

Adventurer's MK

BUSHCRAFT SKILLS

INTRODUCTION

Bushcraft is the art of using the resources provided by our natural environment to survive and thrive in the great outdoors. It combines the knowledge of how to best use the plants and animals at your disposal with some basic bushcraft tools to make outdoor living easier and more efficient. In learning bushcraft skills we benefit in many ways including:

- Increasing our ability to adapt to new challenges
- Becoming more self sufficient
- Growing our confidence
- Increasing our survival skills
- Becoming better prepared to face unforeseen problems

Bushcraft is not just one thing to learn. It is a group of related skills that help you survive and adapt to overcome obstacles. Although traditional bushcraft is focused on wilderness survival, its mindset of using the world around you can easily be applied to an urban or suburban setting.

Bushcraft skills

Learning the primitive skills of bush craft will go a long way in making you better prepared the next time a disaster strikes. Many of the skills and projects within the field of bushcraft can be directly applied to survival situations and are immensely useful to learn such as;

- Food Foraging
- Trapping and Hunting Game
- Water Gathering and Purification
- Shelter Building
- Fire Building

Each of these bushcraft skills has many smaller subsets of tasks and abilities that make them up;

Food Foraging

- Knowledge of local plants
- Camp cooking
- Avoidance of toxic plants
- How to efficiently harvest

Trapping and Hunting

- Tracking and stalking game
- Reading animal signs
- Building snares
- Using lures
- Hiding human scent
- Tying knots
- Making cordage
- Cleaning and cooking game
- Water Gathering and Purification

Foraging for water

- Making a water filter
- Purifying water
- Fire building (for boiling)
- Container making (for carrying water)

Shelter Building

- Felling trees
- Batoning branches
- Harvesting other materials
- Thatching or weaving grass or bark
- Knot tying
- Making cordage
- Natural insulation and waterproofing

Fire Building

- Collecting wood
- Gathering tinder
- Batoning branches
- Building a bow drill, fire plough or other device
- Building a fire pit
- Types of fires and their uses

PRINCIPLES OF TOOLCRAFT SAFETY

Only use tools designed for the job at hand, Saws are for cutting, Knives for slicing, Axes for chopping and Shovels for digging. Using tools for purposes other than that of design will cause damage to equipment and potential injury.

When using an axe, knife, shovel or bow saw:

- a. store tools in a secure place, never leave them lying around or touching the ground;
- b. always use the right tool for job;
- c. follow the safety procedures for using the equipment; and
- d. keep edges and blades sharp, handles tight, and clean and lightly oil steel parts before storage.

USING A SAW:

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To use your saw safely use steady strokes without excessive weight on the blade. Be sure to firmly secure the wood, and be careful not to saw your fingers!

USING YOUR AXE:

To use your axe safely;

- a. set yourself up a safe distance from other people;
- b. check that the axe head is secure on the handle;
- c. always limb (cut off branches) by working from the bottom of the tree towards the top, and stand on the opposite side of the trunk from the branches you are cutting off;
- d. ensure that your swing is not aimed at your foot;
- e. secure your target in a safe manner – not with your hand; and
- f. use both hands on the handle.

Making Cordage

Principles of selecting rope making materials

To discover whether or not a material is suitable for rope-making it must have four essential qualities.

1. It must be reasonably long in the fibre
2. It must have strength
3. It must be pliable
4. It must have adhesion or grip so that the fibres will bite into one another

There are three simple tests to find out if any material is suitable.

1. First pull on a length to test it for strength. If it does not immediately snap or pull to pieces, it should be twisted between the fingers and the fibres should be rolled together.
2. If it will stand this and not snap apart, tie a knot in the material and slowly and gently tighten it. If the material does not cut in on itself and you can pull the knot reasonably tight,
3. It is suitable for rope-making, providing it will bite or grip together and does not slip apart instantly.

You will find these qualities in all sorts of plants; in ground vines, in most of the longer grasses, in some of the water strong bush ropes can be made only if the materials are suitable. The fibres, as in grass or bark, must be long enough to be worked, they must be able to be twisted and be pliable enough to take a simple knot without snapping.

weeds and rushes and in the inner bark of many trees and shrubs. Some green, freshly gathered materials may be stiff or unyielding. However, they still may be suitable for ropemaking. Pass them over the flames of a hot fire for 30 seconds or so. The heat will often cause the sap to burst through some of the cell structures making the material pliable. If the material is hard or stiff, it can be passed over a fire to make it more pliable.

Gathering and preparing materials

In some plants there may be a high concentration of vegetable gum. This can often be removed by soaking in water for several hours until the material is cleaned. A running stream is suitable only if the material can be anchored or secured. Large stones are useful for this. If large enough containers are available the material can be boiled. A third method is to dry it out thoroughly in the sun and then tease the fibres out.

Some materials have to be used green if any strength is required. Those that should be used green include the sedges, water rushes, grasses and liana vines. Grasses, sedges and water rushes should be cut and never pulled out of the ground. Cutting above ground level with a sharp knife or machete is harvesting. But pulling it out destroys the root structure and kills the plant.

When harvesting, work over as wide an area as possible. Do not completely clear any one site. Remember to leave atleast some stands of the plant to go to seed to allow for regrowth. Thus with the sedges and grasses be particularly careful with your harvest. Cut what you require above ground level and take only from the biggest clumps.

To make cord by spinning with the fingers

Use any material with long, strong threads or fibres which have been tested -previously for strength and pliability. Gather the fibres into loosely held strands of even thickness. Each of these strands is twisted clockwise. The twist will hold the fibre together. The strands should be of a thickness from 1 mm downwards for a rough and ready rule there should be about 15 to 20 fibres to a strand. Two, three or four of these strands are later twisted together and this twisting together or 'laying' is done with an anti-clockwise motion, while at the same time the separate strands which have not yet been laid up are twisted clockwise. Each strand must be of equal twist and thickness.

You must ensure that the twisting is even, that the strands are uniform and that the tension on each strand is equal. Do not spin the material too thickly. Thick strands do not help strength in any way; rather they tend to make a weaker rope.

Note: Before entrusting your life to a bush-made rope it should be tested. This can be done by tying the rope to a tree and with the help of two or three people – tugging at the same time (as in the game of tug-of-war).

Bush ropes can be made into simple ladders by inserting two cross sticks at suitable intervals through openings made in the lays. This must be secured to the rope and lashed into place top and bottom to allow them to bear the climber's weight.

Single rope ladder with sticks

A single rope ladder is made by opening the lays of the rope and inserting sturdy cross sticks about 20-25cm long with an equal amount protruding on either side. They must be secured to the rope by lashings both above and below. The distance between these ladder holds should be between 30 and 50cm, depending on the agility of the climber. Bush single rope ladders have the advantage of being able to be used by people who have difficulty in climbing by ordinary means. They provide a relatively easy way of ascending a rock face or a lookout.

Knots and Lashings

Knots and lashings take the place of nails for many bushcraft projects. The ability to join two pieces of natural material together gives the ability to make quite complicated constructions in the bush, or indeed anywhere.

Huts and Thatching

Then the ability to construct a weatherproof temporary hut may save one's life. Little skill is needed to make a comfortable, thatched, weatherproof hut using materials at hand in any sort of country outside of the stony desert regions. The building of a thatched hut from local materials is a creative exercise. Design must provide for the anticipated weather conditions. Although finding suitable materials almost anywhere presents no problem, considerable organisation is required to collect this material. And for the actual structure itself, good teamwork is needed.

Thatched Huts

The making of huts and shelters for occasional or continuous use from exclusively local materials and without the aid of any man-made equipment is not difficult. In place of nails, lashings (either of vine, bark strips or other fibrous material) are used. Framework is of round poles. Weatherproof roofing is provided by thatching with long grass ferns, reeds, palm leaves, seaweed, bark sheets, split shingles or even sods of heavy clay turf.

The material used depends on the location. The shape, size and details of the hut are likewise governed by the length of intended occupation, the number of people that have to be sheltered, the local climatic conditions and, of course, the time available for construction. If there are one or two people to be sheltered for a few nights only in a temperate climate, a simple lean-to thatched shelter will suffice. This can be built in one to three hours. But if there are eight or ten in your party and they require shelter for a few months against cold and bad weather, then a semi-permanent hut complete with doors, windows and a fireplace for heating and built-in bunks will be required.

To make such a structure properly will require work over two to three weeks - even longer if one is using rammed earth. In making any dwelling it has to be assumed that a good knife, a machete and an axe are available to every member of the working party and that all the workers are, of course, willing.

When it comes to planning your own hut you are your own architect and builder. If there are several people in the party organise the labour so that no hands are idle. Have one or two people cutting poles, another carrying them to the site, a fourth stripping bark for lashings and set the others gathering material for thatching.

Collect all the material for the structure before you start to build. Then stack it in orderly piles as close as possible to the cleared building site. Your main poles should be in one pile, the battens for thatching in another, the bark strips or vines shredded down for immediate use in a third, and your thatching material in several piles. In the meantime the building site should be thoroughly cleared of ground cover and, if necessary, levelled. Under normal conditions spades and mattocks are the rule. But in an emergency digging tools may have to be improvised by using bush timber.

Once you are ready to start building, organise the erection of the main framework by lashing on the battens and completing the framework. There is nothing to it really except intelligence. Plan and organise to keep everybody busily engaged.

Design

There are three main designs of huts: a simple lean-to, suitable for fine, warm weather; an enclosed round hut or pyramid, suitable for cold conditions; and a long hut suitable for sub-tropical and tropical climates if left open, or, if completely walled, suitable for cold conditions. Refinements such as doors and windows may be added as needed. And when the hut is completed there is the all important matter of furnishing it.

Lean-to huts

Small one- and two-person huts can be easily constructed in an hour or two by making and thatching two or three frames, from 2-3 metres in length and 1-1.5 metre in depth. These frames, built of battens, are lashed onto two forked sticks. The forks are in the form of hooks at the upper end. The framework is simple to construct.

It is important to ensure that the end of the top frame projects forward beyond the fork and the ridge. This protects the front frame and saves the work of ridge thatching. If raised bunks are being put in, it is advisable to have the bottom of the thatch about 50-60cm above ground level. This raises the ridge height between 30-50 cm. The length of the side poles in this instance is increased to 4 metres.

Permanent lean-to huts

The permanent lean-to hut using a tree for bracing is simple and quick to erect. The ridge pole is raised against the tree by the means of the two end-forked poles to the required height of about 3 metres, depending on the width of the structure. The end forked poles should be at an angle of not less than 45°. If the length of the ridge is more than 4 metres it is advisable to put in another one or two forked poles about halfway along.

On to the end-forked poles lash a crossbar and lash it again to the upright tree. This crossbar has lashed to its front end, a pole connecting and lashed to the ridge and also the front eaves, plus the front thatching battens. Thatching battens are lashed onto the two rear forks. The distance apart for the thatching battens varies. It may be anything from 15-30 cm, depending on the length of the thatching material being used. A general guide is that battens should be spaced apart about one-fourth of the average length of the thatching material.

An upright in the form of a light fork may be placed under the front corners to the front eave pole. Wall thatch battens are lashed horizontally from the rear forked poles to this upright. Wall pegs are

driven in along the rear at whatever height is required and to these wall pegs thatching battens are also lashed.

Forked poles should not be less than 7-10 cm in diameter; the ridge pole should be about the same and thatching battens should be 3-5 cm in diameter. Use dry or dead timber wherever possible. It is lighter to handle and its use avoids any destruction of the bush. When making wall pegs, bevel off the head. They can be driven in without splitting.

Round hut

To make a standard round thatched hut cut or gather four poles each about 5 metres in length and between 10-15cm thick. They should be as straight as possible. Lash these together in the shape of a tepee or pyramid, stand them upright and then sink them into prepared holes in the ground - a depth of 30-50 cm is usually ample depending on the firmness of the soil. In sandy conditions the depth may have to be greater to ensure stability. The distance between the diagonal poles should be about 6 metres to ensure a roof slope of about 45°. This is the best for shedding rainwater from the yet-to-be-constructed roof. Another eight poles, which can be somewhat lighter, are added to the initial pyramid. They should be spaced evenly around the circle. These should be lashed to the roof poles after being driven into the ground. These main structure poles should then be strengthened by cross battens and the inside wall supports constructed within the circle.

Space can be left for a tall or low entranceway as desired (the low one is easiest). The hut should then be thatched with any materials that are available.

Pyramidal Huts

The pyramidal hut, having a square base, is particularly useful where it is desired to make the fullest possible use of wall and floor space. The pyramid and circular hut have similar construction techniques. In the pyramidal hut, when tying on the thatching battens, it is more efficient to make one lashing at each corner secure on the thatching battens. When the span between the forked poles becomes less than 2 metres it is best to lash only onto the corner poles, omitting any extra tying to the intermediate poles. If the span between the corner poles is greater than 2 metres it is necessary to lash battens to the intermediate poles.

Poles and Structures

All sloping sides on any hut must be completely waterproof and should be at an angle of not less than 45° (although a 40° slope will shed water). A slope of 45° will also give good headroom in the larger huts. The diameter of the timber inside the bark can be roughly calculated by allowing a minimum of 2-3 cm diameter at the butt for each 120-150 cm of length. Thus if a pole is 3 metres long the diameter of wood clear of bark at the butt should not be less than 6 cm, or, if the pole is 6 metres long, the diameter at the butt should not be less than 12-13 cm.

If the span is relatively wide or the timber used is relatively light, strengthen the structure and prevent sagging or inward bending of the main poles by putting across ties or collar ties so that the thrust or weight is thrown from one pole on to the pole opposite.

Bracing

If long or lean-to huts are being built and there is no strong support, such as a growing tree, it is advisable to lash in diagonal braces that extend if possible from the ground at one end to the ridge at the other. These bracings will make even a light hut stormproof.

Doors and Windows

Refinements such as doors and windows are completely practical and also possible in thatched huts. Very little extra work is involved. Windows are simply two or three forked sticks cut off short below

the fork with the long end projecting. Thatch battens are lashed to these forked sticks and the framework is lifted up and hung on one of the battens of the hut itself. In the general thatching of the hut this window space is left clear. The window frame is itself thatched separately as a complete unit. It is best to make the window frame wider than the window opening of the hut itself. It can be propped open by the use of one or two sticks. However, if it is very wide more props may be needed.

There should be at least 15 cm overlap of the window and the roof thatch at the sides. The loose ends of the thatching above the window frames should be allowed to come on to the window's own thatch and should completely cover the sewing at the top.

Doors are also made and thatched separately. The hinge of the door can be made by several methods. In construction they are similar to a gate frame with the addition of two uprights lashed across the fork. To these two uprights the horizontal thatching battens are secured.

Thatching Materials

Materials suitable for thatching range from long grass, reeds, rushes, most of the long stalked ferns (such as bracken), palm leaves of all types and, as a last resort, many leafy branches. Long grass and reeds make a high quality roof when they are used dried rather than in their green state. It is advisable when using these materials to cut and stook them at the very start of your building project - particularly if it is a large job spread out over two or more weeks. This enables the material to dry out before being used.

If placed on the roof supports in their green state, grass and reeds will shrink and curl, allowing rain to enter. All green materials shrink and this will affect the thatching stitches as well, causing them to become loose. The thatch can then slip out of the stitches and in the first half-decent wind it will blow away.

If the materials are well-seasoned the stitches will not slacken because there is very little shrinkage, and the thatch will stay down securely. With most of the brackens it is advisable to use the material when it is green and sew it down tightly. This also applies if you are forced by circumstances to use green branches. Green branches do not make a very efficient roof and their use is not recommended except in an emergency.

If branches of trees or shrubs are to be used seek out a dead branch with some of the leaves still on it. Shake the branch. If the leaves immediately fall off the material is useless and will only serve for a day or two. If the leaves withstand this shaking, the plant will probably serve your purpose fairly effectively. Some trees and shrubs drop their leaves within a few hours of being cut. These are also useless.

Thatching Methods

There are almost as many different methods of thatching as there are different materials. Each method has its own peculiar advantage and application for certain types of material. The methods you are most likely to find of use are two simple ones. In the first the material is sewn on to the battens. This is called sewn thatching. The second method is to attach it in bundles. This is called tuft thatching. Instead of sewing the thatch onto the battens it might be more convenient to tie a pliant stick onto them at convenient intervals. The pressure of this stick tightly tied to the batten holds the material securely. This is known as stick thatching. There are several methods by which the materials can be secured to the battens on the ground. The battens are then laid onto the framework overlapping rather like long tiles.

Campcraft

A comfortable temporary or permanent camp is easy to set up and maintain with a little common sense and know-how, plus a few basic tools. While there is no excuse for destroying bushland, given a knife, an axe or machete, and dead timber and other bush materials, everything one needs for a bed, table, seats and chairs, cooking and lighting can usually be found quite close to the chosen campsite. There is no need for a camper to be uncomfortable if he or she exercises a little ingenuity. A properly made camp bed can be as restful as an inner-spring mattress. And no food has more flavour than when cooked out of doors. Once learned, these skills can also be of great use in emergency situations.

Camp Furniture

A number of pieces of camp furniture can be constructed from deadwood on the site. A camp table and seats are worth making if there are five or six people staying for some time in a semi-permanent place. The best type of camp table is one which also carries the seats.

For the framework select two forked stakes at least 8 cm thick and about a metre and a half long. The length of the stakes depends on heaviness of the soil and how far you will have to drive the stakes into the ground to make the structure secure. The lower end of each stake is 'pencil sharpened' and the top ends bevelled. The first stake should be driven well into the soil so that the lowest part of the crotch of the fork is about a metre above the ground. The prong of the fork should be pointing out from the length of the table.

When this stake is set measure off the length you want your table to be - normally about 1 metre for comfort for six people. Then drive in the other stake, with its prong also pointing outwards, to the same depth as the first. Measure their relative heights by eye. Then cut four strong, straight stakes and place these with one end in the crotch of the forks at right angles to the uprights. Drive them in securely as they will carry the weight of the table poles. Secure to the uprights with lashings if necessary. Then lash the table support poles into position. About 50 cm above ground level two straight poles about 10 cm thick and cut to the length required are lashed to the central stakes and the Y supports at either end of the table structure. They must be strongly fixed because they are going to support the seats.

The framework is now finished. Cut short, straight sticks for the top of the table and lace them to the tabletop poles. The seats should now be assembled. On the cross seat poles, braced to the Y structure at either end of the basic structure, a number of poles of similar length should be placed. With binding at either end these poles can be used for seats. However cross-slat seat sticks can be laid on them.

Camp kitchens and cooking

To make life comfortable for the cook, the camp kitchen should be sited so that the prevailing winds of the area do not blow into his or her face. The camp kitchen area should always be sited on a slight rise if possible so that in the event of a heavy downpour it will not be flooded. In a badly drained area it should be built up about 10 cm above ground level, by piling up earth and stamping it down to a flat surface or collecting a set of reasonably even rocks for a rough pavement.

Various kitchen equipment can be made on the site which can be used in campfire cooking. These include stick billy hooks and bush fire tongs. All methods of suspending containers over a fire are made easier by the use of billy hooks. These can be made by cutting a few hooked sticks 1 cm or less in diameter in varying lengths - depending on the height of the suspension pole and the depth of the container above the flames. At the end farthest from the hook a single deep nick is cut into the stick

so that it will hold the handle of the billy. This nick should be made opposite the hook for strength. Fire tongs can be made of a pair of sticks bound together at one end with bush twine.

Bark dish

An improvised boiling container can be made out of bark. A flat piece of bark of a species that does not split easily is stripped from a living tree. Take off a small piece at first and test it by softening it in your hands and folding it. If it does not crack, fold it into the shape (more or less) of a shoe box, much as you would with wrapping paper. Attach two short sticks to the ends of the container and tie them with twine or fibrous bush material.

OUTDOOR COOKING

Eating regularly in the field is a very important factor in maintaining your strength and energy. Even though you may be preoccupied with other things going on, you must eat as much healthy food as possible when engaged in physical outdoor activities. Cold weather, strenuous exercise and constant activity use up a lot of your energy reserves, and only a good, healthy meal can replace them. Reducing the amount of excess garbage that you'll have to carry is to "break down" the rations before packing.

This entails selecting only the food items that you intend to use and leaving behind the extra packaging. Remember that you will likely be hungrier when you're on your trek than you are when you're packing – always bring a little extra food.

For snacks on the trail you can carry high calorie trail mixtures of nuts, seeds, granola, dried fruit, cereals, candies, etc.

You also have the opportunity to cook fresh food in the field:

- boiling is one of the simplest and surest ways of cooking fresh food. Almost every food source can be made safe to eat by boiling. Save the water left over from cooking plants and animals to make a soup;
- food can be baked over a fire, or wrapped in aluminium foil (or wet leaves and mud) and covered in hot coals;
- fresh meat and fish can be smoked to cure it, or leave it to dry in bright sun on a rack; and
- food can be fried in a pan on a stove, or on a rock by a fire.

Boiling and baking without utensils

In an emergency the camper may want to boil water to either sterilise it to some degree or to cook food, but have no water-holding vessel available. A shallow hole can be scraped in the ground and lined with a groundsheet, newspaper (if it is available), bark, or any material in fact that will hold liquid. Build a hot fire and heat a number of small stones in it. Fill the lined hole with water and when the stones are almost red hot lift them from the fire one at a time with a pair of improvised bush tongs and put them gently into the water-filled hole.

If the operation is carried out carefully the stones will not burn the cloth, paper or bark and a litre or slightly more of water can be brought to the boil in a few minutes. The water can be maintained at the boil by placing new stones in the water as the ones that have lost their heat are removed.

Hot stone baking

Meat can be grilled on hot stones by placing a large flat rock in a fire until it is almost red hot, whisking the ash off it and then raking it out of the fire – or at least to one side. The meat can then be placed directly on the surface of the stone. A forked stick makes the perfect barbecue tool.

ENVIRONMENTALLY SAFE WASTE DISPOSAL

Avoid dropping or draining food on the ground in your cooking area. Waste water from cooking should be evenly distributed across the ground away from the cooking area and bivouac site. Do not dump waste water into ground water. Eat all of your meal and pack up any garbage immediately. Pack wet waste in a sealed container or plastic bag.

Waste is created by several activities by members of your team. Packaging material from food items or other food sources, damaged equipment, accidental spills, careless use of equipment, and human waste, all create waste that must be dealt with properly. Remember to divide garbage up for recycling –cardboard, paper, metal, plastic, glass, etc.

Food and meal waste

Divide waste from food packaging into paper, plastic, foil, and cardboard. Pack this waste out and recycle where appropriate. Remember to encourage teammates to finish all the food they open, and not to dump food scraps or extra liquid on the ground – it is polluting, and it will attract animals. Tin cans, glass, plastic containers and other food related garbage can be treated the same way. Do not try to burn any of these. Large groups staying in one bivouac site may set up a garbage point. Collect garbage after each meal and place it in doubled bags.

Waste from equipment

Damaged and broken equipment is a common source of pollution, either from the broken pieces being left around or fuel (or other liquids) leaking out. If equipment is broken or damaged, and repair is not possible, ensure you have all the pieces picked up, mark the device as not serviceable, and return it/pack it out. If fuel or oil has leaked from it, you will have to clean that up as well. Leaked oil will not evaporate. Oil soaked soil will have to be bagged and carried out of the area.

Human waste

Wherever possible you should use an established toilet, outhouse or portable toilet. Your choice for an alternative will depend on your location, the size of the group you are in and the time of year. At your bivouac site, the proper disposal of human waste is important to your health and hygiene, as well as your enjoyment of the outdoors.

In small groups, you should use a “cat-hole” or “one-sit hole.” Each person selects a private and dry place and digs a small hole only 15 to 20cm deep. Make your deposit and then mix in the dirt from the hole with a stick, covering everything well.

In a group of more than 12 people, you should dig a latrine for communal use. A hole about 60cm x 60cm, 30 to 60cm deep will work for about 20 people for one or two days. Cut the covering vegetation in one piece and preserve it for covering the hole later.

Leave the pile of loose earth and the shovel beside the hole to allow users to spread some dirt over their deposit. When the hole is full to about 15cm from the top, cover it with the remaining dirt and original natural cover. The primary considerations for an appropriate location for a latrine or cat-hole are privacy and the prevention of faecal matter entering ground water. Choose a site at least 100m from a ground water source, on dry ground, in a location away from your bivouac and cooking area, and off trails and roads. Urine is not especially harmful to the environment so if you are on the trail and you have to go, and no facilities are available, you should find a private, dry and sunny place to relieve yourself.

In the winter it is often too difficult to dig into the ground, or to ensure that your waste will not pollute ground water. If no established facilities exist, wait for the waste to freeze, Keep it frozen if you can then pack it out in a doubled plastic bag, only solid waste need be packed out – each person

should be responsible for their own. Dispose of waste down a toilet, and clean and dispose of the bags as required. To cut down on toilet paper waste you can experiment with broad leaves, moss and even smooth stones.