CONSERVATION AND SUSTAINABILITY OF SOWANG PLANT: DOES FOLK TAXONOMY PLAY AN IMPORTANT ROLE?

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Abstract

Sowang (*Xanthostemon novoguineensis* Valeton**)** plays an important role in supporting the life of local communities in Papua. Sowang, the endemic plant from Papua Province, Indonesia, has faced the high issues related to land conversion, forest burning, and logging, where this plant can be found in Cyclops mountain. This paper gives the information on the important role of folk taxonomy, which is associated with the sustainability of Sowang in their natural habitat. The study of folk taxonomy plays a significant role in identifying Sowang in their natural habitat by the local communities. Furthermore, the exploration of this study in the field can be conducted to understand the function, distribution and population in their natural habitat. After that, the strategies for protecting this plant can be implemented, involving governments, researchers and local communities. Further studies associated with the folk taxonomy should be implemented for the conservation of Sowang for the sustainability of this plant in Papua.

Kata Kunci: Conservation, Cyclops mountain, Papua, Sustainability, Sowang.

1. INTRODUCTION

Sowang (*Xanthostemon. novoguineensis*), a plant from Myrtaceae family, has known as an endemic species from Papua Province, Indonesia. Since long time ago, Sowang has been used by the local community for their daily activities, for instances, house foundation, cultural values, and utensils (Mumbo, 2010; Sanito, 2016; Sanito, 2017; Sanito 2018a; Sanito 2018b; Sanito and Keiluhu, 2018). However, the population of Sowang is facing the extinction near their natural habitat because of land conversion, forest burning and logging (Wilujeng, 2010; Wilujeng and Agustini, 2017a; Wilujeng and Agustini, 2017b), with the decreasing of their population in the natural habitat (Simbiak and Wilujeng, 2015). As a result, now it is more difficult to find this plant with tree shapes. Thus, the conservation effort should be performed to protect this plant in their natural habitat and sustainability of this plant in the future because this plant is an endangered species.

In this plant identification, the taxonomy of biology plays an important role in the classification system of organisms such as plants and animals. In the local context, the naming of a plant is based on the language of local knowledge from the local communities, and folk taxonomy is a system based on the vernacular name or local name from the certain ethnic (Iskandar, 2012). Berlin (1973) stated that the folk taxonomy is associated with how the living organisms are named, identified and classified based on the cultural approach. *X. novoguineensis* is recognized with the vernacular name Sowang by Sentani Tribes, Papua. Based on the local language. Sowang means the plant with the harsh and durable structures of wood. Thus, this plant is usually used by Sentani tribes in their local community.

This review paper detailed the information of Sowang plant based on the literature studies related to the status of this plant associated with conservation issues. Also, the important role of folk taxonomy is described in this paper associated with *Xanthostemon* sp in different regions.

2. RESEARCH METHODOLOGY

This paper is a literature research that associated with the taxonomy of the Xanthostemon species from previous publications, which has been published in journals and proceedings. All the literature review is associated with the comparison study of the folk taxonomy of *X.*

novoguineensis and other Xanthostemon genus. Also, the recent condition of Xanthostemon genus is also described from previous studies.

3. RESULTS AND DISCUSSION

3.1. Biogeography of Xanthostemon

Distributions of the Xanthostemon genus is from Phillipines, Indonesia, Papua New Guinea, Australia, Solomon Island and New Caledonia (Merill; 1952; Jaffre et al., 1998; Richards et al., 2002; Sedayu, 2008; Wilson and Pitisopa, 2007; Malabrigo Jr and Gibo, 2010; Whiteside et al., 2018; Ocon et al., 2018; Lillo et al., 2019; Erskine et al., 2019). The names of Xanthostemon are based on the vernacular names. In phillipines, for instance, *X. verdugonianus*, *X. philippinensis*, *X. bracteatus*, and *X. speciosus* are known with name Mangkono, Bagoadlau, Diridcalin and Bungan (Ocon et al., 2018; Lillo et al., 2019; Malabrigo Jr and Gibe, 2020). In Indonesia, *X. natunae* is known with the vernacular name Pelawan Punai (Sedayu, 2008). In Papua province, Indonesia, *X. novoguineensis* is recognized with the vernacular name Sowang. In Australia, Xanthostemon usually is recognized with the name golden penda or red penda (Australian Tropical Rainforest, 2020). Figure 1 shows the different of morphology *Xanthostemon* sp.

In Papua Province, the distribution of Sowang is near the cyclops mountain area, and close to the sentani lake, and where the Sentani tribes live. Figure 2 shows the map of the cyclops mountain area with the sentani lake. Simbiak and Wilujeng (2015) reported that Sowang can be found at the elevation with the value from 15-450 m above the sea level, near the cyclops mountain area, which close to the settlements of inhabitants. Sowang growth on the ultrafamic soils, which is predicted consists of high concentration of metals (Wilson 1990; Wilson 1993; Sanito, 2018a).

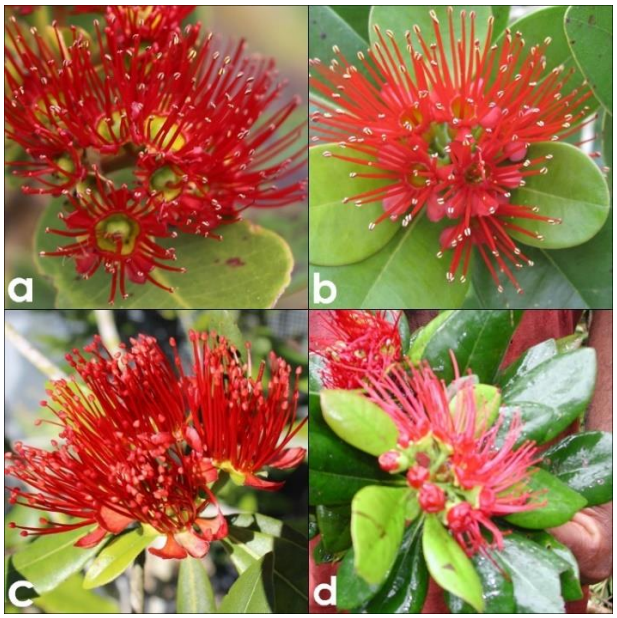

Figure 1. Comparison of flowers of *Xanthostemon* from different countries. a. *X. novoguineensis* from Indonesia. b. *X. verdugonianus* from phillipines, c. *X. youngii* from Australia, d. *X. melanoxylon* from Solomon Island.

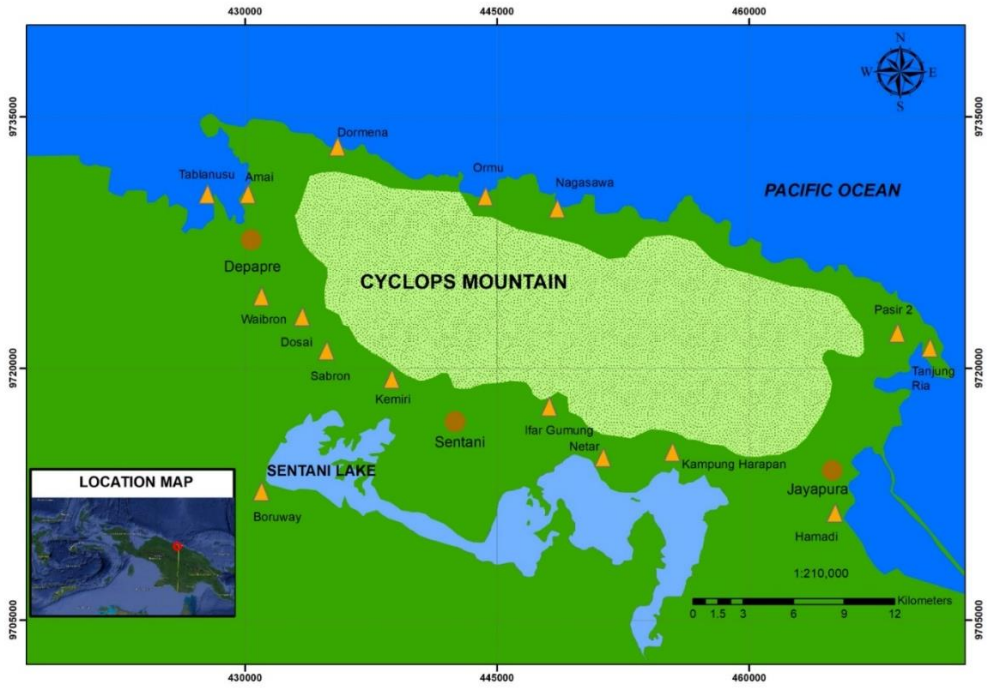

Figure 2. Maps of Jayapura regency. Cyclops mountain is a natural habitat of Sowang. Local communities live near the Sentani lake.

3.2. Perspective of folk taxonomy of *X. novoguineensis*

Samples of Sowang plants were collected first time and described by Valeton (Wilujeng and Simbiak, 2015). Local communities in Papua called Xanthostemon with the terminology Sowang based on the hardness texture, strong and durable structure. Local communities confirmed that some plants, which have similarities in the function also called it Sowang. For instance, *Decaspermum* sp, *Stenocarpus* sp (Yawan, 2007), and *Rhodomyrtus* sp. However, the real Sowang is *X. novoguineensis,* which usually used by the Sentani tribes. The terminology word of Sowang is associated with the naming of objects from the terms of utilization. Berlin (1973) stated that Maya ethnic in Mexico recognized the local plant of corns (*Zea mays*) with the local name *Pine*. After the classification and identification, the terminology pine refers to the 5 different subspecies. According to Kareni (2008), Sentani tribes have different dialects in understanding Sowang. For instance, Sentani tribes from eastern part spells "Howan", while the western part spells with the name "Toang", which the meanings are almost similar, related to the durable, strong and harsh structures. Wilujeng and Simbiak (2015) stated that Sentani tribes identify Xanthostemon based on the color of trunks or stem. The terminology is associated with black Sowang and white Sowang. White Sowang refers to *Gordonia papuana* and Black Sowang refers to *X. novoguineensis*. In this aspect, the name of plants is based on the knowledge of local communities.

3.3. Conservation strategy of Sowang

Further research associated with the X. novoguineensis in Papua is started from the ethnobotany study, which is associated with the using of plants for the traditional purposes of ethnics in Papua. Research developed based on the finding of the plant species based on the vernacular name of local communities, and developed further research based on the identification of plants from the herbarium, based on the description of plants. For instance: the knowledge of Sentani tribes associated with their knowledge and experience in using plants for their daily activity (Sanito, 2017).

Sedayu (2008) reported that the finding of the new species from the genus Xanthostemon from the Natuna Island was identified as *X. natunae*. An analysis of this plant sample from the herbarium Bogoriense indicated that this plant was a new species, and this plant has a similarity with *X. confertiflorus* Merr from Sulawesi, which is known by the local name *pelawan punai*, and the wood is usually used by the local communities traditionally. However, there is no further information about evidence on the function of this wood. The function of *X. natunae* is similar with the *X. verdugonianus*, *X. philippinensis*, *X. bracteatus*, and *X. speciosus* from the phillipines, or these plants are well known as Ironwood, where the local communities use these plants because of the structure of woods (Ocon et al., 2018; Lillo et al., 2019; Malabrigo Jr and Gibe, 2020). In this aspect, it can be understood that the recognition of this plant is based on a survey in the field and understanding of folk taxonomy.

Local communities should be involved in the conservation of this plant, especially the ability of native tribes to recognize this plant in their natural habitat. Moreover, local communities have an exceptional ability to recognize this plant, based on the experience of the local communities. Generally, there are many plants that have been used traditionally to make boats, weapons, paddles, and axes (Sanito, 2017). Moreover, Sowang may be planted in the arboretum with the purpose associated with the education. Sanito and Keiluhu (2017) found that this plant growth naturally in the learning forest of Cenderawasih University. The presence of this plant also has advantages for the educational purposes, conservation, and sustainability from the education perspective. Figure 3 shows the critical thinking of this plant associated with the conservation of this plant.

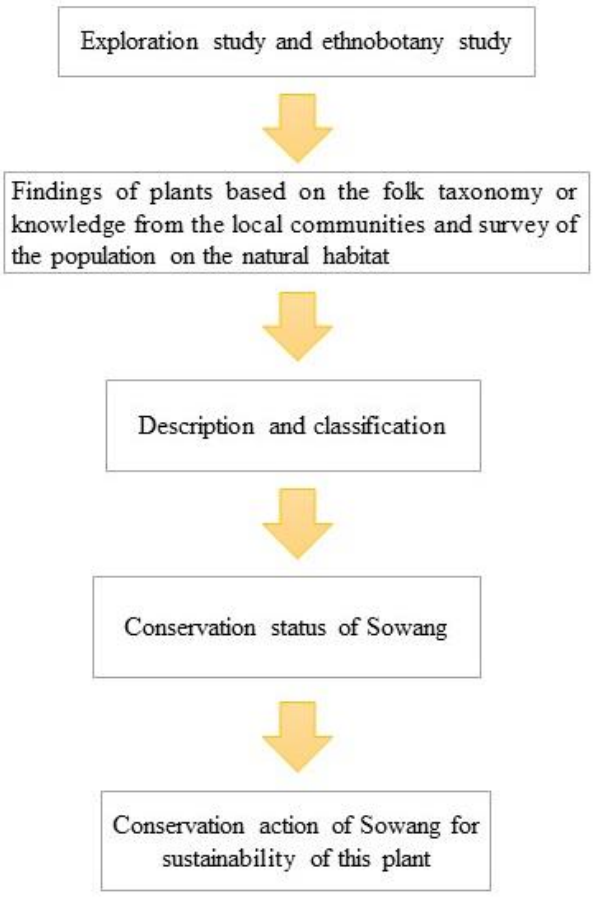

Figure 3. Critical thinking of Sowang conservation in Papua

Folk taxonomy plays an important role in the description of plants, which this plant has been known by the local community. After the function of this plant has been known, an exploration study in the field should be conducted in order to understand the functions, distributions and conservation status in their natural habitat. Thus, research of folk taxonomy is necessary for identifying the group of new species into the genus and family in the biological classification system. Furthermore, efforts from governments, researchers and local communities will significantly impact on the conservation of Sowang in Papua. Then, the sustainability of Sowang in Papua can be obtained. Figure 4 gives the perspective of folk taxonomy, cultural value and ecological value of Sowang.

Figure 4. Conservation and sustainability of Sowang, and its important role for the local communities and ecosystems in Papua associated with education, ecology, social and culture.

4. CONCLUSION, SUGGESTION AND RECOMMENDATION

Folk taxonomy has an important role for the local communities for identifying the plants in their natural habitat. The naming of Sowang refers to the plant with the harsh, strong and durable structure of wood, based on the function in the natural habitat, with the knowledge of this plant by the local communities in their natural habitat and distribution. Knowledge of local communities related to Sowang will help many stakeholders for supporting the conservation of this plant in Papua because of their traditional knowledge. Thus, the local knowledge of Sentani tribes will have an important role in the conservation of this plant in Papua province.

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