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Needs analysis of *Wanga* conservation in Tana Toraja

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Abstract
Wanga (*Pigafetta elata*) is one of Sulawesi's endemic plants whose existence in nature is decreasing. This is due to the use of the community in relation to the culture of the Toraja alang sura tribe (rice barn). Similarly, the specific characteristics of the plant. This study aims to conduct a survey related to the needs of the community about the conservation of wild plants so they can survive in nature. The method used is a survey method by conducting interviews and distributing questionnaires to gather information about the needs of the community related to conservation of *Wanga* plants. Data were analyzed descriptively and the conclusion was based on percentage. The results revealed that basically the local people are aware and caring of the importance of preserved *Wanga* plants, 90-100% of the people know that *Wanga* plants have diminished in nature and concerns about the scarcity of *Wanga* plants, but they do not have the knowledge, understanding, and container to implement and anticipate problems that. 90% of respondents agreed with the conservation activities of the plant for the cultural sustainability of the Toraja tribe "Alang sura".

Keywords: needs analysis, local community, conservation, *wanga* plants

1. Introduction
Wanga (*Pigafetta elata*) is one of the endemic plants of Sulawesi which is spread in several regions in South Sulawesi, Central Sulawesi, and West Sulawesi, namely Tana Toraja, North Toraja, Luwu, Latimojong Mountains Enrekang, Mamasa, and Lore Lindu National Park (Dransfield, *et al*, 2008) [1]. The most areas that use *Wanga* plants are North Toraja and Tana Toraja (Syamsiah, Karim & Hiola, 2014) [8].
Tana Toraja has a local community which is known to be very thick with its customs and culture. One of them is the use of *Wanga* stem as a building material for the traditional house "Alang sura" (rice barn) which has been very well preserved until now (Tonapa, Jusuf & Mahbub, 2014) [10]. Sura reeds are shaped like Tongkonan (a place of deliberation, storing bodies) but smaller and only consist of one room at the top to store rice (Sumalyo, 2001) [7]. Other uses by the local Tana Toraja people are edible fruit and tuber (plant tops) for vegetable ingredients. The use of tubers for vegetable ingredients and stems for building poles immediately killed the plants so that gradually the *Wanga* population diminished in nature. Utilization of plants by local people Tana Toraja only relies on plants that live wildly, this will threaten the existence of its population. This fact is the cause of the *Wanga* population decreasing in nature.
Another problem that poses a threat to the existence of the *Wanga* population is because of the specific characteristics it possesses. Solitary *Wanga* plants so that vegetative propagation through tillers cannot be done at all. Dioecious plants. Dioecious plants generally pollinate with the help of wind and/or insects. Slow regeneration power. *Wanga* seeds take a long time to germinate, this is due to the hard seed structure and the rate of ripening of the embryos in the seeds long enough (Witono, *et al*., 2000) [12]. Based on the specific characteristics possessed in addition to the high utilization of the rice barn pole, the decrease in population is reduced.
According to Syamsiah (2015) [9] that the regeneration of the *Wanga* (*Pigafetta elata*) population in Sangalla District 'South, Tana Toraja Regency is under threat of extinction, with only one sapling found while other high-level plant communities have quite good regeneration because of many species in the sapling stage. Therefore, the existence of *Wanga* plants in nature needs to be maintained and maintained, so that the plants besides being used by the community who of course choose the principle of selective cutting, also avoid extinction. Muharso (2000) [3] states that excessive exploitation of wild plants, exceeding the regeneration capacity of plants and without accompanying, cultivation efforts will disrupt their sustainability.
Problems related to conservation of *Wanga* plants, namely the use of *Wanga* plants by local communities tend to be limited to the use of single functions, namely the use of Alang sura poles, which should have multiple functions, namely ecological, sociocultural and economic functions. There is no policy from the government regarding the conservation of plants, which should have a policy that regulates considering that the plant is endemic to Sulawesi. There is no understanding that endemic plants are a wealth of biodiversity in a region/region that needs management because if they become extinct, then some species that depend on these plants also go extinct. *Wanga* plants tend to be ignored. *Wanga* plants have botanical characteristics that are quite specific, while community knows about them is very little. The community does not have adequate knowledge and understanding of how to carry out conservation of veggie

plants in addition to ignorant attitudes of the community.

One form of public ignorance is to replace the rice barn pole by using cast cement even though it still displays the shape and figure that resembles the stem of the *Wanga* plant. The culture of a particular ethnicity is hereditary wealth inherited from ancestors and should not be changed. The community does not understand how to cultivate *Wanga* plants and this causes the population to decline and on the other hand, the price increases.

Conservation efforts of *Wanga* plants are needed through the participation of local communities as the user community. The participation of local communities in the conservation of plants is very necessary because basically, the community has a high potential. Participation is influenced by public awareness to conserve plants and their habitats.

2. Methods

This research is a descriptive study with a survey method that aims to explore information, the needs of the community are related to their knowledge and concern for plants and the possible obstacles experienced by the community in maintaining these plants in nature. The population of this study is all residents of Tana Toraja Regency. Research samples were community members, adat leaders, and local government officials in connection with knowledge, understanding, attitudes and community participation for the conservation of *Wanga* plants because these plants have high benefits in relation to Toraja ethnic culture. The research data was collected through questionnaires distributed to all research samples which were then followed by interviews. The data obtained are then analyzed descriptively and the conclusions are based on percentage.

3. Results and discussion

Results of data collection through questionnaires, data needs assessment on aspects of conservation of *Wanga* plants.

Table 1: Frequency and percentage of needs assessment on community knowledge of *Wanga* Plants

No	Description of Findings	Frequency		Persentase (%)	
		Yes	No	Yes	No
1	Knowing morphology and economic value	20	0	100	0
2	Get to know the *Wanga* plant habitat	19	1	95	5
3	Knowing the use of *Wanga* plants	20	0	100	0
4	Knowing the economic value of *Wanga* plants	17	3	85	15
5	Know the availability of *Wanga* plants	14	6	70	30

Table 1 shows that out of the 20 respondents who were the study sample as much as 70% - 100% of people had knowledge of the aspects of the morphology of the *Wanga* plant, the habitat of the *Wanga* plants, the usefulness of the *Wanga* plants, the economic value of the Wanga plants, and the availability of the plants. The results of the needs assessment survey on ownership of *Wanga* plants can be seen in Table 2.

Table 2: Frequency and percentage of needs assessment on ownership of *Wanga* Plants

No	Description of Findings	Frequency		Percentage (%)	
		Yes	Tidak	No	No
1	Have *Wanga* plants	7	13	35	65
2	Already utilized	17	3	85	15

Table 2 shows that only 35% of the community has *Wanga* plants, but even so, most claim to have used vetiver plants which reach 85%. The results of the data need assessment survey on the attention to the conservation of *Wanga* plants can be seen in Table 3.

Table 3: Frequency and percentage of data needs assessment on attention to *Wanga* plant Preservation

No	Description of Findings	Frequency		Percentage (%)	
		Yes	No	Yes	No
1	Attention to plants	17	3	85	15
2	Knowing the plants are reduced in nature	18	2	90	5
3	Concern about the scarcity of *Wanga* plants	20	0	100	0
4	Thinking about the preservation of *Wanga* plants	11	9	55	45
5	Maintain wild seeds that grow wild	10	10	50	50
6	Move seedlings of growing plants	5	15	25	75
7	The need to instill a caring attitude towards *Wanga*	20	0	100	0
8	The need for training for local communities	20	0	100	0

Table 3 about the attention of the local community to the conservation of *Wanga* plants shows that basically, the community is very concerned, this is evidenced by the attention and attitude of the public reaching 85% to 100%, but for its implementation as a form of caring attitude is still very low at 25-55% such as maintaining and moving plant seeds that grow wild. The results of the data need assessment survey on participation in the preservation of *Wanga* plants can be

seen in Table 4.

Table 4: Frequency and Percentage of Data Needs assessment on Participation in *Wanga* Plant Conservation

No	Description of Findings	Frequency		Percentage (%)	
		Yes	No	Yes	No
1	Participation in the conservation of *Wanga* plants	6	14	30	70
2	Conservation efforts of individual plants	6	14	30	70
3	Efforts to conserve *Wanga* plants in groups	1	19	5	95
4	Wanga plant conservation efforts driven by Non-Governmental Organizations (LSM)	2	18	10	90
5	Conservation efforts of *Wanga* plants that are driven by the government	2	18	10	90
6	Government policy related to the preservation of *Wanga* plants	2	18	10	90
7	The need for conservation of green plants for sustainable use	18	2	90	10

The results of the field survey in Table 4 on community participation in the conservation of *Wanga* plants are very low at 5-30%. This is also evidenced by the results of a survey on cultivation with a percentage of less than 10%. (Table 5), but basically, they are aware of the importance of conservation of *Wanga* plants for sustainable use which is up to 90%.

Table 5: Frequency and Percentage of Data Needs Assessment on *Wanga* Plant Cultivation

No	Description of Findings	Frequency		Percentage (%)	
		Yes	No	Yes	No
1	Do cultivation	2	18	10	90
2	Cultivation through seeds with physical treatment	1	19	5	95
3	Seed cultivation with chemical treatment	1	19	5	95
4	Cultivation is accompanied by maintenance (fertilization, watering, weeding)	2	18	10	90

The results of the field survey (needs assessment) on the conservation of *Wanga* plants (*P. elata*) for local communities in Tana Toraja Regency are the initial stages in the research and development of Sustainable Models. This survey aims to explore information related to the decline in the *Wanga* plant population due to the utilization by local communities that exceed the rate of plant propagation itself. In addition, the survey also aims to find out what is needed by the local community in relation to efforts to maintain and carry out conservation of *Wanga* plants.

Some suggestions from the local community regarding the importance of conservation of *Wanga* plants in Tana Toraja District are summarized in Table 6.

Table 6: Survey Results Regarding the Importance of *Wanga* Plant Conservation in Tana Toraja Regency

No	Respondents' suggestions regarding *Wanga* Plant Conservation
1	It is better if the government conducts preservation of Wanga plants for the manufacture of barns in maintaining custom
2	In order for plants to be published to the general public about how to develop and their physical properties
3	*Wanga* plants are very important to be preserved because they are related to adat, especially in Tana Toraja as a rice barn pole
4	*Wanga* plants need to be preserved because they are very useful and useful for making rice barns, especially in the Tana Toraja area
5	*Wanga* plants are very important to be planted in Tana Toraja because they are needed for the production of rice barns of the Tana Toraja community
6	Need to be preserved to maintain the culture or customs of the Toraja tribe
7	It is necessary to cultivate and preserve *Wanga* plants because it is very much needed by the Tana Toraja people
8	All people need to preserve the plants
9	It is necessary to cultivate *Wanga* plants so as to make the plants remain and distribute seeds to the wider community, this at the same time preserves the Toraja culture
10	It is hoped that the government will make a policy for cultivating *Wanga* plants as one of the needs of Toraja as a pillar of alang
11	There needs to be an effort by the regional government in facilitating training on the cultivation of *Wanga* plants
12	Conservation of *Wanga* plants is necessary
13	There needs to be attending from the government to *Wanga* plants
14	There needs to be training from the government for the preservation of *Wanga* plants
15	In order for the government to launch a plant conservation program
16	There is a need for nursery activities carried out by the government
17	There needs to be training and direction from the government regarding Wanga plants
18	Expect to be given training on the plants so that they can be preserved

The survey results, as shown in Table 1 to Table 5, show that basically the local people are aware and concerned about the importance of preserved *Wanga* plants, 90-100% of the people know that *Wanga* plants have diminished in nature and concern about the scarcity of *Wanga* plants, but they have no knowledge, understanding, and container to implement and anticipate the problem. Matters related to community participation in the conservation of vetiver plants are very low

at 5-30%, while *Wanga* cultivation is also very low at 5-10%. There are no training efforts, or counseling either from non-governmental organizations (LSM) or from the government related to policies on the conservation of *Wanga* plants.

The survey results related to the suggestions of the importance of conserving *Wanga* plants in Tana Toraja District show that most respondents 90% agree with the conservation of *Wanga* plants and expect the government to make policies for the conservation of *Wanga* plants as one of the needs of Tana Toraja Regency. There needs to be an effort by the regional government in facilitating training on the cultivation of *Wanga* plants. In addition, it needs to be preserved to maintain one of the Toraja ethnic cultures or customs. Regarding the conservation efforts of *Wanga* plants, in general, it can be said that in Tana Toraja District, especially in South Sangalla Subdistrict as a research location conservation activities have never been carried out in the form of training or counseling to the community.

The use of plant species by people in an area needs to receive serious attention because if excessive utilization is not offset by replanting efforts, it is certain that the environment will experience pressure which results in damage, natural disasters, and species loss. What needs to be considered is how humans make use of the natural wealth that exists not only for the current generation but how can the potential still be enjoyed for future generations because it is realized or not, exploitation of biological resources is often uncontrolled so that it has a negative impact on sustainability human life itself. In general, the use of biodiversity is still oriented to obtain maximum economic benefits without regard to the impact on the environment (Syamsiah, 2015) [9].

Requirements for the use of *Wanga* stem as a pillar based on the quality seen from the age of the tree are very influential because the older the age of the tree, the longer it lasts. Furthermore, the height of the midrib free and stem diameter also affected the use of the pillar pole because the larger the diameter of a pole, the more difficult it was (mice) to climb the pole. This is as stated by Tonapa, *et al*., (2014) [10] that *Wanga* tree trunks are well used as rice barns because of the large stem and slippery surface so it is difficult to climb mice, while the midrib free height affects the price of the *Wanga* tree where the higher the free midrib the more expensive the price *Wanga* tree.

There are many obstacles or obstacles experienced by the community in the effort to conserve wild plants. These constraints include: a) lack of knowledge about plants, b) not knowing the life cycle of *Wanga* plants, c) not knowing how to cultivate well, d) no training has been carried out related to conservation of plant, e) no policy from the government regarding the conservation of *Wanga* plants, and f) there is no knowledge that *Wanga* plants are one of the endemic plants of Sulawesi which is very important for conservation efforts because it is the wealth of an area/region. All of these are the dominant factors that cause *Wanga* plants to be ignored in terms of maintaining the species from extinction in nature.

The results of the needs assessment also reveal the state of the plants and their supporting environment, that the ecological factors of the area support the sustainability of the *Wanga* plants in Tana Toraja Regency. The climate (temperature) of Tana Toraja is at a temperature of 25-30^{0}C suitable for *Wanga* growth. Tana Toraja topography at an altitude of 780-1300 m above sea level is in accordance with the conditions of growth and distribution of *Wanga* plants in nature. Soil (edaphic) is a factor that has a very important meaning for the spread of plants, in terms of soil acidity that supports *Wanga* growth at pH 5-7. Living things (biotic) are all living things and their processes both human, plant and animal. that the human factor influences the life of the *Wanga* plants on earth. In addition to these factors animals also have a role in the spread of *Wanga* plants including insects in the process of pollination, and crows that help in the spread of the seeds.

If environmental factors support the growth of *Wanga* in nature, the population seems to be decreasing, it is necessary to conduct research to uncover the causes. Based on the results of the needs assessment (needs assessment) as described, illustrates that the conservation of *Wanga* plants (*P. elata*) in Tana Toraja Regency is very important at this time both individually, in groups, and through appeals to the local government or related agencies.

The overall biodiversity with its ecosystem is protected by Law No. 5 of 1990 concerning conservation of biodiversity and its ecosystem. Efforts to save biodiversity are highly dependent on efforts to protect, protect, conserve and manage the entire biological resources of the Indonesian state for its use for the welfare of the entire community (Soerjani, *et al*. 2006) [6].

Preservation efforts are very crucial activities, especially for the continuity, prosperity, and welfare of human life, and this has been enshrined in the 1945 Constitution of the Republic of Indonesia Article 33 which reads: "The earth and water and natural resources are controlled by the state and used for great prosperity of the people ". Therefore, everyone is obliged to preserve the environment and participate in preventing damage and pollution (Whitten, Mustafa & Henderson, 1987) [11].

Preservation of biodiversity is to maintain a complete flora and fauna so as not to become extinct (Nugraha, 2009) [4]. In order for biodiversity to be sustainable and able to provide maximum benefit to humans, its use must be wisely (Groombridge, 1992) [2]. Some efforts to save and preserve biodiversity are as follows. 1) The cutting system is chosen by choosing plants that when cut down do not affect the ecosystem. 2) Plant rejuvenation is done to maintain and improve yield by preparing substitute plants. 3) Seasonal catching when the animal population is the most and not when conditions can result in extinction. For example not hunting during the breeding season. 4) Establishment of nature reserves and sanctuaries for plants and endangered animals such as wildlife reserves and national parks. These places protect endangered flora or fauna.

According to Purwanto (2000) [5, 12], the conservation or conservation of biodiversity in Indonesia, known as in situ and ex situ preservation aims to protect the flora and fauna from the threat of extinction. In situ. Conservation of biodiversity in situ is an effort to conserve living natural resources in their natural habitat. This is done by considering the characteristics of certain plants or animals that are very harmful to their sustainability if they are moved to other places. In situ conservation includes 7 categories, namely nature reserves, wildlife reserves, marine parks, hunting parks, forests, or

tourist parks, provincial parks, and national parks. Ex situ. Preservation of biodiversity ex-situ is an effort to conserve biological natural resources carried out by moving to other places that are more suitable for the development of life or carried out outside the original habitat, but the conditions are pursued together with their natural habitat. If it is successfully bred, it is often returned to its natural habitat.

Development of Community Training Models is an alternative that is used as a solution to problems related to conservation of *Wanga* plants to anticipate the decline in the plant population in nature. Training Model Tools in the form of teaching materials (modules) equipped with power point media, need to be developed to facilitate the user community, related institutions, and other parties who need knowledge related to the conservation of *Wanga* plants.

4. Conclusion

The conclusions of this study: (1) the community is in desperate need of efforts to conserve *Wanga* plants, the community has great potential to do so but they do not have the knowledge and understanding, (2) the conservation of *Wanga* plants in Tana Toraja Regency is very important today. individuals, groups, and through appeals to local governments or related institutions; and (3) a model of community training related to conservation of vetiver plants is needed as a solution to the problem of the decline in wild plant populations in nature to avoid the extinction of endemic species as well as the cultural sustainability of the Toraja tribe.

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