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Community Knowledge About the Conservation of Kaboa Plants (*Aegiceras corniculatum*) at Sancang Beach, Garut Regency

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ABSTRACT

The Leuweung Sancang Nature Reserve has a unique type of mangrove known as Kaboa (*Aegiceras corniculatum*). Kaboa is known as an endemic plant in the Sancang Beach area because of the myths and legends it has. The proof is that currently, the number of kaboa presence on Sancang Beach has begun to decrease. The cause of the decline in kaboa is closely related to the level of conservation knowledge possessed by the community. Research on the level of public knowledge regarding the conservation of the kaboa plant needs to be carried out. This research uses a descriptive quantitative method. The research was conducted in four villages namely Sancang Village, Sagara Village, Karyamukti Village, and Karyasari Village. The research instrument used a questionnaire with a Thurstone Scale score given to 100 respondents from the four selected villages using a purposive sampling technique. The results showed that 65% of the people had good knowledge, 28% of the people had sufficient knowledge, and 7% of the people had less knowledge about the conservation of the kaboa plant. The level of public knowledge on each indicator of use, maintenance, and supervision is in a good category. Most people already have good knowledge about the conservation of kaboa plants. However, there needs to be other efforts made by related parties including the government in it to increase public knowledge.

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Introduction

The Sancang Beach area is located in the Leuweung Sancang Nature Reserve area. At Sancang Beach, mangrove forests can be found along the southern coast of the Leuweung Sancang Nature Reserve. It is known that there is a unique type of mangrove in Sancang Beach known as kaboa (*Aegiceras corniculatum*). This type of mangrove with the scientific name *Aegiceras corniculatum* is a type of mangrove that can be found on some coasts in the Indo-

Australian region including India, South China, Sri Lanka, Bangladesh, Vietnam, Indonesia, Malaysia, Papua New Guinea, Solomon Islands and Australia¹. Usually these plants can be found in the middle of the ocean at a distance of about 500 m from the shoreline, live inundated by seawater and gather like bamboo. According to a growing belief in the community, the kaboa tree on Sancang Beach is a tree left by Prabu Siliwangi. There is a belief in the community that the tiger incarnated by Prabu Siliwangi can be seen through the medium of kaboa wood. So that the wood of the kaboa tree is believed by the community to have the power to protect its owner from various kinds of disturbances and increase authority. However, currently it is known that the number of kaboa trees has decreased due to land grabbing and illegal logging since the reform in 1998².

In terms of its usefulness, mangrove forests have several important functions, namely physical functions, ecological functions, and economic functions. Physically, mangrove forests function as abrasion prevention, shoreline stability guards, sediment collectors, waste and litter processing, absorbing carbon dioxide (CO₂), and generating oxygen (O₂) and preventing tsunamis³. Ecologically, the function of mangrove forests is not only to act as a habitat and nutrient supplier for several organisms in the waters, but also to function as a spawning ground, nursery grounds, and feeding ground for several types of biota who live in the sea⁴. As for economically, mangrove forests function as a producer of wood in the form of building materials and crafts, medicines, food sources, aquaculture areas, as well as tourist attractions⁵. If there is damage to the mangroves it will eliminate these functions and will harm environmental sustainability. So is the case with the mangrove forest at Sancang Beach, where functionally it has decreased, one of the causes is due to human disturbance.

Based on the results of initial interviews that were conducted with several communities in the villages around the Leuweung Sancang Nature Reserve, information was obtained that the Sancang area which had been opened as a spiritual cultures tourism site had had a good impact on the economy of the surrounding community. Some people also know that the kaboa plant is located on Sancang Beach and can be found in the Cibako area.

Conservation in practice cannot be separated from the indigenous knowledge system of indigenous people in an area, because based on this knowledge the community can practice conservation efforts in their area⁶. Joshi *et al.* explained that local knowledge and local wisdom are two things that cannot be separated because knowledge is the basis of local wisdom owned by the community⁷. Knowledge influences community participation in conservation activities⁸. In addition, there has been no research on public knowledge about mangrove conservation in Sancang Beach. So this study aims to find out how the knowledge of the people who live in villages around the Leuweung Sancang Nature Reserve regarding the conservation of kaboa plants as an effort to maintain mangrove biodiversity in the area.

Method

This research uses a descriptive quantitative method. This research was conducted in March 2022. This research was carried out in four villages close to the Leuweung Sancang Nature Reserve area, namely Sancang Village, Sagara Village, Karyamukti Village, and Karyasari Village. For more details, the research locations can be seen in Figure 1.

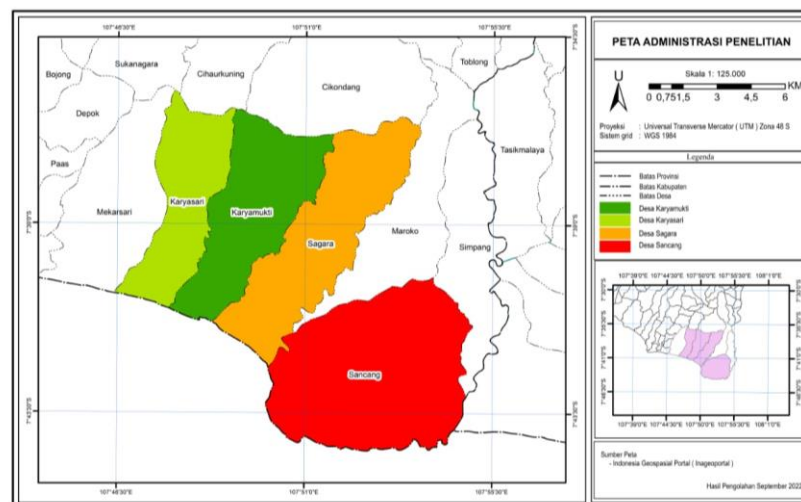


Figure 1. Research Locations

Data collection technique

The population in this study were people living in four villages close to the Leuweung Sancang Nature Reserve area, namely Sancang Village, Sagara Village, Karyamukti Village, and Karyasari Village. The sample in this study was selected using a purposive sampling technique. The sample used was 100 respondents from the four villages that were randomly selected with the respondent criteria, namely people aged 17-60 years and over with the consideration that 17 years of age is considered legally mature and respondents can understand more about the contents of the questionnaire given. The determination of the sample is based on the opinion expressed by Roscoe which states that a sample size of more than 30 and less than 500 is appropriate for most studies⁹.

The research instrument used a non-test technique in the form of a questionnaire consisting of 30 statements to determine public knowledge by scoring the Thurstone Scale, this scale is identical to involving expert judgment to assess each statement item, this scale is known to be simpler because there are only two alternative answers¹⁰. The instruments used to determine community knowledge used three indicators, namely indicators of utilization, maintenance, and supervision, the three indicators included knowledge indicators with high category values¹¹. Before the questionnaires were given to the respondents, they were tested for validity by expert judgment.

Data Analysis

The data that has been obtained was analyzed quantitatively. The analysis prerequisite test used is the normality test and linearity test. After the questionnaire filling data was obtained, the data was processed using the Microsoft Excel application and analyzed using the SPSS 26.0 application. To find out the data on public knowledge about the kaboa plant, several steps are used to convert the score obtained into a value using the following equation I¹².

$$N = \frac{Sp}{Sm} \times 100 \quad (I)$$

Information:

N = Knowledge value

Sp = The average score obtained

Sm = Maximum score

The results of measuring the level of knowledge are categorized into 3 criteria of knowledge which can be observed in Table 1¹³.

Table 1. Knowledge Criteria

Score	Category
75-100%	Good
56-74%	Enough
<55%	Not enough

Results and Discussion

Kaboa plant on Sancang Beach

Based on observations, the Cibako estuary area is known as one of the Sancang Beach areas where the kaboa plant lives. Mangrove zoning in the Cibako estuary area is included in the lanward zone, where the landward zone is narrow because it is close to rain forest and adjacent to land overgrown with grass. Line research conducted by Zhang *et al.* suggested that the seaward and landward zones were dominated by *Aegiceras corniculatum* and *Kandelia obovate* mangroves¹⁴.

Kaboa plants can be found growing in groups at the mouth of the Cibako river which is a brackish water area with normal high tides. This plant belongs to the habitus shrubs or small trees, the shape is upright like a pillar with a height of ± 6 meters¹. For more details, the kaboa plants in Sancang Beach can be seen in Figure 2.



Figure 2. Kaboa plant (*Aegiceras corniculatum*) at Sancang Beach

Community Knowledge About the Legend of the Kaboa Plant

The existence of the kaboa plant on Sancang Beach makes it an endemic plant in the area. Besides having an important function for the coastal ecosystem, the kaboa plant on Sancang Beach has a strong historical value with the legend of Prabu Siliwangi. Rosyadi stated that according to legend the kaboa plant is a plant left by Prabu Siliwangi whose stems are inscribed with the sentence "kaboa panggih, kaboa moal, tapak tracakku anak incu" where the sentence is said to be Prabu Siliwangi's last message before disappearing with his soldiers².

Based on the results of observations, information was obtained from the community regarding the legend of the kaboa tree. Where several legends have developed in society to date regarding the existence of the kaboa plant on Sancang Beach. According to several stories that developed in the community, before there were no trees on the beach, but after Prabu Siliwangi arrived, Grandmother Syekh Haji made an artificial forest for Prabu Siliwangi and his soldiers to escape from Prabu Kian Santang's pursuit. According to another legend that developed in the community, the name kaboa was given by a fisherman named Aki Jongrang who saw the

strange presence of a tree on the beach, so it was called kaboa which comes from the word 'boa-boa' (approximately).

Another legend that has developed in the community is that the kaboa tree itself is the incarnation of Prabu Siliwangi and his soldiers. It is said that when Prabu Kian Santang asked about the whereabouts of Prabu Siliwangi, his soldiers only shook their heads, then Prabu Kian Santang's eyes were fixed on a straight tree like a stick sticking into the beach and he thought that the stick was Prabu Siliwangi. Based on this prejudice, Prabu Kian Santang said that whoever followed him would become a human, but if the soldiers followed his father Prabu Siliwangi then they would all become trees. Because the soldiers loyally followed Prabu Siliwangi, they all became a tree which is now known as the kaboa tree.

In addition, there is trust in the community in the existence of the Sancang tiger, which is considered the incarnation of Prabu Siliwangi, which can be seen through the medium of kaboa wood. Some people believe that the kaboa tree is a tree containing the supernatural khodam from the tiger Prabu Siliwangi and his soldiers who disappeared in the Sancang forest. The wood of the kaboa tree is believed to have the power to protect its owner from physical and mental disturbances and increase the authority of the owner. The legend of the kaboa tree and Prabu Siliwangi in Sancang brings opportunities for the economy of the surrounding community.

With the development of these legends, the kaboa plant is a characteristic and uniqueness of the Sancang area. According to the belief that developed there, if a kaboa tree is cut down without permission from the "elders" there, then anyone who tries to take the tree will be faced directly with "Maung Lodaya"¹⁵.

Community Knowledge About Kaboa Plant Conservation

Based on the results of filling out a questionnaire to 100 respondents to find out the level of public knowledge about the kaboa plant, it was found that 65 people had good knowledge about the kaboa plant, 28 people who had sufficient knowledge about the kaboa plant, and 7 people who had insufficient knowledge about the kaboa plant. Lack of knowledge about kaboa plants, namely as many as 7 people. For more details, the distribution of public knowledge about kaboa plants can be seen in Table 2.

Table 2. Distribution of Community Knowledge About the Kaboa Plant

Category	Frequency (n)	Percentage (%)
Knowledge level		
Good	65	65
Enough	28	28
Not enough	7	7

Based on the results of observations regarding public knowledge about the use of the kaboa plant, it was obtained that 74.4% of the community knew the benefits of the presence of the kaboa plant in Sancang Beach. Although some people do not know about the function of the existence of mangrove forests which can absorb carbon emissions and can increase fishermen's income. But most people already know the benefits of the existence of the kaboa mangrove forest which functions as a place to live for various types of marine life, maintains shoreline stability, breaks waves, and prevents tsunamis from occurring. Most people also believe that the kaboa tree has benefits for those who use it as a talisman.

The existence of this belief makes the community benefit from the existence of the kaboa plant. Some people are known to process kaboa tree wood to make handicrafts and then the results are traded to pilgrims who visit Sancang. Because the Sancang forest and beach area itself is a spiritual cultures tourism area, this makes the potential for exploiting kaboa trees for economic purposes a promising opportunity for some of the people there. This is in line with

the results of research conducted by Rosmiati *et al.* which shows the results of mangrove utilization with the highest value obtained on the tourism area indicator¹⁶. However, if this utilization is allowed to continue without any effort to maintain the existence of the kaboa tree to continue to live in its habitat, of course this will harm environmental sustainability. In line with the opinion of Marhawati *et al.* the existence of unsustainable utilization in the mangrove ecosystem area can be a threat to damage to the mangrove ecosystem¹⁷.

Furthermore, the community's knowledge regarding the maintenance of the Kaboa plant obtained results of 79.1% of the community knowing the maintenance of the Kaboa plant at Sancang Beach. The community knows that the kaboa plant is a protected species and must be preserved, if taken continuously it can harm the surrounding environment. Most people also know about the maintenance of the kaboa plant which has special conditions for its place of life so that it can grow properly. However, the community does not yet know that the Kaboa plant can be propagated and replanted through the seedling method. The lack of maintenance of the kaboa mangrove ecosystem occurs because people still believe that kaboa plants cannot be planted anywhere other than in the Cibako area. After all these plants will die if the planting medium is not suitable. This is in line with the results of research conducted by Makaruku & Aliman where the low percentage of mangrove life can be influenced by several factors, namely the absence of further maintenance activities for the mangrove ecosystem so that the success rate of mangrove plants live is low, and the lack of socialization regarding planting/rehabilitation techniques so that knowledge the community regarding how to plant mangroves is still lacking¹⁸.

While community's knowledge regarding the supervision of the kaboa plant obtained results of 78.95% of the community knowing the supervision of the kaboa plant in Sancang Beach. The community knows that there are rules that are applied to enter the area where the kaboa plant lives, and the community is also aware of the existence of supervision of the kaboa plant. However, some people still do not realize that the number of kaboa plants on Sancang Beach is decreasing. According to Anwar & Farhaby, improving the monitoring aspect of mangrove forests, requires involvement between the government and the people who live around the coast where mangroves grow¹⁹. This is in line with the results of research conducted by Bahari which showed an increase in the area of mangroves in the coastal area of Lamongan and community obedience due to supervision by the relevant agencies to oversee mangrove forests²⁰.

Ignorance of the community regarding the decline of the kaboa plant on Sancang Beach can lead to low conservation being carried out, so the community will have low participation in protecting this species. In line with the research results of Ardiyaningrum *et al.* which shows that respondents who have less knowledge of land conservation by 87.9% have an impact on attitudes that are not good towards land conservation by 59.6%²¹. The level of public knowledge about the kaboa plant which is classified as good will certainly have a good impact on the conservation efforts being carried out, so efforts are needed to increase public knowledge about the conservation of the kaboa plant. Efforts that can be made are by utilizing information media to spread the message of conservation of the kaboa plant, and providing environmental education to the public which can add insight into conservation. In addition, the values of local wisdom that exist in the local community are important to maintain and care for so that the community has the responsibility to protect and preserve their natural environment and respect the rights of nature itself.

Conclusion

Based on the results and discussion that has been presented, it can be concluded that the level of knowledge of the local community living in the villages around the Leuweung Sancang Nature Reserve, namely Sancang Village, Sagara Village, Karyamukti Village, and Karyasari

Village as many as 65 people have good knowledge, 28 people have sufficient knowledge and 7 people have less knowledge about kaboa plant conservation. The level of public knowledge on each indicator of utilization, maintenance, and supervision is in a good category. Some people already have good knowledge about the conservation of kaboa plants. However, other efforts need to be made to increase public knowledge.

There needs to be a collaborative effort from various parties and layers of society to protect the kaboa plant. Local communities and the government need to work together to make rules for the protection of the kaboa plant. This can be done by holding counseling and discussion activities so that all parties, be it the community, the government, or nature are not harmed. In addition, efforts to monitor and maintain the protection of kaboa plants need to be increased. The use of the kaboa plant must be balanced by replanting the plant by the community so that the quantity and quality are not reduced.

References

1. Noor, R. Y., Khazali, M. & Suryadiputra, I. N. *Panduan Pengenalan Mangrove di Indonesia Part-1*. (Bogor: PHKA/WI-IP, 2006).
2. Rosyadi. Legenda-legenda Keramat di Kawasan Sancang Kabupaten Garut (Studi tentang Kearifan Lokal). *Patanjala* **5**, (2013).
3. Rahim, S. & Baderan, D. W. *Hutan Mangrove Dan Pemanfaatannya*. (Deepublish, 2017).
4. Zainuri, A. M., Takwanto, A. & Syarifuddin, A. Konservasi Ekologi Hutan Mangrove Di Kecamatan Mayangan Kota Probolinggo. *Jurnal Kehutanan* **14**, 1–7 (2017). <https://doi.org/10.22219/dedikasi.v14i0.4292>.
5. Rijal, S., Zainal, F. A. & Badollahi, M. Z. Potensi Hutan Mangrove Sebagai Daya Tarik Wisata. *PUSAKA (Journal of Tourism, Hospitality, Travel and Business Event)* **2**, 153–159 (2020). DOI: 10.33649/pusaka.v2i2.59.
6. Helida, A. Integrasi Etnobiologi dan Konservasi. *Publikasi Penelitian Terapan dan Kebijakan* **4**, 18–25 (2021). <https://doi.org/10.46774/pptk.v4i1.335>.
7. Perdanaputra, F. Pengaruh Pengetahuan Lokal terhadap Status Ketahanan Pangan. *Dep. Sains Komun. dan Pengembangan Masyarakat* (2017).
8. Kurniarum, M., Prihanta, W. & Wahyuni, S. Pengetahuan Dan Sikap Masyarakat Terhadap Konservasi Penyu Dan Ekowisata Di Desa Hadiwarno Kabupaten Pacitan Sebagai Sumber Belajar Biologi. *Jurnal Pendidikan Biologi Indonesia* **1**, 124–137 (2015). <https://ejournal.umm.ac.id/index.php/jpbi/article/download/3321/3928>.
9. Sugiyono. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. (Alfabeta, 2017).
10. Pratama, D. Pengembangan Skala Thurstone Metode Equal Appearing Interval untuk Mengukur Sikap Moderasi Beragama Siswa Sekolah Menengah Atas. *Jurnal Psikologi Teori dan Terapan* **11**, 71 (2020). DOI: 10.26740/jppt.v11n1.p71-82.
11. Rosemery, S. & Wouthuyzen, M. Hubungan antara Pengetahuan tentang Lingkungan Hidup dengan Partisipasi Masyarakat terhadap Konservasi Ekosistem Pesisir di Pulau Pari, Kepulauan Seribu, DKI Jakarta Terumbu Karang Indonesia dalam kurun Kepulauan Seribu mempunyai potensi. *Jurnal Parameter* **31**, 70–80 (2019). doi.org/10.21009/parameter.312.01.
12. Arikunto, S. *Dasar-dasar Evaluasi Pendidikan*. (Bumi Aksara, 2009).
13. Arikunto, S. *Prosedur Penelitian Suatu Pendekatan Praktik*. (Rineka Cipta, 2010).
14. Zhang, Y. *et al.* The role of mangrove fine root production and decomposition on soil organic carbon component ratios. *Ecological Indicators* **125**, 107525 (2021). <https://doi.org/10.1016/j.ecolind.2021.107525>.
15. Sutarna, E., Sutarna, I. & Hartati. *Tata Kelakuakn di Lingkungan Pergaulan Keluarga dan Masyarakat Setempat Daerah Jawa Barat*. DEPARTEMEN PENDIDIKAN DAN KEBUDAYAAN (Departemen Pendidikan dan Kebudayaan, 1985). 1-104 (1985).

16. Rosmiati, Rauf, B. & Amir, F. Pola Pemanfaatan dan Pemeliharaan Mangrove Masyarakat Pesisir di Kabupaten Bulukumba, Provinsi Sulawesi Selatan. *UNM Enviromental Journals*. 3, 47–54 (2020). <https://doi.org/10.26858/uej.v3i1>.
17. Marhawati, M., Rahmadani, A., Astry, A. & ... Pemberdayaan Masyarakat Dalam Upaya Pelestarian Ekosistem Pesisir Dan Hutan Mangrove Di Pulo Kambing Kecamatan Pitumpanua Kabupaten Wajo. *Jurnal Lepa-Lepa Open*. 386–392 (2021). <https://ojs.unm.ac.id/JLLO/article/view/16922>.
18. Makaruku, A. & Aliman, R. Mangrove Di Desa Piru Kecamatan Seram Barat Kabupaten Seram Bagian Barat. *J. Rekayasa Lingkungan* **19**, 1–17 (2019). <https://doi.org/10.37412/jrl.v2i2.2>.
19. Anwar, M. S. & Farhaby, A. M. Analisis Kebijakan Pemanfaatan Lahan Dalam Wilayah Hutan Mangrove Di Provinsi Bangka Belitung. *University of Bengkulu Law Journal* **6**, 20–38 (2021). DOI: 10.33369/ubelaj.6.1.20-38.
20. Bahari, M. I. Efektifitas Pengawasan Hutan Mangrove Di Wilayah Pesisir Kabupaten Lamongan. *Novum Jurnal Hukum* **3**, 1–9 (2016). <https://doi.org/10.2674/novum.v3i1.17194>.
21. Ardiyaningrum, I., Budiastuti, S. & Komariah. Hubungan Antara Tingkat Pendidikan Dan Pengetahuan Terhadap Sikap Masyarakat Dalam Konservasi Lahan Kering Di Kecamatan Selo. *Artikel Pemakalah Pararel*. 114–118 (2020). <http://hdl.handle.net/11617/12248>.