book of Divination*, Takalar: Pakalawaki Institute and All Grafika, 2014.

Sidin, Nor, *Bilang Taung*, Jakarta: Turikalengna Foundation, 2020.

DOI: 10.22373/sjhk.v9.i3.26954

Syam, Hikmatul Adhiyah, *Sistem Penanggalan Empat Etnis Masyarakat Sulawesi Perspektif Astronomi*, Semarang: Universitas Islam Negeri Walisongo Semarang, 2023.

Syam, Hikmatul Adhiyah. "Harmonisation of Arabic and Bugis-Makassar Calendar." *El-Falaky: Journal of Falak Science* 2, (2018).

Wakia, Nurul, and Sabriadi, HR. "History of Development and Scope of Falak Science Curriculum." *Hisabuna: Journal of Falak Science* 2, no. 3 (2021).

Yani, Nurul Fitrah, "The Tradition of Making Cipi' and Sapu Lidi to Welcome the Month of Muharram for Mandarese People in Campalagian District, Lematto Village, West Sulawesi (Semiotic Review)." *Deiktis: Journal of Language and Literature Education* 1, no. 2 (2021).

Yanty, Vega Febry. "Diversity and Social Tolerance of Junior High School Students in Jakarta." *Nusantara: Journal of Social Sciences* 6, no. 2 (2019).

Yasil, Suradi, *Encyclopedia of Mandar History, People, and Culture*, Makassar: Lembaga Advokasi dan Pendidikan Anak Rakyat, 2004, p.78.

Yusmar, Syarifuddin. "Bugis-Makassar Calendar in Determining the Beginning of the Kamariah Month According to Shariah and Science." *Hunafa Jurnal Studia Islamika* 5, no. 3 (2008).

Zulfiyah, Zulfiyah. "An Explorative Study of Hadith as a Source of Islamic Law on Falak Science." *Al-Mizan Journal* 14, no. 1 (2018).

Internet Data

Ibrahim, Ilham. Principles of Global Islamic Calendar According to Prof. Syamsul Anwar. Tarjih Centre, (2019). Retrieved from https://pusattarjih.uad.ac.id/prinsip-prinsip-kalender-islam-global-menurut-prof-syamsul-anwar/. Accessed on July 12, 2024.

Kholidiyah, Riha. The Universal of Tana Toraja, (2023), Retrieved from https://kotakilmurihalidiyanugroho.blog.spot.com/2013/04/kebudayaantanatoraja.html?sc= 1673529205484&m=1#c4352796948663322890. Accessed on July 12, 2024.

Muhammad Munir, Kutika (Putika), (2022), Retrieved from https://galerikopicoqboq.blogspot.com/2016/06/kutika-putika.html. Accessed on July 12, 2024.

Interviews

Interview with Alimuddin, Muhammad Ridwan, Writer, Journalist, Photographer, Librarian, and Freelance Researcher, August 29, 2024.

Interview with Bakri, M, Toraja Muslim Community, August 7, 2024.

Interview with Pondan, Tappi, *Ambe Tondok,* or Elder in the Village, August 14, 2024.