



Guide to Ecological Maintenance of Green Spaces in Dense Urban Areas



EASY PRACTICES TO IMPLEMENT



GreenDense: Greening dense urban areas for enhanced climate resilience, biodiversity and health

Summary

- 1 - Differentiated mowing..... 3
- 2 - Selective weeding..... 7
- 3 - Planting for biodiversity..... 11
- 4 - Reasoned pruning..... 15
- 5 - Preserving water..... 19
- 6 - Local composting..... 23
- 7 - Keeping soils healthy..... 27
- 8 - Supporting urban wildlife..... 31
 - 8a - Aromatic spiral..... 32
 - 8b - Sparrow nest box..... 34
 - 8c - Hedgehog shelter..... 36
- 9 - Building a team..... 39

What will you find in each sheet?

Level of technical difficulty. (Points to page 1)

Explanation of the positive impacts of implementing the maintenance practice. (Points to page 2)

Method of implementation, described through a step-by-step process. (Points to page 2)

Definition of some key concepts addressed. (Points to page 1)

List of the necessary resources (equipment, tools, etc.). (Points to page 2)

Introduction and general overview of the maintenance practice. (Points to page 1)

Tips for avoiding some of the main issues you may encounter. (Points to page 3)

Real example of implementation. (Points to page 4)

Supplementary action or knowledge to take the practice further. (Points to page 3)



Differentiated mowing

Flowering meadow surrounding the Coteau park, Vitry-sur-Seine. • Camille Savage

WHAT

ARE WE TALKING ABOUT ?



Glossary

Plant community:
collection or association of plant species within a designated geographical unit.

Adapting the frequency and height of grass mowing according to the different uses of a green space, also called **differentiated mowing**, is an important ecological maintenance practice. This means mowing regularly only in frequently used areas that require a stable low height (e.g., around playgrounds, along pathways), while keeping some of the less used areas (e.g., base of trees) as **flowering meadows**. These areas will become ecological sanctuaries protected from overuse, free to evolve naturally, and provide year-round changing landscapes.

WHY

IT IS IMPORTANT?

Frequent mowing (every fortnight on average) reduces the number of flowering plants by favoring only low and fast-growing species. Letting a lawn naturally evolve as a meadow allows plants to **complete their growing cycle**, leading them to flourish and spread their seeds. This in turn will encourage the development of a more **diversified plant community**, providing valuable resources for pollinators as well as small mammals, birds, and amphibians. Scientific studies have shown that keeping unmown lawn areas within urban green spaces, even of only 1 or 2 m², has a positive impact on local biodiversity.



The herbaceous layer is essential to the life of **microfauna**. Snails and butterflies lay their eggs in decomposing grass, while the larvae of many pollinators cling to the stems.

Established meadows have complex root systems, which promotes water infiltration and retention. This helps to **mitigate floodings and droughts**. Implementing differentiated mowing also induces a reduction of energy consumption and noise pollution. On average, a regular lawn requires three times more work than a meadow (50 min of annual working time per m², compared to 15 min per m²).

What you will need

SCYTHE / BRUSH CUTTER

RAKE



Small meadow at the foot of a street tree, Paris-Saclay. • Camille Savage

HOW

TO DO IT?

A flowering meadow requires **mowing only once or twice a year**, always keeping a minimum height of 20 cm. Proceed slowly using a scythe or an electric brush cutter, starting by the center of your plot to allow small mammals, amphibians and reptiles hiding in the grass to escape. Depending on the size of your green space, you can apply **rotational mowing** by cutting different areas at different times of the year, always keeping at least one unmown area to provide a constant refuge for local wildlife.

The best time to mow a meadow is autumn **after the flowers have gone to seed** (when they begin to fade) to ensure the plants reach the next phase of their lifecycle. As some birds nest in meadows, make sure to schedule your mowing **outside of nesting seasons** (generally from February to August). Grass clippings should be left for a few days after mowing to drop any seeds, then raked up and removed to keep the soil fertility down. This will ensure that wildflowers do not get overwhelmed by vigorous grasses. Regularly monitor your meadows, weeding out any invasive species (see sheet 2) and removing waste if needed.

HOW TO PREVENT

PROBLEMS?

If a meadow is located along a path, keep a mowed strip (about 50 cm) on the edges to prevent tall grass from falling and obstructing the passage, and avoid excessive visual heterogeneity by creating a height gradient. A strip should also be mowed inside larger areas of meadows where people usually cross, in order to **maintain accessibility** while protecting the plants from trampling.

As a reduction of mowing frequency can encourage the development of invasive species, implement regular monitoring and weed out any unwanted vegetation (see sheet 2). You can also carry out targeted mowing before problematic species go to seed.

TO GO

FURTHER

You can create a flowering meadow from scratch on bare, weed-free ground. Start by removing the surface layer of the soil using a rake to reveal the less fertile sub-soil, before **sowing a wildflower seed mix** suited to the local soil type. Most seed mixtures contain both annual and perennial species, allowing the meadow to thrive for several years. They should be sown in early autumn (September) to give seeds time to settle in over winter. If you have a heavy clay soil which tends to stay wet and cold over winter, wait until early to mid-spring (March/April) to sow. Ensure that the seeds are scattered evenly, then rake in lightly and water thoroughly. There is no need to fertilize.



Meadow outlined through mowing in front of the MMA building, Strasbourg (EcoJardin certified site). • Urbanesens

PRACTICAL EXAMPLE

In the **historical gardens** of the Hotel Matignon, listed as a French historic monument since 1923, three different heights of grass are maintained. In some of the less used areas, mowing is carried out only once a year in October to promote vegetation renewal and allow different plant species to grow. The **natural flowering meadows** that result provide abundant food resources for insects, which in turn attracts birds and other predators. The height of all lawns is doubled in case of very hot weather, reducing their water requirements and enhancing their resistance to drought. A total of 1,500 m² are currently covered with flowering meadows, and wildflowers seeds have been sown since 2009. This initiative shows that a more wild-looking vegetation can find its place even in heritage sites.



Flowering meadows in the garden of the Hôtel de Matignon, Paris (EcoJardin certified site). • ARP Astrance



2



Selective weeding

Spontaneous vegetation in the streets of Paris. • Camille Savage



Glossary

Spontaneous vegetation: plants that grow and reproduce without human care or intent.

Invasive species: a species that has been introduced to a region or ecosystem in which it did not previously occur naturally, and whose spread can cause harm to the local biodiversity.

WHAT

ARE WE TALKING ABOUT ?

Spontaneous vegetation, more commonly called “weeds”, can have a bad reputation when it comes to maintaining a green space. However, accepting its development is essential in an ecological maintenance approach and a main step towards more **sustainable cities**. Weeding should be reduced as much as possible, intervening only in case of **invasive or toxic plant species** development, or for security reasons (e.g., if the plants obstruct and/or become a source of danger to passage). Avoid using any synthetic pesticides as they are dangerous for us and the environment.

WHY

IT IS IMPORTANT?

Spontaneous vegetation plays a key role in supporting local biodiversity within urban environments. It provides **valuable resources** for many insects, birds, and small mammals, allowing them to thrive throughout the seasons. Dandelions, for example, can provide an early source of spring nectar for pollinators. Furthermore, they provide important **ecosystem services** such as filtration of heavy metals and reduction of air pollution. However, invasive spontaneous vegetation should be removed as some species cause direct threats to the local biodiversity by destroying and/or



Weeding equipment. • Summa, Pixabay

replacing important resources, or even changing the local soil chemistry. Check **local lists of species declared as invasive** in your area.



Two of the **most widespread invasive plants** in North-West Europe are the Japanese knotweed and the Black locust. The spread of the **Japanese knotweed**, introduced from East Asia in the 19th century, is mainly due to its rapid growth and resilience. It can

reach up to 3 m high. The **Black locust** has been introduced from North America as an ornamental tree. It enriches the soil with nutrients, which in turn impoverishes the local flora and alters native vegetation.



Flowering Japanese knotweed (left) and Black locust (right). • Hoerwin56 (left), GoranH (right), Pixabay

HOW

TO DO IT?

The best method for effectively weeding unwanted vegetation is to **remove both the aerial part and the whole root system** of the plants to prevent their reappearance. Proceed manually using a hand weeder, and after removal gently till the soil with a rake to destroy any remaining pieces of plants. Plants either reproduce sexually by producing seeds, or vegetatively by forming new plants from a fragment of the parent plant (e.g., pieces of stems or roots). Sexually reproducing plants should be removed **before seed production** to prevent further spreading. For vegetatively reproducing plants, ensure that all underground parts are removed by digging deeply if necessary. Do not forget to **wear protective equipment** (gloves, sleeves) to protect you from accidentally touching toxic species, such as the Thorn apple (*Datura Stramonium*). When digging out the roots is not possible (e.g., weeds growing on sealed soils), you can still target the aerial parts by applying hot water to cause a **thermal shock**. This technique will boil the water contained in the plants cells, degrading their structural walls.

What you will need

- HAND WEEDER
- RAKE
- GARDENING GLOVES
- PLASTIC BAG

HOW TO PREVENT

PROBLEMS?

Care is needed when disposing of the removed plant materials, especially if invasive, as some species can continue to flower and set seed even out of the ground, or **take root in compost**. Store them in a strong plastic bag, making sure that no parts poke through, before transporting them to a waste collection site. In addition, make sure to **clean any tools and equipment used** after each intervention before leaving the site to limit any risk of dissemination.

TO GO

FURTHER

Covering the soil with **organic mulch** (see sheet 7) is an efficient method to naturally prevent persistent unwanted vegetation from growing by creating conditions inhibiting their development. In **restricted areas** that are difficult to access and where intervening frequently can be hard, such as steep slopes, temporarily covering the soil after weeding using a black tarp can help prevent regrowth by depriving the plants of sunlight. Make sure to remove any stones or sharp objects that could create holes, and stretch the tarp slightly around the area, securing the edges with rocks or logs.

PRACTICAL EXAMPLE

The city of Grenoble (France) built in 2015 a **collective orchard** called “Essen’ciel”, involving local residents in the selection and planting of different fruit trees and shrubs. Maintenance is co-managed by the Parks & Gardens Department, which is responsible for maintaining the lawns, and the residents who are responsible for the trees and shrubs. The use of synthetic pesticides has been banned within the site since its creation, while **spontaneous vegetation is welcomed and nurtured**, bringing biodiversity within a dense urban area.



Pathways in the Essen'ciel orchard, Grenoble (EcoJardin certified site). • Brassica



Planting for biodiversity

Diversified flower bed along the Picpus Boulevard, Paris. • Frédéric Combeau



Glossary

Native species: species that has occurred and developed naturally in a region or ecosystem without human intervention, progressively adapting to its specific conditions (soil, climate, etc.).

Perennials: herbaceous plants that live several years (as compared to **annuals**, which complete their life cycle in one year).

WHAT

ARE WE TALKING ABOUT ?

Flowerbeds are a main aesthetic feature of many urban green spaces, whether they are planted at ground level, in a raised bed or a planter box. But they can also provide important resources for many insects, birds, and small mammals, especially if they are composed of **diverse, multi-layered vegetation**. Planting **native, nectarous and fruit producing plants** while varying flowering periods will provide food for insects and birds all year round. **Perennials** should also be preferred over annuals to save on input and energy.

WHY

IT IS IMPORTANT?

A diversified flowerbed will be beneficial to a large number of species that need different vegetation layers for **nesting and breeding**. This diversity will also **promote plant resilience** to pest and diseases. Planting nectarous and fruit producing species will provide a variety of food resources such as berries, seeds, and nectar, while native plants will often have **deeper root systems** and thrive in your local soils, reducing watering and fertilizing needs. Furthermore, many have evolved forming **symbiotic relationships** with the local fauna, which can be dependent on them to survive.

HOW

TO DO IT?

Start by finding a good spot for your flowerbed in a sunny area sheltered from prevailing winds, easily accessible, and if possible close to a water source. Select perennials of different sizes, small shrubs (less than 1.5 m high) and ground cover plants that will fill in small spaces and edges of the bed while enriching the soil. Integrate at least $\frac{1}{3}$ of **native species** (consult your local lists.) and favor **pollinator-friendly plants** with different flowering periods spread out over a year.

Before planting, remove any existing vegetation and gently loosen up the soil with a rake. Using a hand shovel or a spade, dig the planting holes as deep and at least 1.5 times wider than the root system of your plants. Space them 20-40 cm apart for smaller plants, 50-90 cm for larger ones. To **optimize root development**, loosen the bottom surface of your holes and gently untangle some of the roots before placing the plants in the ground. Backfill the holes with a ratio of **80% soil to 20% compost**, ensuring that the stems remain upright. Gently compact the soil to avoid any open spaces around the root systems, then add a final 2 cm layer of compost topped with **mulch** (see sheet 7).



Pollinator-friendly flower bed in a residential street, Rezé.
• Sandrine Larramendy

The shrubs' root collar (area where the trunk or stems joint the roots) should be a few cm higher than the level of the soil to avoid sinking. Water well immediately after planting, then regularly as the plants are establishing (see sheet 5). Perennials are best planted in **spring or autumn**, while the ground is moist. Take into consideration the orientation of the sun when placing your plants.

To maintain a **healthy growth**, remove fading or dead flowerheads in autumn using hand shears. Leave the dead stems and grasses over winter to provide shelter for wildlife, cutting them back the following spring (without damaging new shoots). You can remove the dead foliage of evergreen plants during spring and summer, and prune the shrubs to stimulate new growth and promote flowering if needed (see sheet 4).



The roots of most perennials can develop from 15 to 30 cm deep, and small shrubs up to 70 cm. As **restricted roots** result in slowed growth, make sure to ensure that your bed will be deep enough.

What you will need

- RAKE
- HAND SHOVEL / SPADE
- HAND SHEARS
- PLANTS OF CHOICE

HOW TO PREVENT

PROBLEMS?

Avoid selecting species that are likely to constitute a source of danger to people or animals, such as plants that can be poisonous to the touch or produce **poisonous berries** (e.g., Bittersweet), **allergenic plants** (e.g., Ragweed), as well as stems that have large thorns. Do not plant exotic species suspected of being invasive. As your flowerbeds will attract many pollinating insects, including wasps and bees, choose a location away from high-traffic areas and playgrounds to prevent any risk of stings.



Bittersweet (left) & Ragweed (right). • Konrad Lauber (left), PublicDomainPictures (right), Pixabay

TO GO

FURTHER

If your planting space is limited or against a wall, you can create an upward flowerbed (or facade garden) using **climbing plants**. Install a sturdy support framework, such as a trellis made of stainless steel, as climbers can become heavy as they grow. Plant at least 40 cm away from the wall to allow space for root development, and help your plants reach the support by **tying in the stems regularly** using soft garden twine. Small bushes can also be trained upwards by tying them into the support. Some climbing plants may require regular pruning to help them grow in a specific direction.



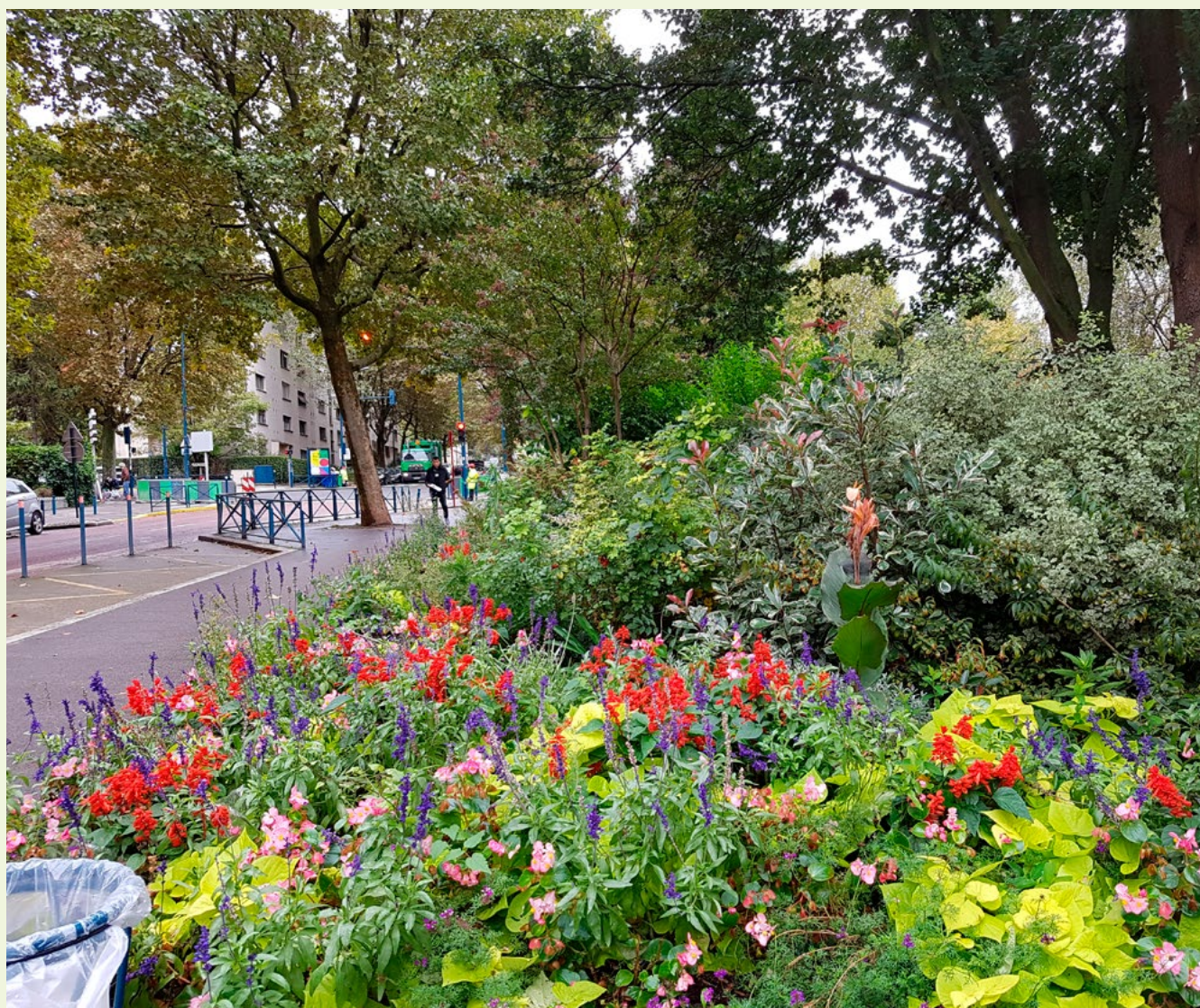
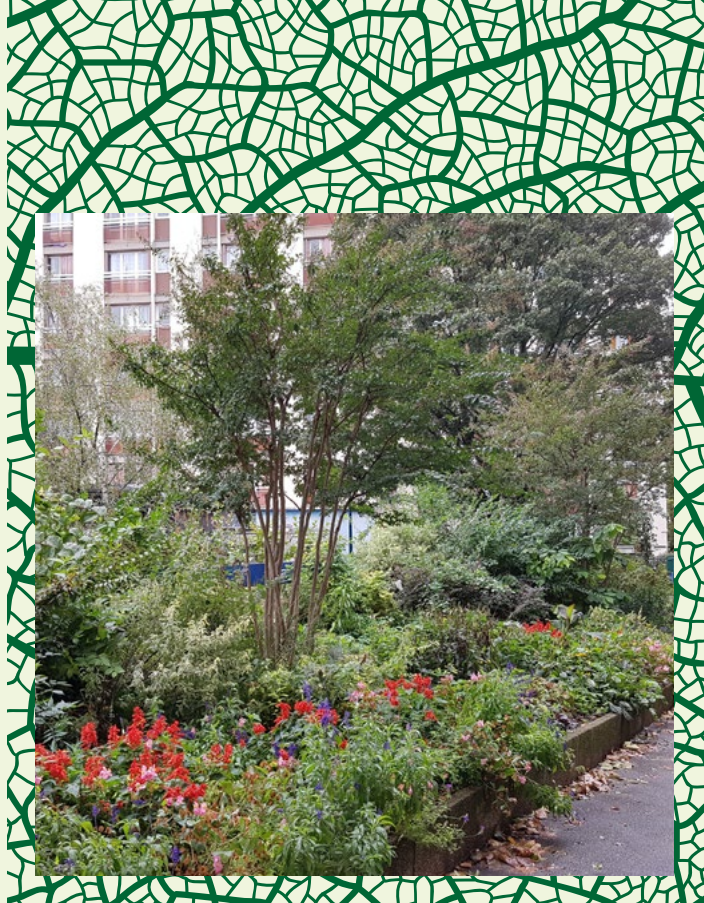
Climbing plants use a variety of **support methods**. They either self-cling using tendrils or pads (Ivy), twine themselves around a supporting framework (Wisteria), or use thorns as hooks (Rose).



Climbing plants in the garden of the Maison du Végétal (House of Plants), Angers (EcoJardin certified site). • ARP Astrance

PRACTICAL EXAMPLE

In 2020, the city of Pantin (France) designed a 250 m² flowerbed in the Anatole France Avenue, allowing wildlife to move along this tree lined avenue. The city's Green Space Department worked on diversifying the vegetation layers and the plant palette, while focusing on selecting native, nectar and fruit producing species of **interest to entomofauna and pollinators**. The local soil type as well as exposure to sun and wind were considered, and maintenance of the different vegetation layers allows for the free expression of plants.



Views of the flower bed in the Anatole France Avenue, Pantin (EcoJardin certified site). • ARP Astrance



Reasoned pruning

Pruning of a twig to a scaffold branch. • Eblommorse, Pixabay

WHAT

ARE WE TALKING ABOUT ?



Glossary

Branch bark ridge: raised and wrinkled strip of bark at the top of a branch, at its junction with the trunk.

Branch collar: swollen area with rougher bark at the base of a branch, at its junction with the trunk.

Callus: soft tissue that forms over a wounded or cut plant surface, leading to healthy healing.

Scaffold branch: primary branch that grows directly from the trunk and supports smaller lateral branches (including twigs).

In ecological maintenance, the pruning of trees and shrubs is limited and focused on preserving their **natural, free form shape**. Main pruning operations are done in favor of the **plant health and/or for safety reasons** and tailored to the specific characteristics of each site, avoiding radical techniques. Branches are removed only if they are broken, diseased or decaying, if they rub together (creating open wounds), or if they are becoming a source of danger by obstructing passage, blocking traffic views or being too close to power lines. Shrubs can also be pruned to stimulate healthy new growth. Small tree branches (less than 10 cm in diameter) can be easily accessible for pruning, but larger branches should be left to a **qualified arborist** who will be trained and equipped to proceed safely.

WHY

IT IS IMPORTANT?

Pruning results in open wounds that cause **energy-consuming reactions** and can become an entry point for fungal and bacterial infections. Repetitive techniques can disrupt natural growth patterns and weaken the plants **resistance to damage and diseases**, while removing too much foliage can hinder their ability to photosynthesize effectively. Limiting pruning interventions will promote a more **sustainable growth**, while being less time-consuming as maintaining an artificial shape requires frequent interventions. The growth of trees and shrubs should rather be anticipated in order to choose the right plant for the right location.

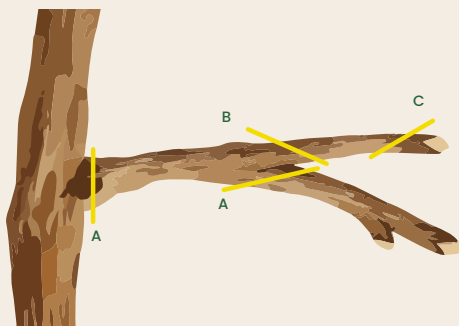


Dead branches provide valuable resources for biodiversity. They should not be removed unless they present a risk of breakage.

HOW

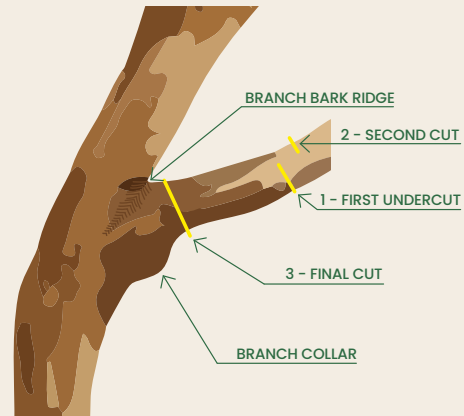
TO DO IT?

A branch should never be cut in its middle, as it will leave a protruding stub which will likely die and become an entry point for infections. Always cut back a branch either to **the trunk** or a **scaffold branch** (or a main stem for shrubs) **(A)**, to a **lateral branch** **(B)**, or to a **healthy bud** **(C)**. Use a hand saw or shears to create a clean, straight wound.



Correct pruning placements.

(A) Cut just outside of the **branch collar and branch bark ridge**, on a slightly oblique angle perpendicular to the branch axis. This will facilitate the quick **formation of a callus** while preventing water damage. Branches larger than 4 cm in diameter will require three cuts to **prevent tearing of the trunk**, the first two cuts (about 30 to 50 cm from the branch collar) designed to remove weight from the branch and the final cut as described above.



Pruning to the trunk.

(B) Cut just above a **lateral branch**, with an angle **parallel to its axis** (see diagram above). Always cut to a lateral branch that is at least one-third the diameter of the removed branch to prevent it from drying.

(C) Cut about 5 mm above a bud, at about a **45° angle** and with the lowest point of the cut farthest from the bud. Choose a **healthy bud** that will act as a sap drawer, helping the healing process. This pruning technique can be used to spur growth in a specific direction.



Pruning to a bud.

What you will need

HAND SAW

SHEARS / HAND SHEARS

Shrubs can be pruned every two or three years **to stimulate healthy new growth** and promote flowering. Remove the older, less vigorous branches which flower weakly, providing room for new growth while allowing light and air to circulate. Branches can be cut down to the base if needed, 25-45 cm above the soil. Do not remove more than one-third of a shrub's mass at any one time to preserve enough foliage. Respect **flowering seasons** by pruning shrubs that flower from July to October in spring (before new growth begins) and shrubs that flower from November to June immediately after flowering.

HOW TO PREVENT

PROBLEMS?

To prevent transmitting pests (e.g., aphids, caterpillars) or diseases (e.g., fungi such as mildew or canker), **clean any tools and equipment** used after each intervention. You can also protect the cutting areas using a fungicide wash, such as potassium bicarbonate. Avoid pruning if the plant presents a poor vitality or if the growing conditions

are not suitable, such as during long periods of drought or extreme weather. Avoid pruning trees in spring during sap rising (just before bud breaking) and always prune out of **bird nesting seasons**.

TO GO

FURTHER

Urban trees are very vulnerable. Their trunk can suffer from **repeated bark stripping and abrasing** from mowing equipment, or **strangulation** when a cable is improperly installed. Nails and screws are regularly embedded in their wood, while branches suffer from frequent breakage. Their roots can be amputated during excavations, while **pollution or physical alteration of the surrounding soil** (e.g., compaction, sealing) is detrimental to their development. All these injuries, even seemingly small, can significantly damage a tree by cutting off the flow of sap. As a standing injured or dead tree is at increasing risk of breakage and uprooting, alert your city council in case of visible injury.



Bark stripping at the base of a tree due to repetitive brush cutting.
• François Freytet

Strangulation due to improper cabling. • Augustin Bonnardot

PRACTICAL EXAMPLE

On the Simone Veil Forecourt in the city of Pantin (France), trees and shrubs are left to grow freely, creating a **lush and natural landscape**. Trees are pruned every three to four years solely for reasons of public or building safety. Shrub pruning is kept to a minimum and on a case-by-case basis, with the aim of allowing passer-by circulation and uses. All interventions are planned outside of bird nesting season, while avoiding damage to potential habitats (e.g., removing inhabited hollows or knocking down bird's nest). Small cuttings are left in piles and tree stumps are kept, providing **resources for local biodiversity**.



Winter views of the Simone Veil Forecourt, Pantin (EcoJardin certified site). • ARP Astrance



Watering can. • Manfredrichter, Pixabay

Preserving water



Glossary

Drought: a deficiency of precipitation over an extended period (usually a season), resulting in a water shortage. A deficit lasting for a few weeks or months is considered a short-term drought, and a long-term drought for more than six months.

Plant establishment: when the roots have reached the deeper, moist layers of soil and the stems, leaves, or trunk are strong enough to handle normal weather conditions. This process typically takes about a year.

Stormwater runoff: rainwater that is not able to soak into the ground and instead flows off surfaces such as roofs, driveways, or parking lots. This water collects particles of dirt and chemicals along the way, before entering storm drains and flowing to nearby streams.

WHAT

ARE WE TALKING ABOUT ?

Preserving water resources is a main component in ecological maintenance of green spaces. The first action is to **reduce and optimize water consumption** by implementing a rational approach to watering and preventing waste, while promoting a natural and efficient **soil infiltration process**. An appropriate watering should only ensure that plants develop properly, recover well and prevent wilting. A second step is to **limit the use of clean drinking water** by collecting and recycling rainwater.

WHY

IT IS IMPORTANT?

In the current context of climate change leading to increasingly severe periods of **drought and water restrictions**, we need to adapt watering practices and reduce unnecessary uses of drinking water, a valuable and limited resource. A regular lawn of 500 m² can use up to 150 m³ of water in a year, as much as a family of four. Furthermore, collecting rainwater can help the management of heavy rainfalls and flash floodings by reducing the volume of stormwater runoff, while promoting **self-sufficiency**.

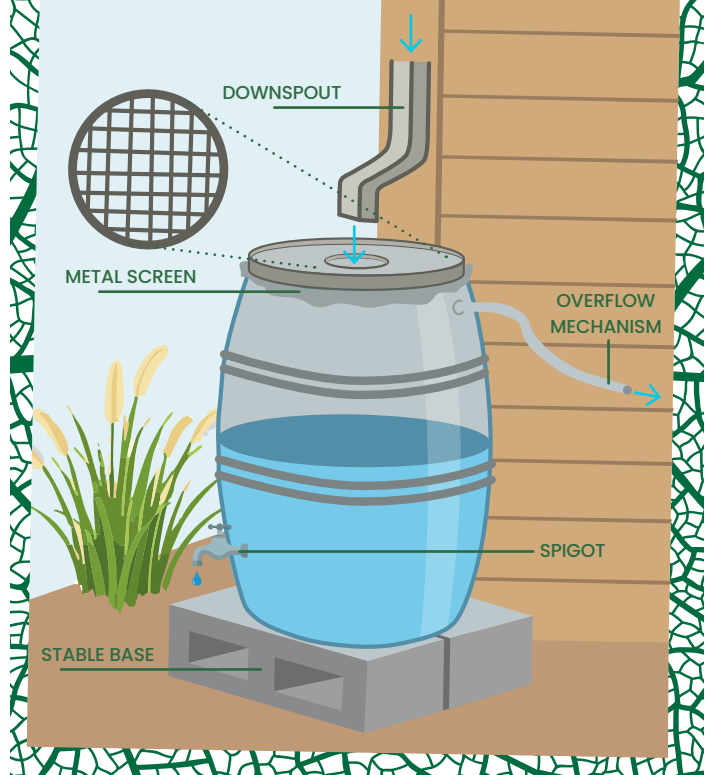
HOW

TO DO IT?

Restrict watering to **new plantations until establishment**, or to times of important drought. Young plants can be watered daily for the first two weeks after planting (unless it rains heavily), every two or three days for the first three months, then weekly until they reach their first year (or second for trees and shrubs, depending on the species). Plants can then be watered weekly in case of long-term drought. Due to their restricted root area, **planters** will need watering once a day during hot summers and weekly during cooler weather. The soil should be kept moist, but never soggy.

Prevent water waste by adapting to the specific needs of each plant, their sun orientation and wind exposition, and to the local daily weather. Plants can also be grouped according to their watering needs. The best time for watering plants is during the last hours of the day, as evaporation will be minimal.

Reducing water consumption also means keeping soils healthy (see sheet 7) to promote **water infiltration and retention**, and planting native or rustic species with deeper root systems and lower watering needs.



Rainwater collector.

Rainwater can easily be collected from the roof of any built structure (i.e., homes, garages but also greenhouses and other garden structures) as long as it has **gutters and a downspout**. Place a bucket or a barrel with an overflow mechanism and a spigot under the gutter downspout, preferably out of the sunlight. Place it on a stable base at least 15 cm off the ground (you can use a recycled pallet or concrete blocks). Cut and secure a fine mesh metal screen on top of the bucket to keep debris and bugs out, especially mosquitoes.



You can **regulate water intake** using simple techniques, such as burying a clay jar filled with water (leaving the opening accessible at the surface). The porous nature of the clay allows water to seep out slowly and evenly, ensuring a gradual water distribution.

What you will need

- WATERING CAN / TROLLEY
- BARREL / BUCKET (PLASTIC OR METAL)
- OVERFLOW VALVE & SPIGOT
- FINE MESH METAL SCREEN & WIRE CUTTERS

HOW TO PREVENT

PROBLEMS?

To **minimize bacteria growth**, breeding of mosquitoes and avoid any smells, clean all watering and storage equipment (cans, buckets, barrels), as well as your gutters annually. You can use non-toxic cleaning products, such as white vinegar or organic oils. Store any unused equipment in a dry place to avoid mold and pests.

As rainwater is generally not drinkable and may contain microorganisms (bacteria, fungi), make sure that a **“non-potable water” label** is clearly visible on the buckets or barrels to avoid any health risks. You can also prevent pollutants from the roof (metals, paint residues, dirt) from accumulating in collected rainwater by using a “first flush diverter”, which directs the first rainwater that falls during a storm away from the collection system.

TO GO

FURTHER

To further reduce stormwater runoff, you can **create a rainwater garden** that will temporarily hold and allow rainwater to soak in, while filtering sediments, chemicals and attracting biodiversity. Choose a low-lying, well-drained area and remove about 30 cm of soil. Add a first draining layer of sand before filling in with compost amended soil (80% soil to 20% compost). Plant moisture and drought tolerant perennials and shrubs according to depth, integrating at least $\frac{1}{3}$ of native species. Add a final 2 cm layer of mulch. Regularly remove any debris or waste to maintain a clean water flow. Remove fading or dead flowers in autumn and regularly weed out any unwanted vegetation (see sheet 2).



Raingarden planted with species tolerant to inundation and drought, Chicago, IL. • Red Stem Native Landscapes, Inc.

PRACTICAL EXAMPLE

In 2022, the Jean Jaures school (Pantin, France) created in its outdoor area an educative flowerbed experimenting a **sustainable water management**. Rainwater is collected from the roof of a greenhouse via the gutter system into a reservoir integrated into a planter. This system ensures a gradual release of water into the soil, preventing stagnation and ensuring **water autonomy**. Furthermore, the reservoir is connected to a pump so that any excess stored water can be used for watering other plants, or washing. The plant palette is adapted to frequent humidity variations.



Experimental watering system in the Jean Jaures school, Pantin (EcoJardin certified site). • ARP Astrance



Local composting

Communal 3-bin composting system in the Groues neighborhood, Nanterre. • Camille Savage



Glossary

Brown waste: dry and carbon-rich materials, such as dried leaves, twigs, small branches and woody pruning residues, straw, wood chips, or egg cartons.

Green waste: moist, nitrogen-rich materials, such as fresh grass clippings, green leaves, fruit and vegetable scraps, or coffee grounds.

WHAT

ARE WE TALKING ABOUT ?

Composting is the natural process of aerobic (oxygen-required) **biological decomposition** of organic materials, made possible by microorganisms. It is a simple and effective way to transform and recycle garden and kitchen waste into a valuable source of **organic amendment** that can be used to enrich soils when needed (see sheet 7), while reducing food waste. Composting can reduce the weight of household waste by 30%. It is important to keep the composting materials, process, and product as local as possible.

WHY

IT IS IMPORTANT?

Adding compost is a key practice to nourish soils, **improve their fertility** and increase their biodiversity. It promotes healthy plant growth, while enhancing their resilience to diseases and pests. It can help regenerate urban soils that have been depleted by overuse or pollution. As the transport and treatment of perishable waste emits greenhouse gases, composting promotes **sustainable living** by locally reducing carbon footprint. It can also provide a space for **environmental education** through self-reliance.

HOW

TO DO IT?

You can easily **build a compost bin** by using wooden pallets as a frame, holding everything together with strong cable ties. Secure with screws and brackets at the top and bottom corners of each intersection. Line the inside with chicken wire to prevent materials from spilling out, and add a tarp on top to help retain heat while protecting from heavy rainfall. Place your bin directly on the ground, in a flat and shaded area out of prevailing winds. Make sure you will have enough space to move around.

Always start a compost pile by adding a 10-15 cm **bottom layer of coarse brown waste** (e.g., wood chips, twigs) that will filter odors, soak up liquid, and allow air into the pile. You can then gradually add your brown and green waste, always maintaining a **balanced ratio of $\frac{1}{3}$ green and $\frac{2}{3}$ brown** (which can be cut into small pieces of 5 cm² to help speed up the composting process). A balanced distribution of large and small particle sizes will support optimum density and porosity of the compost, maintaining peak temperature while letting air and water flow through the pile. Keeping a top layer of coarse brown waste will help reduce odors and keep flies out.



Compost bin built using wooden pallets. • Phaedra Hise, KitchenPlot.com

Feed your compost once a week, tracking the volume of green and brown waste added using a shared document, and turn the pile using a pitchfork or shovel (leaving the base layer of coarse browns undisturbed). This will introduce fresh air, release trapped heat, and distribute moisture. Regularly check your compost humidity (it should feel like a wrung-out sponge) and add water or coarse brown waste if it becomes either too dry or too wet. A dome shaped pile of at least 1 m tall is the most effective for active composting, but keep it small enough so you can turn it by hand. Organic materials generally take about two or three months to fully decompose. Finished compost has a dark, crumbly texture and a rich, earthy smell. You can screen it to remove items that did not fully decompose, such as sticks. Use it as soon as possible to keep all its nutritional value.



A mismatched waste ratio can lead to odors or incomplete decomposition. Too much green can cause wet and smelly compost due to **anaerobic decomposition**, while too much brown will slow down composting process due to a lack of **nitrogen** for microbial growth.

HOW TO PREVENT

PROBLEMS?

The following materials should be kept **out of your compost mix**: treated wood, ashes, rocks, or dirt, acidic or greasy foods, oils, onion and garlic, plastic or glass, as well as toxic or sick plants. Be careful to check your carboards and eggs cartons for any plastic labels or packaging. It is especially important to **exclude all animal products** (meat, fish, dairy products, and pet waste) to avoid attracting rodents, as well as local invasive plants, as some species could continue to set seed or take root in your compost (see sheet 2). Avoid walnut leaves as they contain a powerful and harmful tannin, and resinous trees needles which strongly acidify the soil. A clear signage of prohibited materials will help reduce unwanted materials.

Also remember to check the moisture level of your compost daily during heavy rainfalls as well as long periods of drought, and add coarse brown waste or water if needed.

TO GO

FURTHER

If you need to handle large amounts of compost, you can **build a 3-bins composting system**. Each of the three bins, arranged side by side, will contain compost at a different stage of the process, from freshly added materials to finished compost ready-to-use. Start by adding your materials in the first bin (following the same protocol than for a single compost bin), and once it is full use a pitchfork or shovel to scoop the content into the middle bin. It can be useful to leave some materials in the first bin to prime fresh waste with **beneficial microorganisms**. When the first bin is full a second time, move the existing contents of the middle bin to the third bin, where finished compost will be stored and made available to all. This system makes it possible to pull out finished compost at any time, while simultaneously building new batches of compost with fresh brown and green waste.



Balanced ratio of green and brown waste. • Ben_Kerckx, Pixabay

What you will need

- PITCHFORK / SHOVEL
- THREE HEAT-TREATED WOODEN PALLETS (RECYCLED IS BEST)
- CABLE TIES
- SCREWS, L-BRACKETS & DRILL
- CHICKEN WIRE & WIRE CUTTERS
- TARP
- LOGBOOK / RECORD JOURNAL

PRACTICAL EXAMPLE

The House of Nature and Tree is a public structure located in the city of Meudon (France) whose main mission is to **raise awareness about eco-citizenship**. It offers regular activities and provides support for local environmental projects, one being the installation of a neighborhood 3-bins composting system in its garden. Any nearby residents who decide to join this initiative can transport food waste to the compost bins once a week. Green waste produced within the site (grass clippings, pruning residues, leaves) is also recycled into the compost. The compost bins are maintained by the staff, while regular communication ensures that only suitable materials are added.



Community compost system in the garden of the House of Nature and Tree, Meudon (EcoJardin certified site). • ARP Astrance



Keeping soils healthy

Conditioning a soil for an optimal plant growth. • Alexander Fox, Pixabay

WHAT

ARE WE TALKING ABOUT ?



Glossary

Lime: calcium and magnesium-rich compounds (e.g., chalk, limestone) capable of reducing soil acidity by raising the pH.

Soil pH: indication of the acidity or alkalinity of a soil, measured in pH units ranging from 0 (extremely acid) to 14 (extremely alkaline). The ideal level for most plants tends towards neutrality (between 6.2 and 6.8).

Promoting the health and functionality of soils is a key issue in ecological maintenance. This involves preserving their **chemical and biological characteristics** (minerals availability, nutrient retention, and biodiversity) and their **physical structure** (optimum porosity and permeability, necessary for gas exchange and water retention). To do so, the main practices to implement are **proscribing bare soils** through mulching (covering a soil with organic plant materials), limiting external matter inputs, and avoiding tillage. Using any products derived from synthetic chemistry should also be prohibited. The goal is to protect the harmony of local soils while restoring a **natural water cycle**.

WHY

IT IS IMPORTANT?

Healthy soils provide many essential **eco-system services**, such as water storage and purification, pollutant retention, carbon storage, and nutrient transformation. They are **home to more than 25% of all living organisms** that in turn ensure the soils fertility, leading to an optimal plant growth. Urban soils suffer from many damages (e.g., pollution, compaction or impermeabilization) that degrade and deplete them. But maintenance practices can have a significant positive impact, in particular **mulching**. It regulates temperature by adding a **layer of protection** from weather changes and promotes water infiltration and retention by limiting evaporation, which reduces stormwater runoff and watering needs. It also provides a good habitat for **soil biodiversity**.



The **key nutrients** that plants derive from soils are nitrogen, phosphorus, and potassium, while carbon, oxygen and hydrogen are absorbed from the air.



Soil protected with wood chips in the Jarre Park, Marseille (EcoJardin certified site). • Brassica

HOW

TO DO IT?

Mulch can be made from dry plant materials, such as wood chips, shredded twigs or branches, and dry grass clippings, best **recycled from local pruning or mowing residues**. Prefer using twigs or young branches (diameter of less than 8 cm), as they contain 80% of a tree's nutrients. This will introduce favorable minerals into your soil as materials decompose over time, **increasing its pH towards neutrality**.



Mulch is slowly transformed into **humus** in a chain of decomposition made possible by the soil micro-fauna (e.g., worms, mites) and wood-decaying fungi.

Mulch can be applied anytime of the year when needed, in particular around new plantations that will benefit the most from **moisture retention**. Spread a thick layer (at least 5 cm), keeping some small open spaces for ground nesting pollinators (see sheet 8a). You can also **keep fallen dead leaves in autumn** as mulch. Monitor regularly, adding a fresh layer of mulch when needed.

Fertilizer can be added when conditioning a soil for planting (see sheets 3, 8a) and in case of important hydric stress, favoring the use of **locally made compost** (see sheet 6). Lime can be sparingly added if a soil is too acidic (pour white vinegar onto a sample, an effervescence means the soil is chalky while no reaction means it is acidic). Due to their limited soil volume, **planters** can be amended with compost once or twice a year (in spring and/or autumn) to keep levels of organic matter. Avoid **unnecessary soil tillage** (turning and disturbing), as it can alter its structure. Limit hoeing and digging to operations strictly requiring it, such as new plantations or weeding of unwanted vegetation.

What you will need

- ORGANIC, LOCALLY MADE MULCH & COMPOST
- LIME

HOW TO PREVENT

PROBLEMS?

Avoid adding mulch in immediate contact with **trees and shrubs' root collar** (area where the trunk or stems join the roots), as it can cause it to soften and become vulnerable to diseases. Do not recycle pruning residues as mulch if the branches were removed because they were diseased or decaying.

TO GO

FURTHER

Impermeable sealing is one of the main causes of urban soils degradation. It drastically alters their properties and functions by reducing biological diversity and activity, **limiting interactions with the atmosphere**, and disrupting the water cycle. This in turn increases stormwater runoff, and thus floodings, while contributing to **heat stress within cities**. However, sealed soils are not dead, but rather in a coma. They can be slowly restored by unsealing surfaces whenever possible, and even a small action such as removing a few cobblestones can have a significant impact. Unsealed soils should be loosened and amended with compost to boost the **process of reconstruction**, before choosing to plant or letting spontaneous vegetation settle in.



Natural unsealing of a sidewalk, Nantes. • Christophe Schwartz

PRACTICAL EXAMPLE

In 2020, the city of Pantin (France) **unsealed 270 m² of sidewalk** in the Victor Hugo Street, creating a new enclosed urban green space. In order to **preserve the local soil** as much as possible, the only external matter inputs are compost and worm juice when necessary. Bare soils are prohibited, and many groundcover plants have been added. Mulch is made with wood chips recycled from local pruning residues and applied depending on the needs of each plant, the decomposition of the previous application, and possible movements of the mulch during maintenance work.



Unsealed healthy soil in the Victor Hugo Street, Pantin (EcoJardin certified site). • ARP Astrance



Supporting urban wildlife

Nest box, Paris-la-Défense. • Camille Savage



Glossary

Habitat: place or environment in which a species lives and finds the resources necessary for its survival and reproduction. Habitats can either be natural (a forest), semi-natural (agricultural land) or artificial (a roof).

Pollinator: species that carries pollen from one plant to another, allowing the transfer of genetic material. Around 80% of flowering plants need them to reproduce. The most well-known pollinator is the honeybee, but many other species also play a major role such as bumblebees, wasps, butterflies and even squirrels.

Urban wildlife: animals that can live or thrive in urban areas. Some of the most common types are flocks of birds including sparrows and pigeons, small mammals such as hedgehogs and mice, amphibians like frogs, and many insects.

WHAT

ARE WE TALKING ABOUT ?

In growing cities where human activities can create many nuisances (pollution, noise, light, etc.), urban green spaces are valuable habitats for the **urban wildlife**. You can support their survival by **building artificial shelters** that will welcome them and provide a nesting or breeding site, a resting place (especially during winter) as well as food resources, meeting their needs throughout the year. Follow next cards to learn how to build an **aromatic spiral for pollinators**, a **sparrow nest box**, and a **hedgehog shelter** within your green space.



8a



Aromatic spiral

Aromatic spiral built in a communal garden, Saint-Sorlin-en-Bugey. • Commission Jardin biodiversité, Lo Parvi

WHY

IT IS IMPORTANT?

Originating from permaculture practices, an aromatic spiral provides both functional and environmental benefits. It allows the vertical cultivation of different aromatic herbs in a reduced space, while providing **valuable shelter and food resources for many insects**, especially pollinators, as well as small lizards and spiders.



70% of bees nest in the ground, creating **burrows** in the soil. Others build their nests in hollow stems or dead wood. In Spring, they lay eggs on a ball of nectar and pollen.

HOW

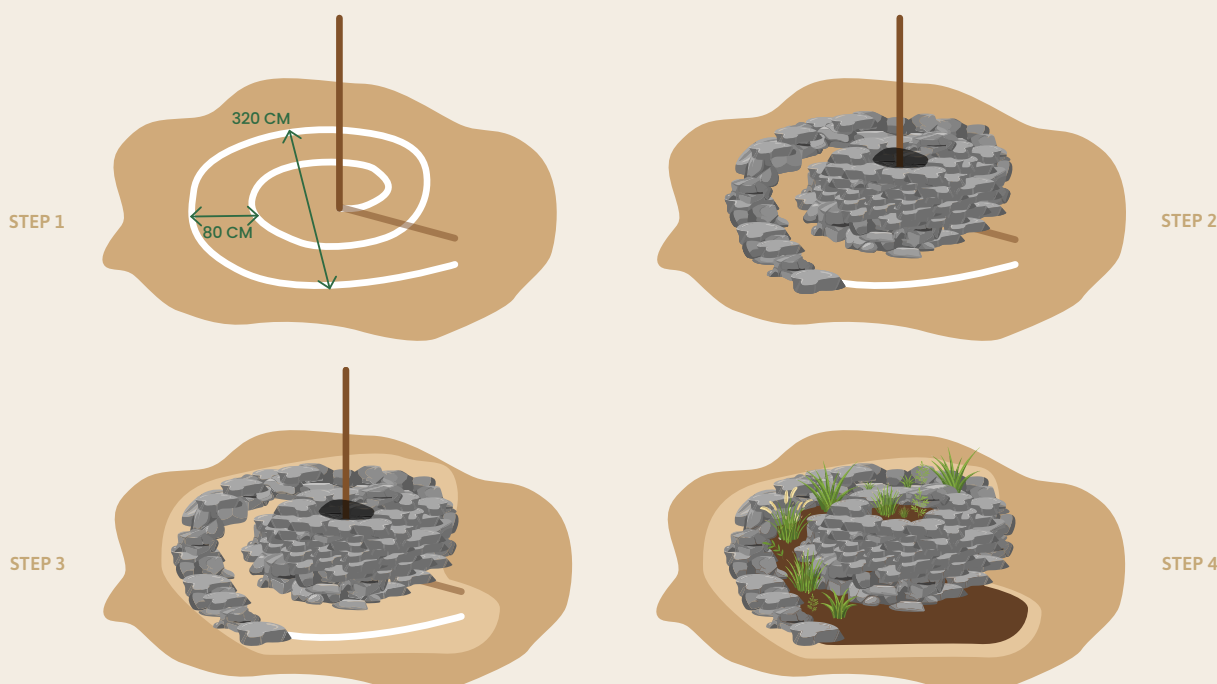
TO DO IT?

Start by **drawing the shape of the spiral** on the ground using a biodegradable chalk marking spray, leaving at least 80 cm between each line (*step 1.*). Following those lines, dig a ditch of 20 cm deep and your desired wall size wide with a shovel. Add at the bottom of the ditch a first draining layer of sand and rubble (e.g., pebbles or small stones) to avoid waterlogging, before **building the spiral by piling up stones or bricks**. Start at the center, which will be the highest point, and gradually decrease the height towards the periphery (*step 2.*). Tilt the wall slightly inwards to make it more stable. It is important that the stones or bricks are not cemented, leaving spaces for insects to shelter in. You can also insert small hollow stems or logs with holes in those gaps. Add a first draining layer of sand and rubble about halfway up the wall, reducing the quantities as you descend into the spiral (*step 3.*), and a **final layer of compost amended soil** (*step 4.*). You can add a two cm layer of mulch after planting your herbs.

An aromatic spiral generates a **variety of microclimates**; the higher up, the drier and sunnier the conditions will be. The distribution of each plant will thus be important for their development. In the top section you can plant rosemary, thyme, or lavender. In the middle try oregano, basil, or chives, while on the bottom part mint, cilantro or green onions will thrive.

What you will need

- SHOVEL
- SAND & RUBBLE
- NATURAL FLAT STONES / RECYCLED BRICKS
- SOIL & ORGANIC, LOCALLY MADE COMPOST
- HERBS OF CHOICE



The different steps of building an aromatic spiral. • Modified from an internal document produced by the Nature and Gardens Department of Nantes

HOW TO PREVENT

PROBLEMS?

Ensure that the structure is stable and well anchored to the ground when building your spiral to **prevent erosion** and let water flow smoothly from the top to the bottom. Maintain **healthy herbs** by regularly pruning dead leaves or twigs, carefully weed out any invasive species to avoid competition, and remove waste if needed. Due to the limited soil volume, you can add some compost once or twice a year. Do not forget to harvest your herbs.

TO GO

FURTHER

If **insect hotels** have become popular in many cities, they are not always the best solutions. As these structures often mainly host solitary species, the number and promiscuity of nests can enhance predation, parasitism (bacteria, fungi), and diseases. It can even support invasive species. A pile of dead wood or a stone heap will always be the best way to **naturally host insects**.



8b



Sparrow nest box

Blue tit perched on its nesting box. • Jggrz, Pixabay

WHY

IT IS IMPORTANT?

Many species of sparrow have been declining in Europe these past 40 years due to the loss of many woodlands and the **destruction of natural cavities** (hollows in trunks or large branches, cracks in cliffs or rocks, as well as small spaces under exposed root systems). Building a nesting box within your green space can compensate for this loss by providing those small birds a safe place to rest, nest and raise their young during breeding season.



The presence of birds within a green space can foster your mental well-being, as different studies have shown that listening to birdsong can help reduce depression!

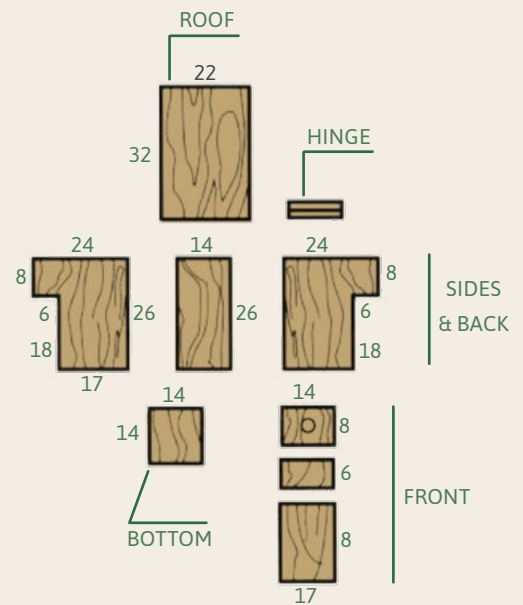
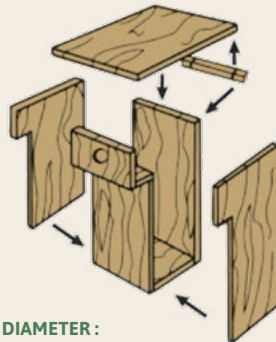
HOW

TO DO IT?

As birds come in different sizes and have specific needs, **one box does not fit all** and must be adapted to the species you wish to attract. The “mailbox-style” with a balcony is the easiest to build and suitable for many sparrow species, while providing better protection against predators and weather. Following the indicated dimensions in the construction plan, measure and cut your wood using a hand saw. Pierce the bottom with a few small holes (5 mm in diameter) to **promote ventilation and drainage** before nailing all the parts together. The roof should be attached only to the back piece using a hinge, making it easier to open the box for cleaning. It is best to **let the box weather naturally**, but if you want to add color use oil-based paints and never paint the inside or around the entrance hole. If the wood is too smooth, make horizontal grooves inside the box so that birds can climb out by clinging to the rough wood.



SIZE OF THE HOLE DIAMETER :
2.8 CM : BLUE TIT, COAL TIT, EUROPEAN CRESTED TIT AND CHICKADEE
3.2 CM : GREAT TIT
3.4 CM : NUTHATCHE, HOUSE SPARROW



Mailbox-style nest box construction plan (dimensions in cm). / Modified from LPO, s. d. Des Refuges pour la nature - Nichoirs pour les passereaux. p. 2

To install your nest box, **choose a quiet location** away from doorways or well-used paths, sheltered from prevailing winds and avoid direct sunlight or full shade. You can attach it to a tree trunk using galvanized wire and **a wedge to protect the trunk** (check it regularly, as the tree grows the wire might need adjusting), or a wall under the eaves of a building using screws. Place it **2-4 m above the ground** to protect birds from curious cats and other rodents. Make sure that birds will have a **clear flight path** without any direct obstacles to the nesting box, and slightly tilt it forward to protect it from bad weather. Install your nesting box in autumn so birds have time to find it before breeding season starts the following spring.

What you will need

- HAND SAW
- 2 CM UNTREATED, MOISTURE-RESISTANT WOOD (E.G., PINE, RED CEDAR, OR OAK)
- NAILS & HAMMER
- HINGE, SCREWS & DRILL
- GALVANIZED WIRE, WEDGE & WIRE CUTTERS

HOW TO PREVENT

PROBLEMS?

To **prevent diseases and kill any parasite invasions**, empty and clean the inside of the nest box every year using boiling water and a wire brush. Check that it is still securely attached and repair it if necessary. Do it in September-October to avoid disturbing the birds during nesting or breeding season.

TO GO

FURTHER

You will increase the likelihood of birds moving in by providing a favorable immediate environment. If possible, place the box near natural food sources such as fruit producing shrubs. You can also add **supplementary feeders in winter** containing oil rich seeds, such as sunflower seeds, and a birdbath. Change the water every two or three days, especially in summer.



8C



Hedgehog shelter

European hedgehog. • Alexas_Fotos, Pixabay

WHY

IT IS IMPORTANT?

Hedgehogs, particularly European hedgehogs, have faced an important decline in Europe due to urbanization and the disappearance of hedges. They are today a protected species considered “**Near threatened**”. If many hedgehogs reside in more rural landscapes, they can also be found in cities where they are very reliant on green spaces and gardens. Building a shelter will provide them with a safe place to hide during the day, away from predators (such as dogs and foxes). It will also give them a dry and quiet place to **breed and hibernate** during winter, with the bonus of attracting insects for them to feed on.

HOW

TO DO IT?

Start by finding a quiet and shady spot for your shelter, such as under a thick shrub or behind a building. You can **build a simple shelter** using a wooden crate placed upside down. Do not use a crate that is too small, bearing in mind that a hedgehog can give birth to as many as six hoglets and should be able to move around next to them. Using a hand saw, cut a square gap of about 15 cm² for the entrance, making sure you place it out of prevailing winds. You can **create an entrance tunnel** using two plastic flower pots cut at the bottom and taped together, which will limit the passage of predators and prevent heavy rain from getting in. Place a tarp on top of the crate to protect it from rain, and **fill it with a bed of dead leaves**. Cover the structure with sticks or small logs to add stability. Finish by piling dead leaves on top and around the shelter, making it look more natural for hedgehogs.

HOW TO PREVENT

PROBLEMS?

To prevent diseases and kill any parasites, empty and clean the shelter once a year using boiling water and a wire brush. Fill it again with a fresh bed of dead leaves and repair it if necessary. Do it in April after hibernation season, or in October after breeding season to avoid disturbing its occupants.



You can find out if your box is occupied by putting something in front of the entrance that can be easily moved (like a piece of newspaper). If a hedgehog has moved in, it will have been moved by morning.

TO GO

FURTHER

Dry hedges can also be valuable shelters for Hedgehogs. Use straight lengths of 3-5 cm diameter branches, woven between vertical stakes hammered into the ground in two opposite rows about 50 cm apart and at 1.5 m spacings. You can also **build a branch pile** by gradually piling up any sticks and pruning residues. Keep the bottom open a little to help hedgehogs create their way in.

What you will need

- HAND SAW
- WOODEN CRATE (RECYCLED IS BEST)
- TWO PLASTIC FLOWER POTS & TAPE
- TARP
- STICKS / SMALL LOGS & DEAD LEAVES



Recycled hedgehog shelter. • Mariana Vidmar

PRACTICAL EXAMPLES

In 2023, the environmental association “Lo Parvi” created an **aromatic spiral** on a newly purchased plot of land where a pile of stones was being stored after the collapse of a wall. The stones were slowly adjusted row by row to build the spiral, ensuring its stability and durability. Hollow stems were added between the stones to provide shelter for insects, as well as lizards and spiders. Different **perennial aromatics** were planted, such as common and wild thyme, oregano, and various lavenders. Each Spring, annual flowering plants are added between the existing plants to **attract a wide variety of insects and pollinators** throughout the seasons.



Bee enjoying thyme flowers. • Andhoj, Pixabay

Faced with a decline in local House sparrow populations, the city of Paris partnered with the LPO (French League for the Protection of Birds) **distributed over 2000 nest boxes** over 2021-2022, along with a maintenance guide providing technical advices. The goal was to bolster the existing bird populations while **raising awareness** among professionals and the general public. Communication also focused on promoting the acceptance of spontaneous vegetation to provide food resources for birds while improving the living environment for residents at a neighborhood level.



House sparrows perched in front of a nest box. • Pixabay

In Brittany, the project “Hedgehog Route” (Route du Hérisson) was launched in 2024 to **preserve local species of hedgehogs**. The goal is to create and promote small passages between private and public green spaces in order to facilitate their movement in search of food and shelter (hedgehogs can travel up to 4 km every night). More than 30 passages were established across eight municipalities, with the program now open to local residents until 2027. Explanatory display panels were placed in front of the passages, and an online map was created to identify plots made permeable. By **improving local ecological corridors**, this project allows hedgehog populations to adapt to seasonal changes, while creating a collective movement to care for biodiversity. This project was inspired by a regional program in Normandy “Prickly city” (Piqu’en Ville), itself inspired by the British initiative “Barnes Hedgehogs”.



Small passage way created in a garden fence, Pleurtuit. • Manon Belec



Building a team

Nature celebration day in the communal green space Agrocité, Gennevilliers. • Sami Benyoucef

WHAT

ARE WE TALKING ABOUT ?



Glossary

Citizen science programs: scientific data collection programs that involve volunteer citizens, promoting the emergence of a common knowledge feeding into current research programs.

Bringing together a team of gardeners around a **collective ecological maintenance program** is a good way to optimize sustainability of the practices. Establishing efficient and **regular communication** between those involved in the maintenance program is key to ensure its continuity and **foster a shared responsibility**. It can also be a good educational tool to learn and gain skills collectively, while raising environmental awareness.

WHY

IT IS IMPORTANT?

Urban green spaces are good vehicles for **social cohesion**, especially within a neighborhood, and coming together around the topic of ecological maintenance can positively contribute to local life and dynamism. Gathering a team of gardeners will allow to **share experiences and exchange knowledge**, which is essential to tackle problems and implement a continuous improvement approach. It will also provide a space for **community building**, as well as opportunities to spend time outside regularly.

HOW

TO DO IT?

The first step is to **create a collective maintenance plan** defining short, medium and long-term goals (as well as potential issues to be aware of), based on a map of the different areas and features of the green space (flower beds, meadows, single trees, playgrounds, etc.). Detail for each area the different maintenance practices to implement every month and/or season over the course of a year, taking into account local uses. Formalize the maintenance plan into a written document (online and/or in paper) that will allow **efficient transmission of information** between gardeners. Include all useful information, such as the periods and frequency of intervention (which can be displayed in a **calendar**) or the necessary equipment and where they are stored. Plan regular maintenance of the equipment used to optimize their proper functioning and extend their lifespan. You can also list the specific responsibilities of each gardener to **ensure accountability**. Update this document regularly, allowing for adjustments if needed.



Mapping of the landscaping in the garden of the Maison du Végétal, Angers (EcoJardin certified site). • Plante & Cité

Set up **regular meetings and/or collective gardening sessions** to ensure a dynamic and long-term communication, as well as fun activities or events that will fuel involvement while creating opportunities to bring people together (e.g., sports activities, outdoor cinema, children play dates, etc.). Create **fixed rituals**, such as monthly meetings over coffee or seasonal themed days, and set up regular **educational activities** or training sessions to learn and gain skills together. You can also contact specialists (naturalist or environmental associations, local authorities, etc.) to benefit from their advice and guidance, and **establish partnerships** with local schools or community centers. Use these gatherings to **collect and address any concerns**, but also to celebrate successful achievements.

In addition, you can implement **external communication** on your ecological maintenance practices to promote their understanding and respect by other local residents and passersby. Create **on-site display panels** or leaflets explaining the process, goals and benefits of your practices and list important rules or good practices for respecting them.

What you will need

- SHARED BINDER
- LOGBOOK / RECORD JOURNAL

HOW TO PREVENT

PROBLEMS?

Maintaining a green space can pose certain health risk, usually caused by poor posture or sharp equipment (cuts from pruning shears or spades, injuries from improperly stored tools, etc.). **Train together for safe procedures**, including choice of ergonomic tools and how to handle them correctly, use of protective equipment, and sanitary rules (tetanus vaccinations, cleaning of any wounds, etc.).

To avoid noise complaints during events or activities set up in your green space, consider limiting the hours, always notify neighbors, and organize events that are open to local residents.

TO GO

FURTHER

Set up **collective species inventories** and/or join together **citizen science programs** to assess the **positive impact of your ecological maintenance practices** on local biodiversity. Conduct an initial inventory of the different species present in your green space (fauna and/or flora), especially if endangered or protected. Do not forget about the **soil biodiversity**, especially earthworms which are good indicators of a soil's health. Include in your observations a quick description of the habitats where the species are found, and do not forget the date of each inventory. Follow-up through **regular monitoring** every year, and adjust maintenance practices accordingly if needed (e.g., plan pruning interventions outside of the local bird species nesting periods).



Awareness raising workshop on ecological maintenance, Chilly-Mazarin. • Camille Savage

PRACTICAL EXAMPLE

The University of Rennes (France) created in 2011 a citizen science program called the “Participatory Earthworm Observatory Protocol” (OPVT), which includes a **simplified method for observing and counting earthworms** in any type of green space. It is intended for volunteers of all expertise level, enabling the collection and analysis of data gathered at the national level. In Paris, earthworms inventories are carried out by the gardeners every three years since 2017 in different flowerbeds of the city, before being submitted to the OPVT program and its associated researchers.



Earthworm diversity assessment, Paris. • Jean-Christophe Lata



Earthworm of the genus Scherotech. • William Perrin

Drafting

Alice Meyer-Grandbastien, Plante & Cité

Editorial coordination

Gaëlle Rigollet and Aurore Micand, Plante & Cité

Proofreading

Robin Dagois and Mélissa Haouzi, Plante & Cité

Funding

The creation of this document, produced as part of the GreenDense Interreg North-West Europe project (Greening dense urban areas for enhanced climate resilience, biodiversity and health), received financial support from:



GreenDense

Graphic design and illustration

Layout and design: La Fabrique Rouge

Unless otherwise stated, the diagrams in this document are from the GreenDense project and are credited to Plante & Cité.

Front cover: Paul Bodin Street, Paris. • Sonia Yassa

Back cover: Residential Street, Montreuil. • Camille Savage

Legal notices

ISBN: 978-2-38339-050-3

Publisher: Plante & Cité, 26 rue Jean Dixmèras, 49000 Angers

Publication date: Mars 2026

To cite this document: Meyer-Grandbastien A., 2026. **Guide to Ecological Maintenance of Green Spaces in Dense Urban Areas. Easy Practices to Implement.** Plante & Cité, Angers, 43 p.

Plante & Cité is the French national center for research and experiments in the area of green spaces and urban landscaping. Constituted as a non-profit organization, it has today more than 800 members (local governments, landscape companies, research institutions and training centers, etc.). Sponsored by the Association of French Mayor and supported by the interbranch organization for horticulture and landscape (VALHOR) and the Ministry of Ecological Transition, Plante & Cité develops research and expertise to provide innovative solutions for the development and management of urban green spaces and natural areas, in a sustainable development perspective. Created in Angers, Plante & Cité benefits from the support of Angers Loire Metropolis and participates in the dynamic of Végépolys Valley, international plant cluster, particularly in the area of urban vegetation.

www.plante-et-cite.fr





Guide to Ecological Maintenance of Green Spaces in Dense Urban Areas

EASY PRACTICES TO IMPLEMENT

Ecological maintenance is a contemporary approach to managing green spaces that promotes **environmental sustainability** while enhancing **human health**. It aims to shape functional and resilient ecosystems, tackling current issues such as climate change adaptation, air and soil quality improvement, droughts and floods prevention, and local biodiversity support. The gardener becomes a central actor in the natural evolution of a site based on careful observations and constant adaptation, while cooperating to promote social cohesion. The methods applied in an ecological maintenance program focus on **preserving valuable resources**, natural and human.

This *Guide to Ecological Maintenance of Green Spaces in Dense Urban Areas* consists of a set of **nine practical sheets** presenting key ecological maintenance practices that can be easily implemented within diverse green spaces across dense urban areas. It is intended to **inspire, raise knowledge and guide public participation** in sustainable maintenance, helping cities become more resilient.

The **GreenDense Interreg North-West Europe project** (Greening dense urban areas for enhanced climate resilience, biodiversity and health) brings together six cities and three expert organizations to address climate change, pollution, and biodiversity loss in densely populated urban areas. Through an **innovative “mosaic” approach**, the project aims to install small-scale green infrastructures where they are needed most, focusing on **creative greening built via grassroots co-creation**. These small but significant green interventions will increase green connectivity, while delivering a wide range of social benefits for local communities, such as public health, active mobility, and youth engagement.
Find more information at : greendense.nweurope.eu