



IDENTIFICATION OF FOREST BATHING TOURISM ROUTES (SHINRIN-YOKU) IN THE TAHURA BUNDER AREA, GUNUNG KIDUL, SPECIAL REGION OF YOGYAKARTA

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ABSTRACT

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Some people are starting to complain about and experience physical and mental health issues as a result of living in cities and using electronic devices. Going back to nature is one way to lessen these issues. Forest bathing is one method of getting back to nature. Finding the forest bathing routes in Tahura Bunder, Yogyakarta, is the goal of this study. This study employed a qualitative method. In order to verify the data that had been gathered, additional measuring tools and literature reviews were used in addition to on-site research to conduct direct research. Tahura Bunder is a great place to take a forest bath, according to the study findings. Following that, three route models—the novice route, the intermediate route, and the expert route—were produced from the

identification of routes on Tahura Bunder. The components that should be present in these three paths can be measured and observed to determine which ones they are. The study concludes that Tahura Bunder is a great place for forest bathing, offering three different routes for visitors to choose from as a potential health tourism activity.

Keywords: Forest Bathing; Shinrin-Yoku; Therapy; Health Tourism; Healing

INTRODUCTION

Shinrin-yoku, or "forest bathing," is a type of ecotourism where visitors are encouraged to stroll through forests and "bathe" their bodies and minds. This activity is an alternative form of health tourism that is highly sought after because it has been scientifically shown to enhance visitors' physical and mental well-being. In addition, its fit with the ecotourism idea is a unique draw for travelers who value the environment.

Forest bathing has a lot of supporters and is fairly common in Indonesia. According to data from Highland Adventure in 2021, there are currently a number of Indonesian forest areas that serve as popular tourist destinations for forest bathing. The province of West Java is home to the majority of these locations.



Indonesia's Yogyakarta Special Region (DIY) is a province that attracts tourists. The four districts that make up DIY Province include Gunung Kidul, which has 15,001 Ha of forest area. Given the size of the forest, we believe Gunung Kidul has the potential to become a popular destination for tourists to go forest bathing. Near Bunder Forest Park (Tahura), there is one of them.

Tahura Bunder was selected as a forest bathing location due to its strategic location, popularity stemming from its frequent use for tourism and research, and the attributes of the Taura area that make it a suitable forest for forest bathing. The significance of this study lies in two things: 1) the growing popularity of forest bathing could lead to its development as a new tourist destination; and 2) the Tahura Bunder area in Gunung Kidul could facilitate the realization of this potential. Thus, the goal of this study is to pinpoint hiking paths for tourists who want to enjoy forest bathing in the Tahura Bunder region. Mapping forest bathing tourism activities starts with identifying trekking routes.

LITERATURE REVIEW

Let's start with complaints about living a digital lifestyle.

Data from the UK digital media agency We Are Social in 2023 indicated that the number of people using the internet and owning gadgets is rising annually (sofiamaddalena, 2023). People are more and more entwined with the fast-paced digital world. It has been demonstrated that this illness can lead to stress and illness (Adli, 2011).

Returning to the natural world

'Healing' or recovery is the term used to describe the subsequent need to reduce stress. Forest bathing health tourism is one of the therapeutic tourism activities (Farkic et al., 2021). Forest bathing is a therapeutic approach that involves walking through the forest with knowledgeable guides to restore mental and physical clarity (kmmh.fkt, 2021). Dr. Qing Li was the one who first presented this technique (Li, 2018). The word "shinrin-yoku" (forest bathing) is derived from Japanese. To avoid misunderstandings about what exactly constitutes "forest bathing" we do not refer to shinrin-yoku or forest bathing as "mandi di hutan"

Forest bathing for health

Forest bathing, according to Dr. Qing Li, allows visitors to stroll through the forest and take in its sights, sounds, and textures. Tourists are asked to put their devices away for the duration of the activities (Li, 2018). This exercise can be done in small groups or alone (Mencagli, 2018), away from dense populations (Aisyianita, Afif, & Anwari, 2022), and even in parks or other green areas that have been collaboratively developed (Aisyianita, Afif, & Prasetyo, 2022). Forest bathing has been shown in numerous studies to improve visitors' physical and emotional well-being. For example, notably lowering stress, tension, anxiety, and depression as well as producing a calming and energizing effect following activities (Chen et al., 2018; Komori et al., 2017; Lee et al., 2017). It has also been demonstrated that interacting

with green, open spaces improves health and boosts endurance (Hansen et al., 2017).

An ideal spot for forest bathing

According to Highland Adventure data from 2021, a number of Indonesian forest areas—including Tebing Keraton in Lembang, Orchid-Forest Cikole in Lembang, Mount Walat in Sukabumi, the Mount Patuha forest complex in Ciwidey, Forest-Walk Babakan in Siliwangi, and Cikaniki Research Station in Bogor—have already developed into forest bathing spots (Mutaqin, 2021). The province of West Java is home to the majority of these forests. To identify new forest areas suitable for forest bathing, research is required.

One of the Indonesian provinces that attracts tourists is Yogyakarta Special Region (DIY). There are four distinct tourist districts in DIY. The Gunung Kidul Regency, which is well-known for its natural beach and forest tourism, is the subject of this study. There is potential for the 15,001 Ha (Dinas Lingkungan Hidup dan Kehutanan, 2019) forest area in Gunung Kidul to be developed into a forest tourism area, particularly for forest bathing tourism.

A forest should ideally have normal air temperature, enough humidity, sunlight coming through the trees, a river or waterfall, low pollution levels, a typical forest, trees with a distinct scent, and safe paths in order to be the site of forest bathing activities (Farkic et al., 2021). We identified the Bunder Grand Forest Park (Tahura) as the only forest area in Gunung Kidul that satisfies these requirements based on a review of the literature. In addition to its qualities that make it ideal for forest bathing, Tahura Bunder's accessibility and proximity to the city were important factors in our decision to use it as the study's subject. Tahura Bunder is strategically located as a tourist route, connecting Yogyakarta City with the coastal tourist area of Gunung Kidul. Tahura Bunder is currently well-known as a tourist and research destination.

METHOD

In this study, a case study methodology is combined with a qualitative method. In order to gather comprehensive information about the research object, which is the Tahura Bunder area of Gunung Kidul, DIY, we decided to use a case study approach. The phases of the research methodology that we used are as follows:

First, we collect the necessary data. 1) Conducting interviews with Tahura Bunder managers to ascertain current conditions pertaining to the research location is one of our methods for gathering data. 2) Direct observation through site visits to record trekking routes, aromas, sound of forest, assess noise, temperature, lux levels and humidity levels, and perform geotagging; 3) Archive records to acquire Tahura Bunder's geographic maps and characteristic profiles; 4) Literature study by reviewing prior studies on forest bathing and trekking routes for health tourism.

Second, we analyze the data. Our two-stage data analysis method is as follows: 1) The data preparation stage involves gathering and classifying the information we have acquired through the use of interview techniques, direct observation, archival recordings, and literature research; 2) The data analysis stage involves processing the information we have assessed. The phase of data analysis consists of: The tasks

involved in trekking include determining the trail's starting point, searching for a safe route to travel, measuring the trail's characteristics (such as noise level, humidity level, water path, and aroma), sorting the distance to determine the three levels of trail difficulty (beginner, intermediate, and expert), and entering geotagging into the software.

The literature and earlier studies on the subject of forest bathing and hiking routes for health tourism represent the state of the art for this study. Dr. Qing Li is credited as the person who first introduced the concepts and practices of forest bathing (Li, 2018). References (Aisyianita, Afif, & Prasetyo, 2022; Li, 2018) regarding the potential of forest bathing as an alternative form of health tourism. See (Chen et al., 2018; Doran-Sherlock et al., 2023; Hansen et al., 2017; Komori et al., 2017; Lee et al., 2017) for more information on the advantages of forest bathing for both physical and mental health. Please refer to (Farkic et al., 2021) for the forest criteria for forest bathing. (García & Miralles, 2020) are cited in the guidelines for determining trekking routes that involve forest bathing. For information about the forest areas in Tahura Bunder and Gunung Kidul, consult the DIY Environmental Service's Forestry Statistics Book (Dinas Lingkungan Hidup dan Kehutanan, 2019).

This study's originality is: 1) This study integrates a tourist trekking route with the idea of forest bathing. Other research that bolsters this theme has not been located. 2) Tahura Bunder has not been the subject of any prior studies that examined the practice of forest bathing. 3) This study provides an answer for the creation of a hiking path that allows for forest bathing in Tahura Bunder.

We identified tourist trekking routes in accordance with forest bathing guidelines in order to maximize Tahura Bunder's potential as a forest bathing location (García & Miralles, 2020). Consequently, the goal of this study is to pinpoint hiking paths for tourists interested in forest bathing in the Tahura Bunder region of Gunung Kidul, DIY. This goal is in line with the urgency of the research, namely the Tahura Bunder area, which satisfies the requirements as a forest bathing location, can realize the popularity of forest bathing, which has the potential to become a new tourist attraction in Gunung Kidul. Therefore, the first action that needs to be done through this research is to identify trekking routes.

RESULTS AND DISCUSSION

Upon making direct observations at Tahura Bunder, we discovered a number of elements that are utilized to designate pathways or routes for forested bathing, such as:

Type of vegetation

Tahura Bunder was identified as having 118 types of plants. Some of them are; Kepuh (*Sterculia foetida*), Laban (*Vitex pubescens*), Lo (*Ficus glumerata roxb.*), Mojo (*Feroniella lucida*), Preh (*Ficus ribes*), Pulai (*Alstonia scholaris*), Tamarind (*miss Tamas indica*), Bintaos (*Wrightia javanica*), Bendo (*Artocarpus elasticus*), Bulu (*Ficus elasticus*), Ilat-ilat (*Ficus callosa*), Ipik (*Ficus superba*), Serut (*Streblus asper*), Talok (*Grewia paniculata*), Tebelo Pusuh (*Cinchona spec*), Teak (*Tectona grandis*), Mahogany (*Meliaceae*), Kayu Putih (*Eucalyptus*). Overall, the diversity of plant types in the Tahura Bunder area is classified as moderate. This is caused by several types

of plants that still dominate in several locations (Pusdatin, 2022). Because of their large size and unique scent, which can calm the senses when in close proximity, pine trees make up the majority of the forests in Japan that are used for forest bathing. In some areas of Tahura Bunder, eucalyptus trees predominate instead of trees with a characteristic scent, despite the area not being covered in pine trees.

Natural sounds

Stress can be reduced more effectively in a forest with a variety of natural sounds than in one that is quiet. These organic noises include the sound of rushing water, wind gusts, chirping birds, and rustling leaves. These natural sounds fall within the 2,500–3,500 Hz frequency range, which has been shown to help people feel less stressed and more focused (Ratcliffe et al., 2013). While we were watching, we heard a variety of natural sounds, such as roosters crowing, birds chirping, twigs rustling, wind blowing on leaves, and water flowing. We also heard Tonggeret insects (*Cicadidae*).

The temperature of the air

It is challenging to compare the ideal temperature for forest bathing because of the differences in Japan's and Indonesia's geographical locations. We attempt to make reference to the Indonesian thermal comfort zone standards. The data collection period in 2023 will be a hot dry season, and we were in Tahura Bunder between 10.30 and 14.00 WIB at the time (Awaliyah & Azizah, 2023). We thus had a fairly high temperature range—33 to 35 degrees Celsius. It definitely qualifies as uncomfortable (based from SNI T-14-1993-037). When this report was written, we recommended that the best time to go forest bathing was in the morning because we anticipate that the morning and afternoon will be colder than the daytime high.

Noise

Vehicle noise, horns, manufacturing machinery, home repairs, and other noises are common in urban areas. Health issues brought on by noise include elevated blood pressure, difficulty concentrating, restless nights, and stress. In Japan, natural sounds are valued highly, and the Ministry of the Environment has captured and preserved one hundred high-quality recordings of natural sounds. A forest that makes its own sounds is the best kind for forest bathing; an overly silent forest is not the best kind for such activities. Based on this table, we can determine that a maximum decibel of 40–60dB is still within a comfortable range for bathing in the forest. It's hard to avoid car noise because the Tahura Bunder entrance is near Jalan Raya Wonosari. Nevertheless, as we entered Tahura Bunder's inner area, the sound of the outside world started to welcome us and the cacophony of the cars eventually subsided.

Humidity

Naturally, Indonesia produces relatively high humidity; in Jakarta, the average humidity in 2023 will be 80%. In addition to being uncomfortable, excessively high or low humidity has negative effects on health. Therefore, the forest bathing location needs to have the right amount of humidity in order for visitors to enjoy their activities and, of course, reap the health benefits. We measured the humidity at the locations where forest bathing activities will take place, and the average humidity in Tahura Bunder was found to be between 30% and 60%, which is still comfortable.

Wind Breeze

Air flow is also important for forest bathing activities because moving air creates a comfortable and fresh atmosphere. In addition, visitors who engage in forest bathing activities will be able to inhale the scent of the forest thanks to the wind. The onomatopoeic variations in Japanese kasa kasa (the sound of leaves rustling underfoot) and gasa gasa (the rustling of branches swaying in the wind) will be enhanced by the sound of leaves and the rustling of tree branches. Even a light breeze can be beneficial for activities like forest bathing, so a strong wind is not necessary to be comfortable. Based on our measurements taken at various locations within Tahura Bunder, we discovered that the average wind gusts, as seen on the Beauford scale, ranged from 0.3-1.5 m/s to 1.5-3.3 m/s, meaning they were classified as mildly calm to slightly windy.

Air Fragrance

Upon making observations, the research team discovered that the pine and cedar trees that typically thrive in Japanese forests were missing. These two trees are known for their unique scent, which makes forests where they predominate ideal for forest bathing. Nonetheless, Tahura Bunder has a large number of eucalyptus trees and houses a factory that processes eucalyptus oil, so the scent of eucalyptus can be very strong when near the factory and the eucalyptus tree area. There are health benefits associated with the aroma of eucalyptus (Sadlon & Lamson, 2010). Next, the scent of dry bamboo leaves, which are quite common along the path, adds to the variety of scents that can be inhaled. Those who engage in forest bathing can also inhale the scents of earth, dry wood, moss, and pretikor, or soil soaked in water, which is located along the banks of the Oyo River.

Water flow

Negative air ions are carried by water flows, particularly waterfalls, and are good for your health (Yun et al., 2023). Although there isn't a waterfall in the Tahura Bunder region, there are two different kinds of water flow there: the seasonal Oyo River flow, which disappears during the dry season, and the year-round seasonal flow. A Mole Spring serves as a rainwater reservoir as well. Because of the extended dry season in 2023, this spring did not hold a lot of water when we observed its condition.

Route Safety

We didn't come across any wild animals because Tahura Bunder is not a remote jungle, but we were nonetheless cautious because poisonous reptiles might be hiding behind withered leaves. This location has fairly good security because there are a lot of officers on standby at the post and there is a communication signal, despite some areas being blank signal spot.

Route Texture

The route we took for the observation had a variety of terrain, including flat sections and moderately steep inclines and declines, making it less physically taxing overall. The routes we explore have a variety of textures, including cement, asphalt, and dirt. This combination will be helpful for visitors who wish to walk barefoot for health benefits.

Route Distance

More than two forest therapy trails are required in Japanese forests in order to be certified for forest bathing. The following are some of Japan's forest bathing trails (Li, 2018): the 2.7km Komadori Trail, which passes by two large, iconic Hinoki pine trees; the 2.1km Nakadachi Trail, which features rare Hiba cypress; the 3.3km Tsumetazawa Trail, which blooms in April; the 2.2km Kami-Akasawa Trail, which offers stunning views of Mount Otake; the 1.5km Keiryu Trail, which sounds like gurgling water and is accompanied by gentle breezes; and the 3.5km Keiryu Trail, which has stretches of Rhododendron flowers blooming in spring. Upon examining multiple instances of forest bathing routes in Japan, we were unable to locate any that extended beyond four kilometers. Consequently, we established a four-kilometer forest bathing route at Tahura Bunder.

Path or Route Selection

The studied literacies serve as the basis for path selection. There are no regulations governing the minimum and maximum distances that can be covered on the Forest Bathing route, according to research. The author draws the conclusion that forest bathing routes do not necessarily need to be as far away as mountain trekking activities based on a literature review of such routes in Japanese forests. Nonetheless, a route that is longer than one kilometer but shorter than four kilometers is adequate. The experience and intensity of being at one with nature along the route are what matter most about forest bathing, not how far the route is.

Table 1. Condition Forest Bathing Components

Forest Bathing Components	Condition	Description
Air temperature	Not ideal	Too hot during the day
Humidity	Ideal	Comfortable
Light intensity	Not ideal	Too dazzling during the day
Wind breeze	Ideal	Blowing slowly
Noise	Ideal	Quite calm
Sounds of nature	Ideal	Variative
Air Fragrance	Ideal	Smell
Water flow	Ideal	Oyo annual river and seasonal river
Route safety	Ideal	Safe from wild animals
Route texture	Ideal	Variations are not steep

Source: Primary Data, November 2023

By offering experiences and activities that align with the goals of forest bathing, the researchers attempted to "knit" several of the points that we have measured in this research into a single forest bathing route in Tahura Bunder. Visitors visiting Tahura Bunder will have the option of choosing from three distinct forest bathing routes, each with varying distances. When making a decision, factors like physical attributes, workload, and well-being may come into play. These three routes are referred to as the expert, intermediate, and beginner paths, respectively.

Then, when gathering these routes, researchers attempted to meet a number of requirements for the perfect routes listed in Qing Li's Forest Bathing guidebook; wide roads, mild inclines, paths that are clearly marked and kept up, devoid of pollution, Away from the sounds of traffic Ponds or lakes, waterfalls or streams, a

large range of plants, suitable lighting—not too dark— Stretch 2 - 5 km A forest manager, therapist, guide, or restrooms are available.

Novice Route

Starting Point from Tahura Bunder Entrance (maps.app.goo.gl/cA884vyLCNagJVko7). Some activities that can be done on this route include; Lying or walking barefoot on a large fallen tree (maps.app.goo.gl/u8RuEdGfKX9Utk6EA), silence, meditation, yoga while listening to the sounds of nature and inhaling the aroma of petrichor at Sendang Mole Springs (<https://goo.gl/maps/VkUeFKrX7uxTnz3KA>), Next, inhale the aroma of eucalyptus in the eucalyptus plantation and the area adjacent to the Sendang Mole Eucalyptus Factory (goo.gl/maps/1qVTVkPbPiS7wuEf7). Participants can choose to end the forest bathing activity by going through the challenging floating wooden walkway (maps.app.goo.gl/x2HeznYEYpVwoc2o8) or feeding the deer (maps.app.goo.gl/MECq6h9GVViPMobu7).

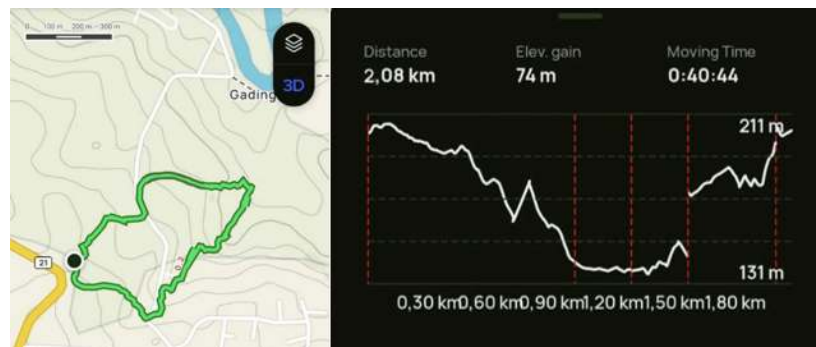


Figure 1. Novice Route

Source: Primary Data, November 2023

Finish Point, the end of this novice's route returns to the starting point, namely the Tahura Bunder Entrance (maps.app.goo.gl/cA884vyLCNagJVko7), visitors can carry out toileting activities in the restroom in this area. Distance and travel time for this beginner's route is not too far, namely two kilometers (2km), this route can be taken in around 1 hour (without activities) and 2 hours (by doing several activities).

Intermediate Route

Starting Point from Tahura Bunder Entrance (maps.app.goo.gl/cA884vyLCNagJVko7). On this intermediate route, the initial route is the same as the beginner route. Namely passing a large fallen tree (maps.app.goo.gl/u8RuEdGfKX9Utk6EA), Sendang Mole Springs (goo.gl/maps/VkUeFKrX7uxTnz3KA), East Sendang Mole Eucalyptus Factory (goo.gl/maps/1qVTVkPbPiS7wuEf7) with the addition of passing the very iconic big Shinju Tree (maps.app.goo.gl/rtbr7ip6ZwYAAE6HA).



Figure 2. Intermediate Route
Source: Primary Data, November 2023

Forest bathing participants can carry out hugging the big tree. The condition of the track near this tree is slightly downhill but remains safe, after passing several thorny plants. Participants will pass a path where there are quite a lot of butterflies (maps.app.goo.gl/jykzajMtEQBSqr5u8), they will fly when we pass this path. The forest bathing route will be a little challenging as it passes through an uphill but lush path. This route will take participants to KHDTK Watusipat (maps.app.goo.gl/ga3jnJGTo7xUcj518). Participants can choose to end the forest bathing activity by going through the challenging floating wooden walkway (maps.app.goo.gl/x2HeznYEYpVwoc2o8) or feeding the deer (maps.app.goo.gl/MECq6h9GVViPMobu7).

Finish Point, the end of this beginner's route returns to the starting point, namely the Tahura Bunder Entrance (maps.app.goo.gl/cA884vyLCNagjVko7), visitors can carry out toileting activities in the restroom in this area. Distance and travel time for this beginner's route is not too far, namely three kilometers (3km), this route can be taken in around 2 hours (without activities) and 3 hours (with several activities).

Expert Route

Starting Point from Tahura Bunder entrance (maps.app.goo.gl/cA884vyLCNagjVko7). The route on the expert route is the same as the intermediate route with the addition of an activity point on the edge of the Oyo River (maps.app.goo.gl/ZVx8Z5gZTBrXkWTv8), with this addition the distance for the expert route will be longer than the intermediate route because it goes to the edge of the Oyo River you have to take a longer route but the conditions are cool, full of shady trees. After this, visitors can choose to end this route via the floating wooden walkway (<https://maps.app.goo.gl/x2HeznYEYpVwoc2o8>) or feed the deer in the deer enclosure (maps.app.goo.gl/MECq6h9GVViPMobu7).

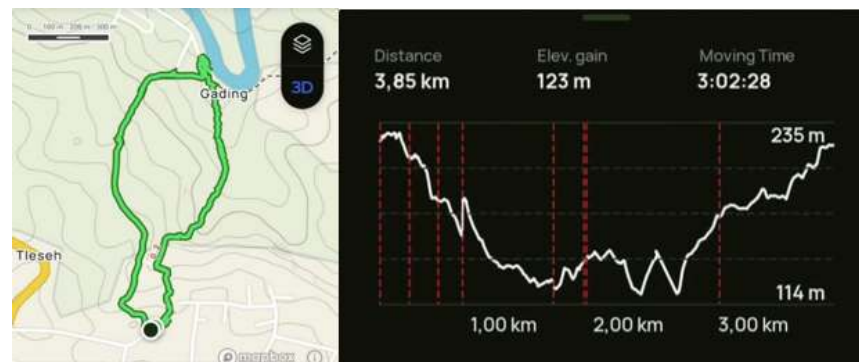


Figure 3. Expert Route

Source: Primary Data, November 2023

The finish point for this expert route is the same as the other routes, namely at the entrance to Tahura Bunder (maps.app.goo.gl/cA884vyLCNagjVko7) so that visitors can use Tahura Bunder facilities such as the restroom and prayer room. Distance and travel time for the expert route is almost 4km or 3.85km to be precise, this route can be taken in around 3 hours (without activities) and 4 hours (by doing several activities).

Things to do when taking a forest bathing

Actually, all you have to do is enjoy the forest with a leisurely stroll. To get the most out of your forest bathing experience, you should, however, switch off all of your electronics beforehand. You should also remember to pack enough supplies and water. The simplest method to begin with is to go barefoot; by doing so, the body will become "grounded" in the earth. The surface needs to be organic, like grass or dirt in a forest, not man-made like a sidewalk or road.



Figure 4. Barefoot

Source: Primary Data, November 2023

The process of breathing in the scents of a forest is identical to that of aromatherapy (Li, 2022). Studies with a methodological quality score >8 and an effect size of 0.93 showed significantly higher sleep quality following aromatherapy, according to quality evaluation. Furthermore, when aromatherapy was combined with other factors like stress, pain, anxiety, depression, and fatigue, significant effects were seen (Her & Cho, 2021). Visitors can breathe in the scent of eucalyptus at the rest area near the eucalyptus processing factory and tree area. Subsequently,

the scent of damp soil from rain and moss can be detected at the rest area beside the Oyo River.



Figure 5. Breathe in the scent of nature
Source: Primary Data, November 2023

Hugging trees, lying on trees, lying on the ground, practicing yoga or meditation, leaning against trees, sitting next to waterfalls, and soaking your feet in flowing water are a few more activities that can be done while taking a forest bath. It is possible to carry out all these activities in order to provide visitors with the health benefits of forest bathing. Except for sitting next to the waterfall—there isn't a big waterfall at Tahura Bunder—all of these activities can be done on the forest bathing route.



Figure 6. Breathe in the scent of nature
Source: Primary Data, November 2023

As a means of taking a forest bath, guests can prepare tea and coffee at the end of the trail. Making tea and coffee by hand is a therapeutic process that has additional health benefits.

CONCLUSIONS

We draw the conclusion that Tahura Bunder is perfect for forest bathing activities overall based on the research findings. Humidity, light intensity, wind gusts, noise, natural sounds, natural scents, water flow, route safety, and route texture are the elements of a perfect forest bathing environment. The air

temperature is the only element that isn't ideal, but it can be made ideal if forest activities are done in the morning when it's cloudy. The inclusion of amenities at the Tahura Bunder location, such as a bathroom, adds value.

Based on the aforementioned findings, we have created three forest bathing routes: the novice, intermediate, and expert routes. Visitors can select the route that best suits their needs and skill level when participating in forest bathing activities. Then, a number of resting and stopping places facilitate activities that are appropriate for forest bathing, like yoga, meditation, taking a leisurely stroll through the park, walking barefoot, hugging large trees, breathing in the scent of the natural world, and soaking your feet in a river. and prepare coffee or tea drinks. We anticipate that this research will make it easier for people to learn about the health and tourism benefits of forest bathing, particularly in Tahura Bunder.

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