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Training to Enhance Ecoprint Products Based on the Natural Potential in the National Environment

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Abstract. *The communities that live in the neighborhood of national parks have restrictions on the use of the forests around them; this is related to the rules that protect the national park as a conservation area. It often creates conflict between the public and the government. Sustainable use of forests by using non-wood forests as raw materials for the production of ecoprint products can be one of the solutions. Faculty of Forestry has an obligation to assist the government in ensuring the sustainability of the forests around the national parks. This activity aims to transfer science by introducing ecoprint products that can use the potential of the surrounding nature in a sustainable way. The method used is perform a presentation and direct practice of producing ecoprint products. This activity was accomplished through the collaboration between Bukit Baka Bukit Raya National Park and the Ella Belaban Village, which had about 35 participants. The success of this activity is evaluated through the questionnaires before and after the activity. Based on the results of the questionnaire, there is an increase in public understanding of ecoprint products over 65%.*

Kata kunci: Ecoprint, Potensi Alam, Taman Nasional

Abstrak. Masyarakat yang hidup di lingkungan taman nasional memiliki keterbatasan dalam memanfaatkan hutan yang ada disekitar mereka, ini terkait aturan yang melindungi taman nasional sebagai wilayah konservasi. Hal tersebut sering kali menimbulkan konflik antara masyarakat dan pemerintah. Pemanfaatan hutan secara lestari dengan memanfaatkan hasil hutan bukan kayu sebagai bahan baku untuk pembuatan produk ecoprint dapat menjadi salah satu solusi. Civitas akademik fakultas kehutanan memiliki kewajiban untuk turut serta membantu pemerintah dalam menjaga kelestarian hutan disekitar taman nasional. Pengabdian ini bertujuan untuk mentransfer ilmu dengan memperkenalkan produk ecoprint yang dalam pembuatannya dapat memanfaatkan potensi alam disekitar secara lestari dan berkelanjutan. Metode yang digunakan dalam pengabdian ini adalah melakukan persentasi dan praktek langsung pembuatan produk ecoprint. Pengabdian ini terlaksana dengan kerja sama antara pengelola Taman Nasional Bukit Baka Bukit Raya dan perangkat Desa Belaban Ella yang menghadirkan sekitar 35 peserta. Keberhasilan pengabdian dievaluasi melalui penyebaran kuisioner sebelum dan sesudah kegiatan. Berdasarkan hasil pengolahan kuisioner terlihat

peningkatan pemahaman masyarakat tentang produk ecoprint diatas 65%.

1. Introduction

Belaban Ella Village is one of 24 villages located around Bukit Baka Bukit Raya National Park (TNBBBR) which is located in the working area of Belaban Resort. The nearest distance from the village to the TNBBBR area is 3 km to the south (Nugroho, 2018). With the limits of administration as above, it can be seen that the village Belaban Ella is bordered directly with the National Park. In the management of the National Park, the local residents face limitations on utilizing forest products due to the regulations safeguarding the park. Consequently, this often leads to conflicts between the village authorities and the managers of the National Park (Humawin, 2002).

The disagreement arising from the classification of forests surrounding the village of Ella, which have been designated as a conservation area within the national park, persists with regular frequency (Myers & Muhajir, 2015). The government, in collaboration with national park administrators, has implemented various strategies to address the problem by finding a resolution for the financial well-being of local populations (Veiasa et al., 2021). Currently, the TNBBBR has established a collective of skilled artisans known as the Mutiara hand craft group. The organization's objective is to uncover the untapped potential of local regions, which can ultimately contribute to enhancing the welfare of local people through the utilization of both human and natural resources. The local potential refers to the human resources available for development, taking into account the community's own issues. On the other hand, natural resources are valuable assets that can be utilized to improve the well-being of socio-economic groups (Endah, 2020).

Forests play a vital role in the lives of local communities, especially in developing countries (Hussain et al., 2019). Restrictions on exploiting forests around national parks do not mean not taking advantage of forests at all. The village of Belaban Ella has an enormous natural potential in terms of plants and animals, environmental services, and natural landscapes. We need to explore alternative ways to enhance the quality of life for the people around the national parks, such as using forest yields in an environmentally friendly and sustainable manner, and reducing the population's reliance on wood-forest yields.

Due to its tropical temperature, Indonesian woods yield plants and trees that possess raw materials, such as leaves and wood, which, when processed with ingenuity and originality, enhance the economic worth of a product. In the current era, the economic worth of a product or service is determined by the utilization of creativity, improved technological advancements, and the exploitation of creativity, rather than relying on raw materials or production processes as was the case in the earlier industrial era. (Purnomo, 2016).

Ecoprint is a process of moving patterns of leaves and flowers onto a fabric surface that has been prepared in advance by removing the layer of candles and dirt that is sticking so that the color of the leaves and flowers can stick to the maximum (Irianingsih, 2018). The materials used for the ecoprint are leaves, flowers, stems, and even branches. Unlike printing, which at a certain stage uses chemicals, ecoprint uses natural elements without synthetic or chemical ingredients. That's why this material is very environmentally friendly and does not pollute water, soil, or air.

Using natural materials to manufacture ecoprint products is quite simple. Ecoprint products have several advantages. Firstly, they are ecologically sound, since they do not rely on the use of chemicals. Additionally, their manufacturing process is straightforward and uncomplicated. Furthermore, the materials used in ecoprint products, such as leaves, flowers, or plant branches, are readily available and do not require machinery (Nurhayati et al., 2022). By utilizing the inherent capabilities of the natural surroundings in the villages of Belaban Ella, it is anticipated that the quality of life for the local population residing near the forest will be enhanced. The enhanced proficiency of individuals in producing ecoprint products has the potential to amplify the value contributed to products that capitalize on the region's potential and local expertise, thereby augmenting the community's ability to generate ecoprint [Saptutyningsih, 2020]. The community service carried out by (Afrahamiryano et al., 2022)demonstrates an increase in the skills capacity of partners in using natural materials.

The purpose of the dedication and utilization of natural materials in the production of this ecoprint is to increase awareness and independence in entrepreneurship and release the dependence of local communities on wood forest yields. (Nayasilana et al., 2022). Ecoprint is one of the creative economic solutions offered to ensure that the community does not damage the forest. To achieve this, the community service team from Faculty of Forestry, Tanjungpura University designed and trained ecoprints as an alternative to the enterprise in order to increase the community's

capacity to exploit forest products that are environmentally friendly and have high economic value.

2. Method

This activity is one of the three pillars of the university: the commitment to serving the community undertaken by the academic civitas of the Faculty of Forestry, University of Tanjungpura conducted on July 28th 2023. The transfer of knowledge regarding the sustainable utilization of the national park's natural resources through the production of ecoprint products is conducted in the Hall of the Office of the Village of Belaban Ella inside the Supporting Section of Melawi district. This settlement is situated inside the boundaries of Bukit Baka Bukit Raya National Park. Civitas Academic Faculty of Forestry at the University of Tanjungpura, whether as individuals or as a collective of experts, actively promotes and advances the field of science and technology, specifically in the area of forestry, as a manifestation of its commitment to the community. The primary focus of Civitas Academic Faculty of Forestry at the University of Tanjungpura is to develop specialist expertise in the field of forestry, with a particular emphasis on the utilization of non-wood forest products. The techniques employed in this commitment to the community encompass lectures, discussions, Q&A sessions, and collaborative manufacturing of ecoprint items, all on an equitable basis.

We conduct an assessment of the program's implementation to determine the effectiveness of this activity in enhancing the participants' knowledge. Subsequently, we create a questionnaire comprising inquiries pertaining to the training material. Prior to the commencement of the presentation and demonstration activity, the participant is required to complete a questionnaire in order to evaluate their existing knowledge. Following the presentation, the participants are given an identical questionnaire to complete. The second questionnaire aims to evaluate the participants' progress in comprehending the presentation material and their proficiency in carrying out the activity. The questionnaire comprises ten items pertaining to the ecoprint product. The process of completing a closed questionnaire involves providing responses in the form of either "yes" or "no," based on the participant's capacity or comprehension. Each question item is assigned a weight of 10. Therefore, if the participants answer all questions accurately, the cumulative score will be 100. The instrument will assess the effectiveness of training activities to exploit the natural potential of the Highlands Mountains National Park as an alternative to natural dyes. An increased understanding among the

participants is the key to the success of such activities. We measured access using the results of the pre-test and post-test questionnaires. We determined improved understanding by comparing the pre-test and post-test scores. The post-test scores showed an improvement in the participants' understanding.

We assess the effectiveness of this activity program using the following criteria:

a. The activity and demonstration were attended by 80% of the invited attendees. We calculated based on data that we got from village administrator
b. Execution of intended communication and exhibition activities.
c. Half of the total participants successfully demonstrated the ability to explain and apply the process of creating a diverse range of ecoprint products.

3. Results

This community service originated from a partnership between the National Park administrators and the Faculty of Forestry. Due to the tension arising from land use limitations, the National Park need the assistance of academics to educate local residents about the sustainable utilization of forest resources. The community dedication ceremony, also known as PKM, was held at the village hall of Belaban Ella (Figure 1). The participants were a collective of 35 individuals, encompassing both the

Pearl Craftsmen Group community and the students of Belaban Ella middle school (Figure 2). The choice to engage and instruct junior high school students was made after receiving counsel from the village manager. The activity commenced with the completion of the questionnaire, which served as a pretest. The PKM team successfully submitted the necessary materials, as depicted in Figure 3, and received ample attention from the participants. Both the community and high school students displayed a notable level of enthusiasm in participating in this program. The majority of the participants engaged in the endeavor of creating an eco-print product on a canvas bag that was supplied (Figure 4).

The training activities received a very warm welcome from the villages, local communities, and the TNBBBR, which also participated in the accompanying training.

Figure 1. Participants in training activities

Figure 2. Lecture methods for material delivery

4. Discussion

The implementation of this activity involves training and hands-on experience in the production process of ecoprint products, leveraging the natural resources found in the vicinity of Bukit Baka Bukit Raya National Park. The leaves and flowers that are easily acquired in the area surrounding the training place are the environmental potential that is utilized in this direct practice. A blank sack that was brought straight from the Pontianak was used as the media for this project. Aside from

handbags, the execution team also brought instruments such as a wooden hammer, plastic, and powder as equipment for creating ecoprint products. The purpose of this practice is to allow participants to directly see and engage in the utilization of the natural resources in their surroundings, which can be economically beneficial when correctly managed. Specifically, these resources can be used as major materials in the production of eco-print items that hold economic worth. Currently, the utilization of trees and plants in rural areas remains restricted to traditional practices, primarily including the collection of fruits and stems. Consequently, their economic potential remains relatively low, necessitating the exploration of other ways to harness the economic benefits of plants.(Muflihati et al., 2024)

The essence of empowering society is to awaken the potential that exists within the individual or group by providing an incentive. Providing awareness of the potential of that person or group with the aim of empowering leads to a state of access or that wants to be produced towards the change of society that is capable and has the capacity to change and improve the socio-economic life of the community. This is the essence of empowering society. The term "local potential" refers to the advantages, capabilities, and capabilities of the village that have the potential to be upgraded in order to enhance the well-being of the community. (Endah, 2020)

Bukit Baka Bukit Raya National Park is one of the conservation areas that has biodiversity with the potential to produce natural colors. Based on the results of research, it is known that natural dyes are abundantly found in the natural forest forests of Western Kalimantan. In the Long Ensaid Village of Sintang Kalimantan West, the people of Dayak Iban used 11 kinds of natural dyeing plants to dye threads for traditional bindings that produce black, red, yellow, and blue-blue black. The plants that produce the red color are Symplocos ophirensis, Clerodendrum adenophysum, Psychotria megacoma, Litsea angulata, and knots (Morinda citrifolia). Four plants produce black colors: Archidendron pauciflorum, Melastoma malabatrichum, Nephelium lappaceum, and rantali. (Macaranga costulata). The tarum plant (Marsdenia sp.) produces a blue-black color, and the curcuma plant (Curcuma domestica) produces a yellow color. (Muflihati et al., 2019).

The eco-printing process uses natural materials such as leaves and flowers that are easy to find in the surroundings of the house. The production of ecoprints can be made using leaves of jati, sukun, rose leaves, cacao leaves, garden leaves, eucalyptus leaves, rainbow leaves,

leaves of bodi trees, flowers of kenikir, caterpillar flowers (caterpillars), shoe flowers, flowers of nature, wora-wari flowers, and nuts as natural coloring on the batik. (Sedjati & Sari, 2019) Mordant is the name given to the natural color that is acquired during the ecoprinting process. Compared to a cloth made of synthetic material, a natural color will be more readily absorbed by a fabric or a medium that is made of natural materials. Eco-printing is a procedure that involves the utilization of natural plant materials, such as leaves, stems, blossoms, or roots, to create motifs and shapes that may be tailored to the user's exact specifications (Husna, 2016). The dedication activities in the hamlet of Belaban are centered around the manufacturing of ecoprint items using leaves and flowers. This concentration is due to the village's location within Bukit Baka Bukit Raya National Park, where there are restrictions on exploiting forest resources. The fundamental component used in the development of ecoprints is a careful selection of mature, non-youthful, and non-aging leaves. These are the leaves of the Japanese papaya, the leaves of the shrimp plant, many types of flowers, and different varieties of nails. Figure 5 show some artistic creations that utilize different types of plant leaves to make visually stunning patterns that are highly valuable in the market.

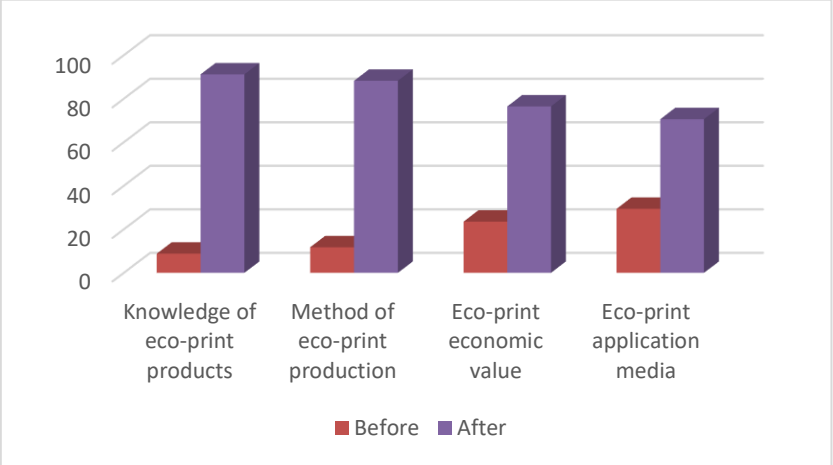
During the dedication to the community, there was a lot of attention from the training participants because almost all the participants participated in the practice of making eco-print products on the bag with the method of pounding. In addition, many have asked questions about this eco-printing product, both about its potential economic value and about the process of producing eco-printing products in media other than bags. These training activities have successfully transferred new knowledge about the potential of local natural resources in the production of ecoprint products that have sufficiently high economic value that can later be used by local communities as an alternative source of income. In addition, in this training there has been an increase in public understanding of one of the potential non-wood forest results, which becomes quite important because indirectly, by maximizing the use of forest products instead of wood, the community will also play a role in keeping the forest. Information becomes very important to be transferred to the local community because they live under the forest status of a national park, which means there must be restrictions and stricter rules in using its wood forest results. It is therefore necessary to find an alternative to using sustainable forest products.

In the implementation of this community service activity, we spread questionnaires to measure the amount of information and science given to the public. Participants fill out the questionnaires both before and after

the training. After taking this training, we tried to find out the level of public understanding from the questionnaires we gathered. The results of the questionnaire are presented in the form of tables. Table 1 shows that public understanding of this eco-printing product has increased. Prior to the training, only about 12 percent of the present participants possessed knowledge about eco-printing. At the end of the worst activity, there was an increase in the understanding of the local community about this eco-printing product, both in terms of the manufacturing process and the sales value of the eco-printing application itself.

The training also provided some tools and materials to support the community in better understanding and knowing this eco-print product. As for the supplies, they're a bag of 40 pieces, a wooden hammer of 40 pieces, and powdered dough. Besides, the PKM team also provided a table plaque made with the ecoprint method to serve as a benchmark and a real example for the public about the potential of this ecopprint, which has a fairly high economic value if it can be developed well. Increasing the ability of the young generation in terms of managing the enterprise can be done through development activities to encourage the growth of entrepreneurs. In these development activities, junior high school students are also involved (Suprayitno & Widajanti, 2018). Basically, training activities have a similarity to learning operations, because the aspect to be evaluated is the same that a person is said to have followed the training or learning process when he has undergone a series of changes (Widoyoko, 2017). It is meant that following a training or learning process, there will be a shift in value in three elements, which include a change in knowledge, a change in attitude, and a change in skills. This change is meant to be taken into consideration.(Anderson & Krathwohl, 2001). The results of this training have given knowledge to the participants, both the group of craftsmen and high school students who previously did not know what ecoprint technique was. After following this training, there has been an increase in understanding and knowledge, as can be seen clearly from the processing of the results of the questionnaire that they have filled out. Aspects of attitude can be seen in the interest of all participants in following this training program by participating as well as participating directly in the process of making ecoprint products.

Figure 3. The outcomes of the Ecoprint product training



Tabel 1. Enhanced comprehension among participants following the training session

5. Conclusion

In the training of producing ecoprint products based on natural potential in the environment of Bukit Baka Bukit Raya National Park, there are some conclusions that can be made that there is an improvement in knowledge and understanding of eco-printed products on the basis of local natural potential, in addition to the improvement of the skill of the participants in using forest products instead of wood, i.e. leaves and flowers that are made as a natural source of dyes in making eco printed products. During this training, participants have the opportunity to create a product, specifically a bag, that harnesses the natural color of the environment and holds economic value. Last but not least is the better cooperation between the Faculty of Forestry Tanjungpura University and Bukit Baka Bukit Raya Melawi National Park.

Similar with community service that carried out by a team of lecturers from the Faculty of Economics and Business of Bina Bangsa University which provide ecoprint training for pkk cadres of Sayar Village.The ecoprint training is to improve the skills of productive age PKK members in Sayar village. Through ecoprint training is expected to be the birth of new female entrepreneurs to improve the family economy and to

support their lives for the better in the future (Khodijah et al., 2021) The results of the ecoprint training are expected to increase the creative economy that has the potential to be developed by villagers, as a form of participation in building village businesses, and to be able to provide welfare for the residents of their village(Mardiana et al., 2020)

The advice that can be given as a follow-up to this activity is that the skills acquired by the training participants require advanced support from the Faculty of Forestry, in particular in the advanced practice of the production of eco-print products from the environmental potential of the TNBBBR Area. The support is necessary until the community can get economic benefits from the results of using forest instead of wood in the form of natural dyes that are applied to the ecoprint products. This training should be carried out in colaboration between Bukit Baka Bukit Raya National Park and Forestry Faculty, Tanjungpura University in the form of an annual activity plan in order to protect the forest area in the national park while keeping in mind the economic conditions of local communities that are heavily dependent on the potential of local forests. This colaboration is needed as a model of this community service to gain more benefits and to overcome some problems that may arise in the future.

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