



Religious Life of Fishermen: Research in Prapag Lor Fishing Village, Losari, Brebes

Miftahudin,^{1*} Asep Muhyiddin²

¹² UIN Sunan Gunung Djati Bandung, Indonesia

* Correspondence: miftah9377@gmail.com

Received: July 2025; *Accepted:* November 2025; *Published:* April 2026

Abstract: This study investigates the religious life of the fishing community in Kampung Nelayan Prapag Lor, Losari District, Brebes Regency, using a qualitative ethnographic approach. Based on participant observation, in-depth interviews, and documentation analysis, the research reveals that the community's religious expression is deeply influenced by local culture, socioeconomic conditions, and traditional beliefs. Their religious worldview reflects Clifford Geertz's description of the Abangan variant of Javanese Islam, in which religious practices are not limited to formal worship but are expressed through communal rituals such as *slametan*, *suwuk* (protective prayers), and pilgrimage to sacred sites. Religion functions as both a spiritual and social system that provides meaning, structure, and emotional security in a life shaped by uncertainty at sea and limited economic opportunities. While older generations preserve strong ties to tradition, younger members show increasing openness to scriptural and institutional expressions of Islam influenced by education and media. The study argues that religious life in marginalized coastal communities is not a reflection of religious decline, but a creative adaptation to local realities. These findings offer significant insight for scholars of religion, culture, and poverty by highlighting the role of indigenous spirituality in fostering social cohesion and resilience.

Keywords: abangan; coastal community; ethnography; Geertz's typology; indigenous Islam; Javanese tradition; local religion, religious expression.

1. Introduction

Religious life cannot be separated from the social, cultural, and economic context of the society that lives it. Religion, on the one hand, is understood as a belief system that gives meaning to reality, answers human existential limitations, and explains the relationship with transcendent entities (Hermawan & Rahman, 2024). In the positivistic perspective of the 19th century, religion was considered an intellectual product that functioned to explain world phenomena through metaphysical concepts. This view, although making important contributions, overemphasizes cognitive and individual aspects, and ignores the symbolic, ritualistic, and social roles of religion in shaping the order of society (Turner, 2016).

As a critique of this overly reductionistic approach, Turner revives Durkheim's thinking that religion is not merely a belief in supernatural beings, but rather a manifestation of the separation of the sacred and profane worlds (Turner, 2010). In this view, religion is understood as a social reality whose existence is external to the individual, but has a coercive power in shaping collective consciousness and behavior (Veeger, 1993). Religion, according to Durkheim, is a social fact that manifests as norms and practices that regulate communal life, strengthen social solidarity, and create order in society (Abdullah, 1986). (Durkheim, 2016) shows how in traditional societies, such as the Arunta, religion and society are almost inseparable: religion is an expression of collective life. When individuals feel subject to a greater power, which appears as a sacred power, they are actually worshiping their own society.

In this context, religion becomes an effective mechanism of social control, as well as a tool of social integration that unites individuals in collective moral solidarity.

However, the relationship between religion and socio-economic conditions, such as poverty, raises complex questions. There is an assumption that poverty causes people to abandon religious ritual obligations due to the pressure of life's needs. (Sobary, 2007) states that society prioritizes social piety, such as working for the sake of the family, over carrying out ritual practices (Elsayed, 2024). This social piety includes acts of kindness between humans, while ritual piety is manifested in personal worship such as prayer or fasting (Hasib, 2023).

Critique of this dichotomy is important, because it assumes that involvement in worldly affairs is synonymous with a decline in religiosity. This view ignores the fact that religiosity can be expressed in many forms. In fact, in conditions of poverty, religion can be a source of moral strength, psychological comfort, and a tool of social resistance to structural injustice (Thohir et al., 2024).

In marginalized communities, such as urban poor communities or coastal fishermen, the relationship between religion and socio-economic life becomes more complex. Poor communities are often considered to have insufficient access to education, health services, and religious facilities. However, this does not always reduce the intensity of their religious life. Research (Beals, 1961) on the Martinez family shows that changes in religious orientation can bring about significant social transformation: Pedro, after converting, abandoned deviant behavior and focused his life more on religious values and the welfare of his family.

This study attempts to explore such phenomena in the context of Prapag Lor Fisherman Village, Losari District, Brebes Regency. This area is categorized as a slum with characteristics of limited economic, social, and educational access. However, the people there show a distinctive form of religiosity. Their religious practices are not only based on formal Islamic teachings, but are also colored by local religious traditions such as slametan, kenduren, and sea alms. These traditions show how local culture and religion absorb each other and form a contextual pattern of religiosity (Beatty & Saefuddin, 2001).

This settlement, although economically marginal, shows a strong level of social integration. The division of social roles in society, including in the management of mosques and religious activities, is based on an assessment of religious understanding. The community determines religious figures informally based on local consensus. However, limited access to information tends to make religious life static and conservative.

Religious traditions such as kenduren, slametan, grave pilgrimage, and sea alms show the existence of a religious system that is syncretic between Islam and Javanese culture. This is in line with the assumption that religion in Javanese society cannot be separated from the local cultural framework called *kejawen*. In many cases, *kejawen* does not conflict with Islamic law, but instead becomes a medium for people's spiritual expression that is easier to understand and practice in their daily lives.

Thus, this study is important to reveal how the people of Prapag Lor Fisherman Village carry out their religious life in conditions of poverty and limitations. Are their religious practices a reflection of pure Islamic teachings, the result of acculturation with Javanese traditions, or a synthesis of the two? This study will answer these questions by exploring religious understanding, religious social structures, and ritual practices of the local community. The goal is to understand more deeply how religion remains a significant life force even though it is carried out in a social space full of limitations.

2. Research Method

This study uses a qualitative-ethnographic approach because the topic studied concerns the meaning, beliefs, and religious practices that live in the daily lives of the Prapag Lor Fisherman Village community (Basole & Ramnarain, 2016). This approach was chosen because it provides space to understand in depth how individuals form meaning for their religious actions in a complex and dynamic socio-cultural context. The phenomena studied are not only seen from the surface, but also from how society interprets it, strategies for acting in their social environment, and the relationship between cognitive, affective, symbolic, and contextual aspects inherent in religious practices. This study

positions researchers as subjects who learn from and with society, with the aim of exploring a complete and holistic emic understanding.

Data sources were obtained through two main channels: field and documentation. Field data were collected through participant observation, in-depth interviews, and direct involvement in socio-religious activities such as sea alms, slametan, and grave pilgrimage. Informants were selected purposively and expanded through snowball sampling techniques, including religious figures, community leaders, and residents from various backgrounds. Documentation sources consisted of official village documents, government archives, previous research reports, and academic literature related to fishing communities and their religious practices, all of which were used to complement and enrich field data (Punch, 2008).

This research was conducted through three stages: orientation to identify the location and build initial relationships with informants; exploration to explore religious practices through observation and contextual interviews; and data deepening to capture the symbolic meaning behind socio-religious actions. Researchers were not only observers, but were also directly involved in community life in order to obtain a comprehensive picture (*thick description*). The recording process is carried out immediately after observation to keep the data fresh and accurate.

Data analysis was carried out using the method (Miles et al., 2019) which includes data reduction, narrative presentation, and iterative and open conclusion drawing. Interpretation was carried out carefully while maintaining the authenticity of the informant's statements and was verified through triangulation and re-checking with data sources. This research is non-generalizable, but allows transferability to similar cultural contexts. Thus, this study not only offers an in-depth description of religious practices in Prapag Lor, but also contributes to the understanding of the relationship between social structure, poverty, and spirituality in coastal communities in Indonesia.

3. Research Results

3.3. Prapag Lor Village Area

Prapag Village Lor, part of Losari-Brebes District, offers a strong blend of long history and dynamic coastal life. Administratively, this village is bordered by the Java Sea to the north, Prapag Village to the east, and Kidul in the east and south, and Karang Village Dempel in the west (Contributor, 2019). According to the BPS report, the rice fields of 292.60 ha and the pond fisheries of 78.52 ha make it a productive area with a land area of around 376.25 ha.

The population is around 6,208, almost evenly distributed between males (3,180) and females (3,028). The 0–39 age group dominates the population distribution, reflecting much more dynamic socio-economic activity than similar coastal villages.

Historically, this village has strong roots in Javanese-Islamic religious and dynasty narratives. Its name, "Prapag Lor", comes from the title of the spiritual figure Ki Chapter Nenggala, who managed to quell the conflict in this area and then died and was buried at the end of RW 003 of the village, which is now widely visited by people from Brebes and Cirebon (Gopari, 2022). It is said that the term "Prapag" stuck because of its location in the north, then added "Lor" (north), so it is known as Lor.

The traces of Islam are getting stronger through the relationship between the Cirebon and Demak Sultanates—although the details of the genealogy are mostly heard orally by the people, without official written documents (Gopari, 2022). However, the existence of the tomb of Ki Sura Nenggala and the annual pilgrimage tradition are indications that this region has long used religious symbols as an identity and social glue.

With a distance of about 6 km from the sub-district center and 36 km from the district capital, and is at an average altitude of 2 m dpl, Prapag Lor features a flat coastal landscape that is prone to tidal influences. Its people work as fishermen and shrimp farmers, reflecting a significant link between the physical environment and their socio-economic structure (Gopari, 2022).

The population of Prapag Lor Village shows a demographic structure that reflects the typical dynamics of coastal communities. In the 40–44 age range, there are 364 people who generally have established jobs or businesses. The 45–49 age group numbers 384 people, most of whom are starting to

enter a calmer and more focused phase of life approaching old age. The population slowly decreases at the age of 50–59 by 310 people, then decreases further in the 60–64 age group by 193 people who generally start to spend more time at home. At the age of 65–69, there are 117 people who interact more often with family and grandchildren, conveying stories and values of the past. The population aged 70–74 years is only 47 people, and those aged 75 years and over are recorded as 35 people who live their days with peace, worship, and family togetherness (Suci et al., 2023).

Of the total population, there are 2,646 people who are included in the productive age group and are actively working to support village life. The 15-19 age group includes 290 people who are starting to get to know the world of work while undergoing a transition period towards adulthood. In the 20-24 age group, there are 407 people who have started to find the rhythm of work and responsibility. The same number is also seen at the age of 25-29 years, indicating the initial phase of independence and family formation. At the age of 30-34 years, 377 people continue to be actively working, and at the age of 35-39 years, 266 people mark the period when work experience begins to play an important role. The number of workers decreases at the age of 45-49 years with 236 people, then 227 people at the age of 50-55 years, and the remaining 149 people at the age of 60-64 years who are still involved in economic activities although not as active as the younger age group (Azizah, 2019).

Of the area of approximately 3.76 km², approximately 1,650 people actually live and work in this village. The livelihoods of the residents are very diverse and closely related to the natural conditions of the surrounding area. As many as 20 people work as civil servants, while only 2 people are members of the TNI or Polri. As many as 44 people work in the private sector, while 68 others run small-scale trade and entrepreneurship businesses to strengthen their household economy. As a coastal village, as many as 258 people depend on marine products for their livelihood. They go to sea from early morning and return with catches that are not always certain. In addition, 980 people work as livestock farmers who raise chickens, ducks, goats, or other livestock. As many as 25 people still work as farm laborers, and 7 people work as service providers in the village. As many as 20 people are recorded as retirees and 3 others have also completed their service period. As many as 50 people have a role in social affairs such as managing marriages, divorces, and reconciliations which are still an important part of the lives of the Prapag Lor community (Saputra et al., 2023).

In terms of education, there are still 1,099 people who have not or have never received formal education. As many as 1,366 people have not graduated from elementary school, and 2,409 people have completed their education at the elementary school level or equivalent. Meanwhile, 806 people have completed their education at the junior high school level and 445 people have completed their education at the Diploma I, II, III, and Bachelor levels. The number of students currently studying at elementary school is recorded at 771 people, while at the junior high school level there are 1,021 students. To support education, there are 28 teachers who teach at elementary school and 54 teachers at the junior high school level spread across various educational units in the village (Poniasih, 2025).

Religiously, the population of Prapag Lor Village is dominated by Muslims, reaching 6,207 people out of the total population. Only one person in this village is recorded as a Catholic. Religious life is carried out collectively through three mosques in the village, with the support of 17 ustadz who play a role in fostering the community. In 2018, five villagers went on the Hajj pilgrimage, consisting of one man and four women. This shows that religiosity is not only present in the form of belief, but also in the real form of religious practices that continue to be maintained and passed down from generation to generation.

Viewed from the industrial side, there are many Micro, Small/Medium Enterprises in the food industry group in Prapag Lor Village, 2 tofu and tempeh makers, 12 cracker and similar entrepreneurs. Meanwhile, data on families using electricity in Prapag Lor Village are 88.9 PLN electricity users and 4151 non-PLN electricity users. The number of families using electricity in Prapag Lor Village (Apisah, 2008).

Like other villages in general, when entering the Prapag Lor Village Office yard, a clear signboard appears that reads "Prapag Lor Village Office." When the author entered the office, a neat diagram of the village government organizational structure was seen. The structure shows

that the Village Head is held by Fakhruddin Andes Raka, SH., with Ali Akbar Tirmidi as the Village Secretary. For financial matters, there is Santo as the Head of Financial Affairs who is assisted by his staff, Taufik Agustina. However, the position for the Head of General Affairs and Planning has not yet been filled. Furthermore, Amir Tauhid Supriyadi serves as the Head of the Government Section, while Tolib is tasked with the duties of the Head of the Welfare and Service Section, with the support of his staff, Mohamad Casudin. This structure also lists three Hamlet Heads, namely Harun as the Head of Hamlet I, Sanudin as the Head of Hamlet II, and Sahuri as the Head of Hamlet III. Overall, the organizational structure reflects a clear hierarchy from the Village Head to the Hamlet Head level, as well as a division of tasks according to each field, even though one position is still vacant (Apisah, 2009).

Figure 2. Document: Prapag Lor Village Office



The organizational structure of the government in Prapag Lor Village is the same as the organizational structure in other villages. Prapag Lor Village consists of 3 hamlets, 3 RW and 23 RT with an area of 302 Ha, with the potential of its apparatus consisting of a Village Head (Kades), one Village Secretary (Sekdes), four Kaur, two staff and three Hamlet Heads (Kadus), has a population of 8064 people consisting of 4139 men and 3925 women, and with the number of Poor Households (RTM) totaling 914 RTM (Suci et al., 2023).

3.3.1. Characteristics of the Prapag Lor Fishing Village Community

The characteristics of fishing and agrarian communities differ sociologically due to differences in resource characteristics (Delgado-Ramírez et al., 2023). The resources faced by the office, namely land processing for the production of commodities at relatively affordable prices, agrarian communities represented by farmers. The nature of such products allows production to remain in the same place, so business mobility to mitigate risk is relatively low.

In terms of fish farming, it can be categorized as a farmer's business (*agrarian*) because the nature of the resources faced is comparable. Determining the amount and location of cultivation is similar. In terms of fish farming, it is done by catching so that the harvest pattern is more controlled. The amount of production input is determined to achieve the expected output because the harvest is also controlled. However, according to Firth as quoted by Arif Satria, fishing communities have similarities with farming communities, for example, the nature of their businesses is small-scale with simple equipment and market organizations (Putri et al., 2024). Exploitation often occurs in relation to cooperation problems with most of them relying on subsistence production. In addition, they have diversity in economic levels and behavior (Satria, 2015).

Fishermen are a society, society itself is defined as every group of people who live and work together for a long enough period of time, so that they can organize themselves and are aware that they are a social unit with clear boundaries (Linton, 1984). This Fishermen Society is also called a small community that has several characteristics: Having a distinctive identity (*distinctiveness*), consisting of a limited number of residents (*smallness*), so that they still know each other as individuals with personalities. Being uniform with limited differentiation (*homogeneity*), the needs of life are very limited so that all can be met by themselves without relying on external markets. (*all providing self sufficiency*) (Rothschild et al., 2024).

Referring to the concept above, the Prapag Lor Fisherman Village community located in RW 08 is inhabited by 745 people and spread across eight RTs. Of that number, men dominate the population with a total of 648 people, while women only number 95 people. The disparity in the number of men and women reflects the social structure of the fishing community, where men are more numerous because they are generally the main breadwinners at sea.

The RT with the largest population is RT 08, which is inhabited by 126 people, consisting of 110 men and 16 women. Meanwhile, the RT with the smallest population is RT 07 with a total of 64 people, where 61 men and only 3 women.

This population distribution shows a typical pattern in the lives of coastal communities, where marine-based economic activities require the involvement of men in greater numbers. Meanwhile, women, who are relatively few in number, generally play a role in the domestic sphere and additional economic activities such as processing seafood.

Although there are variations in the number of residents in each RT, overall, RW 08 remains a close-knit community that relies on the sea as its main source of livelihood. This demographic structure also reflects how the social and economic dynamics in Prapag Lor Fishing Village have been going on from generation to generation.

Table 1. Demographics of the Community of RW 08 Prapag Lor Fishing Village

No	RT	Male	Female	Amount
1	RT 01	88	11	99
2	RT 02	84	10	94
3	RT 03	67	15	82
4	RT 04	88	16	104
5	RT 05	88	8	96
6	RT 06	62	16	78
7	RT 07	61	3	64
8	RT 08	110	16	126
Total		648	95	743

Prapag Lor Fisherman's Village in Prapag Lor Village, Losari District, Brebes Regency, Central Java. Housing in this Fisherman's Village is mostly along the riverbank that separates Prapag Kidul Village and Prapag Lor Village. The settlements at the end are partly affected by abrasion due to *torob* sea water. In picture 1. One of the houses of a resident in a fishing village is seen which is threatened by abrasion due to sea water intrusion. The owner, Mr. Warsim, was interviewed on October 5, 2022. He told about the condition of his house which was always inundated by sea water: "In this area, during the rainy season and during high tides, the water enters the house. But what can we do because we only have the land we live on, so we cannot move.

Figure 2. Residential settlement of Fisherman's Village



Many residents are unable to raise the foundations of their houses, so that during the tidal season they sink, when the tidal season comes and if the house is flooded, they evacuate to other people's or relatives' houses that have been raised. Because tidal flooding does not happen every day. While those whose houses are affected by abrasion are only able to dam the sea water and surrender until their houses are truly uninhabitable.

Figure 3. A settlement whose front of the house is always flooded



In addition to the threat of seawater abrasion, the Prapag Lor Fisherman's Village is also often hit by tidal waves which often occur, disrupting the mobility of residents. What is meant by tidal waves is the rise of sea water into residents' settlements, as stated by one of the residents interviewed: "The tidal wave was caused by high tide, experiencing severe tidal waves in November 2021. Because of the tidal wave, the village road was flooded and the height was as high as an adult's knee."

The above expression shows that the severe rob in November 2021. But implicitly the expression represents the residents of the Prapag Lor Losari Fisherman's Village accepting and surrendering to reality. This is in line with what was said by one of the residents: "What else can we do if the tidal flood comes? Just evacuate. When the flood recedes, go home. It's always like this every time a tidal flood occurs."

Figure 4. The tidal water reaches the knees of adults in residential areas



Prapag Lor Fisherman Village tries to raise the foundation of the house and raise the road in front of the residents' houses. Raising the foundation of the house is sometimes not followed by raising the top of the house, as a result when you want to enter the house you have to lower your head, because the entrance is getting lower (See picture 4.5) raising the foundation of the house and raising the road are always racing, so that the tidal water does not re-enter. In the picture, the windows and doors of the house appear to be only a third of their original size, thus causing discomfort in Prapag Lor Fisherman Village.

On the other hand, the sanitation conditions of the community are still of concern, this is evident from the fact that most residents still defecate into the river along the settlement of the Fisherman's Village by making a cubicle or square from bamboo. The cubicle is supported by four poles that are stuck into the river. The poles are made of bamboo or wood. The walls are covered with cubicles or

used plastic and in the middle are given two bamboos or wood like a bridge for a place to defecate. This can be seen in Figure 4. 6. They think that is the most practical way to defecate at a low cost. Such living habits have been going on for a long time, houses are crowded with small alleys just enough for pedestrians and motorbikes. As a result. The residential environment of residents looks less clean. However, residents feel that that is where they live because of the hope of life that is ongoing and is in the Fisherman's Village of Prapag Lor Losari.

Figure 5. Suitable conditions for defecating in the Kampung Nelayan Prapag Lor settlement



The settlement of Prapag Lor Losari Fisherman Village, appears as a densely populated settlement and houses are lined up, there is almost no distance between the residents' houses and the alley. The narrow alley between the residents' houses to connect their houses to the main road in the village with limited land, they also prefer to spend time relaxing on the veranda of their house, so it is a common sight if they often chat with neighbors.

Knowledge of general fishing techniques in Prapag Lor Fisherman Village is passed down from parents and predecessors through empirical experience. The strength of this local knowledge is one of the factors that ensures their survival as fishermen. As told by one of the fishermen, Mr. Kasmin, to the author, he said: *"Bakat bagen see the water santer what belih nganggo rope dibanduli stone in jemplunggan in the sea, talent banyune santer felt the stone kendir talent bagen tenaang stone belih obah"* To find out whether the water is fast flowing or not, use a stone tied to a rope and then thrown into the sea. If the water is fast flowing, the stone will float away, on the other hand, if the water (current) is slow, the stone will remain still (Interview with Mr. Kasmin, September 6, 2022).

Likewise, for the calendar system and direction when going to sea, the fishermen of Prapag Lor village use the constellations that appear alternately throughout the year, namely Lintang Lumbung, Lintang Waluku, Litnang Wuluh, Litnang Gubug, and Lintang Lanjer, as direction indicators. Regarding Lintang Paru as a direction indicator north. However, if sailing at night when the sky is cloudy, determining the direction is done by reading the current direction. When Lintang Wuluh appears, the ocean current moves to the west at night. Meanwhile, when Lintang Waluku appears at night, the current moves from the north at low speed. When Lintang Lanjar appears at night, the current flows rapidly to the east (Interview with Warsono, 2022). Although at this time there are some who already use the Compass.

The traditional knowledge system of Prapag Lor Fisherman Village regarding its environment is quite high, however, because it is not yet equipped with modern knowledge about the outside world, most fishermen are less able to take advantage of the available opportunities compared to the community in general. There is quite a lot of traditional knowledge of Prapag Lor fishermen that is positive and needs to be developed, such as knowledge about the conditions and secrets of nature related to the fishing season, the behavior of marine organisms and various traditional skills.

The Prapag Lor Fishing Village community is familiar with the concept of Perbani, which is a condition of seawater during low tide or mid-tide when the seawater is red and about. At that time it was believed that there were many fish. When the water is in a reddish green color, fishermen believe that there are many large fish roaming around. Conversely, if the water conditions contain many stone-tailed water worms according to the knowledge of the Prapag Lor Fishing Village Community, it is believed that the sea conditions are fishless (Interview with Warsono, 2022).

Another local knowledge possessed by the people of Prapag Lor Fisherman Village is the technique of maintaining *jukung* (boats) by smoking (Contributor, 2019). This process is carried out by burning *nipah* leaves around the body of the *jukung* for a certain period of time. The aim is to protect the *jukung* wood from attacks by sea animals such as mold, which is known as a wood destroyer, and *krikip*, a small sea animal that usually sticks to and damages the surface of the wood.

This knowledge is part of the intellectual heritage of the community which is included in the category of indigenous knowledge. Until now, this knowledge continues to be practiced and maintained. It is fitting that the knowledge system that lives in the community of Prapag Lor Fisherman Village is appreciated, while also opening up space to be combined with modern findings from research institutions and other technological innovations (Gopari, 2022).

Sociologically, the people of Prapag Lor Fisherman Village still hold the belief that the sea has magical powers that must be respected and treated specially. This belief is reflected in various traditional rituals that are still carried out, especially when going to sea (Suci et al., 2023). One tradition still preserved is *suwuk*, the practice of asking a spiritual figure called *kuncen* for protection. In the author's interview with Mr. Catur on September 5, 2022, he said that fishermen usually come to ask for *suwuk* every Friday Kliwon to be given safety and abundant sustenance when fishing in the sea.

Apart from the *suwuk* tradition, the people of Prapag Lor Fishing Village also believe that *jukung* or boats have elements of life like humans (Saputra et al., 2023). Boats considered "sick" must undergo a healing ritual called *rubbing*. This ritual consists of several stages, starting with cleaning the inside of the boat using coconut fiber or sand to remove moss. Next, the boat is washed with rice water that has been soaked with areca nut leaves (areca catechu), cogongrass (*imperata cylindrica*), wood leaves, *gialing* leaves (*vitis trifolia*), and ash from black glutinous rice..

Although this tradition is still practiced, the development of the times has influenced the way people view it. Increased access to education and understanding of religious values have led some residents to see these rituals no longer as spiritual obligations but as part of a cultural heritage maintained for social sustainability. In this context, traditions such as *suwuk* and *rubbing* are better understood as cultural instruments that function to maintain social harmony and strengthen the collective identity of the Prapag Lor Fishermen Village community (Azizah, 2019).

3.4. Religious Understanding of the Prapag Lor Fishing Village Community

The religious understanding of the people of Prapag Lor Fishing Village is shaped by various factors, such as socio-economic background, local traditions, and their social interaction patterns with their surroundings. As a fishing community whose livelihood depends on the weather, seasons, and luck of the sea, they tend to have a strong spiritual awareness of dependence on God. The context of life full of uncertainty then gives rise to more collective, communal, and ritualistic religious practices. Religion in this context is not only seen as a formal belief system, but also as a source of values that regulate social relations and the daily behavior of the community. (Afrilsah, 2024).

In general, the Prapag Lor community tends towards traditional religion. Their religious expressions include various rituals such as *slametan*, communal prayers, the use of amulets or *suwuk*, and belief in the power of ancestors and spirits. This pattern of religious understanding is related to the religious typology of Javanese society as stated by Clifford Geertz, who divides Javanese society into three main variants: *Santri*, *Abangan*, and *Priyayi*. In the context of Prapag Lor, the community is closer to the *Abangan* religious pattern, which is a variant of Islam that is more cultural than normative-doctrinal. This group practices Islam as part of local tradition, not merely as a strict legal system or creed. Their religious practices are often mixed with elements of animism, dynamism, and traces of Hindu-Buddhist culture that are still alive in their daily lives (Geertz, 2017).

Traditions such as *slametan*, rituals to ward off disaster, and the use of offerings and local prayers are an integral part of their belief system. Although different from the southern villages such as Kampung Lumpur which has had an Islamic boarding school since the 19th century, namely the Yanbu'ul Ulum Islamic Boarding School founded by KH Idris bin Ahmad Sholeh around 1874 AD, the Prapag Lor community continues to maintain their spiritual values through local customs and wisdom

(Ahmad, 2018). This shows that the religious life of the fishing community in this region is not entirely free from the influence of Islam, but is more dominant in a syncretic form—combining Islamic elements with local religious heritage. For them, religion is part of the social structure that maintains harmony in the community, not just a formal ritual obligation.

Based on concept (Geertz, 2022) above, then the religious understanding of the Prapag Lor Fishing Village Community is similar to the Abangan religious understanding. Abangan tends to be less strict in carrying out obligatory worship. They may identify themselves as Muslims but emphasize more on aspects of local culture and traditions. The Concept of Abangan in the Context of the Prapag Lor Fishing Village Community, as expressed by one of the religious figures of the Prapag Lor Fishing Village, Mr. Maksud (February 10, 2022) said: "In 1965, the people here were still Abangan, their religion was Hindu, they rarely prayed, they still made offerings when there was a tahlilan. Thank God, I gave a little explanation when I was doing the tahlilan, now it's a little better but it can't change all at once."

Almost all tribes worldwide believe in God and spirits. The beliefs held by God can be in the form of gods in Hinduism, supernatural powers and spirits in pre-Semitic religions, or the Almighty and One God as in Semitic beliefs, such as Judaism, Christianity and Islam. All beliefs about Judaism, Christianity in Allah, and Islam in the oneness of Allah are recognized by God in the Jewish Bible. Just like humans believe in spirits. In pre-Semitic religions, gods, such as those of Greece, Egypt, Persia, and Kaubta. However, since the beginning of the Semitic religion, which was founded by the Prophet Abraham, these spirits were considered as sentan angels and so on.

Including the people of Prapag Lor Fishing Village Understanding about God who is the nature of hali ni Allah, the author found about the understanding of belief in Allah when he wanted to interview Mr. Maksud (February 10, 2022) it happened to be approaching Maghrib and on the edge of his house there was a prayer room, so the author went to the prayer room while waiting for the Maghrib call to prayer to sound. After the Maghrib call to prayer sounded, the author took ablution water and then entered the prayer room and there were many children and worshipers from the prayer room environment. While waiting for the imam to lead the prayer, it is common in the villages for the congregation to chant praises "*Allah wujud, qidam, baqa', mukhalafatu lil hawaditsi, qiyamuhu binafsihi, wahdaniyat, qudrat, irodat, ilmu, hayyat, sama, basar, klam qodiran, mahasiswanya. Aliman hayyansamina, basirnan, mutakalimaman*". In their view, God is described as a substance that exists, previous, eternal, different from the new. He stands alone, one, the creator, the one who determines, lives, hears, sees, speaks, determines, has knowledge, gives life, listens, shows, and speaks. Kamal, Jamal, and Qohar describe Allah as all-perfect, all-beautiful and all-powerful.

According to the understanding of the Prapag Lor Fishing Community, they understand the belief in the existence of spirits as is common in Javanese society, as expressed (Geertz, 2017) There are three main spirits: *Memedi, Lelembut* and *Tuyul*. *Memedi* only disturbs or scares people, but usually does not cause serious damage. Male *memedi* are called Genderuwo and female ones are called *wewe*, they are always seen carrying small children with a scarf around their waist, like human mothers), *Memedi* are usually found at night, especially in dark and quiet places, often they appear in the form of parents or other family members, sometimes even resembling their own children (Watra, 2014).

Unlike *Memedi*, *lemalu* can cause someone to fall ill or go crazy. *Lemalu* enters a person's body and if the person is not treated by a native Javanese shaman, he will die. Western doctors will not be able to do anything about illness or madness caused by *lemalu*; only a shaman can cure it. The shaman can always say which part of the body the *lemalu* entered and can remove it by massaging that area alone. For example, the legs, arms or back. Because *lemalu* is completely invisible, it also does not depict one of the faces of a family member. But they are very dangerous to humans (Simanjuntak, 2013).

The final type of *tuyul* is a child-like spirit that is not human. ia (Hakim et al., 2023). They do not bother, scare people, or make them sick; on the contrary, they are very much liked by humans because they help humans become rich. If people want to relate to them, they must fast and meditate. Not long after that people will be able to see and then can employ them for their own interests. If people want to be rich, they just employ them to make money. They can disappear and travel in the blink of an eye so they will not have difficulty in finding money for their masters. The model of belief among the abangan

in Mojokuto towards spirits as above. The author also found in the Prapag Lor Fisherman's Village that they have a clear understanding of God and spirits. This is as expressed by Mr. Maksud in an interview with the Author (February 10, 2022) when explaining about spirits:

Makhluk halus niku antawisipun: Malaikat, Jin sutowo setan dan malaikat punika dipun damel saking cahya. Jin lan setan didamel saking geni. Malaikat ingkang wajib dipun ngertosi dening tiang Islam inggih punika entoen sedoso: Malaikat Jibril, Malaikat Mikail, Malaikat Israfil, Malaikat Izrail, Malaikat Munkar, Malaikat Nakir, Malaikat Raqib lan Malaikat Atid. Nek Jin niku didamel saking geni gadah kewajiban kados menungso maksudipun nggih kedah nyembah dating Gusti Allah, Setan puniko tugase mung nggoda dateng manungso supaya ingkar kalih Gusti Allah. Teng mrki nggih sami pearcanten saliane nopo ingkang dipun jelaskanen ngig peniko percanen enten jenis makhluk halus sanese, kados dene Duyul. Pernah enten kejadian pinten-pinten warga kilangan arto puniko sampe geger tureen sing nyolong niku Tuyul (bangsa lembut).

(These spirits include: Angels, Jinns or Satan. Angels are created from light. Jinn and Satan are created from Fire. The angels that Muslims must know are ten Angels Gabriel, Angel Mikail, Angel Israfil, Angel Izrail, Angel Munkar, Angel Nakir, Angel Raqib and Angel Atid. Jinns are created from Fire and have obligations like humans, namely to worship Allah. Satan's job is only to tempt humans to deny Allah. Here, they also believe in other than what is mentioned above, they believe in other spirits such as Tuyul. There was once an incident where several residents lost money until it was widely said that the person who stole the money was Tuyul (a spirit).

Prapag Lor Fishermen Community, in addition to understanding the belief in the existence of spirits as described above, also believes in sacred places. Based on the author's research, the sacred place in question belongs to Ki Buyut Suranenggala, local people usually only call him Ki Buyut. This place is located in the middle of a residential area on the edge of the river that separates Prapag Lor Village and Prapag Kidul. This sacred place is the tomb of the founder of Prapag Lor Village. Based on Ki Maksud's statement, Ki Suranenggala was once one of the army commanders who accompanied Prince Angka Wijaya when he converted Losari to Islam. then to the north, namely to Prapag Lor Village. The sacred tomb of Ki Buyut Suranenggala is believed to bring blessings by the surrounding community and even people from outside the area who have wishes or desires usually do tawasul for what they want to come true.

Many people from outside the area come with the aim of having their wishes granted. Ki Maksud selu kuncen said that at that time there was a contest for the election of village heads in the Cirebon Regency area, indeed the author himself witnessed what was shown by K Maksud at that time there were two photos of candidates for Village Head who asked for help from Ki Maksud to perform asceticism through his sacredness Ki Buyut Sura Nenggala. He said that his asceticism was by fasting for three days where the photos of the candidates for village head were read certain prayers in the tomb by Kuncen so that what was intended would be granted. In addition, he also said that when Ganjar Pranowo wanted to run for Governor for the second period, he made a pilgrimage to the Tomb of Sunan Gunung Djati Cirebon but based on his story when he got to the tomb of Sunan Gunung Djati he had to go to the Tomb of Ki Buyut Suran Negaal. Because to be able to visit Sunan Gunung Djati, he had to first visit Ki Buyut Sura Nenggal.

In addition, there are mystical stories that say there was an incident when the tomb of Ki Buyut Sura Nenggala, whose walls were made of woven bamboo and whose roof was made of thatch, was about to be repaired, suddenly a strong wind came and the roof was carried away to the road. This is based on the story of K Maksud, a sign because his tomb did not want to be built permanently with a tiled roof or walls made entirely of brick. In addition, if there was a disaster or special incident, Ki Buyut Sura Nenggala would come to deliver the news to him by riding a horse and wearing an all-white robe (Interview with Ki Maksud, 2025). So according to the beliefs of the Prapag Lor Fishing Village community, Ki Buyut Sura Nenggala always provides protection to his community.

Figure 5. The Sacred Tomb of Ki Buyut Sura Nenggala



The religious understanding of the Abangan group emphasizes more on social values and togetherness than on formal worship obligations such as praying five times a day or fasting. They prioritize harmony in the community and practice religion in a flexible and more custom-based way, not strict in formal worship.

The pillars of faith and the pillars of Islam are the most important religious components of Islam that regulate the lives and actions of its adherents. One of the pillars of faith is faith in Allah, the Almighty God, faith in angels and their books, faith in the Messenger and His messengers, faith in qada and qadar, and faith in the Day of Judgment. The pillars of Islam are: 1. Swearing that there is no god but Allah, and Muhammad is the Messenger of Allah, 2. Praying five times a day, 3. Paying zakat, and 4. Visiting Mecca if able (Sobary, 2007). In the daily life of the Fishermen's Community, the pillars of faith and Islamic law are understood. This understanding comes from the holy book of Islam, the Quran, and the Hadith.

The people of Prapag Lor Fisherman Village understand the importance of the Quran by showing that almost every house has the Quran as a holy book and source of teachings. This is, as explained by H. Tarmidi, a religious figure and also the head of RW 03. Delivering: "The residents of the Prapag Lor Fishermen's Community, God willing, will have an Al-Quran every day. The Al-Quran is usually read at least once a week, especially the Yasin letter on Friday night." (Interview with the author, December 3, 2020).

Understanding the importance of the Quran for people in Prapag Lor Fisherman Village is almost the same as having to know about the Quran because Islam is spread throughout the world. If they want to learn Islam, they only need to learn the Quran by studying Arabic because they do not understand the extensive Islamic education system. Sobari also said the facts in the study in Suralaya because they do not understand the Islamic education system. Therefore, more and more people are learning Arabic. It turns out that it is not the same as the facts of the Prapag Lor Fisherman Village community; the main cause is limited access to education, including no suggestions specified to teach parents to read the Quran. If parents can read the Quran, they will not understand it (Sobary, 2017). Prapag Lor Community's Understanding of the Ramadan Fast as explained by Ki Faqihudin to the Author (March 6, 2022).

Masyarakat mriki nek bulan Puasa Ramadhan nggih sami ngalaksanakeun puasa sebab puasan niku bagian rukun Islam ingkang wajib dipun laksanakan dengan umat Islam. Biasane nek awal puasa nggi sami dugi magri tapi mungkin teng pertengahan kadah ingkang mboten nglaksanaaknene alseane ngorong kalih kempong wetenge. (The people here during the fasting month of Ramadhan fast because fasting is part of the pillars of Islam that must be carried out by Muslims. Usually at the beginning of fasting it is done until Maghrib but when it enters the middle of the fasting month many do not do it because they are thirsty and hungry).

In general, people in Prapag Lor Fisherman Village consider fasting as a duty that must be done during the month of Ramadan. The people of Prapag Lor Fisherman Village are not the only ones who think that they must fast during the month of Ramadan. However, all Muslims know that the government announces the beginning of the fasting month of Ramadan through official institutions. In

addition, knowledge of obligatory fasting in the month of Ramadan is not necessary for pregnant women, elderly travelers, or workers who have too much workload. In everyday life, the use of the hijab as women's clothing is one of the signs that is often used by the Muslim community. Wearing the hijab for mothers in the Prapag Lor Fisherman Village Community is done at official events such as pengajian or sinoman⁸ in sinoman activities usually only some wear the hijab. In daily activities at home, such as receiving guests, mothers do not always wear the hijab. Instead, they often wear a scarf draped over the head. This can be seen from the following photo:

Figure 6. Mothers are having Sinoman



The *Sinoman* tradition is one real form of social solidarity that is still alive and maintained by the people of Prapag Lor Fisherman Village. This term refers to the practice of mutual cooperation carried out by mothers or women in the village environment when a neighbor is holding a celebration, such as a wedding or circumcision. Their role is not just as invited guests, but they are actively involved in various preparations, from cutting cooking ingredients, cooking, to making cakes and food for the event (Rahman et al., 2024).

This activity is done voluntarily without expecting anything in return, as a form of concern, togetherness, and respect for family values in the community. In one of the field documents, two mothers are seen performing sinoman at the house of a resident who is going to hold a celebration, which reflects the strong spirit of collective participation and cooperation in this coastal community. Traditions such as sinoman not only strengthen relationships between residents, but also become part of the local cultural identity that continues to be maintained until now (Aswin et al., 2024).

This activity occurs every day when the fathers earn money. After finishing, the mothers continue to chat while waiting for their children to come home from school or their husbands to go to sea for fishermen. This activity usually starts at 10:00 am and ends at 16:00 pm. There are no other events or entertainment for the mothers other than meeting with neighbors. they assume that not wearing a headscarf or hijab in such a situation means that they are outside the house. This is as expressed by K Maksud's wife to the researcher: "*Kangge tiang istri khusus ibu-bu nek ngage jilbab paling nggih nek badhe acara resmi pengaosan kadosdene acara muludan rajaban atanapi lintune nek tenggria nggih mboten ngangge jilbab*" (for women, especially mothers, wearing the hijab is most when there are official religious activities such as: Mauludan, Rajaban or others, if at home they do not wear the hijab. (Interview September 8, 2020).

In contrast to the Santri group who adhere to Islamic rules such as prayer, fasting and zakat, the group If we look at the religious understanding of the people of Prapag Lor Fishing Village, several aspects show similarities with the Abangan group in theory (Geertz, 2014), for example: Rituals before going to sea. Although carried out in the form of Islamic prayers, many fishermen also believe in natural signs or certain blessings, which reflect elements of local mysticism.

Belief in the blessings of certain places For example, there is a belief that certain places bring good luck or that ancestral spirits can provide protection at sea. Religion as part of social tradition Mutual cooperation in religious events and rituals such as the commemoration of the Prophet's Birthday is emphasized more as a cultural tradition and social togetherness rather than as a formal religious obligation.

However, with the development of technology and the flow of information, their religious

understanding has also changed. The younger generation gets more religious information from social media, which, in some cases, can shift them away from the Abangan religious model toward a direction closer to Santri or even toward a new, more individualistic form of religion.

4. Conclusion

This study demonstrates that the religious life of the Prapag Lor Fisherman Village community is the result of a dialectic among socio-economic conditions, local cultural heritage, and historically developed religious understanding. In a situation of limited economic and educational access, the community continues to express their religiosity through ritual practices that are collective, symbolic, and sometimes syncretic. Traditions such as suwuk, slametan, kenduren, grave pilgrimage, and beliefs in sacred places and spirits, show that their religiosity cannot be separated from the framework of Javanese culture, especially the Abangan religious pattern in Geertz's typology.

However, there is a tendency toward change as younger generations become better educated and have greater access to information. This shift creates a new dynamic in the religious life of the community that is starting to move towards a more personal, scriptural, and formal norm-oriented form of religiosity in Islam. Therefore, the main contribution of this study is to show that the religiosity of poor coastal communities is not a form of religious decadence, but rather a creative adaptation to complex social realities. This finding provides new space in the study of the sociology of religion, especially in understanding the religious expressions of marginalized communities in Indonesia that are full of symbols, values, and collective solidarity.

References

- Abdullah, T. (1986). *Agama, Etos Kerja dan Perkembangan Ekonomi*. LP3ES.
- Afrilsah, M. (2024). Investigating the role of religion in shaping moral values and social norms. *Mahogany Journal De Social*, 1(1), 29–36.
- Ahmad, F. (2018). *Jejak Sejarah Awal Penyebaran Islam di Brebes*. NU Online.
- Apisah, M. (2008). *Hubungan Antara Status Pekerjaan Ibu dan Tingkat Kemandirian Anak Usia Prasekolah di Desa Prapag Lor Kecamatan Losari Kabupaten Brebes*. Skripsi. Semarang: Fakultas Ilmu Keperawatan dan Kesehatan Universitas
- Apisah, M. (2009). *Hubungan Antara Pekerjaan Ibu dan Tingkat Kemandirian Anak Usia Prasekolah di Desa Prapag Lor Kecamatan Losari Kabupaten Brebes*. Diperoleh dari: <http://digilib.unimus.ac.id/gdl.php>.
- Aswin, R. N., Astutik, D., & Trinugraha, Y. H. (2024). Tradisi Sinoman Masyarakat Desa Ngampel Dalam Perspektif Tindakan Sosial Max Weber. *Jurnal Niara*, 17(2), 459–467.
- Azizah, R. N. (2019). Analisis pengambilan keputusan perempuan Pesisir menjadi buruh migran di Desa Prapag Lor. *Empower: Jurnal Pengembangan Masyarakat Islam*, 4(2), 241–258.
- Basole, A., & Ramnarain, S. (2016). Qualitative and ethnographic methods in economics. *Handbook of Research Methods and Applications in Heterodox Economics*, 135.
- Beals, R. L. (1961). *Five Families: Mexican Case Studies in the Culture of Poverty*. Duke University Press.
- Beatty, A., & Saefuddin, A. F. (2001). *Variasi Agama Di Jawa: Suatu Pendekatan Antropologi*. Murai Kencana (Division Rajagrafindo Persada).
- Contributor. (2019). *Prapag Lor, Losari, Brebes*. Wikipedia. https://id.wikipedia.org/wiki/Prapag_Lor%2C_Losari%2C_Brebes?utm_source=chatgpt.com
- Delgado-Ramírez, C. E., Ota, Y., & Cisneros-Montemayor, A. M. (2023). Fishing as a livelihood, a way of life, or just a job: considering the complexity of “fishing communities” in research and policy. *Reviews in Fish Biology and Fisheries*, 33(1), 265–280.

- Durkheim, E. (2016). The elementary forms of religious life. In *Social theory re-wired* (pp. 52–67). Routledge.
- Elsayed, W. (2024). Building a better society: The Vital role of Family's social values in creating a culture of giving in young Children's minds. *Heliyon*, 10(7).
- Geertz, C. (2014). *Agama Jawa, Abangan, Santri, Priyayi dalam Kebudayaan Jawa* (A. Mahasin & B. Rasuanto (trans.)). Komunitas Bambu.
- Geertz, C. (2017). *Agama Jawa: Abangan, Santri, Priyayi Dalam Kebudayaan Jawa*. Komunitas Bambu.
- Geertz, C. (2022). The Impact of the Concept of Culture on the Concept of Man. In *Man in adaptation* (pp. 19–32). Routledge.
- Gopari, F. (2022). Pemahaman Keagamaan Pada Kelompok Masyarakat Pesisir Prapag Lor Brebes [FAKULTAS ILMU TARBIYAH DAN KEGURUAN]. In *Braz Dent J.* (Vol. 33, Issue 1). https://eprints.walisongo.ac.id/id/eprint/18376/1/Tesis_1903018113_Fikri_Gopari.pdf?utm_source=chatgpt.com
- Hakim, T., Kurniawan, A., & Hapsari, W. W. (2023). Pengenalan Jenis Makhluk Halus Dalam Tradisi Sunda Melalui Buku Ilustrasi. *FAD*, 2(1), 1–14.
- Hasib, M. (2023). The Role of Rituals in Different Religious Traditions: A Research Review. *Al Haqeeqah*, 3(2), 15–24.
- Hermawan, U., & Rahman, M. T. (2024). D Dialog Agama Perspektif U. *Integritas Terbuka: Peace and Interfaith Studies*, 3(1), 31–42.
- Linton, R. (1984). *Antropologi: Suatu Penyelidikan Tentang Manusia*. CV Cemaress.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2019). *Qualitative Data Analysis: A Methods Sourcebook*. Sage Publications.
- Poniasih, A. (2025). Risk Factors for Obesity: A Systematic Review. *Epidemiology and Society Health Review (ESHR)*, 7(1), 1–11.
- Punch, K. F. (2008). Quantitative and qualitative approaches. *The Sociology of Healthcare: A Reader for Health Professionals*, 51.
- Putri, D., Rahma, F., & Kinseng, R. A. (2024). Social Structure Analysis in Management of South Sumatra Inland Waters. *Scientific Journal of Fisheries & Marine/Jurnal Ilmiah Perikanan Dan Kelautan*, 16(1).
- Rahman, S. A., Jamalie, Z., & Noor, A. (2024). Nilai Pendidikan Islam dalam Tradisi Sinoman Hadrah di Kecamatan Haur Gading Kabupaten Hulu Sungai Utara. *INTEGRASI: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, 2(01), 1–16.
- Rothschild, L. J., Aversch, N. J. H., Strychalski, E. A., Moser, F., Glass, J. I., Cruz Perez, R., Yekinni, I. O., Rothschild-Mancinelli, B., Roberts Kingman, G. A., & Wu, F. (2024). Building synthetic cells— from the technology infrastructure to cellular entities. *ACS Synthetic Biology*, 13(4), 974–997.
- Saputra, I. H., Wulandari, A. S., & Mas, A. R. (2023). Edukasi Warga Masyarakat Desa Prapag Lor Tentang Optimalisasi Pengelolaan Bank Sampah Sido Maju. *Jurnal Gerakan Mengabdi Untuk Negeri*, 1(2), 52–57.
- Satria, A. (2015). *Pengantar Sosiologi Masyarakat Pesisir*. Yayasan Pustaka Obor Indonesia.
- Simanjuntak, J. (2013). *Konseling gangguan jiwa & okultisme*. Gramedia Pustaka Utama.
- Sobary, M. (2007). *Kesalehan Sosial*. Lkis Pelangi Aksara.
- Sobary, M. (2017). *Kesalehan Sosial*. LKiS Pelangi Aksara.

- Suci, N. A., Apriliano, D. D., Latief, A., & Khamid, A. (2023). Analisis Kerusakan Perkerasan Jalan dengan Metode Pavement Condition Index (PCI) Ruas Jalan Losari, Prapag Lor, Kabupaten Brebes. *Era Sains: Jurnal Penelitian Sains, Keteknikn Dan Informatika*, 1(3), 1–16.
- Thohir, A., Mulyana, M., & Hermawan, U. (2024). *Kyai dan pendidikan kewirausahaan: Membangun ekonomi masyarakat perkotaan*. Gunung Djati Publishing.
- Turner, B. S. (2010). Religion in a Post-secular Society. *The New Blackwell Companion to the Sociology of Religion*, 649–667.
- Turner, B. S. (2016). The New Blackwell Companion to the Sociology of Religion. In B. S. Turner (Ed.), *The New Blackwell Companion to the Sociology of Religion* (pp. 81–93). John Wiley & Sons.
- Veeger, K. J. (1993). Realitas Sosial: Refleksi Filsafat Sosial Atas Hubungan Individu-Masyarakat. In *Cakrawala Sejarah Sosiologi* (p. 159). PT Gramedia Pustaka Utama.
- Watra, I. W. (2014). *Perjanjian dengan makhluk halus*.



© 2026 by the author. Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY SA) license (<https://creativecommons.org/licenses/by-sa/3.0/>).