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Traditional Wisdom and Conservation of the Osing Tribal Community in Banyuwangi

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ABSTRACT

In daily life, the interaction of the Osing people with their agricultural environment has resulted in various activities that have local wisdom values. All of these activities are still carried out in the midst of the rapid advancement of digital and online technology-based civilization. In addition, in their social life, the community is consistent in carrying out and preserving various traditional ritual traditions from their ancestral heritage. The research aims to make an inventory of various activities that have local wisdom values and record they carry out traditional conservation of the biological resources in their environment. The research used a qualitative descriptive method, while data collection was carried out through observation and interviews in Focus Group Discussions (FGD). The data analysis process uses cross-checking, summarizing, and synthesizing. The results showed that there were various activities of the Osing community that contained local wisdom values, including farming practices using the Javanese calendar (*pranotomongso*) and the history of making and placing garden lands that function as buffer areas for paddy fields to prevent landslides. ancestors of the Osing tribe. The division of tasks in farming activities in the rice fields carried out by men and women of the Osing tribe reflects a combination of activities that have aspects of local wisdom. Likewise, the use of straw as animal feed and natural organic fertilizers, as well as the use of a kettle, fishing tools, the use of hunting dogs to get wild animals, and skills in the process of making traditional tools. The Osing community carries out traditional ecosystem-based conservation to protect all plants that grow on their agricultural lands. In addition, in maintaining the sustainability of clean water springs (*belik*) along the banks of the Sobo and Gulung rivers, they do this by making a ban on cutting down trees that grow around the riverbanks and performing the *rebo wekasan* salvation ritual.

Keywords: qualitative descriptive, FGD, traditional conservation

ABSTRAK

Dalam kehidupan sehari-hari, interaksi masyarakat Osing dengan lingkungan pertaniannya telah melahirkan beragam aktivitas yang memiliki muatan nilai kearifan lokal. Seluruh aktivitas tersebut tetap dilakukannya di tengah pesatnya kemajuan peradaban teknologi berbasis digital dan online. Selain itu, dalam berkehidupan sosial, masyarakatnya juga tetap konsisten menjalankan dan melestarikan berbagai tradisi ritual adat dari warisan leluhurnya. Tujuan dari penelitian ini adalah untuk menginventarisasi beragam kegiatan yang memiliki nilai-nilai kearifan lokal dan mendata cara mereka melakukan konservasi tradisional terhadap sumber daya hayati di lingkungannya. Penelitian menggunakan metode deskriptif kualitatif sedangkan pengumpulan datanya dilakukan melalui cara observasi dan wawancara pada *Focus Group Discussion* (FGD). Proses analisis data menggunakan cara *cross-checking*, *summarizing* and *synthesizing*. Hasil penelitian menunjukkan bahwa terdapat beragam aktivitas masyarakat Osing yang memiliki muatan nilai kearifan lokal di antaranya praktik bertani dengan menggunakan penanggalan Jawa (*pranotomongso*), serta sejarah

pembuatan dan penempatan lahan-lahan kebun yang berfungsi sebagai daerah penyangga lahan sawah agar tidak longsor, semuanya dilakukan oleh para leluhur suku Osing. Pembagian tugas dalam kegiatan bertani di sawah yang dilakukan oleh para petani laki-laki dan perempuan suku Osing mencerminkan perpaduan kegiatan yang memiliki aspek kearifan lokal. Begitu pula pemanfaatan jerami sebagai pakan ternak dan pupuk organik alami, serta penggunaan ketepel, alat pemancing, penggunaan anjing buruan dalam mendapatkan hewan liar, maupun keterampilan dalam proses pembuatan peralatan tradisional. Masyarakat Osing melakukan konservasi tradisional berbasis ekosistem untuk melindungi seluruh tanaman di lahan pertaniannya. Selain itu, dalam menjaga keberlangsungan sumber mata air bersih (*belik*) di sepanjang bantaran Sungai Sobo dan Sungai Gulung, mereka lakukan dengan cara membuat larangan menebang pohon-pohon yang tumbuh di sekitar bantaran sungai, dan melakukan ritual selamatan *rebo wekasan.*

Kata kunci: deskriptif kualitatif, FGD, konservasi tradisional

INTRODUCTION

In general, local knowledge systems that grow in the community and are sourced from the results of a collection of various knowledge when interacting with the environment, of course the community already has customary institutions and norms as fundamental evidence of the socio-cultural conditions of a tribe. One of the objectives of understanding local knowledge in spatial planning is to measure the level of adaptation strategies to the surrounding environmental conditions in order to remain able to survive. In addition, there are other objectives, including identifying various local community activities, assessing their impact on environmental conditions, and even measuring management strategies in managing and utilizing the existing environment in the area. In general, based on the study of local knowledge, this research is expected to be able to provide data information that is important enough to study in detail the ecological aspects of the environment and the richness of its biological resources (Raynor & Kostka, 2003).

The Osing tribe community are known as tenacious and capable farmers (Anazifa, 2016; Prasetyo *et al*., 2018), the majority of the Osing people live in the Banyuwangi Regency, East Java Province. These communities have customs, culture, and language that are relatively different from the Javanese, Madurese, and Balinese tribes (Prasetyo, 2019). In social life, various characters who have good values often become the hallmarks of this community, including the tendency to have a strong life independence, the nature of mutual cooperation that is upheld, and the obedient nature and respect for the customs of the Osing tribe (Tobing *et al*., 1993).). Some traditions and cultures that are still often carried out by this community are *rebo wekasan, barong ider bumi, tumpeng sewu, gedhogan*, cleaning the village by drying black and red mattresses, playing *angklung paglak*, and drinking coffee *sewu*. Basically, the entire implementation of this tradition aims to ask God Almighty so that the people are free from all kinds of natural disasters, disease outbreaks, so that agricultural crops thrive with abundant results, and convey gratitude for His blessings and grace.

The Osing tribe communitie's compliance in preserving the traditions and culture of their ancestors is reflected in the beauty and greenness of various agricultural landscapes based on ecological wisdom (Anazifa, 2016). In general, agricultural landscapes in rural areas are multi-functional and rich in biocultural diversity, so it is very important to integrate biological and cultural diversity for the sustainability of the welfare of the community (Agnoletti & Rotherham, 2015). There are 4 (four) types of agricultural landscapes that are known and well understood by this community, namely yards, paddy fields, gardens, and fields (Iskandar &

Iskandar, 2016; Prasetyo et al., 2018). When examined in detail, various kinds of activities related to the needs of the four agricultural landscapes reflect activities that are full of local wisdom values. The activities in question are how to plow, plant, weed, and harvest rice in the fields which he does traditionally. Likewise, the cultural activities of playing *angklung paglak* during the rice harvest season, as well as the *gedhogan* culture which is done by pounding rice using a mortar by the women of Osing alternately. Examples of other local wisdom activities are making various kinds of equipment needed in the kitchen, tools for carpentry, equipment for finding wood in the garden, all of which are made of wood (Prasetyo, 2019).

At this time, in the modern era of digital and online technology, the Osing tribe community in their daily lives consistently carry out and preserve various traditional ritual traditions inherited from their ancestors. These technological advances have not diminished in the slightest the strength of customs and traditions that have been deeply rooted in their personalities. In this regard and referring to the study of the traditional knowledge of the Osing tribe community in interacting with the surrounding environment, it is necessary to conduct research on various activities that have local wisdom values and how they protect and protect the biological resources in them.

The novelty of this research is that through ethnobiological research on the Osing tribal community in Banyuwangi, it is proven to be able to reveal the existence of values of life based on local wisdom in interacting with their living environment. This living condition is carried out in the midst of an increasingly advanced civilization of information technology system technology, which has digital and online platforms. The purpose of this research is to make an inventory of activities that have local wisdom values and to record how they carry out traditional conservation of biological resources in their environment.

METHODOLOGY

Ethnobotanical data collection was carried out in three villages, namely Kemiren Village, Glagah District, Taman Suruh Village, Glagah District, and Jambe Sari Village, Giri District, Banyuwangi Regency (Fig. 1). The reason for choosing the research location is because in daily life Kemiren Village is a village that seems strong enough to preserve the customs and culture of the Osing tribe, while the other two villages are relatively less concerned with preserving various traditional rituals even though the community still obey and adhere to the Osing customary rules.

The research was carried out using a qualitative descriptive method (Lestari *et al*., 2019), while data collection was carried out through observation and interviews with key informants and respondents (Silva & Andrade 2006; Newing *et al*., 2011; Iskandar, 2012; Albuquerque *et al*., 2014) in Focus Group Discussion (FGD) (Sheil *et al*., 2004).

The requirements criteria in determining key informants and respondents are based on the researcher's need for valid and correct data sources related to the research topic (Bernard, 2002; Lewis & Sheppard, 2006). The characteristics of the key informants used are native Osing tribesmen, who have lived for decades and have knowledge of various activities related to the use of natural resources in the village that reflect the values of local wisdom, and have free time to be willing to provide this knowledge. The characteristics of the respondents in this study were the original inhabitants of the Osing tribe, both male and female (White *et al*., 2011), adults (18-45 years) and old (≥ 46 years) (Dolisha *et al*., 2007). The condition of the two ages reflects that the social status of the respondents has reached maturity and is stable in studying socio-cultural values in society (Prasetyo, 2019). The data analysis process uses cross-checking, summarizing and synthesizing methods (Newing *et al*., 2011).

Fig. 1. The location of the three research villages in Banyuwangi Regency

RESULTS AND DISCUSSION

The History of The Formation of Agricultural Lands in The Osing Tribe Community

In the life of an agrarian community that has evolved for hundreds of years into a sedentary rural community, the formation of agricultural landscape units in the Osing tribe community is one of the strong characteristics of a farming life that is integrated with the culture and traditional rituals of the tribe (Anazifa, 2016; Lestari *et al.* , 2019). Community farming activities are known to have given birth to agricultural lands such as yards, paddy fields, gardens, and fields (Prasetyo *et al*., 2018). In the practice of managing these lands, the Osing tribe community have adapted to the environmental conditions presented in agricultural practices.

Based on information from key informants, referring to stories from the ancestors of the Osing tribe, that the history of the formation of environmental units known as rural landscapes, began with tripe pedestals by cutting down trees that grow in the forest to open new lands as residential area. This activity was carried out by people from the Majapahit kingdom, and is estimated to have occurred towards the middle of the 13th century until the end of the 14th century.

The first land that was successfully created from the results of tripe pedestal was known as the residential land, which is now called the yard and residence landscape unit. Over time and in the interest of easy organization in social life in the community, these landscape units developed into rural areas (rural landscapes) (Walujo *et al*., 1991). At first the purpose of establishing a place to live was not just a place to shelter from the sun or rain and wind during the rainy season, but the main purpose was to use the land for farming in order to survive. People's lives at that time still depended strongly on the consumption of local food sources such as cassava (*Manihot esculenta*), taro (*Colocasia esculenta*), sweet potato (*Ipomoea batatas*), *gembili* (*Dioscorea esculenta*), canna/*ganyong* (*Canna discolor*), and breadfruit/*sukun* (*Artocarpus altilis*), in addition to paddy/*pari* (*Oryza sativa*) as a staple food.

The next land formed is paddy fields. The paddy fields were formed because to answer the pressure of the basic needs for the main staple food, namely rice. At that time, the development of public understanding of land for farming was quite advanced. In general, the land that is used for paddy fields is land where all types of trees that grow in it have been cut down until nothing remains, then the land is left for 3-4 months exposed to sun and rain so that the soil undergoes biological weathering. The next process is plowing the soil until it forms plots of paddy fields that are ready to be planted. The ancestors of the Osing tribe had a fairly good understanding of farming knowledge, especially about farming practices that referred to the Javanese calendar called *pranotomongso* (Anazifa, 2016) so it was natural that the paddy yields they obtained were quite high.

The next formation of agricultural land is gardens. The garden land was formed from the clearing of forest land when it was turned into paddy fields, which was intentionally left by the ancestors of the Osing tribe because the conditions were quite steep, so it was more appropriate to use it to support paddy fields so that they did not experience landslides. In general, the location of the gardens in the three villages is on a steep slope (15^0-30^0) downwards, supporting the paddy fields that are above them. Most of the trees that grow in the gardens are trees that were not cut down during forest clearing whose roots are expected to be able to withstand the excessive discharge of rainwater.

The last land formed as a result of the interaction of the Osing tribe community with the environment they live in is fields land. Basically, the fields land is paddy fields that are intentionally drained by the owner with the intention of planning to build buildings or houses. In general, this land is located close to residential areas, so its designation as agricultural land is more temporary (Prasetyo, 2019).

Traditional Wisdom in The Social Life of The Osing Tribe Community

Indirectly, the maturity of a person's understanding of thinking which is the result of his ancestral heritage, which is then implemented in the practice of ethnobotany will give birth to a wise and wise social life experience, a situation like this is reflected in the life of the Osing tribe community. The various life experiences of the Osing tribe community related to farming activities, which were obtained from generation to generation from their ancestors to become qualified farmers, are a form of traditional wisdom that is full of good values and needs to be preserved (Lestari *et al*., 2019).

As is generally done by farmers in rural areas, farming activities begin with seeding activities in different paddy fields from the plots to be planted with rice, followed by irrigating the paddy fields, hoeing/*mencangkul* paddy fields, plowing/*menyingkal* paddy fields, leveling/menteter the soil, irrigate the paddy fields again, remove the seeds that are old enough, followed by planting paddy/*tandur* (Anazifa, 2016). When the rice plants begin to grow to form clumps, the next activity carried out by farmers is fertilizing, weeding (*matun*) to harvesting rice when it has turned yellow (Anazifa, 2016). All these activities tend to be carried out by men because the Osing tribe community still holds strong cultural norms which indirectly acknowledge the roles and responsibilities of men as breadwinners in the family. In addition, the Osing tribe community still have a perception of the division of work based on differences in physical strength that men are stronger than women (Pfeiffer & Butz, 2005). The activities of women tend to support farming activities carried out by men, such as being responsible for planting rice seeds, weeding weeds that grow between rice plants, and even harvesting rice (Saradamoni, 1991). At noon the women often come to the fields with food and drinks that are ready to be served for the men's lunch. All activities carried out by men and women are a form of traditional

wisdom that is still strongly maintained in the lives of the Osing tribe community (Lestari *et al*., 2019).

The Osing tribe community also use rice straw for fodder for cattle (*Bos primigenius*) and water buffalo (*Bubalus bubalis*), some use it as natural organic fertilizer in their paddy fields (Iskandar & Iskandar, 2016), although in farming their rice also uses chemical fertilizers. Sometimes the Osing people use cattle dung, water buffalo, and goat (*Capra aegagrus hircus*) to fertilize other agricultural crops such as *lombok cilik* (*Capsicum frutescens*), lombok gede (*Capsicum annuum*), eggplant/terong (*Solanum melongena*), and long beans/*kacang dowo* (*Vigna unguiculata*) after the animal waste has been left for several days. All the activities carried out by the Osing community are full of studies of environmentally friendly traditional technologies that reflect the local wisdom of the Osing tribe.

Some of the activities of the Osing tribe community in utilizing various animal species to fulfill their sense of pleasure, they get in the following ways to catch birds using catapults and *pulut* (tree sap), or to protect chickens from predators such as mongoose/*garangan* (*Viverricula indica*) they do by hunting using dog/*asu* (*Canis familiaris*). Sometimes to meet the need for animal protein, they do it by fishing in the river. All activities in the Osing community are a local culture full of wisdom values for the sustainability of animals in their environment so that they do not become extinct.

Various Traditional Utensils Made Through Skills From The Ancestral Heritage of The Osing Tribe Community

The Osing tribal community as a traditional society that has advanced civilization, in social life cannot be separated from various tools to support the necessities of life. They are familiar with various tools used in their daily life routines, including tools for: household purposes, farming, self-defense/security, art, hunting, gardening, playing, and transporting goods. Sometimes the equipment is grouped into three major groups, namely tools used for household purposes, farming, and tools for the arts. The various tools needed are mostly obtained by making their own through skills passed down from their ancestors, but some tools such as salang, violin, and angklung are obtained by buying in traditional markets (Table 1). Basically, various skills in the process of making traditional equipment in rural areas are activities that are full of local wisdom values which at present are relatively rarely found in social life.

Referring to all the equipment used by the people of Osing, it is recorded that the source of the materials used to make the equipment comes from 18 (eighteen) species of plants that grow on their agricultural lands. The 18 plant species referred to include *jajang benel (Gigantochloa atter), jajang wuluh (Schizostachyum silicatum), jajang ori (Bambusa arundinacea),* coconut/*kerambil (Cocos nucifera),* jackfruit/*nongko (Artocarpus heterophyllus), bendo (Artocarpus elasticus),* rattan/*rotan (Daemonorops sp.),* mahogany/*mahoni (Swietenia mahagoni),* sugar palm/*lirang (Arenga pinnata), labian (Vitex pinnata), lod-lodhan (Thespesia populnea), randu (Ceiba pentandra),* soursop/*sirsak (Annona muricata),* teak/*jati (Tectona grandis), potat (Planchonia valida*), red sandalwood/r*osidi (Pterocarpus indicus),* and hibiscus/*waru (Hibiscus tiliaceus).* The plant species that are widely used as materials for crafting equipment are *nongko* (*Artocarpus heterophyllus*), *jajang benel* (*Gigantochloa atter*), and *kerambil* (*Cocos nucifera*).

Table 1. Various tools made by the Osing tribe community through the skills inherited from their ancestors

Tool group	Tool's name	Material	Utility
Household	bucket of water/*siwur*	coconut shell/*batok kerambil*/*Cocos nucifera* and bamboo of benel/ *jajang benel*/*Gigantochloa atter*	take water from the barrel/ *gentong*
	Irus	coconut shell/*batok kerambil* and bamboo of benel/*jajang benel*	helps when cooking vegetables
	Entong	jackfruit wood/*kayu nongko* / *Artocarpus heterophyllus*, potat wood/*kayu potat*/*Planchonia valida*, or kapok wood/*kayu randu*/*Ceiba pentandra*	help when cooking rice
	Cantuk	*coconut wood* or bamboo root/*oyot jajang*	soften the ingredients on the mortar
	Kukusan	bamboo of benel/*jajang benel*	a place to cook rice usually used with a *dandang*
	Kemarang	bamboo of benel/*jajang benel*	rice bowl
	Irik	bamboo of benel/*jajang benel*	Filter/*ayakan*
	Nyiru	bamboo of benel/*jajang benel*	winnow rice
	Tampah	bamboo of benel/*jajang benel*	put in the open for freshly roasted coffee
	Welasah	bamboo of benel/*jajang benel*	a place for harvesting the way to use it must be carried
	Penong	bamboo of benel/*jajang benel*	the same as *welasah* but small in size
	Knife handle/ *gagang piso*	jackfruit wood, angsana wood/ *kayu rosidi*/*Pterocarpus indicus*, or hibiscus wood/*Hibiscus tiliaceus*	so that the *piso* functions according to its designation
	Salang	rattan/*rotan*/*Daemonorops* sp.	a rice holder that is how to put it by hanging above
	Sepit	bamboo of benel/*jajang benel*	smoldering charcoal
	Fan/*tepas*	bamboo of benel/*jajang benel*	raise the wind
Art	Angklung	bamboo of benel/*jajang benel*	produce music sound
	Cagak gong	teak wood/*kayu jati*/*Tectona grandis*, jackfruit wood, mahogany wood/*Swietenia mahagoni*, or wood of *bendo*/*Artocarpus elasticus*	place of *gong* (musical instrument)
	Drum/*kendang*	coconut wood and rattan	produce music sound
	Cagak kendang	teak wood, jackfruit wood, or wood of *bendo*	drum place (*kendang*)
	Flute/*suling*	bamboo of *wuluh*/*jajang wuluh*/ *Schizostachyum silicatum*	produce music sound
	Violin/*biola*	soursop wood/*Annona muricata*	produce music sound
Agriculture	Hoe handle/ *gagang pacul*	jackfruit wood	in order for the hoe to function to plow the ground
	Sickle grip /*gagang arit*	jackfruit wood, kapok wood, or wood of *bendo*	sickle/*arit* to function according to its designation
	Handle of goding/ *gagang goding*	jackfruit wood, kapok wood, or wood of *bendo*	*goding* to function according to its designation
	Hoeing/*singkal*	Wood of *labian*/*Vitex pinnata*	hoeing the land in the paddy fields
	Leveling/*teter*	palm wood/*Arenga pinnata*	*meneter*/leveling the muddy ground in the paddy fields
	Rampang	Wood of *lod-lodhan*/*Thespesia populnea*	linking *singkal* or *teter* to cows or water buffalo
	Couple /*pasangan*	Bamboo of *ori*/*jajang ori*/ *Bambusa arundinacea*	tighten between the two cows or water buffalo so that it does not come off when used to hoeing or leveling

Traditional Conservation and Management System of *Belik* (Water Source on The Riverbank) by The Osing Tribe Community

The Osing tribal community have a concern for environmental care in the area where they live. This is reflected in the various Osing traditional ceremony performances which they routinely hold every year, especially ceremonies related to the environment. The results of field observations show that the Osing tribe community do not recognize and do conservation of a plant species that is considered very important in a sacred way. They tend to carry out traditional ecosystem-based conservation, namely by protecting all plants that grow in their yards, paddy fields, gardens, and fields from all kinds of disturbances, both caused by pests and other nuisance living creatures such as monkey/*kethek* (*Macaca fascicularis*), squirrel/*cowot* (*Callosciurus notatus*), rat/*tikus* (*Rattus exulans*), and sparrows/*manuk emprit* (*Lonchura leucogastroides*).

In addition, they also do not cut down trees that grow in gardens, fields, and along riverbanks due to economic needs (Monk *et al*., 2000, Sumarmi, 2015, Sufia *et al*., 2016). The trees in question are coconut (*Cocos nucifera*), *jajang ori* (*Bambusa arundinacea*), *jajang benel* (*Gigantochloa atter*), mundung (*Baccaurea racemosa*), sugar palm/*lirang* (*Arenga pinnata*), *pakem* (*Pangium edule*), *randu* (*Ceiba pentandra*). The ban on felling of trees also applies to several species whose presence is characteristic of every belik, namely *bendo* (*Artocarpus elasticus*), potat wood (*Planchonia valida*), durian/*duren* (*Durio zibethinus*), and *klampok* (*Syzygium littorale*). *Syzygium littorale* or often people call it by the name of *klampok*, generally thrives naturally along the river in considerable numbers (Irawanto *et al*., 2011). This protection activity has the support of the local government, namely the enactment of a regional regulation with legal force regarding prohibitions and sanctions for violating it when cutting down trees in the area. The prohibition of not cutting down trees is posted on a notice board on the side of the road close to community gardens.

In addition to the form of a ban that has legal force, to protect the environment in which they live, the Osing people perform a salvation ritual known as *Rebo wekasan* (last Wednesday), which is carried out in the month of *Sapar* (Javanese year) (Munawaroh, 2013). The implementation of this traditional salvation event is carried out around the riverbank where the *belik-belik* is located, but sometimes some people also hold a celebration at the '*Buyut Cili*' tomb (a sacred tomb that is trusted by most of the people of Osing Kemiren Village as the elder and forerunner of the village's founder) as the form of a permit application and the blessing so that the water at 'belik' remains abundant. Some of the offerings that must be available for *Rebo wekasan* salvation are *jenang abang-putih* placed in *takir* (a container made of gedang leaves) and market snacks. The offering of *jenang abang-putih*, the basic ingredients of which is made of rice flour and palm sugar, has a meaning as a symbol of repellent to disaster, while the market snacks consisting of fried bananas, *klopong*, fried sweet potatoes, *getuk* and other snacks are meant as symbols of the descendants of the Prophet Adam still crowded like a bustling market. Basically, the ritual of salvation aims to make the Almighty Creator always continue to bestow a large supply of water that is beneficial for the benefit of the community.

The Osing tribe community are very obedient not to violate the regulations that have been enacted, this is reflected in the many well-maintained sources of clean water (*belik*), especially in Kemiren Village. These *belik* all appear along the banks of the *Sobo River* (44 *belik*) and *Gulung River* (37 *belik*) which border Kemiren Village from the east and west positions. Some of the *belik* are not only used for bathing, washing clothes or household utensils, they are also used to supply clean water to people's homes which are channeled through pralon pipes. The clean water distribution management system is known as '*pam*'. The source of the *pum* to meet the clean water needs of the people of Kemiren Village comes from three different places, namely from large *belik* in Kampung Anyar Village, one source comes from belik on the banks of the

Sobo River, and comes from belik on the banks of the *Gulung River*. In addition, there is also a large *belik* on the banks of the *Gulung River* in Kemiren Village to meet the clean water needs of the people of Banjar Sari Village (Fig. 2). Activities to protect clean water sources in Kemiren Village are intended for mutual benefit (Monk *et al.*, 2000).

The *pam* management system is not under the control of the village apparatus, but is carried out by three different community groups in Kemiren Village, so that the payment burden imposed on the community is also different. Some people have to pay IDR 5,000 per head of family for each month, while for community groups whose *pam* installations are equipped with a meter, they have to pay IDR 5,000 per month for a maximum capacity of 20 m3. If it exceeds that capacity, every 1 m3 excess will be charged a payment of IDR 1,000. The proceeds from the payment for the use of the community *pam* are used by each group for management fees and payment of land tax for the owner of the place where the *belik* is located.

The condition of the *pam* management system is a reflection of community life in mutual cooperation which is still well maintained in the countryside. However, it is a little different in the *pam* management system which is distributed to the people of Banjar Sari Village, they have to pay to the owner of the land where the *belik* is located by means of a contract system per year with the amount of the contract value that allows it to change. All of the activities carried out by the Osing community are a form of traditional wisdom and conservation based on a sustainable natural resource management system.

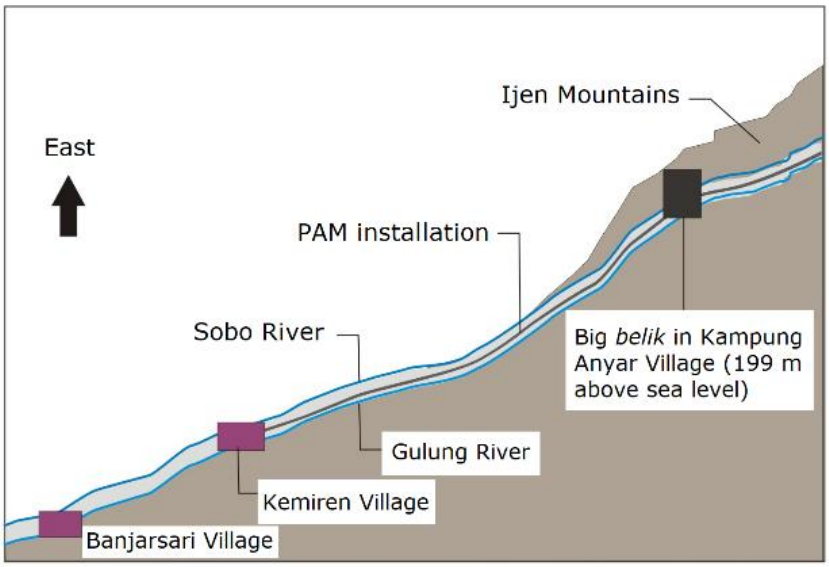

Fig. 2. Sketch of a clean water source (*belik*) that supplies water to Kemiren Village

CONCLUSION

In social life, the dynamics of the interaction of the Osing tribe community with the agricultural environment in their area has given rise to a variety of activities that contain local wisdom values. The various activities in question, such as farming practices using the Javanese calendar (*pranotomongso*) and the history of making and placing gardens that function as buffer areas for paddy fields to prevent landslides, were all carried out by the ancestors of the Osing tribe. The division of tasks in farming activities in the fields carried out by male and female farmers of the Osing tribe reflects a combination of activities that have aspects of local wisdom. Likewise, the use of straw as animal feed and natural organic fertilizer, as well as the use of slingshots, fishing

gear, the use of hunter dogs to get wild animals, as well as skills in the process of making traditional equipment.

Various ways have been carried out by the Osing people in protecting their biological resources so that their management remains sustainable. The community carries out traditional ecosystem-based conservation to protect all the plants that grow on their agricultural land. In addition, in maintaining the sustainability of clean springs (*belik*) along the banks of the *Sobo* and *Gulung rivers*, through a regional regulation they prohibit cutting down trees that grow around the riverbanks, and routinely carry out the ritual tradition of *rebo wekasan* salvation.

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REFERENCES

Agnoletti, M., & Rotherham, I. D. (2015). Landscape and Biocultural Diversity. *Biodiversity and Conservation, 24*(13), 3155-3165. https://doi.org/10.1007/s10531-015-1003-8

Anazifa, R. D. (2016). Pemanfaatan Sains Tradisional Jawa Sistem Pranotomongso melalui Kajian Etnosains sebagai Bahan Ajar Biologi. In *Prosiding Seminar Nasional Pendidikan IPA Pascasarjana Universitas Negeri Malang* (Vol. 1, pp. 832-838).

Albuquerque, U. P., da Cunha, L. V. F. C., De Lucena, R. F. P., & Alves, R. R. N. (Eds.). (2014). *Methods And Techniques in Ethnobiology and Ethnoecology*. New York: Springer Protocols Handbooks, Humana Press.

Bernard, H. R. (2002). *Research Methods in Anthropology: Qualitative and Quantitative Methods 3rd Edition*. Walnut Creek, California: AltaMira Press

Dolisca, F., McDaniel, J. M., & Teeter, L. D. (2007). Farmers' Perceptions towards Forests: A Case Study from Haiti. *Forest Policy and Economics, 9*(6), 704-712. http://dx.doi.org/10.1016/j.forpol.2006.07.001

Irawanto, R., Lestari, D., Ariyanti, E., & Deden, M. (2011). Penyebaran Klampok (Syzygium) di Malang Raya. Berk. Penel. Hayati Edisi Khusus, 7, 15-20.

Iskandar, J. (2012). *Etnobiologi dan Pembangunan Berkelanjutan*. Bandung: AIPI Bandung, Puslitbang KPK LPPM dan MK63 Foundation

Iskandar, J., & Iskandar, B. S. (2016). Etnoekologi dan Pengelolaan Agroekosistem oleh Penduduk Desa Karangwangi Kecamatan Cidaun, Cianjur Selatan Jawa Barat. *Jurnal Biodjati*, *1*(1), 1-12. https://doi.org/10.15575/biodjati.v1i1.1035

Lestari, P. M., Irawati, R. P., & Mujimin, M. (2019). Transformation of Traditional Agricultural Tools to Modern Agricultural Tools Based on The Javanese Local Wisdom. *Jurnal Ilmiah Kebahasaan dan Kesastraan: Widyaparwa, 47*(1), 1-10. https://doi.org/10.26499/wdprw.v47i1.312

Lewis, J. L., & Sheppard, S. R. (2006). Culture and Communication: Can Landscape Visualization Improve Forest Management Consultation with Indigenous Communities?. *Landscape and Urban Planning*, *77*(3), 291-313. https://doi.org/10.1016/j.landurbplan.2005.04.004

Monk, K. A., De Fretes, Y., & Reksodiharjo-Lilley, G. (2000). *Ekologi Nusa Tenggara dan Maluku*. Jakarta: Prenhallindo.

Munawaroh, S. (2013). Fungsi Sumber bagi Masyarakat Using Desa Kemiren. JPSPSB. 14 (1): 99-118.

Newing, H., Eagle, C. M., Puri, R. K., & Watson, C. W. (2011). Conducting Research in Conservation: Social Science Methods and Practice. London and New York, NY: Routledge.

Pfeiffer, J. M., & Butz, R. J. (2005). Assessing Cultural and Ecological Variation in Ethnobiological Research: The Importance of Gender. *Journal of Ethnobiology*, *25*(2), 240-278. http://dx.doi.org/10.2993/0278-0771(2005)25[240:ACAEVI]2.0.CO;2.

Prasetyo, B., Chikmawati, T., Walujo, E. B., & Amzu, E. (2018). Ethnoecology: The Traditional Landscape of Osing Tribe in Banyuwangi, Indonesia. *Biodiversitas Journal of Biological Diversity*, *19*(6), 2003-2009. https://doi.org/10.13057/biodiv/d190604

Prasetyo, B. (2019). *Etnobiologi Masyarakat Suku Osing di Kabupaten Banyuwangi* (Doctoral dissertation, IPB University).

Raynor, B., & Kostka, M. (2003). Back to The Future: Using Traditional Knowledge to Strengthen Biodiversity Conservation in Pohnpei, Federated States of Micronesia. Ethnobot. Res. App., 1, 55-63. http://hdl.handle.net/10125/131

Saradamoni, K. (1991). Filling the Rice Bowl: Women in Paddy Cultivation. Delhi: Sangam Books.

Silva, A. J. D. R., & de Holanda Cavalcante Andrade, L. (2006). Cultural significance of plants in communities located in the coastal forest zone of the state of Pernambuco, Brazil. *Human Ecology*, *34*(3), 447-465. https://doi.org/doi: 10.1007/s10745-006-9026-0

Sheil, D., Puri, R. K., Basuki, I., van Heist, M., Wan, M., Liswanti, N., ... & Wijaya, A. (2004). *Mengeksplorasi Keanekaragaman Hayati, Lingkungan dan Pandangan Masyarakat Lokal Mengenai Berbagai Lanskap Hutan: Metode-Metode Penilaian Lanskap Secara Multidisipliner.* Bogor: Center for International Forestry Research.

Sufia, R., Sumarmi, S., & Amirudin, A. (2016). Kearifan lokal dalam melestarikan lingkungan hidup (studi kasus masyarakat adat Desa Kemiren Kecamatan Glagah Kabupaten Banyuwangi). *Jurnal Pendidikan: Teori, Penelitian, dan Pengembangan*, *1*(4), 726-731. https://dx.doi.org/10.17977/jp.v1i4.6234

Sumarmi, S. (2015). Local wisdom of osing people in conserving water resources. *Komunitas: International Journal of Indonesian Society and Culture*, *7*(1), 43-51. https://doi.org/10.15294/komunitas.v7i1.3429

Tobing, N. L., Sumarsono, Suhardi, Setiawati, L., & Herliswanny. (1993). *Pola Kehidupan Sosial Budaya Masyarakat Using di Kabupaten Banyuwangi, Propinsi Jawa Timur*. Jakarta: Departemen Pendidikan dan Kebudayaan.

Waluyo, E. B., Soedjito, H., Widjaja, E. A., & Rifai, M. A. (1991). Penguasaan Etnoekologi Secuplikan Masyarakat Etnik di Indonesia. *Makalah Utama pada KIPNAS V. LIPI Jakarta*, 3-7.

White Jr, T. H., Camacho, A. J., Bloom, T., Diéguez, P. L., & Sellares, R. (2011). Human perceptions regarding endangered species conservation: a case study of Saona Island, Dominican Republic. *Latin American Journal of Conservation*, *2*(1), 18-29.