

March 2020 Issue #19

Welcome to the autumn edition of the Early Invader Update

WESI-GNP Projects

In October 2019 the WESI Project in collaboration with the Good Neighbour Program (GNP) provided an opportunity for DELWP pest plant managers to apply for funds to manage early invader weed infestations in their patch.

Proposed projects needed to show a focus of aiming to eradicate an early invader weed or group of weeds; be managed by DELWP and occur on public land; and demonstrate use of the WESI early invader tools and process.

The WESI team received a fantastic response with applications for 13 different projects across the State. We are pleased to announce that approximately \$25,000 has been split over four projects in the Gippsland, Grampians and Port Phillip DELWP regions.

Projects included:

- Ox-Eye Daisy in Boulung-Deera/Dargo High Plains;
- Bluebell Creeper Midlands District;
- Delimiting Surveys in Yellingbo NCR; and
- Foxglove and Wandering Trad in Pauls Range State Forest (SF).



Figure 1: snippet of the cover of WESI Guide 4 – delimiting survey guide (DELWP).

This funding will help those regions complete on-ground early invader weed management activities such as treatment by hand removal and chemical, engage contractors; and delimiting surveys and monitoring following the WESI process to ensure management actions are appropriate and working.

Applicants said that "this was a great opportunity to reinvigorate people into thinking and acting on early invader weeds, especially while the WESI training was still recent enough to be on people's minds."

And that the project has encouraged "lots of talk with Parks Victoria [who manage a neighbouring park] about the current situation and working collaboratively on this species."

The WESI team is taking feedback received into consideration and hopes to provide similar funding opportunities to help deliver early invader weed projects into the future. Please read on to learn more about one of the projects and stay tuned to coming issues for more information on the remaining projects.



Figure 2: Ox-Eye Daisy (*Leucanthemum vulgare*) in Central Highlands Eden.

Credit: Sally Lambourne (DELWP).

Early invader weed project in Port Phillip Region.

The Yarra District (in DELWP's Port Phillip Region) with the assistance of the Central Highlands Eden Project team were successful in their application to treat new infestations of Foxglove (*Digitalis purpurea*) and



Environment, Land, Water and Planning

Wandering Trad (*Tradescantia fluminensis*) in the Paul's Range State Forest.

The Central Highlands Eden team (DELWP's Sally Lambourne and Brad Matthews) continue to recognise early invader weeds and the importance of early detection for best management practices, so it was great to see their involvement in this project.



Figure 3: Paul's State Forest Foxglove infestation. Credit: Brad Matthews (DELWP).

They have made following the WESI process a part of their everyday weed management plan and implementation strategy. The project site is the only patch of State Forest not currently covered under the Central Highlands Eden Project area.

Whilst Foxglove is a well-known environmental weed to the wider area, it has not been seen at this location previously. Both weeds are listed in the <u>Advisory List for</u> <u>Environmental Weeds in Victoria</u> and Wandering Trad is rated as a very high-risk species.

Treatment of the Foxglove and Wandering Trad, in this early stage, is important to prevent further spread. The team made sure that the treatment activities were completed prior to planned culvert repair works at the Foxglove site to help minimise further spread. Disturbance can assist with germination and spread of many types of weeds, considering this is an important step in planning and carrying out management activities.



Figure 4: Foxglove in the area planned culvert replacement. Credit: Brad Matthews (DELWP).

Prior to their application for funds, the team completed a delimiting survey of the area to get an understanding of the extent of the Foxglove and Wandering Trad infestations. They found Foxglove in small numbers at 13 sites and just one site for Wandering Trad. Contractors have completed treatment and mapping of the sites and the Yarra District crew will continue to keep an eye on the sites for emergence of seedlings.

Follow up monitoring and treatment (if required), is a vital step in the management of early invader weeds, with many species having lengthy seed longevity and the ability to emerge in a flourish post treatment. Not following this step risks all your hard work and money being undone and going back to square one.

Congratulations to the Yarra District and Central Highlands Eden teams for completing this project, especially during a busy fire season.

Amazon Frogbit found in Gippsland!

A second infestation of Amazon Frogbit (*Limnobium laevigatum*) has been discovered in a public waterbody in Gippsland, Victoria.

The infestation was identified in February and the WESI team was contacted immediately by Brian Dowley (DELWP). He identified the plant and did a quick web search which led him to issue #15 (winter) of the Early Invader Update newsletter.



Figure 5: Mountain Ducks on Amazon Frogbit infestation in a waterbody in Gippsland area.

Credit: Brian Dowley (DELWP).

The WESI team was then able to notify staff from DELWP in Gippsland who have since been in contact with the Local Government Agency (LGA) that manage the site. The LGA is now treating the site.

This is a good reminder to keep an eye on waterways for aquatic weeds. If you see Amazon Frogbit or other nasty aqautics, please report your observation to the land manager.

For more information on Amazon Frogbit please refer to the <u>winter 2019 issue (#15)</u> of our newsletter, which can be found on our website with other back issues.



Figure 6: Amazon Frogbit plant, "bladder" visible under leaf is a key identifying feature.

Credit: Brian Dowley (DELWP).

Photography Tip #2: aquatic weed

To take photographs of aquatic weeds that are floating or anchored in water, carefully immerse a glass jug or other clear vessel into the water next to the weed and be sure to stop before letting water enter the jug. Hold it steady while with the other hand, carefully lower your mobile phone with camera ready into the jug.

The camera will be lower than the surface of the water and remain dry while taking photos of the underwater features of the weed! Concentrate hard to avoid filling the jug and ending up with a water-logged phone!



Figure 7: Amazon Frogbit underwater photo. Credit: Brisbane City Council (weeds.brisbane.qld.gov.au/weeds/amazon-frogbit)

50 shades of Autumn

How many of us as kids spent glorious weekends touring in the back of our parent's car looking at the magnificent autumn leaves in the Dandenong's or around Bright? Maybe it brings back memories of being car-sick, bored senseless or staring out the windows in wonderment at nature's magic!



Figure 8: Autumn colours, Mount Macedon, Victoria. Credit: Gavin Boyce (<u>www.abc.net.au</u>).

There are many deciduous plants grown in gardens for their colourful autumnal displays, which have escaped and become weeds.

Many of our environmental weeds including early invaders are deciduous plants over winter and sometimes summer. 'Deciduous' means the plant drops its leaves for part of the year. It's the opposite of 'evergreen'. Losing leaves means the plant can pull back essential energy and minerals from the leaves into its infrastructure of trunk, branches and roots. Then, while conditions are less favourable for growth, the plant can sit dormant and send out new leaves when conditions improve.

As the plant pulls in green chlorophyll out of its leaves into its trunk, brightly coloured chemicals are left behind in the leaves such as anthocyanins that give red, orange, yellow and purple colours.

Autumn is a great time to make use of the opportunity to undertake detection and delimiting surveys while these weeds are easy to see, often standing out like bright red, orange or gold beacons amongst native vegetation.

Some winter deciduous environmental weeds include Box-elder (*Acer negundo*), Old Man's Beard (*Clematis vitalba*), Desert Ash (*Fraxinus angustifolia*), willows (*Salix* species) and Tree of Heaven (*Ailanthus altissima*).



Figure 9: Box-elder in Winter.

Credit: Sheldon Navie (via keyserver.lucidcentral.org/weeds).

Weedy Fun Fact #3

Did you know some weeds are deciduous over summer, losing their leaves as the temperature rises and water dries up? Example: Weed of National Significance, Bridal Creeper (*Asparagus asparagoides*).



Figure 10: Bridal Creeper (Western Cape) form (*Asparagus asparagoides*) near Heywood, Victoria.

Credit: Bianca Gold (DELWP).

African Boxthorn CSIRO

The WESI team prides itself on connecting people to help with the management of environmental weeds in Victoria. We are lucky enough to have a network of friends that spans interstate and even internationally, made up of people working on all sorts of amazing projects.

Ben Gooden from <u>Commonwealth Scientific and</u> <u>Industrial Research Organisation (CSIRO)</u> is one of these wonderful people.-He recently contacted the WESI team with an exciting project that involves setting up monitoring plots for African Boxthorn (*Lycium ferocissimum*).

Ben is looking to build partnerships with local community groups, weed managers and private landholders to set up long-term monitoring plots in areas with African Boxthorn infestations across Southern Australia. Ben and his colleagues intend to work with local stakeholders to create a network of fixed monitoring plots across infestations in a variety of habitats, to collect data on the condition of African Boxthorn populations and associated native vegetation and pastures.



Figure 11: African Boxthorn flowers, Warracknabeal, Victoria. Credit: Kate Blood (DELWP).

Recognising that chemical and mechanical control measures can be costly, and in some cases, pose a risk to culturally significant and ecological sensitive environments, CSIRO is developing biological control (biocontrol) options. These are hoped to assist in improved management of African Boxthorn in Australia. In some circumstances, biocontrol offers a safe, nondestructive, cost-effective and sustainable alternative method of weed control.

Before a biocontrol agent can be approved for release, it needs to be thoroughly researched and undergo serious testing in a controlled environment to ensure that it does not pose a risk to non-target plants (such as native species or farming).

CSIRO is currently testing a rust fungus and leaffeeding insect for African Boxthorn with the intentio to release at selected monitoring sites if approved.



Figure 12: African Boxthorn with fruit. Credit: John Heap (PIRSA).

Provided the biocontrol agent is approved, the monitoring sites can then be used to gather important data on its impacts and the flow-on effects to native plants and animals.

Ben is keen to hear from you now as he starts planning monitoring sites and activities. He can be contacted via email at <u>ben.gooden@csiro.au</u>.

You can get more information on the project at <u>https://research.csiro.au/african-boxthorn/</u> and in the attached fact sheet.



Figure 13: Screenshot CSIRO fact sheet (research.csiro.au).

Weed to watch for new Trad!

The genus Tradescantia is popular for indoor plant enthusiasts and for low maintenance gardens. Unfortunately, due to this popularity and the ease of growing plants, some of the species have escaped gardens and invaded native bushland.

Wandering Trad, also known as Wandering Creeper (*Tradescantia fluminensis*), is an example. It is an invasive perennial, found in almost every state in Australia (excluding Northern Territory).



Figure 14: Wandering Trad (left) and Trad Giant Leaf (right) in screenhouse.

Credit: Greg Lefoe (Agriculture Victoria).

Commonly known as Trad, this weed forms dense mats (also known as swards) that, due to this dense covering, disables the regeneration of indigenous plants. It's ability to spread vegetatively, growing roots at each node that meets soil, makes it a vigorous grower.

In recent times, the introduction of a very host-specific biological control (biocontrol) agent has been tested and recommended for approval for Wandering Trad. The agent in this case is a type of fungus known as

"smut" that smothers the leaf, causing damage to the leaf cells and the death of infected leaves.

A discovery in the Eltham area of a larger leaved unidentified Trad species, currently known as "Giant Leaf" could be easily confused with the more common Trad. This species was checked during the biocontrol host-specificity tests and was found to be resistant. Given what is known about the impacts of Wandering Trad, the Giant Leaf species has the potential to take over areas, similarly to its relative.



Figure 15: Close up of Giant Leaf Trad in the screenhouse. Credit: Greg Lefoe (Agriculture Victoria).

If you locate what you think might be the Giant Leaf Trad, please contact the land manager. DELWP's customer service can be found at <u>https://www2.delwp.vic.gov.au/our-department/contact-</u> us; and Parks Victoria via

https://www.parks.vic.gov.au/contact-us. A quick web search will help you with local government and Regional Roads Victoria/Vic Roads.

Weeds and Bushfires Feature (#18)

The WESI team recently shared a feature newsletter with our subscribers via email. We will be doing these features from time to time where there is a demand for further information on a topic such as this, bushfires and weeds.

There has been great interest in the bushfire-weed information sources we have been sharing through our networks and social media. The feature supplement (#18) to our summer update (issue #17) aims to share more of those information sources to help biodiversity managers impacted by fire focus on making a smooth recovery.

If you didn't receive the fire and weed management feature (shown below) via email, you can find a copy on our webpage at

https://www.environment.vic.gov.au/invasive-plantsand-animals/early-invaders

We hope those working and living in fire-affected areas find this resource useful in assisting them with their recovery and post-fire management works.



Figure 16: Cover page of feature newsletter #18 February 2020 (DELWP).

Let's get technical: It's berry time!

Bird Iollies!

Autumn is when many introduced plants have ripening berries. Berries are like 'bird lollies'! They are neat little fleshy packages containing seed that are carried away from the plant by birds and other animals. The flesh of the fruit is the attractant for the animal.

Having the seed carried away from the parent plant provides less competition for both the parent and the new resultant seedling.

Berries are one of many types of fruit that plants have to contain their seeds. Common examples of berries we might have in our kitchens include blueberry, currants, and pumpkin. Interestingly, tomatoes, bananas and eggplants are also berries. You can look up why strawberries and raspberries are not berries, botanically speaking.

A couple of reasons why weed managers should take interest in berries:

- They are often carried from gardens into natural areas by birds and other animals, washed down drainage lines and rolled down slopes. Gardens are a common source of early invader weeds.
- They can be a useful distinguishing feature that can assist identification and detection of early invaders in the field when doing search and detect surveys, or delimiting surveys (determining the boundaries of an infestation).

Bird-poo halo

Have you noticed trees or fences in natural areas with masses of plants germinating under them? They most likely have grown from seeds deposited in bird droppings. Many of these will be environmental weeds from nearby gardens where birds have been dining on delicious berries. Michael Mulvaney from Canberra many years ago introduced Kate to the term "bird-poo halo" and she has been using it ever since.



Figure 16: A bird-poo halo under a Eucalyptus of 10 different environmental weed species spread by birds in droppings. Credit: Kate Blood (DELWP).

What is a berry?

A botanical definition of a berry is: "a fleshy or pulpy indehiscent fruit with 1 or more seeds, the seeds embedded in the fleshy tissue of the pericarp" (Beentje 2010). Now most of us don't use botanical jargon every day and rely on a botanical glossary, dictionary or "googling" to understand. If you are not botanically inclined, the definition could be interpreted as - a fleshy fruit with no split down the side, with one or more seeds embedded within the flesh.

Environmental weeds with berries, some of which may be early invaders in your patch, include the various Asparagus species, for example: Bridal Creeper (*Asparagus asparagoides*); Irish Strawberry Tree (*Arbutus unedo*); Japanese Honeysuckle (*Lonicera japonica*); African Boxthorn (*Lycium ferocissimum*); Banana Passionfruit (*Passiflora mollissima* or the more recent botanical name *Passiflora tarminiana*); WA Bluebell Creeper (*Sollya heterophylla* or the more recent botanical name *Billardiera fusiformis*); and White Arum Lily (*Zantedeschia aethiopica*).



Figure 17: WA Bluebell Creeper (Billardiera fusiformis) has maggot-shaped berries that turn almost black when ripe. Credit: Kate Blood (DELWP).

We can see from these examples that plants with berries don't fit a specific category of plant. They can range from small plants to shrubs, trees to or climbers. They can have different sized and shaped fruit and contain one or more seeds. The berry can occur as a single fruit or in large clusters. They can grow from the coast to the alps and everywhere in between.

For the purists amongst you, environmental weeds that are often referred to as having berries but botanically don't include: Hawthorn (*Crataegus monogyna*), Cotoneaster and Pyracantha species that all have

pome fruit, like an apple; Italian Buckthorn (*Rhamnus alaternus*) and English Holly (*Ilex aquifolium*) have drupes; and blackberries (*Rubus* species) in fact have compound fruit "that develop from more than one flower" (Beentje 2010). While the definition of a berry isn't always as it seems, the birds and other animals that devour them don't understand the difference and the spread factor is much the same.



Figure 18: Italian Buckthorn (Rhamnus alaternus) have drupes, not berries.

Credit: Kate Blood (DELWP).

Sources and spreaders

For biodiversity and public land managers, the proximity of gardens to natural areas and the existence of berryforming environmental weeds means that they will continue to be spread by various means, often called 'vectors' (Sheehan et al. 2016). Vectors, or carriers, include: introduced and indigenous birds and animals, for example, possum, fox and deer, either in their gut, through their droppings or attached to fur; machinery or mountain bike tyres; person's boot; pet dog; socks; water and camping gear.

Let's focus on birds for a moment. A seed dispersal article (Gosper et al. 2005) has some interesting findings on the interactions between birds and invasive plants and some useful management options. I highly recommend reading it if bird-dispersed early invaders are an issue in your area.

So why is this important to know about which weeds have berries or berry-like fruit?

- It can help to prioritise treatment of those early invaders above some other weeds that are not as readily spread by birds and other vectors.
- There are some management options specifically for bird-dispersed weeds (see Gosper et al. 2005)

 Autumn, when many plants are in fruit and are easier to recognise, can be a great time to schedule surveys to detect and delimit known or potential early invaders in your area.

See the "Early invader manual" for information on how to do surveys:

https://www.environment.vic.gov.au/invasive-plantsand-animals/early-invaders

References:

Beentje, H. (2010) The Kew plant glossary: An illustrated dictionary of plant terms. Royal Botanic Gardens, Kew UK. ISBN 978-1-84246-422-9.

Gosper, C. R., Stansbury, C. D. and Vivian-Smith, G. (2005) Seed dispersal of fleshy-fruited invasive plants by birds: contributing factors and management options. Diversity and Distributions Vol 11, No. 6 (November 2005): 549-558.

Sheehan, M., James, R. and Blood, K. (2016) Looking for weeds: search and detect guide. A guide for searching and detecting weeds at the early stage of invasion on public land in Victoria. Department of Environment, Land, Water and Planning, Victoria. ISBN 978-1-76047-000-5 (Print); ISBN 978-1-76047-001-2 (pdf/online).

<u>Tip</u>: there is a glossary in the back of botanical floras, and online at your State/Territory herbarium e.g. VicFlora https://vicflora.rbg.vic.gov.au/flora/glossary

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Figure 19: Screenshot of glossary in VICFLORA.

Credit: vicflora.rbg.vic.gov.au (Flora of Victoria online).

For the calendar

The 22nd biennial <u>Australasian Weeds Conference</u> (AWC) 2020 is being hosted by the <u>Weed Management</u> <u>Society of South Australia (WMSSA)</u> on behalf of the <u>Council of Australasian Weed Societies (CAWS)</u>, at Adelaide Oval, 25-29 October 2020.

From March to July, early bird registration is available and can save you around \$150.00. Other discounts for members and students are also available.

The conference is a great opportunity to hear about a range of topics from cutting edge weed science and research to local and national innovative policy; new operational practices and tools; chemical innovations; alternative weed control; and on-ground case studies, all helping to protect agricultural and environmental landscapes from weeds threats and fire management.

Til next time!

https://www.environment.vic.gov.au/invasiv e-plants-and-animals/early-invaders

Social media Bianca Goldweeds and @weedyk8



Your friendly WESI Project Team, Bianca (aka Goldie) and Kate

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