Bushcare

training manual

For more information visit
hornsby.nsw.gov.au/bushcare

HORNSBY
SHIRE COUNCIL

welcome

Welcome to the Hornsby Shire Council Bushcare Program. You are joining one of the largest volunteer Bushcare programs in Sydney.

The Bushcode training workshop you are attending today is for all new volunteers and all those undertaking 5 year membership renewal. It aims to provide a background to the Bushcare program at Hornsby, basic skills and understanding of bush regeneration techniques and importantly safe work practice in bushland.

The workshop is an important part of registering as a Bushcare volunteer. It ensures that you have the basic skills to undertake bush regeneration work correctly and to work safely in bushland. It also informs you about what you can expect from Council and Council's expectations of you as a volunteer working on public land.

Now you have made the decision to join the Bushcare program you will no doubt be eager to get out into the bush and start working. That is where you will learn the most about Bushcare with the guidance of your qualified and experienced Council Bushcare Trainer. What you will learn in the Bushcode workshop today is just the start (or continuation) of a long and special relationship with your local bushland in Hornsby Shire.

enjoy!

Hornsby Shire Council
Bushcare

Version 00002
Printed August 2014
HSC01169

Contents

Introduction

History of bush regeneration

Bush regeneration has its roots in recent local history in Sydney over the last 50 plus years.

A brief timeline:

- In the 1920s and 1930s visionary individuals undertook isolated on ground efforts to rehabilitate degraded ecosystems in South Australia and New South Wales.
- In the 1960s the Bradley sisters in Mosman started working to restore their local patch of bush. Joan and Eileen Bradley pioneered a successful method of bush regeneration that is still used to restore bushland around Australia today.
- In the 1970s, battles to protect pockets of bushland such as Kellys Bush on the Sydney Harbour foreshore drew international attention.
- In the 1980s many Councils in Sydney saw the need to support this community action. From this combined effort, Bushcare programs sprang up.
- In 1986, the Australian Association of Bush Regenerators NSW was established to promote sound bushland management practices.
- In 1989, Hornsby Shire Council's Bushcare Program officially began, forged by the efforts of pioneering local residents who saw the need for bush regeneration in the Hornsby Shire area.

Today there are over 17,000 volunteers working across Sydney to protect and restore bushland, waterways and other natural areas.

Image opposite: Ann of Wareemba Avenue Bushcare with student

Hornsby Shire

Hornsby Shire Council area covers around 51,000 hectares. Of this, about 69% is bushland. This represents the highest proportion of bushland in a Local Government area in Sydney. Many residents who choose to live in Hornsby do so specifically for the beautiful bushland that surrounds us. To give you an idea of how special Hornsby Shire is here are some further facts and figures for you:

- It is home to 1,000 plant species (34 of these are threatened), 340 vertebrate animals (41 are threatened) and 30 ecological communities (12 endangered). Twenty eight of the ecological communities are significant at national, state, regional or local level including Blue Gum High Forest and Sydney Turpentine Ironbark Forest.
- The Natural Resources Branch of Hornsby Shire Council manages around 1,370 hectares of bushland in 278 natural areas. Hornsby Shire area also includes around 23,000 hectares of Bushland contained within National Parks. The remaining bushland is held on Crown Reserves, private and other land.

Bushcare in Hornsby Shire

In the 1980s a few residents took the initiative and began to tackle urban bush weeds growing on Council land near their properties. They were so successful that Council was persuaded to support them. In 1989, Hornsby Shire Council Bushcare was established. It continues today as a successful partnership between the community and Council.

Each Bushcare site in Hornsby Shire is one of many across the landscape. In fact there are around 100 groups actively working in the Hornsby Shire area. To understand the value of each Bushcare site it is important to take a step back and look at the bigger picture. The saying, 'the whole is greater than the sum of its parts' is apt in this instance. The work you do at your Bushcare sites helps strengthen the links between patches of 'good bush' and so make the whole system stronger and more resilient.

Who are your support team?

The Bushland Community Programs Team, which forms part of Hornsby Shire Council's Natural Resources Branch, is the team that provides the support and training to you as a Bushcare volunteer.

Listed below are the staff roles. (You may like to note down names of staff for future reference):

Coordinator, Bushland Community Programs:

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Environmental Scientist Bushcare:

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Community Nursery and Bushwalk Program Coordinator:

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Technical Field Officer, Bushland:

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Bushcare Trainers:

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The Bushcare Trainers are your main link to Council. They are Council staff working onsite with you, supporting and guiding you with 'hands on' training in plant identification, weed removal techniques and safe work practices. They provide you with equipment and resources for your work. Your Trainer is also responsible for developing the site plan that will guide the activities you will do on your Bushcare site and they will document your group's progress and achievements over time.

The rest of the staff contribute to the Bushcare program in some of the following (but less direct) ways:

- Bushcare volunteer recruitment
- Bushcare workshops and training
- Community grant projects
- Coordinate community nursery activities
- Undertake guided bushwalks
- Undertake National Tree Day activities
- Advice and support to schools

Activity

There are many reasons people join up to become a Bushcare volunteer. Have a think about your motivations and jot down why you decided to join up to the Hornsby Bushcare program and what you hope to achieve by being involved?

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Module 1
Introduction to Bush Regeneration

Barbara and David of Bambara Bushcare

Purpose

This module is designed to give you an introduction to basic ecological processes and an understanding of appropriate bush regeneration strategies.

What is bush regeneration?

Bush regeneration is: A long term commitment to the rehabilitation of bushland from a weedy or degraded plant community into a healthy self sustaining plant community composed of local native species by reinstating and reinforcing the system's ongoing natural regeneration processes.

There are many reasons bush regeneration becomes necessary. For one reason or another the bushland environment has become out of balance and some assistance is required to trigger resilience and increase recoverability of the site.

Most people associate bush regeneration with weed removal. It is important to remember bush regeneration is not just about weed removal, it is a 'whole of environment' integrated approach that encourages the bush to 'bounce back'. A successful Bushcare project will abide by the adage "first do no harm". With this in mind, any activities carried out at a Bushcare site will be mindful of the wildlife that inhabit it and ensure that work is carried out in such a way that wildlife habitat is maintained and due consideration is given to the impact of habitat removal when that habitat is weedy vegetation.

Weeds

What are weeds?

Weeds are often plants that have been introduced to Australia, but can also be native plants that have become locally invasive in places where they are not indigenous. These plants, due to favourable conditions, are able to take over and exclude locally occurring species and change the quality and structure of vegetation at a site over time.

How do weeds get into bushland?

Many weeds have been introduced to Australia as ornamental garden plants and for food and medicinal purposes. Some other avenues through which they have made it into the landscape are:

- Cultural use
- Horticulture
- Incidental introductions
- Acclimatisation societies
- Animal feed / agriculture
- Erosion control
- Internet seed purchases

How are weeds spread?

Once in the environment weeds are spread by a variety of mechanisms.

- Droppings
- Water and gravity
- Introduction of contaminated soil
- Attachment
- Wind

Impacts on bushland

Human activity creates a whole range of impacts on bushland that can cause damage to, or make bushland more vulnerable to attack from weeds. Some of these activities and their potential impacts are:

- Clearing – loss of bushland, weed invasion, fragmentation of bushland
- Dumping – Introduction of weeds and damage to plants, increased nutrient levels in the soil from dumped vegetation, disturbance and contamination of soils
- Creation of structures and hard surfaces – changes to stormwater runoff and moisture levels in the soil and increased soil nutrient levels, leading to invasion of weeds favouring these conditions
- Changed fire regime (burning too often or not at all) – senescence of plants and change in plant communities and diversity of species

Ehrharta – prolific seeder

Senna – long lived seed

- Feral animals and wandering pets – increase in soil nutrients, introduction of weeds from droppings and predation of and/or disturbance to breeding cycles of local wildlife.

Most indigenous plants are adapted to low nutrient soils and will often not be able to germinate and/or survive within changed soil conditions.

There are also adaptive features of weed plants that allow them to reproduce readily and quickly.

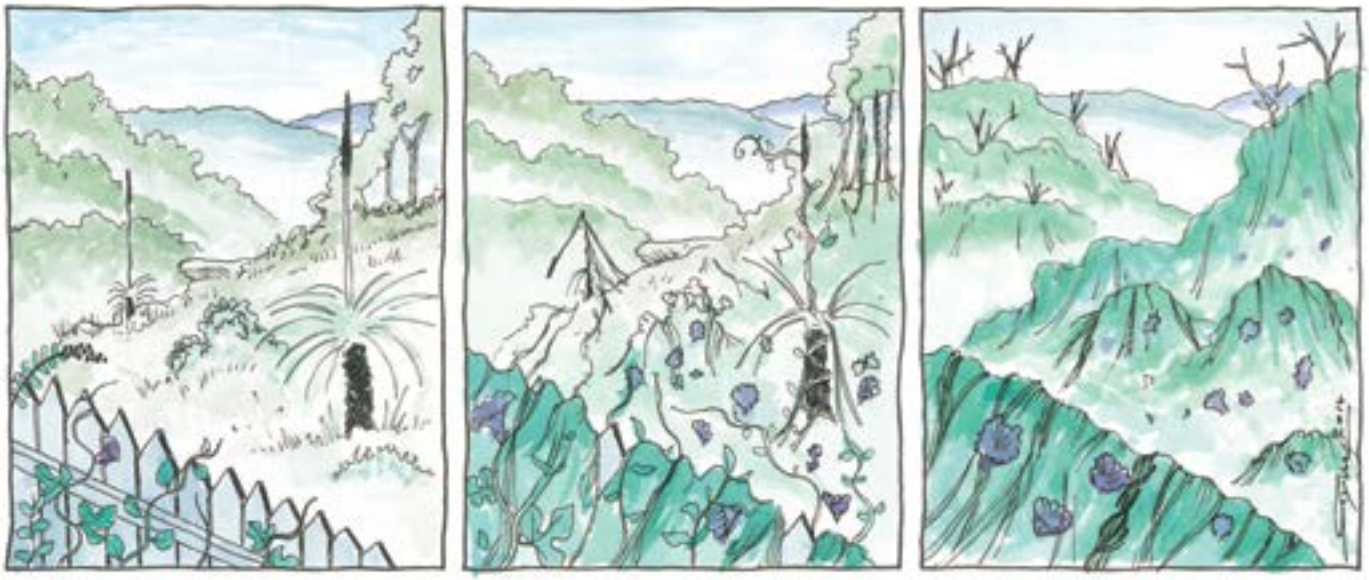
- Vigorous growth favouring human made conditions
- Prolific seeding
- Long lived seed

Weeds proliferate in environments not only because of these adaptive features but because the new environment often does not have the natural predators and diseases that would keep numbers under control.

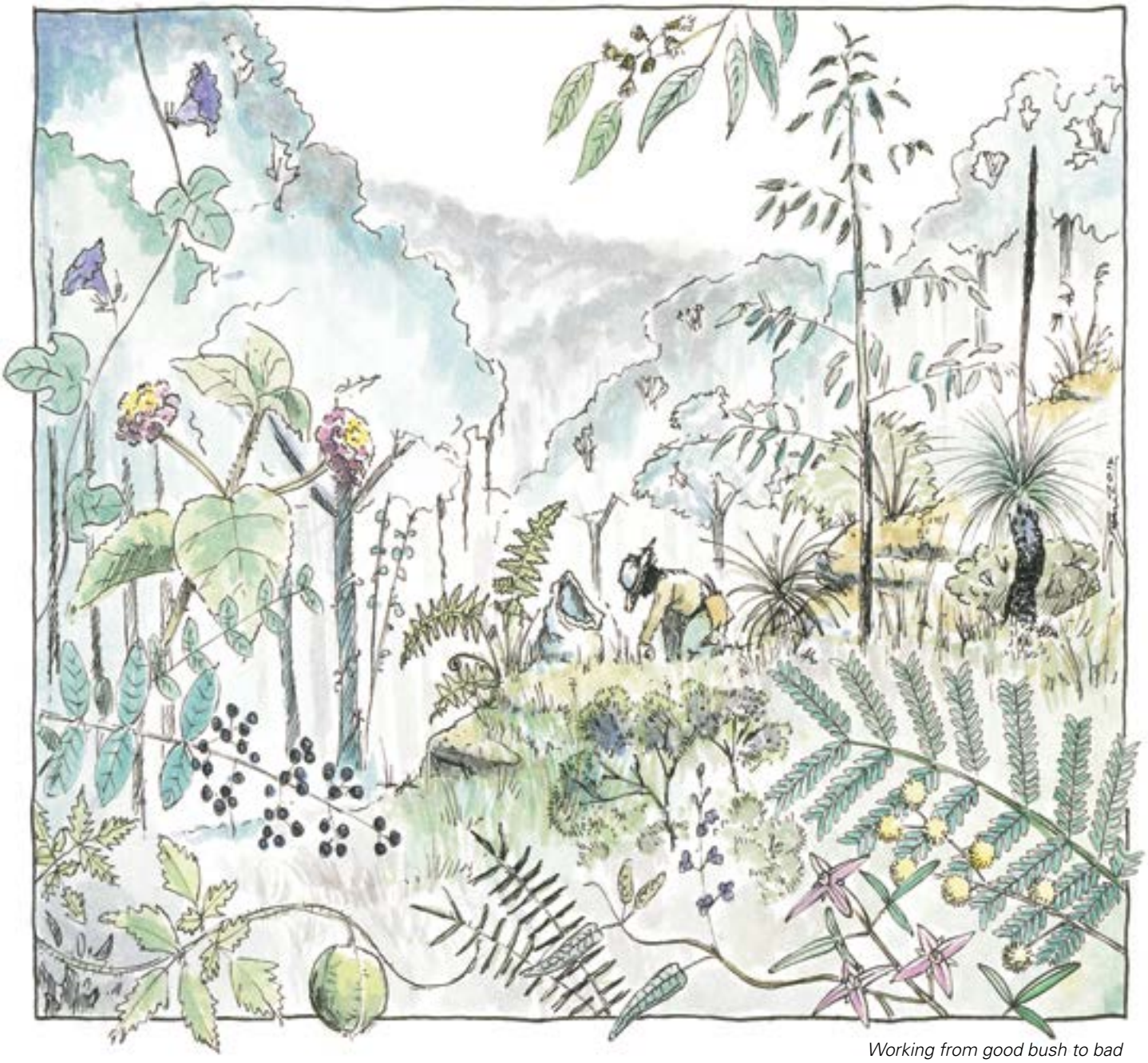
Why are they a problem?

Weeds reduce native occurring plant species by competing with, crowding out and smothering them. In doing this, weeds reduce the quality of natural bushland. They can also be a problem for other reasons:

- Agricultural weeds can be detrimental to stock and cause loss of productivity
- Aquatic weeds decrease water quality
- Weeds such as Asthma weed are harmful to human health
- Weeds can change characteristics of local vegetation and fire regimes and therefore change the structure and quality of the plant community, leading to senescence.
- Weeds can remove specific native plants that are essential habitat for certain species of native animals.
- Weeds help non-native fauna proliferate



Weeds invading bushland



Working from good bush to bad

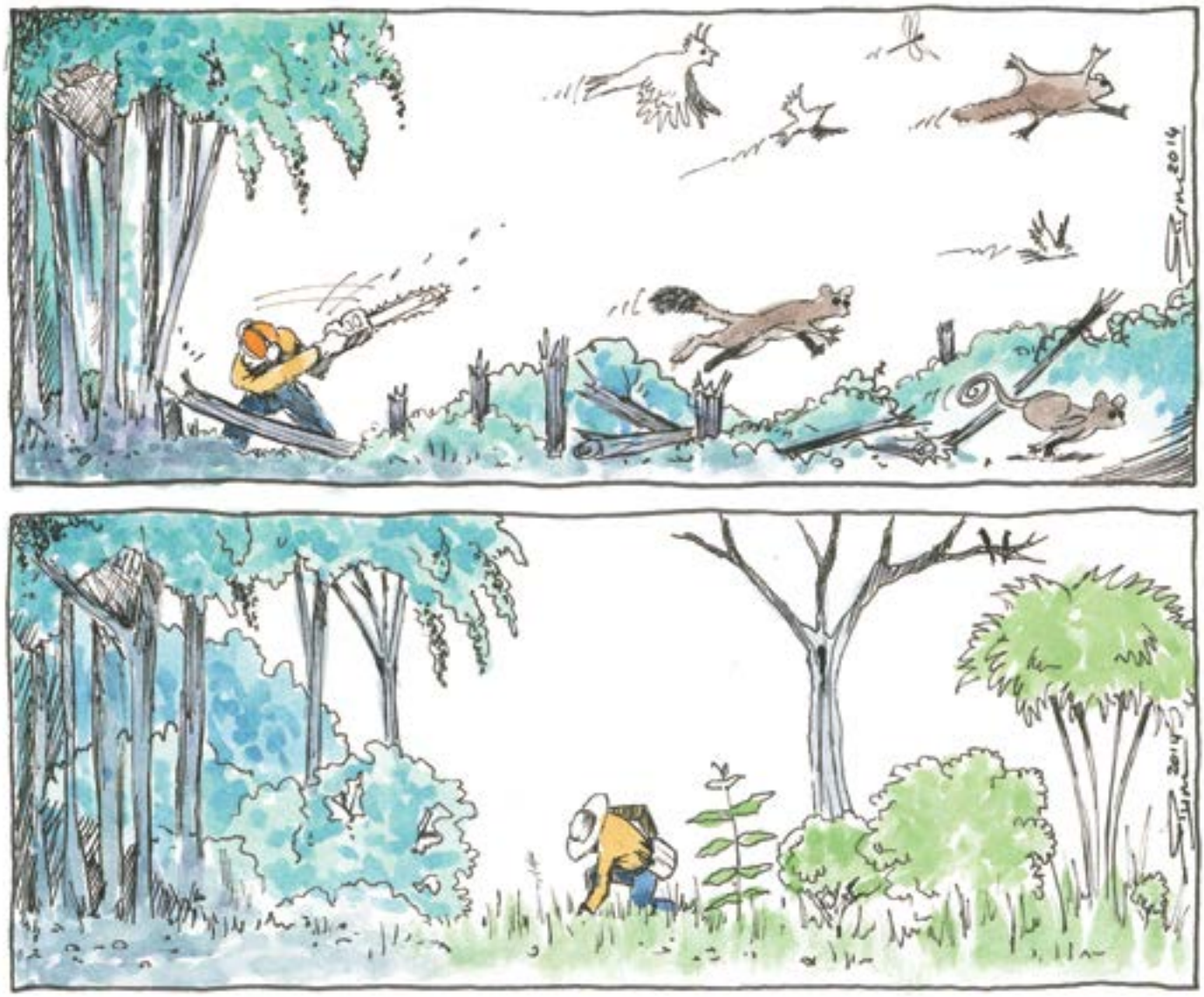
Basic principles of bush regeneration are:

1. Work from good bush to bad

You'll often hear healthy, weed free bushland referred to as 'good bush' and degraded and weedy bushland is often referred to as 'bad'. The reality is that it is rarely, if ever, as black and white as that and the bushland we see around us will lie somewhere on a wide spectrum of grey. Each Bushcare site will vary enormously, it may have very degraded and weedy edges along a roadside or stormwater drain, then metres away may be quality weed free bushland. When we say work from good bush to bad, what we are saying is rather than focus on the weeds, focus on and build upon the strong and resilient part of the Bushcare site first and gradually work outwards and increase the healthy patch of bushland. By doing this, we are helping the bushland to 'help itself'. Working slowly from the good bush out, allows the native plants to re-establish around the perimeter of good bushland with minimal disturbance or encouragement to weed invaders.

2. Don't overclear

Once you start to know which plants are weeds you will start to see them everywhere! The hard bit will be to try and resist the urge to race in to pull out and remove large amounts of weed material in an effort to see results quickly. This point can't be overstated. Bushland needs time to heal and regrow and we need to understand and work with nature's timeframes, not our own. Once weeds are removed there is often open ground and this will be vulnerable to further weed invasion. The reason many weeds are so successful is that they have quick germination times and can often colonise areas quicker than the natives. You may well find that you have to continue to remove weeds from the patch you have cleared many times before native species have successfully regrown. In some instances, due to past disturbance, native regeneration may be very limited or may not occur at all. It is important to understand how much influence soils have on regeneration responses. Consider the past history of the site. Listen to and observe nature, find out what its timeframes are and work in partnership to achieve the best results.



Let regeneration set the pace of clearance

3. Buffer the bush from the boundary

A buffer is a barrier or a shock absorber, a defence between good bush (our Bushcare site) and what is impacting on it from its surrounds. The surprising thing in this instance is that often the buffer is the very thing that we are removing, weeds. So what we are saying is we are using weeds to protect our Bushcare site. Doesn't sound quite right? Feels counter intuitive? If we start to understand that not all weeds are the same and that different weeds need to be treated differently, then we can also understand that many weeds can be used to our benefit. An example of this may be the use of Lantana as a buffer for the edge of a bushland reserve. Lantana can play a very important role in inhibiting the invasion of many other weeds into otherwise good bush. The Lantana in itself is relatively easy to treat and remove when the circumstances allow. Lantana can successfully inhibit invasion of exotic grasses and other weeds and provide habitat to small birds and mammals while in itself remaining a relatively small and contained weed area. We have to carefully consider the full implications of weed removal. Can you think of any thing else that may act as a buffer to help protect your Bushcare site from impacts at the boundary?

Minimise disturbance

4. Follow up, follow up, follow up

This next point can be the hardest part of bush regeneration. It requires patience, commitment and a long term plan. Once we have removed all visible weeds from an area this doesn't mean all weeds are gone for good. In the area that had weeds, the soil will have seeds (referred to as a weed 'seed bank') and other growth parts such as tubers, rhizomes and stem fragments. Weeds will continue to grow until all these sources of weed growth have been exhausted or germination is inhibited. This can be demoralising as it can appear that our efforts are having no impact. The important thing is to follow up and work on one area many times and not to underestimate how much weed can regrow. Many new weed species can appear once we have started to 'open up' an area, introducing space and light. If we start small and recognise the limits of what is manageable with the time and resources we have, and follow up consistently and continuously, then you will start to see great results.

5. Plant ID – when in doubt check it out

Plant identification is a lifetime pursuit. Those who can identify the many hundreds of plants in our bushland have been learning, probably for the majority of their life. All of us in Bushcare come from many different backgrounds and interests and there is no expectation that you will know the names of many, or indeed any, plants when you start out. The important thing is that there are resources (including your Bushcare Trainer and other volunteers) to help you, not only to identify plants, but help you develop the skills to identify plants for yourself. Plant identification books often work to a 'Plant Key' which can help you work through a process of identifying a plant based on its physical characteristics. There are native plants that look similar to weeds, and you may also have threatened species appear once a bushland area returns to favourable conditions. If you are in doubt about the identity of plant always make sure you confirm what it is before removing it from your bushcare site.

Why do we do bush regeneration?

The reasons are many. From a Bushcarer's point of view we may like to:

- restore biodiversity
- improve habitat quality
- meet and work with likeminded people in our community

Other values and reasons could include scenic/aesthetic improvement, scientific research and education, recreation, cultural and historic heritage values, tourism, increased property values or simply a desire to support and 'give back' to our local environment and bushland.

Resilience

Resilience is a word you will come across regularly when talking about bush regeneration. Resilient bush is healthy, strong bushland which is able to withstand the pressures of weed invasion and the activities and impacts that lead to weed invasion. It usually has higher recruitment of native plants from seed bank in the soil. By assessing the level of resilience in your patch of bush you can determine what method of bush regeneration you will need to undertake to treat your area.

Key steps to bush regeneration

There are 4 'R's to remember when undertaking bush regeneration and they require a careful assessment of what is going on at the site. You may have a site that is largely natural bushland with weedy patches around the edge of the site, or a site with some remnant trees that has been cleared of the understorey and mown. Alternatively you may have a site that has been highly disturbed through vegetation clearing and soil movement as you would expect around a building site. Whatever the history or conditions at your site, careful consideration should go into deciding which of the following approaches will best suit the area at which you are working.

Retain – Regenerate – Restore – Replant

In the first instance we should be aiming to retain the native vegetation we have. We are not able to re-create bush once it is gone, it is far too complex. Even tiny patches are important and protecting them should be the number one priority.

Damaged bushland can recover with the right assistance so where this is the case we should aim to regenerate wherever we can. Even cleared and mown areas can regenerate where the soil profile remains intact and plants regrow from seed and other propagules stored in the soil. Natural regeneration preserves the unique character of each patch of bush and offers the best chance for a degraded area to become a balanced ecosystem needing minimal maintenance.

Planned weed removal can stimulate the growth of native plants already growing or stored as seed and other propagules on site. Seed can remain viable in the soil for long periods of time.

The regeneration approach is suitable where resilience is good. It is important to bear in mind though that good regeneration may require that weeds are left to grow on site. This may seem counter intuitive but a weed buffer zone around an area of core bush can act as a barrier to more invasive weed species entering the bushland site. An example of this may be a site that sits alongside a road edge with large hedges of Lantana between the road and the bush. Lantana may be providing an effective barrier to weedy herbs and grasses. The impact of removing the Lantana may be a far more extensive weed problem to manage and control. Weed grasses can extend further into the bush and are far more labour intensive to remove. With a germination timeframe to seed set in as little as 6 weeks, such weeds can readily reinvade and repopulate at a far greater rate than the Lantana.

More seriously disturbed sites may require further intervention. This may be for factors that have caused significant reduction in resilience on site and so intervention may be required to restore health to that environment. Examples where this may be the case would be sites where the topsoil has been removed and the seed bank is lost in which case natural regeneration is not possible and some restorative actions need to be undertaken on the landscape to return bushland (bearing in mind that some seed can remain dormant in the soil for long periods of time waiting on suitable conditions to germinate). Other impacts such as stormwater drainage and erosion, with careful intervention and treatment, can have their effects reversed, allowing for natural regeneration to occur once again.

Replanting is the last and most expensive option. This step is made only where it is no longer possible for natural regeneration to occur, due to removal of soil seed bank and insufficient surrounding bushland to support native regrowth. Replanting should only be made as a last resort. It is one of the most expensive and time consuming approaches to restore natural areas.

There is a fifth R that is not part of the Bushcare program and that is reconstruct. If the site is so severely degraded that the previous approaches of retain, regenerate, restore and replant are not enough then the final option may be to reconstruct. In this instance the work is no longer considered bush regeneration, but such reconstruction may provide vital links to other natural bushland areas and habitat for wildlife.

Disposal of weeds

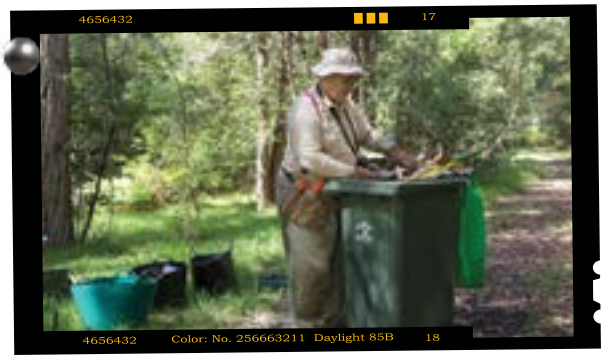
Once your weeds have been removed from your Bushcare site there are a variety of options for disposal.

Most soft weeds can be composted on site once propagating parts have been removed. Seed heads can be bagged and disposed of in a green waste bin and the remaining vegetation can be managed in the following ways:

1. Composted on site – Council provides black plastic to cover the vegetation to assist composting on site.
2. Rafting of woody weeds – this involves elevating woody weed material above the ground and once completely dried it can then be dispersed on site or left to rot (be mindful if you decide to remove your raft pile that it may have become valuable habitat to reptiles and other wildlife at your site).

Your Bushcare Trainer can demonstrate each of these techniques to you. All other vegetative material not suitable for composting or rafting may be placed in your green waste bin (should you have room) or be collected by Council staff by arrangement through your Bushcare Trainer.

Rafting



Green waste disposal

Plant identification

Whether you start out in Bushcare with a lot or little knowledge in plant identification, you will gradually become familiar with the various weeds and native species found on your site. Your bushcare trainer or more experienced volunteers have a wealth of knowledge and experience in plant identification and you can ask them for assistance.

You may like to take time to build your knowledge further and some resources that will help you are the:

- Hornsby Library On-line Herbarium – this contains information and images of many plants that can be found growing in Hornsby Shire. It is constantly being updated thanks to the energy and enthusiasm of a small group of dedicated and very knowledgeable local volunteers. The herbarium can be accessed by logging on to hornsby.nsw.gov.au/library and clicking on eLibrary then clicking on the Hornsby Online Herbarium picture tab. You can search for native and non-native species.
- There is a reference library at the Earthwise Cottage next to the Community Nursery which you are welcome to browse through any time. It is recommended that you phone ahead in case the office is unattended.
- A couple of popular reference guides are Les Robinson's Field Guide to the Native Plants of Sydney and also Burnum Burnum's Wildthings around Sydney.
- Hornsby Council's own publications, 'Grasses: Native and exotic in the Hornsby Shire' and 'Lookalikes' can be downloaded from the Hornsby Council website. These books provide essential information in plant identification and the difference between similar looking natives and weeds common to Hornsby Shire.
- Council report 'Native vegetation communities of Hornsby Shire' by P&J Smith Ecological Consultants provides valuable descriptions of all vegetation communities in Hornsby Shire and is also available on the Council website.

For links to these and other resources refer to the Council website at Hornsby.nsw.gov.au/bushcare

Questions

1a. What might you find at your site that may impact on the quality of bushland?

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1b. What is resilience?

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Activities

1c. Have a look at your Bushcare site and identify the features that are encouraging weeds to grow.

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1d. With the help of your trainer, identify the most problematic weeds on your site and the least problematic weeds. Why is this the case (consider germination timeframes, how does the plant grow and spread, preferred growing conditions)?

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1e. Draw a rough sketch of your Bushcare site below. With the answers to the above questions in mind, mark out where you might start your work on site and why?

Notes:

Module 2
Bushcode

Gianna – Little Ray Park

Purpose

This module makes reference to the content of the Bushcode document and is designed to help you understand the responsibilities of Council staff and volunteers in the Bushcare program. You will all have received a copy of the Bushcode document either beforehand or at the workshop today.

The Bushcode

The Bushcode document is the operational framework for Hornsby Shire Council's Bushcare program. It is the 'rule book' for volunteers and Council staff to help ensure everyone can meet their legal responsibilities and obligations.

You are asked to read through the Bushcode so you are aware of what's expected of you and what you can expect from Council. You are also required to attend a workshop on the Bushcode which covers the safety aspects of the program and some basics in bush regeneration.

We can only hope in the Bushcode workshop, to touch the surface of everything you will learn in Bushcare. Most of the training you will receive on site with your Bushcare Trainer and fellow volunteers including safe and appropriate use of tools, plant identification, what work to do and in what order to get the best results, how to identify potential hazards, how and when to apply herbicide and a whole lot more about 'reading' the bush.

Being a Bushcare member

When you start as a Bushcare volunteer we don't expect you to have any experience, although you probably know more than you realise! We have Bushcare members from all walks of life with all levels of knowledge, interest and skill.

Building your knowledge and skills

For those of you who would like to build a greater understanding in some aspect of Bushcare, we put on free seminars, guided walks and workshops on a range of specialist topics throughout the year. These are organised jointly with Ku-ring-gai Council Bushcare, and are advertised in the Bushcare newsletter which is published three times a year, together with booking details. The newsletter stories also provide topical information and personal stories by volunteers about their sites. It is a great read with valuable information and insights for your Bushcare work. You are encouraged to contribute to the Bushcare newsletter with information and personal accounts that may be of interest to fellow volunteers. To view current and historical Bushcare newsletters go to the Hornsby Shire Council website at the following page hornsby.nsw.gov.au/bushcare and click on the link, Bushcare News.

Steps to being a Bushcare member

By this stage you have already taken the initial steps to become a Bushcare member. You have heard about the program and taken an interest in what it has to offer. You may have joined up with a local Bushcare group for a few sessions to get a feel for what it's all about and now you are here attending a Bushcode workshop. If you haven't been introduced to a Bushcare group there is sure to be one close by to where you live and the Bushcare Officer or Trainer can help you today to find the group for you.

So you are well and truly on your way to being a fully fledged Bushcare member. Where to from here?

1. **Interim Bushcare member:** Once you have completed the Bushcode workshop you are permitted to work on Bushcare sites under the supervision of a Bushcare Trainer.
2. **Registered Bushcare member:** Once you have demonstrated an understanding of basic safety and risk assessment at your work site and an ability to follow instruction from your Bushcare trainer, along with attendance at a Bushcode workshop you will be given full Bushcare membership and a Bushcare member card which is valid for five years. This allows you to work on sites with a group under the direction of a Trainer. If you wish to, you may request to work on site with your group, without supervision from the Trainer, after demonstration of understanding of the fundamentals of bush regeneration.
3. **Bushcode Refresher:** We ask our volunteers to attend a Bushcode 'refresher' workshop every five years. This re-registers you as a member and you are issued with a new Bushcare member volunteer card for a further five years. It's essential to 'refresh' your membership in order to continue as a Bushcare member, but it is also a great opportunity to get the latest information, meet with staff and exchange ideas.

Group leader

Each Bushcare group has one member who is assigned the role of group leader. They take responsibility for the group folder which holds important information about the site, safety information and sign on sheets. Group leaders are responsible for any additional tools and equipment provided by council.

Group leaders liaise with the group's Trainer about such things as changes to meeting times, looking after the needs of other volunteers and how to progress the actions in the site plan.

If you have a question or concern on-site about some aspect of your bushcare activities, and the Trainer isn't available, you can ask the group leader for help.

First Aid

All our Trainers are qualified to administer First Aid and carry First Aid kits with them when they visit their Bushcare groups.

If the group meets outside scheduled Trainer visits, one of the volunteers takes responsibility for the First Aid kit. They ensure its contents are kept up to date and bring it on site to each work session and makes sure everyone knows where it is.

As well as the standard items, Council provides insect repellent, bite relief products, tick tweezers and snakebite bandages.

All incidents that require the use of an item from the kit need to be reported. The number to call is for the Safehold reporting line (9847 4848) and you can find it on the bright orange sticker on the inside of the site folder. (See Safety Quick Reference section for emergency contacts and incident reporting information)

Personal Protective Equipment

Council provides equipment to each volunteer in the Bushcare program to help keep you safe while undertaking bush regeneration tasks on site. You will be provided with the following equipment which you should take with you and wear, where appropriate, at each work session.

PVC coated gloves – for general weeding and herbicide use.

Leather gloves – for heavier duty work

Protective safety glasses – when working amongst spikey plants at eye level and for herbicide use.

Sunscreen – apply whenever working on site

Dust masks – wear during dusty work, particularly working with mulches

Wide brimmed hat – wear while working on site

Long sleeved shirt – wear when working on site

Some additional equipment that your Bushcare Trainer or group leader will bring on site to each session are:

First Aid Kit – to be available at all work sessions

Tool belt – to carry your hand tools safely and securely while working

Activity

At this point in the workshop, weather permitting, you will all go for a walk in the nearby bushland reserve and put your hazard identifying skills to practice.

Assessing risk

When assessing risk we are looking for hazards and the level of risk they pose to our safety.

A **hazard** is an object or work practice that under particular circumstances can result in illness or injury. This can be physical, chemical, mechanical/electrical, biological and psychological injury. An example of a hazard may be a branch falling on a Bushcare site in windy weather.

Risk is a combination of the likelihood of the hazard occurring and how severely it could hurt someone. A score is given for the level of risk. The following risk matrix is the tool you will use to determine the level of risk at your site. It shows how the two factors combine to create your risk score.

2. Probability: How likely is it to be that bad?

1. Consequence: How severely could it hurt someone?	Very likely	Likely	Unlikely	Very unlikely
Kill/ disability	1	1	2	3
Serious injury	1	2	3	4
Medical attention	2	3	4	5
First aid needed	3	4	5	6

Before each work session at your Bushcare site you are required to undertake a risk assessment to determine the level of risk of any hazards and what, if any, action is required to prevent injury occurring while working.

Use the scenarios in the activities section at the end of this module and use the risk matrix to determine the level of risk associated with the hazards identified.

Group records

Each Bushcare group has a group folder that contains important information and records. This folder is entrusted to the Group Leader. Listed below is information that will be available to you at each Bushcare session.

- Site plan and maps
- Sign on sheets
- Safehold phone number sticker
- Safety Data Sheets for Roundup Biactive®, methylated spirits and herbidye
- Safe Work Method Statements (SWMS)
- Insect bite recording sheet
- Bushland hygiene protocols for Phytophthora
- Myrtle rust information sheet
- Working in heat guidelines
- Guide to managing parasite (tick and leech) exposure

- Alcohol and other drugs determination and procedures
- Work Health and Safety determination
- National Trust of Australia Bush Regenerators Handbook
- New volunteer application forms/reply paid envelopes
- Bushcare brochure
- Bushcode document
- Look-alikes booklet
- List of First Aid kit and contents

Sign on sheets

At the beginning of each work session, a risk assessment must be undertaken for your work site and each Bushcare volunteer must sign-on. This information is recorded on the Volunteer Sign On Form located in the group folder. At the end of each work session hours worked, activities undertaken and chemical useage is noted as well.

The data collected from these forms may be used for Council reporting requirements or when applying for grants or funding. It is also necessary from a Work Health and Safety perspective and may be called upon if there were an insurance claim associated with the site.

Questions

2a. What items should you bring with you when you go to work at your Bushcare site?

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2b. List three things you need to do when you first arrive at your Bushcare site to work.

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Activities

2c. Identify a hazard you may find on your Bushcare site.

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2d. Determine a hazard in each of the following scenarios and use the risk matrix (located on p23) to determine the level of risk for each. How might you then reduce the risk of each hazard?

i. There is a steep slope on your site and there has been heavy rain overnight causing the slope to be muddy.

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ii. There is some building refuse dumped on your site

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iii. A large tree branch has snapped and is hanging over part of the Bushcare site.

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Notes:

Module 3
Bushcare – the bigger picture

Short Street bushcare

Purpose

The purpose of this module is to put Bushcare in the context of broader ecological concepts so we can understand how the unique nature of our site determines what work we do and how our actions impact on the bushland and wildlife that inhabit it.

Site plans

There is no single answer for the problems that afflict our bushland. Each site is different and requires careful consideration of the various factors impacting on it. Each action we undertake in the bushland will have a reaction. We want to ensure that those actions help in restoring and regenerating the bushland positively in the manner we intend and do not exacerbate existing problems or create new problems.

In order to do this, each site has a site plan that maps out the problems occurring on your site and lays out a plan to address each problem in a considered and manageable way.

If you don't already have one, your Bushcare Trainer will work with you to create a site plan for your site. It is used as the basis for the activities you undertake at each work session. Over time the site plan will need to be reviewed as progress is made, the site is extended or reduced and priorities change.

In general, a site plan will consist of the following information:

- Reserve name
- Project date of commencement
- Vegetation community
- Historical information about the site and plan
- Vision for the site, including 1, 5 and 10 year outcomes
- Actions to address the problems and timeframe for completing those actions
- Flora and fauna observations / species lists
- Site map

Monitoring and recording

An important part of the work we do is to monitor and record what is happening on site. Your Trainer will show you how to create Photopoints. These are an important tool for monitoring and your site may already have established photopoints. These are specific points (they may be pegged with a stake or taken from a permanent landmark at for instance four corners of your site) with orientation recorded. Photos are then taken at these locations, preferably before work commences, and then at regular intervals thereafter. This will show a history not only of the work you have done but your progress over time.

We also monitor and record the plants and animals at each site. As bush regeneration progresses we can hope to see a change in the type of plants dominating our site but also the animals which inhabit it. The ultimate goal of Bushcare is to increase the habitat for our native wildlife. You may see the return of animals previously lost to a site. For example, increasing numbers of small birds (largely lost in urban environments) at our sites is a wonderful indicator that the bushland is providing a safe and welcoming sanctuary, a sure sign you are on the right track.

Protecting habitat

One of the most important things to remember when we are working in bushland is that it is the home of an abundant array of wildlife. We should always be respectful of the role all features in the landscape play in the everyday life of wildlife. All trees, shrubs, groundcovers, rocks, soil, leaf litter, bark and creeks all provide shelter and food to the wildlife that inhabit it. It is important to know that these benefits can come from weeds as well as natives.

No matter how disturbed or overgrown with weeds a site has become, there will be animals that have adapted and made it home. Therefore when we seek to restore the balance in the bushland vegetation, by removing weeds and rubbish, we must do it gradually, allowing opportunity for wildlife to relocate, and be mindful and vigilant of any home we may disturb in the process.

Lantana – home to small native birds, ringtail possums and native bees

Dead and live tree hollows – home to birds, possums, gliders, antechinus and others

Fallen logs – home to bandicoots, reptiles, invertebrates

Loose bark – home to microbats

Weed infested creeklines – home to frogs and cover for many others accessing the creek

Rock shelves – home to reptiles

We can lessen the impact of our activities on fauna by:

Selectively weeding: in stages or mosaic

Avoiding heavy weeding: during bird breeding seasons or while plants are providing a major food source

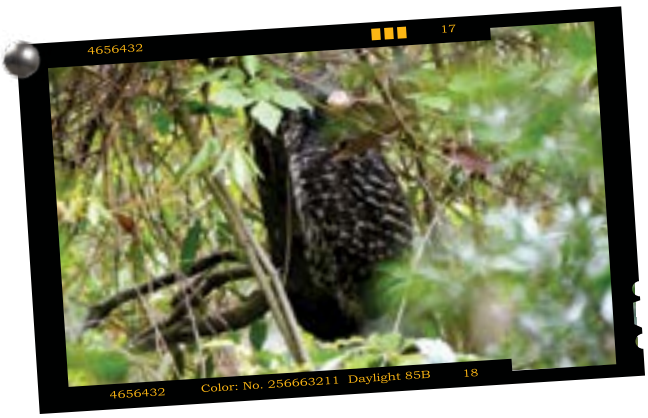
Minimising: the use of herbicides

Assessing: the site for signs of habitation such as nests, scats, feathers and fur.

Weeds and habitat

What can you do to support wildlife habitat while working in the bush:

- Try not to 'tidy up' the bush, leave logs and dead branches/sticks lying in situ in the bush.
- Look out for ringtail possum dreys (roosts) in lantana and balloon vine.
- You may have old brick and concrete lying on your site – this is great (and often essential) habitat for reptiles. If you don't like the look of it, discuss planting vines to grow over it, with your trainer. Old fridges and sheet metal also provide important refuge.
- Be mindful that thickets of low growing weedy shrubs and rubbish and mature weed trees often provide the only habitat for native fauna species.
- Establish replacement habitat before removing rubbish and weeds.



Powerful Owl roosting in Balloon Vine

Female Golden Whistler foraging in Lantana

Fire

Fire is an important part of the Australian ecology. Many plant communities have evolved to cope with and are dependent on fire to maintain diversity and species balance. An example of an adaptation is the seeding of the Banksia which requires the intensity of heat from a fire in order to open seed capsules and in turn allow new plants to germinate in the burnt environment.

A fire regime is the process in nature that represents the ideal fire intensity (how hot) and timeframe (number of years) between large fire events combined with the season the fire occurs in, to allow for ideal species diversity and regeneration for that particular community of plants. Through scientific research, optimal fire regimes have been described for most of Australia's vegetation communities and all of those found in Hornsby Shire.

In a formal sense there are three types of fire that you may expect to see in our landscape:

1. Wildfire – an unplanned bushfire.
2. Hazard reduction burn – A fire that is planned and carried out by the local fire authorities in order to reduce fuel loads in the environment and reduce hazard from fire to surrounding communities and property.
3. Ecological burn – A fire carried out for the specific purpose of maintaining a particular plant community's fire regime for ideal health and species diversity.

These days all planned fires have careful and extensive prior planning, assessments and approvals in order to consider not only the safety but the ecological impact of the fire.

Fire can be of great benefit to bush regeneration activities. Although burnt areas are vulnerable to weed invasion, if your Bushcare site is part of a planned burn you may be lucky enough to see some great regeneration and an increase in species diversity and numbers at your site. Following a burn it is important to keep off the area for at least 3 months as the soil crust and newly germinating plants are easily damaged. Once the bush has bounced back you can expect greater resilience and ability to withstand weed infestations than prior to the burn.

Another tool that is more accessible to the majority of sites is the flame weeder. This is a tool that can be used in certain circumstances for weed control at sites that may otherwise not have the benefit of large scale planned fires such as small sites and those close to dwellings. Although the flameweeder is able to provide some weed control benefits it is not able to replicate the ecological function of bushfire.

Flameweeder

New and future challenges

Urban bushland faces unique challenges now and in future due to human activities. These include:

- Population growth
- Economic forces and governmental decisions
- Greater carbon dioxide concentrations
- Effects of climate change on vegetation communities and cryptic biota such as mycorrhizal associations

Questions:

3a. What is the dominant vegetation community for your Bushcare site?
(Hint: Check your site plan or talk to your Bushcare Trainer)

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3b. Why take photos of your site at the same spot each time?

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3c. How might taking photos motivate you?

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3d. How do you store your photos?

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Activities:

3e. Take a walk around your bushcare site and identify likely habitat locations at your site?
(Make a list here or mark them on a mud map)

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Notes:

Module 4
Volunteer Safety

Purpose

The purpose of this module is to explain how to work safely on site and your rights and responsibilities as a volunteer to a safe working environment.

Responsibilities of volunteers

A sensible approach to working in bushland will help everyone have a safe and enjoyable time while working on their Bushcare site. So, there are a few things you should remember each and every time.

Come to your site wearing:

- Long sleeve shirt and long pants to protect against bites, cuts and sun exposure
- Covered shoes – no thongs, sandals or high heels!
- Hat
- Bring, and use where required, your Council supplied PPE
- Carry drinking water at all times
- Report incidents and hazards
- Comply with the site plan, Bushcode and the Bushcare trainers' instructions

The site plan and your trainer's instructions are given with due consideration for potential hazards and associated level of risk so always work within the set work plan or discuss any variations with your trainer before undertaking work.

Safe working conditions

Accidents and injuries happen from time to time, but with careful assessment of conditions at your Bushcare site and consideration for some basic safety precautions, we can minimise the occurrence of these events. The first consideration before even heading out your door to your Bushcare site should be the prevailing weather conditions. Despite your desire to get out and do some work, you should never go out to work in the following conditions:

- Total Fire Ban days (TOBANs)
- Rainy days
- High wind days

Working on days that follow severe weather should be reconsidered for the risk of continued fire danger or nearby burnt bushland, muddy ground or branches and vegetation made unstable by windy weather may continue to pose high risk.

Risk assessment

When you sign on your attendance sheet you need to assess if there are any risks on your site. For example, after a high wind storm there may be a new large overhanging branch that will need to be avoided. The risk assessment is completed on the form and you identify how you will avoid any risk that is present.

This complements the Bushcare Safe Work Method Statement that each volunteer is required to read and sign.

Safe and correct use of tools

You will be provided on site with tools for your Bushcare tasks. Most of the training in use of these tools you will undertake on site with you trainer. Some common Bushcare tools are:

- Knife
- Trowel
- Secateurs
- Loppers
- Saw

Which tools you use will depend on the type of plants you are treating on site.

At this point in the workshop you may be shown a short film on how to use tools to remove some of the common weeds. You can view these films online at www.sydneyweeds.org.au

Use of herbicide

Herbicide can be used on sites to assist with weed control. The only type of herbicide you will be permitted to use on site is a glyphosate based herbicide, usually Roundup Biactive®

Herbicide use is not compulsory in Bushcare and you are free to refrain from working with or using glyphosate. Where herbicide is used it is advisable to minimise use as much as possible.

Whenever using chemicals or herbicide you should always read the Safety Data Sheet (SDS). Each chemical has a SDS which outlines the handling and usage and also first aid and accidental spill measures. (SDSs for Roundup Biactive® and methylated spirits are found in your group's Site Folder).

Some key points to remember when using glyphosate.

- No smoking or eating during or after handling
- Avoid contact with skin and eyes. If contact occurs rinse with copious amounts of water
- Inhalation may cause irritation to mucous membranes. If this occurs move to a location in fresh air to recover.
- If swallowed, do not induce vomiting and contact Poisons Info on 13 11 26

When using glyphosate based herbicide, in addition to the usual protective work clothing, you should also wear safety glasses and PVC coated herbicide gloves.

Questions:

4a. What kind of protective equipment would you use when preparing and using Roundup?

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4b. How do you safely store herbicide?

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4c. Who is responsible for the safe storage of herbicide?

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Activity:

4d. Discuss what can be done if a bottle of herbicide spills on a Bushcare site?

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4e. Take some time to find out and fill in details on p38 for Bushcare site emergency access points, cross streets and your local doctor or medical centre phone number (these details will be essential and may need to be found quickly in the event of an emergency)

Notes:

Quick Reference Safety Guide

This section is a quick reference guide to refer to for essential safety information.

If another volunteer or yourself are injured on site please seek appropriate medical attention immediately.

For all emergencies phone 000

Note here your nearest access point and local cross roads for emergency access

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List here the emergency contact numbers for the following:

Ambulance/Fire/Police.....000

Poisons Info Line.....13 11 26

Bush Fire Information Line.....1800 679 737

Hornsby Shire Council Reception (and after hours Ranger).....9847 6666

Local doctor or medical centre.....

All accidents and injuries while working on a Bushcare site need to be reported to Hornsby Shire Council within 48 hours on the Safehold reporting line on **9847 4848**.

Spiders

Red Back Spider

Can deliver a very painful bite. Do not apply a pressure immobilisation bandage. Ice or cool running water should be applied to reduce pain and call an ambulance.

Funnel Web Spider

Usually become active after rain and live where it is moist, under rocks, in holes or under the roots of plants. Males are often out in February breeding season. They are very poisonous and it is important to get to a hospital for anti-venom.

If a bite occurs, call 000, keep the patient calm and immobilised, bandage using the pressure immobilisation technique and aim to keep the bite site below heart level.

Mouse Spider

If a bite occurs, treat as per funnel web spider bite.

Snakes

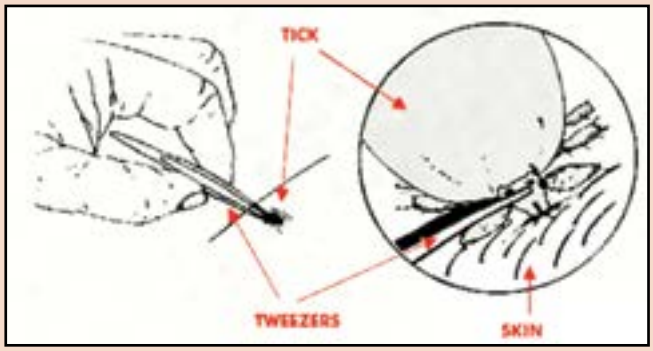
Snake bites should be treated quickly. If a bite occurs call 000, immobilise the patient, bandage using the pressure immobilisation technique. Keep the patient calm (an elevated heart-rate will cause the venom to move around the body and to the heart much quicker). Avoid cleaning or washing the bite site as remnant venom may be used to assist positive identification of the snake if unknown.

Brown Snake

Red Bellied Black Snake

Ticks

Paralysis ticks are common to bushland areas. Many mistakenly believe there are three different species of tick, the grass tick, bush tick or paralysis tick. They are however, all one and the same, but at different lifecycle stages.



Carefully lever a tick out of your skin making sure not to squeeze it. Tick twisters are available in all group first aid kits. If a tick is left in for too long you may start to feel ill, lose appetite, have blurred vision or stiff muscles. Ticks may also carry diseases and should be removed as soon as possible. If you have a tick that is affecting you tell the Bushcare Trainer and seek medical attention immediately. You should report such an incident to the Safehold reporting line on 9847 4848.

Wasps/Bees/Bull Ants/Jumping Ants

Most Bushcare volunteers come across these while working on site. For most of us bites are painful, but with a quick application of itch relief cream the pain should dissipate. Some people have more serious reactions to these types of stings.

If you are known to have allergic or severe reactions it is important you notify your Bushcare Trainer and carry anti-histamine/epi-pen with you on site. You should submit a medical management plan to the Bushcare Team which should include management strategies and what to do in an emergency.

People who have very bad reactions may stop breathing. If a bad reaction occurs call 000, apply a bandage to the sting area, using the pressure immobilisation technique, assist their breathing by EAR (expired air resuscitation) if necessary and call an ambulance as soon as possible.

Bee and European Wasp

Paper Wasp

Jumping Ant

Skin Irritations

There are many plants that may cause skin irritations when brushed up against or after repeated contact. It is important to wear long sleeved shirts to guard against this. If you do develop a mild rash rub a rash relief cream onto the affected area. For more serious rashes see your doctor.

Some common plants which may cause irritation include:

Wild Tobacco

May cause mild skin and throat irritation

Rhus Tree

A serious rash may develop, which may form blisters. Hospitalisation for worst cases may occur.

Asthma Weed

A rash or breathing difficulty may occur if you are in constant contact with this weed.

Stinging Nettle

A severe pain and rash may develop.

Balloon Vine

Throat irritation or mild rash may occur.

Petty Spurge, Moth Vine

The white milky sap may cause a rash or itchiness.

Many plants have been identified as causing skin or throat irritations to some people including: English Ivy, Euphorbiaceae species (which include petty spurge), the 'Robyn Gordon' grevillea and Lantana.

Native plants can also cause skin irritations, especially those that have spiky foliage. These can include spider flower Grevilleas, Prickly Moses (Acacia ulicifolia), Epacris species, Hakeas with needle like leaves and Saw Sedge (Gahnia) with their sharp edged leaves.

To prevent the majority of skin exposure to these kinds of plants it is important to wear long sleeves, long pants and covered shoes.

Epacris and Hakea

Notes:

Module 5
Community Nursery

Purpose

The purpose of this module is to explain to you the functions of the Community Nursery and its important role in the Bushcare program.

Community Nursery

If you are undertaking any restoration at your Bushcare site that involves planting or revegetation, then you will have plants that have been grown at the Hornsby Shire Council Community Nursery from locally collected seed or cuttings. The nursery is located at 28 Britannia Street, Pennant Hills and is run by the nursery coordinator and a group of dedicated nursery volunteers.

The award winning nursery has been in the care and management of Hornsby Shire Council since 2000, when it had substantial upgrades culminating in accreditation through the Nursery Industry Accreditation Scheme Australia (NIASA) in 2005. It is the only Council nursery to be accredited in NSW to date. Hornsby Council's Community Nursery has also recently won the Nursery and Garden Industry Australia (NGIA) award for the "Best Government Nursery in NSW and ACT". And in 2014 the nursery was a national finalist taking out a close 2nd place as "Best Government Nursery in Australia".

Accreditation means we follow set industry practices to achieve a high quality output. We use accredited suppliers where available and have a small environmental footprint.

The nursery is an integral part of the Bushland Community Program's section of Council's Natural Resources Team. It produces around 45,000 plants each year which are provided to:

- Bushcare
- Bush regeneration contracts
- Plant giveaways for Hornsby Shire ratepayers
- Citizenship ceremonies
- National Tree Days
- Schools
- Donations
- Prizes
- Parks
- Street planting
- Rural Land Incentive Program

Genetic integrity

The plants from the Community Nursery are of local provenance which means the seed or cuttings from which the plants are grown are from the same vegetation type and genetic stock as the bushland reserve in which you are working. Plants evolve to suit the particular conditions in which they grow and the production of plants that are of local provenance helps to ensure the robust and resilient plantings and genetic integrity of the bushland reserve in which you are working.

Seed

The nursery collects all its own propagules (seeds and cuttings) with over 90% of production by seed. No seed or plants are bought in.

Seed is collected by the nursery co-ordinator and volunteers. Most seed collection occurs through late Spring and Summer.

Collection areas are divided into regions or catchments:

1. Lane Cove River – which is Sydney Harbour Catchment
2. Upper Berowra Creek – which is predominantly shale soil
3. Lower Berowra Creek – sandstone soil
4. Rural areas – Shale soils and sandstone transition
5. Wisemans Ferry vicinity
6. Brooklyn/Dangar Island area

Seed is ideally collected from a minimum of 20 mother plants but ideally many more. This is to ensure a sound genetic diversity within that single seed lot collection. Otherwise if all seed was collected from a single tree and then propagated the offspring could have reduced genetic fitness.

All seed collection is undertaken following guidelines recommended by Florabank, Greening Australia and CSIRO.

Plants are stored as 'seeds' (in a state of dormancy) in the nursery seed room until required for production.

If you require plants for your Bushcare site your trainer will fill out a plant order form. It has background ecological notes to assist nursery staff to assess at what stage of restoration your site is at. It takes time to get 'correct' plants from this nursery which is why we have the plant order form – it is not an instant plant factory.

Seed is catalogued onto a computer database which assigns batch numbers to seed lots. These assist in tracking and monitoring individual seed lots' performance in the nursery amongst other useful reports which can be generated.

Stages of seed cleaning

Preparation of seed for storage involves the following steps:

1. Dried
2. Sieved
3. Winnowed
4. Peeled (moist fruit) eg. Lillypilly or Fire eg. Banksias to extract seed.
5. Put into clean labelled pouches which are:
   - Light proof
   - Air proof
   - Dry
   - Away from pests and disease

This ensures the longest possible storage in the fridge.

Seed longevity depends on the plant genera. For example:

- Eucalyptus – 10 years +
- Acacias – decades (even centuries)
- Grasses – up to 3 years
- Some species can't be stored, for eg. Christmas bush – a few weeks, has to be sown immediately

Plant production

There are many steps in producing the quality plants that come from the Community Nursery. Plant production follows a set process through the outdoor sections of the nursery and all plants are watered using an on-site stormwater and irrigation run-off harvesting system. Once seed is taken is selected from the seed storage facility it starts off in the glasshouse. The glasshouse is used for seed germination and striking cutting propagules. From here, the plants are placed in their individual containers and taken to the covered shadehouse where the 'hardening off' process begins. After suitable root and shoot tip growth is achieved the plants are then moved onto the second shadehouse structure where they receive direct sunlight but are closed in at night. From here, after further growth, the plants are stored in either full sun (for those plants that require these conditions) or in sheltered areas under mature Eucalypts (for understorey species requiring more sheltered conditions). After this stage, the plants have completed their hardening off process and are ready to leave the nursery.

Questions:

5a. What is the importance of genetic integrity?

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5b. Which seed collection area does your Bushcare site fall into?
(refer to the listed collection areas)

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Activities:

5c. Take a tour of the Community Nursery

Notes:

Glossary

Catchment: A geographic area from which water flows and collects into rivers and their tributaries and reservoirs.

Drey: An enclosed nest of grass, twigs and other vegetation, created and lived in by ringtail possums.

Environmental weed: naturalised introduced plants that have established in natural bushland areas and have a significant negative impact on the ecology of these areas.

Genera: Broad grouping of plants for the purpose classification. Grouped below family and above species. Generally is a group of species exhibiting similar characteristics.

Germination: The process whereby the germ or seed of a living things sprouts, grows and develops.

Glyphosate: active ingredient of herbicide such as Roundup Biactive®. It is a non-selective (affects all plants) herbicide that interferes with the metabolism of growing plants.

Indigenous: local or native to a particular area.

Noxious weed: A weed that is classified by legislation as having particular legal obligations for removal or management. Currently legislated in NSW under the Noxious Weeds Act 1993

Propagation: the process by which a new plant is created by seed, spore, tuber, root or cutting.

Propagule: any part of a plant that can grow into a new individual plant
(eg. seed, spore, tuber, root or cutting)

Provenance: in the context of bush regeneration, refers to the place of origin of plant species (and their seed) for replanting/plant production.

Resilience: the capacity of species, communities and ecological systems to bounce back after disturbance.

Rhizome: A horizontal, usually underground stem of a plant that sends out shoots from nodes.

Seed bank: is the collection of indigenous and weed seed in the ground soil layer (as a result of natural seed fall, human introduction, water/wind/wildlife transport) and available for germination under favourable conditions.

Senescence: Is the process of aging and degeneration of plants and plant communities causing a change in species structure.
This is due to a lack of regenerative processes (such as fire in the Australian landscape) which ordinarily enable recruitment and regeneration of young plants required to sustain the plants and communities.

Tube stock: Plants of small tube pot size produced ready for revegetation projects.

Vegetation community: Group of plants commonly found in particular landscape and climatic conditions.

Vegetative reproduction: the means by which a plant is able to reproduce by fragmentation of for eg. the stem or other specialised plant parts such as rhizomes, corms or bulbs.

Weed: A plant (either indigenous or introduced) that due to environmental changes (favouring that plant) cause it to grow readily and out-compete other vegetation and change the ecology of the area.

Notes: