

Are you a 'Biosecure Bushwalker'? **by Sharon Fulcher**

At a recent meeting of Bushwalking NSW at Redfern Town Hall I presented a session with the title '**How can we 'Leave no Trace' when bushwalking?**' which looked at some of the current policies and resources around Minimum Impact Bushwalking and whether these adequately address the new NSW Biosecurity Act introduced in 2015.

Leaving 'no trace' in the bush is almost impossible. We may follow a track to get to our favourite spot, use a cleared area to pitch our tent or collect wood to make a fire. All of these activities have impacts as diverse as destroying flora from track clearing or trampling, or removing a home for a lizard, insect or bird when collecting wood. Our behavioural practices have changed over the years and as a collective of walkers we have had to adapt to being more environmentally sensitive or 'in sync' with the areas we love to visit. Some of our adaptations include the use of better gear such as campstoves instead of fires, well-enclosed, waterproof tents so that trenches don't need to be dug, packing out our rubbish and not camping in sensitive areas such as glacial lakes. Most of all we have become better informed about our impacts and how to minimise them.

Many clubs use their developed Minimum Impact Guidelines (MIG) to guide walkers' behaviour now, especially our new and/or inexperienced members. There are many models of MIG available to clubs including those from Bushwalking Australia, Bushwalking NSW, Leave No Trace as well as other walking clubs.

One area sometimes only given scarce mention if any at all is '**Biosecurity**'. Some Minimum Impact Guidelines do address dieback, however there are many that do not. We need to know what being **biosecure** is all about and how this links to us as bushwalkers to protect the bush from increasing weeds, fungal issues and bugs. It is a subject I believe that clubs need to examine by raising awareness, having discussions, reviewing their club's policy in this area and addressing personal behaviour.

You may ask what Biosecurity has to do with bushwalkers? Biosecurity is probably a term more familiar to us as 'quarantine' - something we have to 'pass' when returning from an overseas trip or when travelling domestically to places in Tasmania or northern Australia where certain items are prohibited entry. And yes, this too is a part of Biosecurity. However bushwalkers can also inadvertently spread weeds, fungus or intestinal bugs into our favourite walking areas with disastrous results without even knowing it. Let me outline some examples gleaned from various academic papers.

Seeds and weeds

- In D'Anguilar National Park near Brisbane, 63% of visitors reported finding seeds attached to their clothing, before, during or after visiting the park. Of these, 41% of visitors said that when they found the seeds on their clothing, they deposited them in the park (mostly brushing them off in-situ) inadvertently adding to the spread of weeds.
- A review of 21 papers worldwide looked at how clothing played a part in spreading weed seed. The study found seeds lodged in pockets and the interior of shoes could be transported quite some distance from where they were picked up. Some of these seeds collected in the study could be successfully germinated in a greenhouse making the potential of seed being viable and spread in the bush potentially worrying.
- Another study found that uncovered shoes, socks and legs contained more seeds than covered legs protected with trousers. Wearing trousers could reduce the number of seeds collected on socks by 94%, and by 55% on laces; and sports

socks that were of a cotton/nylon blend attracted more seeds than hiking socks which were about 50% wool. Drill cotton trouser legs also collected large numbers of seeds as well as certain fasteners such as Velcro on jacket cuffs, gaiters or packs. Seeds can be transported many kilometres by hikers, as much as 25 km a day.

- In a study in 2009, weeds were identified around alpine mountain huts. The areas had compacted soil, the vegetation was lower than that further away in more natural areas and there was more bare ground. Conditions such as these are ripe for weeds to become established in and 32 non-native species were found within 100 m of the huts.

Anecdotally, I have waded through infestations of Cobblers Pegs/Farmers' Friends (*Bidens pilosa*) in autumn to my great peril in an open weave cotton T-shirt, collecting thousands of seeds. Ignorantly cleaning my shirt, gear and tent of seeds each day by dropping them on the ground helped its spread further along the Guy Fawkes River.

In an ongoing eradication program of mouse-ear hawkweed on the main range of Kosciuszko NP there may be a link to the outbreak to its spread from contaminated walking gear, possibly from walkers travelling from NZ where it is widespread and damaging thousands of hectares in the South Island.



Two invasive weeds of Kosciuszko National Park, Mouse-ear Hawkweed (left), which is yellow with red flecks and Orange Hawkweed (right) which have intensive eradication programs under way. (Permission to reproduce images from J. Caldwell). The Mouse-ear Hawkweed area, which is around Strzelecki Creek at the summit, is in quarantine and Orange Hawkweed is all around Ogilvies Creek, Round Mountain and Tumut River along Farm Ridge Track (Jagungal Wilderness). Many members of walking clubs have participated in this volunteer eradication program.

To summarise, walkers can assist the spread of weedy seeds in the following ways:

- Seeds can be picked up on footwear, socks, laces and trousers and open weave cotton T-shirts and sections of backpacks
- On velcro fastenings on jackets and gaiters
- In open pockets
- Seeds caught in muddy boots
- Picked up by vehicles in 'weedy' carparks or on car mats
- Emptied out of tents and picked off socks
- From around huts, especially in alpine areas
- From interstate, overseas or from another national park



Signage boards alert bushwalkers to identification and reporting procedures for orange hawkweed in Kosciuszko National Park. Photo, S.Fulcher

Fungal infections

Many of us are now familiar with the boot cleaning stations installed in some national parks to ensure our footwear is fungal/spore free from diseases such as ***Phytophthora*** and a newly introduced South American fungus – **Myrtle Rust**.

Phytophthora cinnamomi spreads through soil, water and organic matter and can remain dormant for long periods during dry weather. It is impossible in most situations to eradicate it from infested areas so limiting further spread is critical. Strict ***Phytophthora*** boot cleaning stations in southern WA have been installed to cope with the numbers of tourists visiting spring flowering wildflowers as a way of preventing it. Many are now being used in NSW.

Myrtle rust is caused by the fungus ***Puccinia psidii*** and affects trees and shrubs in the Myrtaceae plant family that includes eucalypts, bottlebrush, lillipillies, melaleucas.



and tea tree. It attacks young, soft, actively-growing leaves, shoot tips and young stems, as well as fruits and flower parts. The first signs of rust infection are tiny raised spots or pustules on infected leaves, which then erupt into distinctive bright yellow spore masses.

Myrtle Rust Image:

www.yourlevyatwork.com.au/new-project-managing-myrtle-rust-and-itsimpacts-in-australia

It can cause deformed leaves, heavy defoliation of branches, dieback, stunted growth and plant death. Spores can be spread by muddy boots, and on clothing and gear.

Bugs in our water

Clean water in the bush is an essential for drinking, cooking and washing. We are most fortunate in Australia that many of our creeks away from urban areas are 'clean' and drinkable without treatment. But the overseas experience of 'bugs' like giardia getting into waterways means that overseas walking usually requires water treatment of some kind. A personal experience of a trip to India is a cautionary tale outlining how potentially easy it is to spread unwanted bugs into our environment. My husband and I picked up a parasite called *Blastocystis hominis*. It didn't make us sick (it can affect others) but a routine scan discovered it in one of us, prompting further testing that found both of us had it. Although always careful with toileting hygiene in the bush we both decided to seek treatment before accidentally contaminating any waterway. We had a follow up test to ensure it had gone.

So unconsciously bushwalkers could be:

- Bringing weed seeds, insect pests, or aquatic pests like waterweeds into new areas on their shoes, gear, canoes, boats or vehicles.
- Damaging vegetation and soil, exposing new ground where weeds can establish
- Damaging native wildlife habitat and creating conditions that encourage non-native species
- Transporting fungus spores, plant diseases or wildlife diseases into previously un-affected natural areas or adjacent farmlands
- Spreading water-borne parasites through poor hygiene practices

How do we deal with these potential impacts?

1. Being aware of the NSW Biosecurity Act 2015

The Commonwealth Biosecurity Act was introduced in 2015. The NSW Biosecurity Act, 2015 developed in response has "A shared responsibility" as its main message: *'Government, industry and the people of NSW working together to protect the economy, environment and community from the negative impacts of animal and plant pests and diseases, weeds and contaminants for the benefit of all people in NSW.'*

At the end of 2016, the NSW Government released the **Biosecurity Act 2015, Recreation in natural areas discussion paper**. Aims outlined include reducing the impact of invasive species on the State's natural areas using a combination of **prevention, eradication, or minimisation through containment and protection**. The general biosecurity duty requires any person who knows, or ought to know, of the biosecurity risks associated with an activity to take measures to prevent, minimise or eliminate the risk as far as reasonably practicable. Results and strategies should be released late in 2017.

(www.dpi.nsw.gov.au/content/biosecurity/biosecurity-act-2015.)

2. Understanding that it is our responsibility

It does impose on us all as leaders and/or participants to be **'Biosecurity Aware'** and by all measures **prevention in the first place is the key**. There are very few references in Minimum Impact Codes and Leave No Trace about Biosecurity issues as it is a developing area requiring review by all outdoor clubs. **The first step to prevention is awareness raising, reviewing the Minimum Impact Code and how it relates to Biosecurity measures.**

3. Looking at things that can help us be 'Biosecure'

Discussions around clothing, gear and personal hygiene will help. A summary of a number of documents and experience from working with NPWS/OEH follows:

Clothing

- Choose 'no weave' or 'close weave' clothing like outdoor/fishing shirts to stop seeds sticking
- Wear knee length gaiters or long pants and sock protectors
- Carry a small brush/toothbrush for daily removal of seeds and mud
- Carry a zip lock bag to dispose of seeds picked off clothing and socks and carry it out. Dispose it in the 'red bin'.
- Make sure pockets are closed especially when accessing road verges or carparks where ground disturbance is more prevalent or when proceeding through disturbed areas or thick bush
- Ensure your boots have been scrubbed clean and sprayed with a solution of 70% metho to 30% water.

Gear

- Ensure you have washed or sprayed your tent pegs, walking poles, bottom of gaiters, and bottoms of packs
- Ensure your vehicle is clean, including floor mats and there is no old mud sticking to the vehicle.

When you are out in the bush

- Use a boot cleaning station if available (or use a spray kept in your car)
- Keep a spray bottle in the car of 70% metho to water and a brush to clean tyres, canopies etc before you leave a site, especially if travelling to another site.
- Keep to walking tracks if you can to avoid spreading diseases/seeds into untracked areas, especially on wet ground.
- Empty tent of debris where you are camped - don't carry the seeds many kms from one area to another
- Thoroughly clean and remove all dirt and plant material on backpacks, boots, socks and other gear before you leave a site and check before going to another site especially in wet conditions. Carry a small brush.
- When parking your car, avoid weedy areas near carparks
- Ensure your toileting practices involve good burial, being downstream and well away from any water source

Afterwards

- Think about where you will empty the 'stuff' on your car's floor mats (you don't want weeds in your own garden either)
- Think about where the water runoff will go when you wash your car

Resources and actions to assist

- Make a leaders box with spray bottles and brushes (esp in the absence of a boot-cleaning station)
- Organise an information night to raise awareness

- Review your club's Minimum Impact or Bushwalker's Code
- Add a section on the walks proposal to include Biosecurity measures
- Series of biosecurity measures In Tasmania including great videos at Bookend Trust website: www.bookendtrust.com/projects-tab/biosecurity
- Download the 'Arrive clean/Leave clean - Keep your gear clean in the wild' brochure (<https://invasives.org.au/project/keep-gear-clean-wild/>)



Boot cleaning station installed in Nadgee Nature Reserve, southern NSW
(Photo S.Fulcher).

To conclude, we have the capacity to expand on the Minimal Impact Principles and incorporate extra explanatory points into them. Discuss some of the issues raised in this article - what people wear, how they collect and dispose of seeds from their socks or tent, boot cleaning and personal hygiene with a view to making small changes in behavior. A walk's leader with a 'clean box' who is mindful about the area being walked in can have a major influence on the behavior of a group.

Most of all have a conversation about Minimum Impact and Biosecurity

Use this presentation to share this information with others:

[Sharon Fulcher: How can we 'Leave no Trace' when bushwalking?](#)

Notes

For more information contact:

NSW Office of Environment & Heritage (OEH) www.environment.nsw.gov.au

NSW National Parks and Wildlife Service (NP&WS) www.nationalparks.nsw.gov.au

References available upon request.

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