DENR Recommends

Volume 4

GUIDELINES FOR THE ESTABLISHMENT OF FOREST PARKS

In response to the call of the government to establish a forest park in every municipality/city as one of the major activities of the “One Billion Trees Program” and in support to the School Forest Park Program of the Department of Education, Culture and Sports (DECS) and the Department of Science and Technology (DOST), the Ecosystems Research and Development Bureau (ERDB) has developed **Guidelines for the Establishment of Forest Parks** especially for urban areas. The simple guide will help those who are interested in undertaking such project on how to plan, select appropriate species, plant and grow trees for the forest park and protect/maintain them.

**What is a forest park?**

A forest park is a piece of forested area in a municipality, or near a city, or a school established for aesthetic, recreational, ecological and educational purposes.

**Why are forest parks important?**

Forest parks are important because they:

- beautify the surroundings
- serve as areas for rest and recreation
- help minimize air pollution
- moderate the environment/prevent extremes in temperatures
- serve as windbreaks
- provide habitat for wildlife and forest plants
- preserve soil fertility and prevent soil erosion
- cut down or absorb noise
- provide shade
- serve as venue for people’s appreciation of the environment and understanding of biodiversity

**How do we go about establishing a forest park?**

- **Planning Stage**

  The local government unit (LGU) through the municipal office, or a public school should call a meeting, or conduct a workshop involving all concerned community/school organizations and other agencies to draw up a plan on forest park establishment. The plan should be based on the following:
Objectives of the forest park. These should be clearly defined because they would set the direction of work and determine the choice of species to plant, the intensity and nature of activities to carry out. The design and layout of the forest park should satisfy the following objectives:

- to provide a recreation area for the people;
- to serve as live laboratory for instruction along biological studies;
- to serve as a venue for social activities in the town/city/school; and
- to encourage biodiversity (natural forest resources) conservation in the area.

Location of the forest park. The location of the forest park should be determined on the basis of the foregoing objectives. The forest park should be strategically located based on site availability and accessibility. It should be established in a government or public land, preferably near a water source, with good drainage and with good soil. This is important for easy protection and management.

Delineation of the area for the park. The location of the forest park and its boundaries should be established with the use of a location/topographic map. Existing trees and other plants should be preserved as much as possible for biodiversity consideration. The forest park plan should be integrated with the overall development plan of the town/city/school in order to harmonize with the various sectorial efforts.

Size of the forest park. This would determine the species to be planted and the layout/landscape design for aesthetic purposes. A minimum of half a hectare contiguous area (a bigger area is preferred), which could be maintained and protected for a long time by the community/school, should be allocated.

Layout or landscape design of the forest park. If the area allocated for the forest park would be less than a hectare, only a simple layout/landscape design would be needed. However, if the objective/objectives of the forest park would vary and the area allocated would be big (more than a hectare), then an elaborate landscape design would be necessary to maximize the efforts that would be put into it. In this case, the aesthetic value of the forest park will be enhanced for the users’ appreciation and tourists’ attraction.

Implementation Stage

In the implementation phase, the following should be considered:

- Availability of seedlings or planting materials
- Establishment activities
- Planting and maintenance

Availability of seedlings or planting materials. The municipality/school may either produce the seedlings of identified species from their own nurseries, or buy them from existing commercial nurseries. It is best to determine the kind of seedlings/species and
quantity 12 months ahead of field planting time. Tree species to be planted should be determined in consultation with the Department of Environment and Natural Resources (DENR). Seedlings may be requested from the Provincial Environment and Natural Resources Office (PENRO), or from the Community Environment and Natural Resource Office (CENRO) in the area.

**Establishment activities.** In establishing the forest park, voluntary labor may be sourced from the community, or the school constituents especially if the area is small. For larger areas, the municipality/school should set aside some amount for forest park establishment purposes.

The following activities should be thoroughly studied for proper implementation:

- land preparation which includes pre-establishment weeding, brushing, staking, plowing and/or cultivation;
- outplanting of trees in the forest park;
- fertilization and regular watering;
- tending, weeding and protection;
- preparation of trails for ecological hiking and putting up of directional billboards/signs (if the area is big enough for the purpose);
- provision of rest and recreational facilities, tables and benches for picnicking as well as comfort rooms, if feasible; and
- posting of identification tags for trees/plants bearing their common and scientific names, their uses with some ecological notes.

Voluntary labor can be sourced from the community, or the school constituents especially if the area is small. Some of the abovementioned activities can be done on special occasions, or during town, or official celebrations.

For larger areas, the municipality, or school should allocate a budget for the abovementioned activities.

**Planting and maintenance.** Seedlings to be planted should be healthy and vigorous to increase the chances of survival after field planting. These should be planted during the onset of the rainy season to lighten the load of watering and minimize seedling mortality.

- Clear off grasses and other competing vegetation at least within 1 m radius around each planting spot by cultivation. Proper site preparation techniques can double, or triple growth rates during the first year after outplanting.
- During field planting, dig holes (using a spade) at least spade width by one and a half spade depth. Spread organic material on the bottom, then cover this with 2 cm of soil to prevent direct contact with seedling. Remove seedling from the plastic container by slitting the bag with a sharp knife. Peel the plastic off carefully to avoid disturbing the media and the roots.
- Plant the seedling into the prepared hole. Pump or press the soil around the seedling with foot until the seedling is firmly set. Press a dish-like depression around the seedling to catch and direct water to the seedling. Cover the top with at least 2 cm of soil to reduce drying up of the seedling.
- Water the newly planted seedlings thoroughly, once a week at least for the first two months, in extremely dry areas. Continue watering until the seedlings shall have been well established. Usually, trees are sufficiently established when they have doubled their initial planting height.
- Fertilize with about 10 g of complete fertilizer about 15 cm away, around the seedlings. Avoid direct contact of fertilizer with seedling to prevent severe damage. **Use organic fertilizer, as much as possible, for economic and environmental reasons.** A second dose of fertilizer six months after field planting is often beneficial. Use 100 g of recommended fertilizer 15 cm away around the base of the seedling.
- Spread mulch (cut grasses or leaves) around the seedling. Mulching will conserve soil moisture and support grass control around each seedling.
- Do some weeding on the 6th and 12th months after field planting, either by hand brushing, or by chemical control. Weeding minimizes competition for soil moisture and nutrient in favor of the planted trees.
- Protect the newly planted seedlings from grazing animals, pests and diseases and fire. Fence the area to prevent damage from grazing animals. Always keep the area clean to avoid spread of diseases.
- Maintain existing trees and other vegetation within the area by cleaning, rouging (cutting of undesirable trees to provide space for well-formed trees), or pruning and applying growth enhancers like organic fertilizer.

**Other considerations especially for big areas and varied uses**

- Forest parks with bigger areas should provide space for rest and recreation as well as picnic grounds. Facilities for such purpose should include tables and benches. For longer use and durability, concrete tables and benches are preferred.
- Provide garbage/trash containers separately for biodegradable, non-biodegradable and recyclable items and place them in strategic points within, or near the picnic area.
- Set up ecology trails for hikers who would like to appreciate the beauty of nature, learn about biodiversity and relax/exercise. These trails should take full advantage of the variety of scenery (including rivers, if any) picnic ground and vegetation types. Certain areas may be paved.
- Put up simple directional billboards and post identification tags for trees/plants bearing their scientific and common names with their uses and some ecological notes. With billboards, vernacular/Filipino with corresponding English translation is preferred.
- In designing the layout for forest parks especially those with varied uses, consider the movement of people around. Eliminate obstacles and confusing directions. Provide unobstructed, well-defined and logical routes within the area.
- Aside from timber-producing forest species, include in the species composition needed for forest parks, nontimber forest species such as bamboos and palms as well as medicinal species which should be given ample portions of the area.
- Plant diversity may be also enriched by introducing other indigenous forest species not present in the area.
- If ever a forested area already exists within the municipality, or school which can be converted into a forest park, the activities may include: delineation of areas; lay outing of ecology trails; improvement of the aesthetic aspects; and minimal clearing to give way to the installation of some facilities.
- Take note that details of the forest park development highly depend upon the availability of resources in the municipality, or school.
## PLANT SPECIES RECOMMENDED FOR FOREST PARKS

### Fast-growing introduced (exotic) tree species to ensure immediate forestation of the area

<table>
<thead>
<tr>
<th>Species</th>
<th>Characteristics</th>
<th>Uses</th>
<th>Planting Material</th>
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</thead>
<tbody>
<tr>
<td><strong>Yemane</strong> <em>(Gmelina arborea L.)</em> Verbenaceae</td>
<td>A deciduous tree which has a very remarkable rate of growth. It is a short-lived tree but with good soil condition, proper care and maintenance, it can survive up to 30-40 years.</td>
<td>Primarily used for pulp wood production. Wood is for general carpentry, joinery, furniture components and other household fixtures. Timber is for posts, poles and housing purposes while rotary-cut veneer is for plywood. Also used as fuelwood.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Mangium</strong> <em>(Acacia mangium Willd.)</em> Mimosaceae</td>
<td>A medium-sized, broad-leaved legume with a height of 10-30 m and with a straight bole that may be unbranched for more than half its total height.</td>
<td>An all-purpose hardwood: timber, molding furniture, veneer, fuelwood and charcoal, pulp and paper, particle board. Also used as: ornamental, boundaries and windbreaks, fodder, hedges, shelterbelts, boxes, for N-fixation and medicinal purposes.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Red Gum</strong> <em>(Eucalyptus camaldulensis)</em> Myrtaceae</td>
<td>A tall tree of 10 cm diameter and 15 m height. The species is fast-growing and fire-resistant. It coppices immediately when the stem is cut or burned. This tree can regenerate by coppicing even up to 6 or more rotations.</td>
<td>Lumber, posts, fuelwood; for medicinal and landscaping purposes.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Aure</strong> <em>(Acacia auriculiformis Cunn. ex Benth.)</em> Mimosaceae</td>
<td>A resilient, vigorously growing, small tree with a generally crooked trunk and with a diameter of up to 60 cm and a height of 30 m. It has circular pods (10-13 cm) and small seeds with ribbon-like orange tissue (funicle) surrounding the seed at its edge.</td>
<td>Fuelwood, wood pulp, shelterbelts, furniture, building poles, fence posts; for N-fixation and soil improvement.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Neem</strong> <em>(Azadirachta indica A. Juss.)</em> Meliaceae</td>
<td>A medium to large tree with a height of 12-20 m and a diameter, 18-25 cm. It is a broad-leaved evergreen tree that forms a round crown spreading from 5-10 cm, except during drought when it sheds its leaves. It has a relatively straight trunk (but not long) with moderately thick bark and deep-growing roots. Neem leaves are alternate, compound, 23-38 cm long; leaflets, 1-17, alternate or opposite, very shortly stalked, 6-7 cm long, oblique and toothed. Its flowers are white, starlike, small, mildly sweet-scented and bisexual.</td>
<td>It is insecticidal and medicinal used in pharmaceutical preparations. The wood is used for the construction of butts, fences and handles of farm implements. Leaves are for feeds. By-products from neem extract are used for fertilizer and energy generation, help in clearing polluted air.</td>
<td>Seeds</td>
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### Indigenous (endemic) premium species for biodiversity conservation

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<tr>
<td><strong>Narra</strong> <em>(Pterocarpus indicus Wild.)</em> Fabaceae</td>
<td>A large tree which grows up to 40 m, frequently with irregularly fluted or deformed short trunk. It has a dense drooping crown, usually narrow, thin and deep, and occupies 1/3 of the total height of the tree when grown in plantation and in the forest. It is nearly deciduous for a short time during the dry season.</td>
<td>Narra is the best known wood for furniture and house construction. A good source for red dye and has medicinal properties.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Mahogany</strong> <em>(Swietenia macrophylla King)</em> Meliaceae</td>
<td>A large tree with a height, 30-40 m. A deciduous tree that sheds its leaves during summer. Leaves are pinnate, smooth and shiny. Flowers are in panicles. Fruits are in large and conical, light chestnut brown pods.</td>
<td>Medicinal, lumber, firewood, carvings, boat/ship building, veneer and paneling.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Molave</strong> <em>(Vitex parviflora A. Juss.)</em> Verbenaceae</td>
<td>A medium- to large-sized tree attaining a height of 20 m or more. Flowers are small with extended stamens crowded together in a cluster which appears like powderpuff.</td>
<td>Molave, being one of the hardest woods, is used as railroad ties. Used for ship building, wagon making, bridges, cabinets, carabao yoke, took handles, balusters, novelties, agricultural implements, fuelwood and has medicinal properties.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Acacia</strong> <em>(Raintree) (Samanea saman Jacq.)</em> Mimosaceae</td>
<td>A hardy, large spreading tree attaining a height of 20 m or more. Flowers are small with extended stamens crowded together in a cluster which appears like powderpuff.</td>
<td>Wood carvings, wall paneling, meat board and wood basins, ornamental, shade and forage.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Agoho</strong> <em>(Casuarina equisetfolia)</em> Casuarinaceae</td>
<td>A short-lived, evergreen tree, 15-50 m high and 20-100 cm in diameter. It has very straight trunks and narrow, pointed feathery crowns. The wood is dark.</td>
<td>Often planted as ornamental and hedge; quite effective as windbreak.</td>
<td>Seeds</td>
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<td><strong>Golden shower</strong> (<em>Cassia fistula</em>) Caesalpiniaceae</td>
<td>A medium-sized, erect and deciduous tree that reaches a height of 6 m or more. Flowers are bright yellow and fragrant. Fruits are long, cylindrical and woody.</td>
<td>For landscaping/medicinal purposes, fuelwood, windbreak, fodder, posts.</td>
<td>Seeds, Wildlings</td>
</tr>
<tr>
<td><strong>Palawan cherry</strong> (<em>Cassia nodosa</em>) Caesalpiniaceae</td>
<td>An unarmed tree, attaining a height of 10-15 m. The leaves are about 30 cm long, each divided into 5-12 pairs of elliptic leaflets, 1-2 cm long.</td>
<td>Ornamental, shade or nurse tree.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Ilang-ilang</strong> (<em>Cananga odorata</em>) Annonaceae</td>
<td>A medium-sized tree attaining a height of 30-35 m with a diameter up to 80 cm. Flowers which are greenish-yellowish and in small clusters are very fragrant.</td>
<td>Source of oil for perfume; its flowers are made into leis and garlands. The bast fibers can be made into coarse rope.</td>
<td>Seeds, Cuttings</td>
</tr>
<tr>
<td><strong>Fire tree</strong> (<em>Delonix regia</em>) Caesalpiniaceae</td>
<td>A fast-growing tree with spreading branches reaching 20 m or more. Smooth bark is light gray. Pinnately compound leaves are finely divided, 30-40 cm long. Flowers are long-stalked, with brilliant colors; fruits are hanging, flat and woody; they turn yellow and black when ripe.</td>
<td>For N-fixation, shade, shelter, ornamental, fuelwood, forage and windbreak.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Bottle brush or Cajeput</strong> (<em>Callistemon citrinus</em>) Myrtaceae</td>
<td>A medium-sized tree having cascading branches with whorls of simple, narrow leaves which give a fragrant, oily aroma when crushed. Flowers are small and bright red, crowned along the end portion of the branches. Fruits are small and brown, looking like pepper corns.</td>
<td>For shade and as ornamental.</td>
<td>Seeds</td>
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</table>

**Hedge plants for boundaries**

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<tr>
<td><strong>San Francisco</strong> (<em>Codiaeum variegatum</em>) Blume Euphorbiaceae</td>
<td>A long-lived, erect, branched shrub attaining a height of 1-2 m. Leaves vary in size, form and color. Cultural forms, recently introduced to the Philippines from Hawaii, are richer in color and have larger leaves.</td>
<td>Used for borders, hedges, screens, fences, mass plantings, foliage and flower arrangement and as a potted plant.</td>
<td>Stem cuttings</td>
</tr>
<tr>
<td><strong>Bunga</strong> (<em>Areca catechu</em>) L. Plamaceae</td>
<td>A tree with an erect, solitary trunk up to 25 m high and marked with annular scars. Leaves are up to 4 m long with numerous leaflets.</td>
<td>For hedges, live fencing, soil conservation, windbreak, ornamental, medicine, timber, fuelwood and food spices. The “ubod” or cabbage is edible, often eaten as salad, or cooked.</td>
<td>Seeds</td>
</tr>
<tr>
<td><strong>Bandera española</strong> (<em>Canna indica</em>) Combretaceae</td>
<td>A coarse, smooth herb which grows up to 1-5 m high. The erect unbranched stem arises from a fleshy rootstock. Leaves are solitary, in two opposite rows along the stem.</td>
<td>Generally used as ornamental and hedges.</td>
<td>Clumps</td>
</tr>
<tr>
<td><strong>Yellow bell</strong> (<em>Allamanda cathartica</em>) L. Apocynaceae</td>
<td>A smooth or somewhat hairy shrub, 2-4 m high. The leaves are in whorls of three or four, the uppermost ones may be scattered, lanceolate, 8-12 cm long, 2.5-4 cm wide. The flowers are yellow and look like bells.</td>
<td>Ornamental and hedge plant. Infusion of the leaves is a remedy for colic; it is purgative and serves as antidote for poisoning. The roots are reported to be a powerful diuretic and tonic, vermifuge and antisyphilitic.</td>
<td>Cuttings, Seeds</td>
</tr>
<tr>
<td><strong>Zigzag plant</strong> (<em>Pedilanthus tithymaloides</em>) L. Euphorbiaceae</td>
<td>A shrub 1-1.5 m tall with acrid milky juice. The stem is erect, zigzagged, or straight, smooth and cylindrical. The green leaves are solitary at each stem joint; flower clusters are grouped at the tip of the stem; fruit is about 1.2 cm long.</td>
<td>Ornamental and hedge plant. The acrid milky juice is an effective protection from browsing animals such as goats and cattle.</td>
<td>Stem cuttings</td>
</tr>
</tbody>
</table>
References


