Index Cultural Significance and Conservation of Plants Diversity for Community in Kerinci Seblat National Park

Commented [w1]: The tittle is not appropriate.

Abstract

Kerinci community is one of the Indonesian indigenous people who live in Kerinci regency, Jambi province. They have the local knowledge of the surrounding vegetation that has become a cultural unity with community. This study were~~is~~ aimed at analyzed the significance of culture plants in relation to Kerinci cultural. The study was conducted at three locations purposively, they are Lempur Baru Dusun, Lama Tamiai and Ulu Jernih, for eight months from October 2013 to May 2014. Data wasobtained by participatory observation approach, depth interview while the assessment of plant deployment society approach by point of view. The research data consist of data botany, plant utilization and assessment plant deployment while data analysis using the formula Index of Cultural Significance (ICS) adopted from Turner. The study shows that the rice (*Oryza sativa* L) and cinnamon (*Cinnamomun burmanii* Ness Ex.BI)) is a plant species that have important cultural value of 59 and 57 while inggu species (*Ruta angustifolia* (L). Pers) and onion timber (*Allium fistudosum* Linn) has the lowest ICS, respectively 3.

Key words : *ICS, Kerinci community, indigenous knowledge, useful plants*

INTRODUCTION

Quantitative assessment of the usefullness and management of botanical sources is one of the important thing in the study ethnobotany (Martin 1995; Mutheeswaran *et al.* 2011). Quantitative ethnobotany study by analyzing the types of useful plants that are important for a community to support the valuation of plant diversity both in the social and economic value (Hoffman & Gallaher 2007). The study of ethnobotany quantitative focused on the observation and analysis of various indices as appropriate, among others, use value index (Prance *et al*. 1987), the index of cultural significance (Turner 1988), ethnic index of cultural significance (Stoffle *et al.* 1990), cultural significance index (Silva *et al*. 2006), index the produce numerical scales or values per plant taxon (Alexiades & Sheldon 1996; Lykke *et al*. 2004) and many other indices that can be used in accordance with the purpose of research (Hoffman & Gallaher 2007).

Reyes-Garcia *et al*. (2006) states that quantitative assessment of ~~data~~ ethnobotanic data~~ny~~ is a complementary qualitative data useful to address the problems faced in public relations with a diversity of plants and the environment. Ethnobotany quantitative assessment can provide data amenable to hypothesis-testing, statistical validation and comparative analysis, also develop hypotheses sharper to address the existing problems with the analysis of a more accountable appropriate scientific framework. Therefore, the quantitative assessment ~~become~~ is an instrument complement and support the ethnobotanical research (Hoffman & Gallaher 2007).

One of the quantitative assessment of ethnobotany is the importance of culture plants is an indication of the importance of each type of plant for communities in the study area are useful as a basis for consideration of important species and the potential for economic purposes (increase income local community) and preservation (Turner 1988). Parameters important cultural value of plants is the value of quality, intensity values and the value of exclusivity of each plant by the community. Quality value (q) is calculated by giving a score or value to the value of the quality of plant species, the intensity values (i) describe the intensity of use of the plant species useful to give a score very high up infrequently, while the value of exclusivity (e) is calculated based on the level of preferably, most preferably to not preferred.

Turner (1988), Purwanto (2002), Pei *et al*.(2009) states that the importance of culture (Index of Cultural Significance = ICS) in each plant species for local communities is different. This difference is influenced by the level of knowledge, culture and local conditions. The importance of plant culture is an indication of the importance of each type of plant for communities in the study area are useful as a basis for consideration of important species and the potential for economic purposes (increase income local community) as well as its preservation.

Based on observations in various regions in Indonesia, each tribe has enough knowledge both about the diversity of plant species useful growing around settlements they live but are used in everyday life is not more than 10% of the number of species overall known benefits (Purwanto *et al*. 2011). Kerinci community is one of the local Indonesian community living in Kerinci regency,

Formatted: Font color: Red

Jambi province. Aumeeruddy (1994) states that people of Kerinci already have knowledge of the plant diversity in their territory. Unique natural conditions surrounded by hills and volcanoes make Kerinci is a fertile area that is suitable for agriculture. Almost all of indigenous people of Kerinci work in agriculture, their interaction with forest resources and land already hereditary.

Pei *et al*. 2009 and ~~;~~ Pei 2013 states that local wisdom in the use of natural resources through traditional use can affect forest sustainability . Traditional communities in and around protected areas have a role to support management with local knowledge in sustainable forest use (Junior & Sato 2005). Local knowledge is not just to be documented but to be understood and integrated, and the problem of power imbalance between the indigenous knowledge system and the scientific knowledge system has to be addressed by integrating it with the scientific knowledge system (Ruheza & Kilugwe 2012). Cultural integration into conservation is expected to improve understanding of conservation that could affect conservation policy (Young *et al*. 2014).

In 1996 motivated by the high level of forest damage and declining quality of habitat for the Sumatran tiger (*Phantera tigris* sumatraensis) and the Sumatran rhinoceros (*Rhiconus sumatraensis*) then be appointed as National Park Kerinci (TNKS) based on the regulation of the Minister of Forestry No. 192/Kpts/II/1996. TNKS is the largest national park in Sumatra with an area of 1.368 million hectares, covering four provinces namely Jambi Province 422 190 hectares, 353 780 hectares of West Sumatra, Bengkulu and South Sumatra 310 910 hectares of 281 120 hectares spread over 36 districts within 9 districts. Designation of conservation areas TNKS lead over most of the territory Kerinci (51.2%) were in the national park as many as 24 villagers from 209 villages in Kerinci including in the area TNKS. This has an impact on people's access to the utilization of forest resources, local knowledge and culture that they have (Hidayat 2006).

Formatted: Font color: Blue

To keep the local knowledge and culture of plant are not lost from Kerinci community, it will require effort and real activity. Knowing the importance of culture plants is one strategy to preserve the plant so that the goal of this study was to measure and analyze the value of the cultural

importance of plants for the people Kerinci and reviewing efforts to conserve plants based on cultural values.

METHODS

Site studies

~~The~~ Field studies were carried out ~~was conducted~~ in October 2013-May 2014 in three sites of Kerinci Regency, Jambi Province, *Indonesia, viz.: (1)* ~~Dusun~~ Baru Lempur Village, ~~District~~ Gunung Raya Subdistrict; (2) ~~Dusun~~ Lama Tamiai Village, ~~District~~ Batang Merangin Subdistrict; and (3) ~~Dusun~~ Ulu Jernih Village, ~~District~~ Gunung Tujuh Subdistrict ~~in Kerinci Regency, Jambi Province~~ (Figure 1). These sites are ~~third study site was deliberately chosen because it is~~ a included in buffer zonas ~~village~~ of Kerinci National Park ~~area~~ which has difference of ~~different~~ biophysical characteristics (Table 1).

The data consist of botany, utilization and distribution plant assessment. The botanical data consist of species name in local and scientific, habitus (tree, shrub, herb, lianas, epiphytes). Utilization data that is referenced utilization category of Turner (1988) modified by Purwanto (2002) while data on the spread of plant species assessment carried out by community observation (society point of view), namely: a). Spread of plant species that assumed very limited because its existence is naturally rare or only found at a relatively far distance from residential areas (score 1); b). Spread of plant species that are assumed limited because many are found in primary forests and the forest around the settlement (secondary forest and fallow) (score 2) and c). Spread of plant species that are assumed numerous and easy to find because it is usually found in fields up to around the settlements (score 3).

The approach of the research was ~~is~~ qualitative with interview documentation, open and semi structure interviews were ~~are~~ guided by an outline of questions, freelisting (Quinlan 2002) and participant observation and direct observation (Reyes-Garcia et al 2006. Informants consisted of people who have a fairly good knowledge of the diversity of plants in locations such as community

Commented [w2]: Site studies should be written clearly

Many grammatical mistakes are found

Formatted: Font color: Red

Formatted: Font color: Red, Strikethrough

Formatted: Strikethrough

Formatted: Font color: Red, Strikethrough

leaders, local shamans and family members who know and use herbs for everyday purposes and field observation to see the kinds of plants.

The data was analysized by calculating the value of the Important Cultural Index (Index of Cultural Significance = ICS), using a technique developed by Turner (1988). Assessment of cultural importance index uses three components namely the quality of use, intensity of use and the exclusivity of use with the following formula:

$$ICS = \sum_{i=1}^{n} (q_1 \times i_1 \times e_1)n_1$$

Each plant species has several uses so that the formula as follows:

$$ICS = (q_1 \times i_1 \times e_1)n_1 + (q_2 \times i_2 \times e_2)n_2 + \ldots\ldots\ldots + (q_n \times i_n \times e_n)n_n$$

Description :
In this formula, ICS, the index of cultural significance, is equal to the sum of individual "use" values from 1 to n, with n representing the last use described; the subscript i rep-resents the value 1 through n, consecutively. For each "use" given, q = quality value, i = intensity value, e = exclusivity value. The formula allows consideration of plants that are "used" in a variety of ways, and in each instance the intensity and exclusivity of"use" are accounted for. Multiplication of the values for each use, rather than simple addition, results in a weighting of the highest values, which seems to yield results more in keeping with intuitive assessments of a plant's importance. It emphasizes the significance of planttaxa having a small number of vitally important uses, and "plays down" the significance of plants whose "uses" may be numerous but not particularly vital to the culture in a survival sense.

Formatted: Left

The method for the reviewing effort to conserve plants based on the cultural value should be written.

RESULTS AND DISCUSSION

Category Utilization of Plant Biodiversity

Based on the results of qualitative analysis, there were 234 species of plants from 75 families were known to the Kerinci community consists of wild plants and cultivated plants that can be found in forests, fields or around the settlement. Most plant species are as many as 15 species of Zingiberaceae family, Solanaceae 14 species, Poaceae and Rubiaceae 12 species. Three plant species are protected, namely kayu taksus (*Taxus sumatrana*), kayu pacat (*Harpullia arborea)* and kayu gaharu (*Aquilaria malakensis*). Based on the part of the plant used, the leaf is the most widely used (Figure 2). While based on plant habitus, the most common is herb in 62 species (Figure 3).

Commented [w3]: Please re-check the grammar ...

Based on the evaluation of the usefulness of plants according to Turner (1988), the use of plants by Kerinci community can be classified into 15 categories of utilization (Table 2).

Table 2 shows that The most type of plant utilization is medicine as many as 200 species (85.47%) consisting of 143 wild plants and 57 plants cultivation. Various types of plants are commonly used to treat ailments suffered by people such as lowering the heat, especially in infants and children/fever, headache, skin diseases, diseases related to digestion, diseases associated with channel digestion. Similar results were reported by Pieroni *et al.* (2006), that the majority of plant species known to the local community is a useful plant as a treatment especially for diseases related to digestion.

Purwanto and Waluyo (1993) states for the Indonesian people in rural, remote and urban reside in the surrounding forests, the utilization of medicinal plants for the benefit of his health is not new, but has lasted long enough. Each tribe has a specificity in the gathering and use the plants as medicine and herbs, depending on the level of cultural and natural resources in the environment around it. Zuhud (2013) also stated that in various parts of the world, the disease and its treatment method already has a typical system, different from each other, according to the assessment of the nature and diversity of the place (of natural resources and human culture), time and circumstances. In the atmosphere of the disease and its treatment has been the character of the nation concerned.

Based on the use of plants by the community information there are 4 types of plants by people known to kill cancer cells that mistletoe tea (*Loranthus* sp), turmeric intersection (*Curcuma zedoaria*), soursop/durian belando (*Annona muricata*) and betel (*Piper betle*). Hendalastuti (2008) stated that the species *Taxsus sumatrana* found in Dusun Ulu Jernih Gunung Tujuh can be used to treat ovarian cancer and breast cancer, because the bark, leaves, branches, twigs and roots of the genus taksus is a source of paclitaxel (taxol) which can kill cancer cells. Bussmann and Sharon (2006) mentions that the tumor disease and cancer in Peruvian society can be cured by traditional medicine using herbs. Another category of plant use is the primary resource materials such as wood

Commented [w4]:

building materials and wood materials, secondary resource materials, other foodstuffs, cosmetics ingredients and rituals (Table 3).

Commented [w5R4]: Please check the grammar

The Important of Cultural Value in Plant Biodiversity

Based on the analysis of data obtained by the estimated value of 234 ICS plant species useful for the people Kerinci ranging from 3 to 59. The lowest value is inggu (*Ruta angustifolia* (L).Pers) and bawang kayu (*Allium fistudosum* Linn) with 1 as the value to which a mixture of ingredients while the value of high ICS owned by rice (*Oryza sativa* L) and cinnamon (*Cinnamomun burmanii* Ness Ex .Bl) respectively 59 and 57. Based on estimates of the value of the cultural importance of plant communities can be grouped Kerinci on 5 categories (Table 4). Grouping is done to see species culturally important in order to increase people's income and the conservation actions undertaken by the community against these types. Table 4 shows only 1.709% which has a very high category with ICS value is greater than 47. This means that these species is a species that has the most important cultural value for the people of Kerinci. Plant species are classified as very high, namely rice (*Oryza sativa*), cinnamon (*Cinnamomun burmanii*), coconut (*Cocus nucifera*) and sampilo (*Carica papaya*).

Rice as the main food for the people of Kerinci has a very high intensity use (i = 5) and used regularly every day (q = 5) and is the main option (e = 2). Planting of paddy is the main activity of Kerinci community besides farming activity. Besides rice is also useful for the treatment of diarrhea in a way roasted to be black, mixed with warm water and then drunk. While cinnamon has several uses, namely as beverage ingredients and aromatic (bark); The main resource materials firewood (stems and branches) and the sap as a cure toothache. Plants with very high value of ICS is a plant species that is known to have some use value (Table 5). Turner (1988) states that the more the value of the usefulness of a particular type of plant, the plant is more important culturally. For those types of culturally significant people will try to get it so that benefits can be obtained in a sustainable plant.

Table 5 shows that species with high cultural value has more than one purpose. Turner (1988) mentions that the many uses of plants, the greater the value of the interests of the plant. Definition and benefits of plant resources will vary from one culture to another culture. ICS value is different for each location because it is related to the culture of the local community about the value of quality, intensity values and the value of exclusivity of plant species for the community. A plant species can have high usability in a single location, but not necessarily for people in locations such as the calculation results ICS plants Dayak people Meratus Meratus Hulu Sungai Tengah (Kartikawati 2004), the calculation results ICS plant the Dayak Kenyah and Dayak Lundayeh District Malinau (Purwanto 2011), community Benuaq (Hendramedi 2009) and the results of the calculation ICS Samin community in Central Java (Jumari 2012).

The fourth category is very high plant species are plants that have been cultivated by the people Kerinci. Based on interviews with the speakers mentioned that these species can be found in the yard and surrounding fields. Spread of plant species including a score of 3, namely the spread of many plant species and easily found because usually found in fields up to about settlements. These results indicate that the plant has a high cultural importance, also have a high ecological importance. It is closely related to the stimulus that causes stimulation that makes someone to do something deed. The high value of the cultural importance of a plant will stimulate the public to carry out planting in order to obtain results that are sustainable and continuous

Table 4 describe that 88 plant species have low ICS (11–22) and 97 species of ICS is very low (<11). ICS lower value in order to show the quality, intensity of use and exclusivity low. This is because the average value categories that are known by the public is one category. In addition to the lack of quality against the use of these plant species, frequency and exclusivity usefulness too low. Ten species have very low category with ICS smallest values are presented in Table 6.

Based on the results of interviews showed that ten of these species are wild plants, has only one category to the Kerinci known by the public. The value of cultural interest is subject to change

at any time because the plants used by people many years ago may only be known by a few people or none at all at this time (Thomas *et al.* 2009).

Purwanto (2007) states the value of ICS and dissemination of important plant known for developing resource management strategies such plants. Species that have a value of low scores and high ICS value it is necessary to cultivation. While the species has spread scores high with low ICS meaningful existence in nature underused by the public. Therefore, it is necessary to develop the creativity of the population to be able to exploit the high potential in nature.

The Importance of Culture and Plant Conservation

Based on the results of measurements of plants known cultural importance of rice (*Oryza sativa*) and cinnamon (*Cinnamomun burmanii*) is a species with a very high cultural importance. This shows that both types of this plant has a value of quality, high intensity and exclusivity. Rice (*Oryza sativa*) is a kind of staple food-producing plants Kerinci. Planting of paddy is the main activity Kerinci community besides farming activity. In the annual cycle Kerinci community working in the paddy fields activities carried out simultaneously marked with a 'cue' from traditional leaders go to the field that season had already begun. This is done to avoid the occurrence of pests and diseases of the rice is done individually. In addition, to maintain the properties of cooperativeness and sharing (sharing of water rice field) in construction fields.

Rice varieties grown are rice payo (high rice) is paddy which has a 7 month growing season, so that in one year they harvested only once, and then for 5 months fallow with a view to restoring soil fertility. Apart from the cost of care and maintenance payo cheaper rice plants, as well as the taste preference preferred by the people Kerinci. Paddy system carried out by indigenous people Kerinci is a form of action on soil and water conservation. A fallow period given to the land in order to restore the fertility of the soil so as to avoid artificial fertilizer can actually impoverish the soil nutrient in the long term (Soepandi *et al.* 2010).

However, based on observations in the field, there has been a change in the selection of varieties of rice planted. This is due to various internal and external factors that go to the people

Kerinci. Internal factors such as the increase and population growth that cause some people to switch to rice superior type which has a harvest can be 2-3 times a year to meet the needs as in Hamlet Lama Tamiai in the district of Batang Merangin and Dusun Ulu Jernih in Gunung Tujuh. External factors such as the introduction of new varieties to the people who caused the farmers to construct their knowledge by way of experiment, information exchange as well as careful observation of rice plants fellow farmers who carried on almost every occasion. Because of this knowledge can be fickle so not all farmers in a village have the same knowledge and information, and curiosity and the ability of each depending on the age and experience of farming, to actualize their knowledge becomes important meaning (Setyawati 1999).

Based on the results of the calculation of the value of cultural importance cinnamon plant is a species with a very high ICS category after rice. Cinnamon is a commodity Kerinci community because it produces the best cinnamon bark in the world. Cinnamon cultivation has been done a long time hereditary because in addition to commodities, cinnamon has several purposes, namely as beverage ingredients and aroma (bark); The main resource materials firewood (stems and branches) and the sap as a cure toothache. In addition to their skins, cinnamon sticks could be used for timber, while the trunk and branches can be used as firewood. Cinnamon tree can be cut down before harvesting the bark and can sprout from the stump. The bark can be harvested at the age of 5 years. If farmers do not need the money he can wait up to 25 years. This allows the flexibility harvest management practices cinnamon tree. Farmers can choose the density of trees, a mix of plant species for seasonal crops and rotation time depending on their overall agricultural strategy. Blend with coffee plants, trees or other seasonal crops while providing a source of income while waiting cinnamon ready to be harvested. Cinnamon as if it had a feature or Kerinci community culture, they already have a good knowledge of the cultivation of cinnamon (Figure 4)

Cinnamon is a tree that grows in the forests near the foot of the mountain like Malaysia, Vietnam and Indonesia archipelago. ~~Can~~ It grows well at altitudes of 800 to 1500 m above sea level. According to the people Keluru, cinnamon has long been cultivated on a small scale in

Formatted: Font color: Red, Strikethrough

Kerinci, Kerinci could make a major exporter of cinnamon Indonesia. Cinnamon is mainly used for the pharmaceutical, cosmetics and food, especially in the manufacture of beverages as well as to increase the flavor of food. Cinnamon tree bark is harvested before it is harvested and can sprout from the stump. The selling price of cinnamon bark spotty but still have a high cultural importance, Kerinci society still makes cinnamon as crop cultivation on their land. This is due to cinnamon cultivation system that is easy and requires little cost to maintain. Besides, suitability factors that place grow on the slopes of the mountain foot hills and knowledge of the factors cinnamon cultivation system that has been understood by the public.

Zuhud (2007) states that the plants and the habitat and culture can not be separated from one another as a unified whole life for the people. Cinnamon and Kerinci community can be said to have a unity so as to society, cinnamon plant is a willingness and not because of compulsion. Also stated that the stimulus of a specific species and biodiversity is unique, addressed to a specific subject as well.

Commented [w6]: Who ???

Planting cinnamon has become a local knowledge of society Kerinci in the utilization of natural resources for generations and have a role in conservation through the use of traditional affecting forest conservation. This shows that the cinnamon crop plants has become a culture for the people Kerinci and managed to be indicators of the success of natural resource management and sustainable use . Pei *et al*. (2009), Pei (2013) states that the management of the resource based on the local knowledge of local communities will be able to ensure the preservation of its utilization

CONCLUSION

Kerinci community knowledge on plants characterized by the introduction of the 234 species of plants from 75 families that can be grouped into 15 categories of usability. The importance of plant culture has a close relationship with the local knowledge possessed by the people of Kerinci. Rice (*Oryza sativa* L.) and cinnamon (*Cinnamomun burmanii* Nees) has a high cultural importance because it has the quality, intensity and high exclusivity. Rice (*Oryza sativa* L.)

is a staple food for the people Kerinci so that the quality, intensity and exclusivity usefulness is high. While cinnamon (*Cinnamomun burmanii* Nees) is a plant that has become the hallmark of Kerinci community for a long time so that the management of both types of plant cultivation has become a knowledge that lasts a long time and heredity, undergo a process of adaptation to the changes that occur. ~~Kerinci people's knowledge of the management of rice and cinnamon can be integrated into conservation efforts which include the protection, preservation and utilization so that the crop can be obtained sustainably and continuously~~. Kerinci people's knowledge of the management of rice and cinnamon can be integrated into conservation efforts which include the protection, preservation and utilization so that the crop can be obtained sustainably and continuously. The index of culture significance and conservation has a close relationship. This was indicated plants high ICS can ensure the continuity and sustainability of the plant spesies.

ACKNOWLEDGEMENT

The present research was funded by Directorate of Higher Education (DIKTI) through a research competitive grants and ICRAF by scholarship study.

REFERENCES

Alexiades MN, Sheldon JW. 1996. *Selected Guidelines for Ethnobotanical Research: A field manual*. NY: New York Botanical Garden Press Bronx.

~~Aumeeruddy Y. 1992. Agroforestry in The Kerinci Valley: A support to buffer zone management for Kerinci Seblat National Park, Sumatra Indonesia. Preliminary Report Laboratory of tropical botany Institute of Botany Monpellier.PHPA Sungai Penuh Kerinci~~ ii+61 hlm

~~Aumeeruddy Y, Bakels J. 1994. Management of a Sacred Forest in The Kerinci Valley Central Sumatra : An Example of Conservation of Biological Diversity and Its Cultural Basis. *Journal d'AgricultureTraditionelle et de Botanique*.~~

Bussmann RW, Sharon D. 2006. Traditional medical plant use in Northern Peru: Tracking two thousand years of healing culture. *Journal of Ethnobiological and ethnomedicine* 2:47 doi: 10.1186/1746-4269-2-47. http:///www.ethnobiomed.com/content/2/I/47

Hendalastuti R. 2008. Variasi Genetik dan Teknik Perbanyakan Vegetatif Cemara Sumatrana (*Taxus sumatrana*). [Tesis]. Bogor: IPB.

Hendramedi. 2009. Etnoekologi Perladangan dan Kearifan Botani Lokal Masyarakat Dayak Benuaq di Kabupaten Kutai Barat Kalimantan Timur [Dissertation]. Bogor: IPB.

Commented [w7]: Orang-orang yang terlibat dalam riset, berperan besar dalam pengumpulan data juga perlu disebut dalam uacapan terimakasih.

Formatted: Font color: Red, Strikethrough

Commented [w8]: What is it? Not cited in the text

Formatted: Font color: Red, Strikethrough

Commented [w9]: Volume? Number? Pages?

Not cied in the text

Formatted: Font color: Red, Strikethrough

Formatted: Font color: Red, Strikethrough

Hidayat H. 2006. Perspeksi stakeholders dalam pengelolaan taman nasional kerinci seblat di era otonomi daerah. *Jurnal Masyarakat Indonesia* 32(1).

Hoffman B, Gallaher T. 2007. Importance Indices in Ethnobotany. *Ethnobotany Journal* 5:201–218 5/i1547–3465-05-201.

~~Irawan P. 2006. Penelitian Kualitatif dan Kuantitatif Untuk Ilmu-Ilmu Sosial. Jakarta: Departemen Ilmu administrasi Fakultas Ilmu Sosial dan Ilmu Politik Universitas Indonesia.~~

Jumari. 2012. Ethnobiologi Samin Community [Disertation]. Bogor. Bogor Agriculture University.

Junior P, Sato M. 2005. Ethnoecology and conservation in protected natural areas: incorporating local knowledge in superagui national park management. *Brazil Jurnal Biology* 65(1):117–127. http://dx.doi.org/10.1590/ S1519-69842005000100016.

Kartikawati SM. 2004. Pemanfaatan Sumberdaya Tumbuhan oleh Masyarakat Dayak Meratus di Kawasan Hutan Pegunungan Meratus Kabupaten Hulu Sungai Tengah [Tesis].Bogor. IPB

Lykke AM, Kristensen MK, Ganaba S 2004. Valuation of local use and dynamics of 56 woody species in the Sahel. *Biodiversity and Conservation* 13:1961–1990.

Martin G.J. 1995. Ethnobotany People and Conservation Manual. Plants London: Chapman and Hall

Mutheeswaran S, Pandikumar P, Chellappandian M, Ignacimuthu S. 2011. Documentation and Quantitative Analysis of The Local Knowledge on Medicinal Plants among Traditional Siddha Healers in Virudhunagar District of Tamil Nadu India. *Journal of Ethnopharmacology* 137:523–533. doi: 10.1016/j.jep.2011.06.003

Neuman W. Lawrence. 2006. Social Research Methods Qualitative and Quantitative Approaches. Sixth Edition. University of Wisconsin at Whitewater

Pei SJ. 2013. Ethnobotany and sustainable use of biodiversity. *Plant and Diversity Resources* 35(4):401–406. ~~Rist L, Shaanker R. U, Gulland EJM, Ghazoul.~~

Pei S, Zhang G, Huai H. 2009. Application of traditional knowledge in forest management: Ethnobotanical indicators of sustainable forest use. *Journal Forest Ecology and Management* 257:2017–2012. doi 10.1016/j.foreco.2009.01.003

Pieroni A. 2001. Evaluation of the cultural significance of wild food botanicals traditionally consumed in Northwestern Tuscany, Italy. *Journal of Ethnobiology* 21(1):89–104

Pieroni et al. 2006

Pieroni A, Houlihan L, Ansari N, Hussain B, Aslam S. 2007. Medicional perceptions of vegetables traditionally consumed by South-Asian migrants living in bradford, Northern England. *Journal of Ethnopharmacalogy* 113:100-110 doi 10.1016/j.jep.2007.05.009

Prance GT, Balee W, Boom BM, Cameiro RL. 1987. Quantitative ethnobotany and the case for conservation in Amazonia. *Conservation Biology* 1:296–310.

Purwanto Y. 2002. The Evaluation of the Cultural Significance of Plants in Ethnobotanical Study of Dany-Baliem, Irian Jaya, Indonesia. Makalah disampaikan dalam International of Symposium on Land Management and Biodiversity in Southeast Asia. Organized by Hokkaido University, Sapporo Japan and Research Centre for Biology the Indonesia Institute of Science. Indonesia.

Commented [w10]: Pages: --- - ---?

Commented [w11]: What is it?

Formatted: Font color: Red, Strikethrough

Commented [w12]: Not cited in the text

Formatted: Font color: Red, Strikethrough

Formatted: Font color: Red, Strikethrough

Commented [w13]: DOI: .....

Commented [w14]: Tanda baca titik (.)

Commented [w15]: Tanda baca titik (.)

Commented [w16]: DOI: ....

Commented [w17]: Not cited in the text

Formatted: Strikethrough

Commented [w18]: DOI: .....

Commented [w19]: Not cited in the text

Formatted: Font: 12 pt

Commented [w20]: DOI: ....

Purwanto Y. 2007. Ethnobiologi, ilmu interdisipliner, metodologi, aplikasi dan prosedurnya dalam pengembangan sumberdaya tumbuhan. Bogor. Bahan Kuliah Pascasarjana IPB

Purwanto 2011

Purwanto & Waluyo 1993

Purwanto Y, Waluyo EB, Afriastini JJ. 2011. Analisis Nilai Kepentingan Budaya Hasil Hutan Bukan Kayu (NTFPs) untuk Valuasi Potensi dan Kemungkinan Pengembangannya. Dalam Y.Purwanto, EB Waluyo dan A.Wahyudi (Eds) Valuasi hasil hutan bukan kayu setelah pembalakan (Kawasan konservasi PT Wira Karya Sakti Jambi), 123–149. LIPI, Bogor

Quinlan 2002

Quinlan MB, Quinlan RJ, Nolan JM. 2002. Ethnophysiology and herbal treatments of intestinal worms in Dominica, West Indies. *Journal of Ethnopharmacology* 80:75–83.

Reyes-García R, Huanca VT, Vadez V, Leonard W, Wilkie D. 2006. Cultural, practical, and economic value of wild plants: A quantitative study in the Bolivian Amazon. *Economic Botany* 60:62–74.

Ruheza S, Kilugwe Z. 2012. Integration of the indigenous and the scientific knowledge systems for conservation of biodiversity: significances of their different worldviews and their win-loss relationship. *Journal of Sustainable Development in Africa* 14(6):160–174.

Setyawati I. 1999. Pengetahuan tentang Varietas-varietas Padi dan Pemanfaatannya di Kalangan Orang Kenyah Leppo ke Di Apau Ping. Dalam *Kebudayaan dan Pelestarian Alam*. Editor Christina E dan Bernard S. The ford Foundation PHPA dan WWF (p97–113)

Shukla S, Gardner J. 2006. Local Knowledge in community-based approaches to medicinal plant conservation: lessons from India. *Journal of ethnobiology and Ethnomedicine* 2:1-9 doi 10.1186/1746-4269-2-20

Soepandie D, Poerwanto R, Sobir. 2010. Sistem pertanian yang berkelanjutan. Dalam Buku Pemikiran Bersama Guru Besar PT BHMN. Editor. IPB Press

Silva VA, Andrade L, Albuquerque de UP. 2006. Revising the Cultural Significance Index: The case of the Fulni-ô in Northeastern Brazil. *Field Methods* 18:98–108.

Stoffle RW, Halmo DB, Evans MJ, Olmsted JE. 1990. Calculating the cultural significance of American Indian plants: Paiute and Shoshone ethnobotany at Yucca Mountain, Nevada. *American Anthropologist.*

Thomas E, Vandebroek I, Sanca S, Van Damme P. 2009. Cultural Significance of Medicinal Plant Families and Species Among Quechua Farmers in Apillapampa Bolivia. *Journal of Ethnopharmacology* 122:60–67. doi : 10.1016/j.jep.2008.11.021

Turner N.J. 1988. The Importance of a Rose : Evaluating The Cultural Significance of Plants in Thompson and Lillooet Interior Salish. *Journal of American Anthropologist* 90:272–290

Young JC, Waylen KA, Sarkki S, Albon S, Bainbridge I, Balian E, Davidson J, Edwards D, Fairley R, Margerison C, McCracken D, Owen R, Quine CP, Stewart-Roper C, Thompson D, Tinch

Commented [w21]: Bolehkan Bahan Kuliah yang belum dibulikasi dijadikan sebagai bahan rujukan?

Formatted: Font: 12 pt

Formatted: Font: 12 pt

Formatted: Indent: Left: 0 cm, First line: 0 cm

Commented [w22]: Tanda baca titik (.) ?

Formatted: Indent: Left: 0 cm, First line: 0 cm

Commented [w23]: Perhatikanlah penulisan yang benar! Jangan lupa mengakhiri dengan tanda titik (.)

Commented [w24]: Not cited in text

Commented [w25]: Tanda baca titik (.) ?

Commented [w26]: Tanda baca titik (.) ?

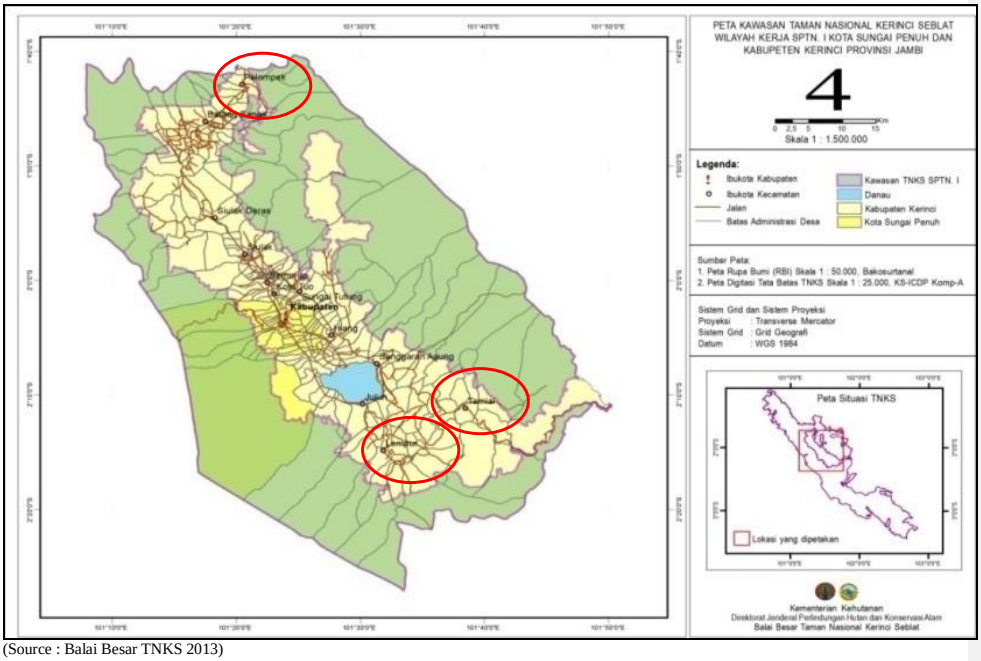
R, Van den Hove S, Watt A. 2014. Improving the science-policy dialogue to meet the challenges of biodiversity conservation: having conversations rather than talking at one-another. *Biodiversity Conservation* 23:387–404. http://dx.doi.org/10.1007/s10531-013-0607-0.

Zuhud EAM. 2007. Sikap Masyarakat dan Konservasi Suatu Analisis Kedawung (*Parkia timoriana* (DC) Merr.) Sebagai Stimulus Tumbuhan Obat Bagi Masyarakat. Kasus di Taman Nasional Meru Betiri. [Disertasi]. Bogor: Sekolah Pasca Sarjana IPB.

Zuhud EAM. 2013. Kedaulatan Kampung Konservasi Biodiversitas Hutan dan Kesehatan Manusia Indonesia. Dalam buku Pembangunan Kehutanan Indonesia Baru Refleksi dan Inovasi Pemikiran Editor Didik Soehardjito dan Haryanto R.P. IPB Press

Commented [w27]: Tanda baca titik (.)?

FIGURE



(Source : Balai Besar TNKS 2013)

Figure 1 Site Research

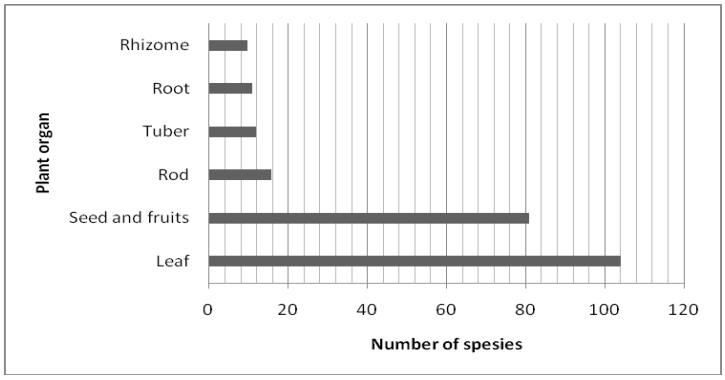


Figure 2 The number of plants based organ in use

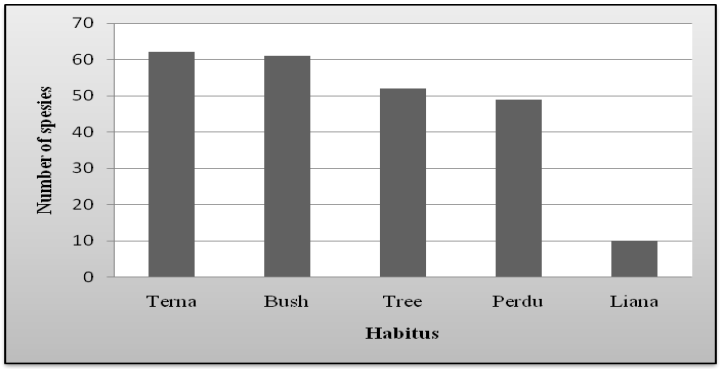


Figure 3 The number of plants spesies based habitus

Figure 4 Knowledge harvesting and peeling cinnanmomun bark by Kerinci community

TABLE

Table 1 Biophysical characteristics of the study site

Biophysical Aspect	Gunung Tujuh District	Batang Merangin District	Gunung Raya District
Geomorphology	Hilly and mountain	The hills to the valley floor that is flat and sloping	Lowland and hilly
Altitude	>1000 m a.s.l	500–1000 m a.s.l.	100 - ≥ 1000 m a.s.l.
Rainfall	1500 – 2000 mm/year	≤ 1500 mm/year	2000 – 5000 mm /year
Type of soil	Andosol, latosol	Andosol, latosol, podsolic, alluvial	Andosol, latosol, podsolic, litosol
Type of agriculture	The main agricultural cultivation of vegetables and agroforestry Cinnamomun, wetland limited	The main agriculutural land paddy rice fields in the hills limited	The main agricultural crops and fields cinnamon especially monoculture and slightly agroforestry

Type of geomorphology	Kayu Aro highland	Valley Kerinci	Lolo- Lempur area

(Source :Aumeeruddy 1992)

Table 2 *Plant utilization categories for community Kerinci*

Type of utilization	Number species	Wild	Domestication
Food primary	1	0	1
Food secundary			
Fruit	21	1	20
Vegetable	21	6	15
Carbohydrat	4	0	4
Drink	2	0	2
Other foodstuffs			
Flavoring	12	1	11
Stimulan	3	0	3
Dye	2	0	2
Packaging of food	3	2	1
Material main			
Wooden building	6	6	0
Firewood	1	0	1
Material secondary			
Hair fertilizer material	1	0	1
Cosmetic ingredients	4	2	2
Medicine plant	200	143	57
Ritual and spiritual	3	3	0

Table 3 List of plants by category usability

Fruits	**Vegetables**	**Flavorings**
Persea americana MILL	*Amaranthus caudatus* Rumph	*Garcinia sizygiifolia* Pierre
Averhoa carambola Linn.	*Phaseolus vulgaris* Linn.	*Allium cepa* Linn.
Arthocarpus heterophyllus L	*Macaranga rhizinoides* Muell. Arg.	*Allium sativum* Linn
Durio zibethinus Merr	*Limnocharis flava* (L.) Buchenau	*Capsicum annum L*
Syzigium aqueum (Burm.f.)	*Archidendron bubalinum*	*Capsicum frutescens* Linn.
Szygium malaccense	*Vigna cylindrica* (L.) Skeels	*Zingiber officinale* Roxb
Psidium guajava Linn.	*Uncaria longiflora* Merr.	*Citrus aurantifolia*
Cannarium littorale Blume.	*Ipomea aquatica Forsk.*	*Cinnamomum burmani* Nees.
Citrus reticulata Blanco	*Sauropus androgynus* Merr.	*Alpinia galanga (L.)* Willd
Citrus decumana Linn.	*Cucumis sativus* Linn.	*Solanum lycopersicum* Linn.
Mangifera indica	*Diplazium esculentum* (Retz.) Sw.	Benincasa hispida Cogn
Garcinia mangostana Linn.	*Momordica charantia* Linn.	**Stimulan foods**
Ananas comosus Merr	*Coriandrum sativum* Linn.	*Syzygium aromaticum*
Mangifera sp	*Leucaena leucocephala*	*Cinnamomum burmanii* Nees.
Musa brachycarpa	*Gigantochloa apus* Kurz	*Pandanus immersus* Ridl
Musa sp	*Solanum rudepannum*	**Packaging foods**
*Musa sp*Linn.	*Nasturtium officinale* L. R. Br.	*Musa paradisiaca* Linn.
Nephelium cuspidatum Blume	*Manihot utilisima* Pohl	*Nephentes sp*
Salacca zalacca (Gaertn) Voss	*Artocarpus altilis* (Parkinson)	*Bamboosa sp*
Carica papaya Linn.	*Solanum sp*	**Dye**
Manilkara zapota Linn	*Daucus carota Linn.*	*Pandanus immersus* Ridl
		Piper betle Linn.

Table 4 : The number spesies plants based scoring ICS

Category	Score ICS	Number of spesies	Percentase
Very height	> 47	4	1,709
Height	35-46	4	1,709
Medium	23-34	41	17,521
Low	11-22	88	37,607
Very low	< 11	97	41,453
		234	100

Table 5 The calculation result is very high ICS

Vernaculer name	Scientific name	Detailed calculation	ICS
Padi	*Oryza sativa*	(5 x 5 x 2) + (3 x 3 x 1)	59
Kayu manis	*Cinnamomum burmani*	(3 x 3 x 1) + (3 x 3 x 1) + (3 x 3 x 1) + (4 x 3 x 2)	57
Kelapa	*Cocos nucifera* Linn.	(4 x 4 x 1) + (4 x 4 x 1) + (4 x 3 x 1) + (4 x 3 x 1)	56
Sampilo	*Carica papaya* Linn.	(4 x 4 x 1) + (4 x 4 x 1) + (4 x 4 x 1)	48

Table 6: Ten spesies are very low category ICS

Vernaculer name	Scientific name.	Detailed calculation	ICS
Sadih	*Brassica chinensis* Linn.	(3 x 2 x 1)	6
Selasih gunung	*Ocimum basilicum* Linn.	(3 x 2 x 1)	6
Temenggi	*Marsilea crenata* Presl	(3 x 2 x 1)	6
Temiang abu	*Vitis repens* W.et.A	(3 x 2 x 1)	6
Asam pipi/asam susu	*Begonia tuberosa* Lamk	(2 x 2 x 1)	4
Bawang api	*Allium ascalonicum* Linn	(2 x 2 x 1)	4
Jambu lipo	*Szygium pyenantum*	(2 x 2 x 1)	4
Rumput belando	*Paspalum Cocugatum*	(2 x 2 x 1)	4
Bawang kayu	*Allium fistudosum* Linn	(3 x 1 x 1)	3
Inggu	*Ruta angustifolia* (L.) Pers	(3 x 1 x 1)	3