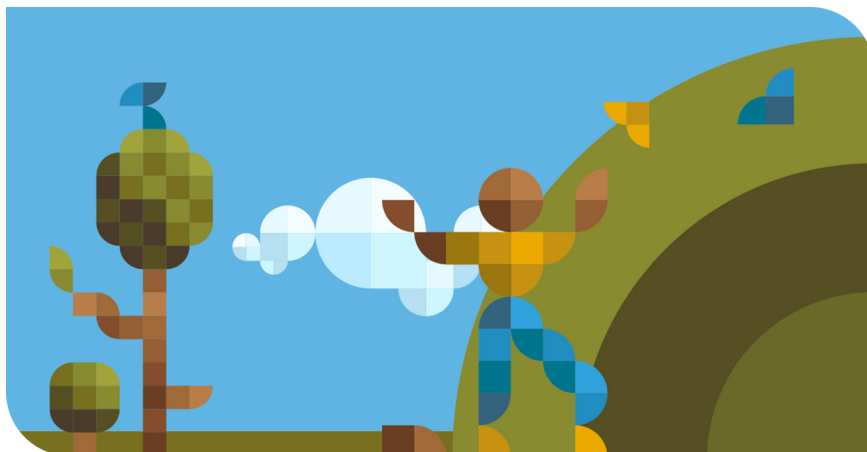


URBAN BIODIVERSITY AND FOREST AND HEALTH PROGRAM

Studies define urban biodiversity as the variety and richness of living organisms and habitat diversity found in and on the edge of human settlements.

The Food and Agriculture Organization (FAO) defines urban forests as networks or systems comprising all woodlands, groups of trees, and individual trees located in urban and peri-urban areas. Below are the main urban forest types defined by FAO:



Peri-urban forests and woodlands

Forests and woodlands surrounding towns and cities that provide goods and services, such as wood, fruit, clean water, recreation, and tourism.

City parks and urban forests (>0.5 ha)

Large urban or district parks with a variety of land cover and partly equipped with facilities for leisure and recreation. Examples: Arroceros Forest Park and Luneta Park.

Pocket parks and gardens with trees (<0.5 ha)

Small district parks equipped with facilities for recreation or leisure, and private gardens and green spaces. Examples: Washington Sycip Park and Legaspi Active Park.

Trees on streets or in public squares

Linear tree populations, small groups of trees, or individual trees in squares, parking lots, streets, etc.

Other green spaces with trees

Urban agricultural plots, sports grounds, vacant lands, lawns, riverbanks, open fields, cemeteries, and botanical gardens. Examples: The Heritage Park, Wack-Wack Golf and Country Club.

A 2015 study observed that green spaces are associated with better self-perceived general and mental health across different degrees of urbanization, socioeconomic statuses, and genders. In the 1980s, forest-bathing was developed in Japan as a means for residents to connect with nature through the five senses. This immersion with nature was proven to provide health benefits, such as:



**Reduced
blood pressure
and lower
stress levels**



**Improved
cardiovascular
and metabolic
health**



**Improved
concentration,
memory, and
mental health**



**Better
immune
system**

With more people living within or near cities and central business districts in the Philippines, it is imperative to maintain and increase green spaces to improve their health and well-being.

Since then, forest bathing has been widely practiced in countries with temperate climates, such as the United Kingdom and South Korea. The practice promotes healing through nature, as well as protecting forests. As Vice President Qing Li, International Society of Nature and Forest Medicine (INFOM), says: "If people were encouraged to visit forests for their health, they would be more likely to want to protect and look after them."

The recent pandemic exposed how vulnerable the local healthcare system is. Forest bathing or nature therapy can improve the mental health and well-being of frontliners and people suffering from technological stress, anxiety, and pulmonary disease.



It is also a good way for children and young adults to connect with nature. While tourism-related activities are restricted, the environmental sector may take this opportunity to promote forest bathing or nature therapy.

The program's goal is to pilot forest bathing in at least one of the urban areas in the country. Specifically, it aims to develop:

- A general checklist for Forest Bathing Experience in Urban Parks
- A forest bathing program for urban parks and forest parks closest to Metro Manila
- Partnerships with the health sector and the academe
- Urban forest-related products and/or enterprises

GENERAL CHECKLIST FOR FOREST BATHING EXPERIENCE IN URBAN PARKS

The following list of considerations and processes for forest bathing is adapted from the Healthy Parks, Healthy People Framework.

1. PLANS AND POLICIES

Existing policies must be considered when developing the plans for forest bathing.

In the Philippines, there are two mandated development plans referencing urban biodiversity and forests: the Philippine Biodiversity Strategic Action Plan for 2015-2028 (PBSAP), and the Philippine Master Plan for Climate Resilient Forestry Development 2016-2028 (PMPCRFD).

PBSAP, a plan supervised by the DENR Biodiversity Management Bureau (BMB), envisions a 5% increase in green spaces by 2028 in the five largest cities in the country: Caloocan City; Cebu City; Davao City; Manila City; and Quezon City. This plan also aligns with the PMPCRFD of the Forest Management Bureau, which responds to demands for forest ecosystems, goods, and services. This includes:

- Supporting the development of mini forests with local government units
- Providing assistance in the IEC and forest-related activities in at least two cities in each region

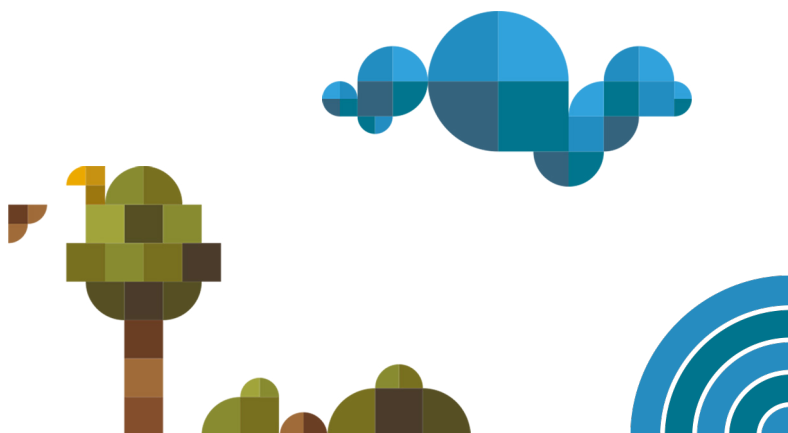
Each local government unit (LGU) may include the provision of urban parks and urban forests as mandated under their development plan and environmental codes.

With governing policies in place, the tenurial instrument of the area of interest should be considered. In the context of urban parks, this can include protected areas (e.g. Ninoy Aquino Parks and Wildlife Center), LGU-declared parks (e.g. Quezon City Memorial Circle), or privately-managed parks (e.g. La Mesa Eco Park). To offer a forest bathing experience in these areas, factors, such as policies, biodiversity, environmental quality, infrastructure, and accessibility need to be assessed.

SAMPLE MANAGEMENT PLAN OUTLINE

An indicative outline of a management plan, with provisions on forest bathing experience, includes:

- Ecological profile (biophysical, socioeconomic, infrastructure; and forest inventory, such as carbon stock and phytoncide concentration)
- Tree establishment, maintenance, protection, removal, and use
- Green exercise and forest bathing activities for people of all ages
- Outreach and public education activities
- Intergenerational access
- Community involvement for actual operation of the forest bathing experience
- Peace, security, and neighborhood crime safety
- Proximity to health care facilities
- Work plan with timeline and personnel requirements
- Any other capacity building needs of forest/park managers



Urban forest managers should also have the following competencies and skills:

- Design and management of urban forests and other green spaces
 - To ensure restorativeness, illness prevention, therapy, and rehabilitation
 - To maximize capacity to remove traffic pollutants and optimize thermal comfort for pedestrians
- Planning and design of green spaces to encourage sporting and other leisure activities
- Management of potentially allergenic urban tree species
- Tree risk management/arboriculture

IMPLEMENTING THE MANAGEMENT PLAN

Once a management plan is in place, the next step would be implementing it. Urban parks should have thermal comfort, pollution filtration, and noise reduction functions. With good knowledge of the current floral assemblage in the parks, improvements may be introduced to ensure delivery of such functions.

A park's ecological profile helps determine necessary redesigning of the existing forest to accommodate forest bathing. As the activity is a multi-sensorial experience, the urban park should stimulate participants' visual, olfactory, tactile, and auditory senses.

2. PRACTICE

After setting and implementing plans for the urban park, the actual practice of forest bathing must be planned.

Two types of forest therapy may be adopted for forest bathing:

- 1 Guided Therapy** - with a trained guide to lead the forest bathing experience, including educational sessions and meditation.
- 2 Unguided Therapy** - with no guides apart from signage suggesting forest bathing activities. This allows individuals to experience the activities at their own pace.

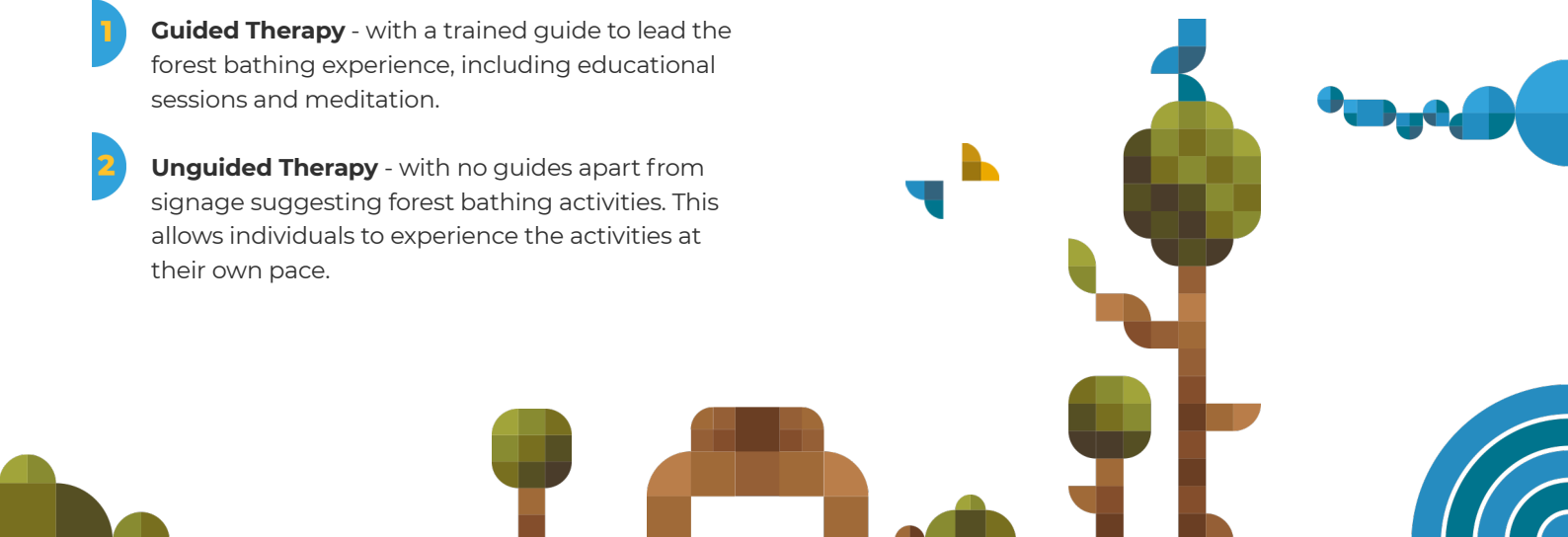
A forest bathing program should have the following:

- **Pre and post health check** - includes a questionnaire on physical and mental health, and blood pressure rate and cortisol level check
- **Green exercise/forest therapy walk** - physical activities that expose participants to nature
- **Tree care activities** - can involve maintenance and monitoring of trees and other plants, and can be segmented per age group
- **Food and refreshments** - from local produce

3. PARTNERSHIPS

As forest bathing or nature therapy requires a holistic approach, partnerships with the following stakeholders should be considered:

- **Government:** DENR, Department of Health, Philippine Institute of Traditional and Alternative Health Care, Barangay Health Workers
- **Business Sector:** First Philippine Holdings Inc.
- **Professionals:** Philippine Medical Association, Alliance For Safe, Sustainable and Resilient Environments, Philippine Institute of Environmental Planners, Philippine Association of Landscape Architects
- **Academe:** University of the Philippines Diliman, Miriam College
- **Communities:** General public
- **NGOs:** Green Convergence, Rain Forest Restoration Initiative Network, Health Futures Foundation



Research partners may also be tapped to study the following topics:

- Mapping of green spaces and healthcare facilities and their relation to pulmonary rehabilitation in a given city/municipality
- Phytoncides released per species or per specific area
- Cost-benefit analysis of maintaining urban or pocket parks, particularly as it relates to the cooling systems of buildings or offices nearby
- Recruitment of wildlife species in urban parks

4. MONITORING AND EVALUATION

Once the program is conducted, the following may be checked for better management:

- Proportion of native/non-native species in urban forests
- Perceived attractiveness of urban forests to citizens
- Perceived thermal/physical/psychological comfort
- Number of new urban forest-related jobs and enterprises
- Tourism and new business activities developed
- Production and marketability of urban forest-related products
- Public and private-sector investment in urban forests
- Energy savings for cooling buildings
- Cost-benefit of the establishment and management of urban forests
- Pollution levels in the city
- The extent to which healthcare services promote the use of urban forests
- Number of “green” prescriptions

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