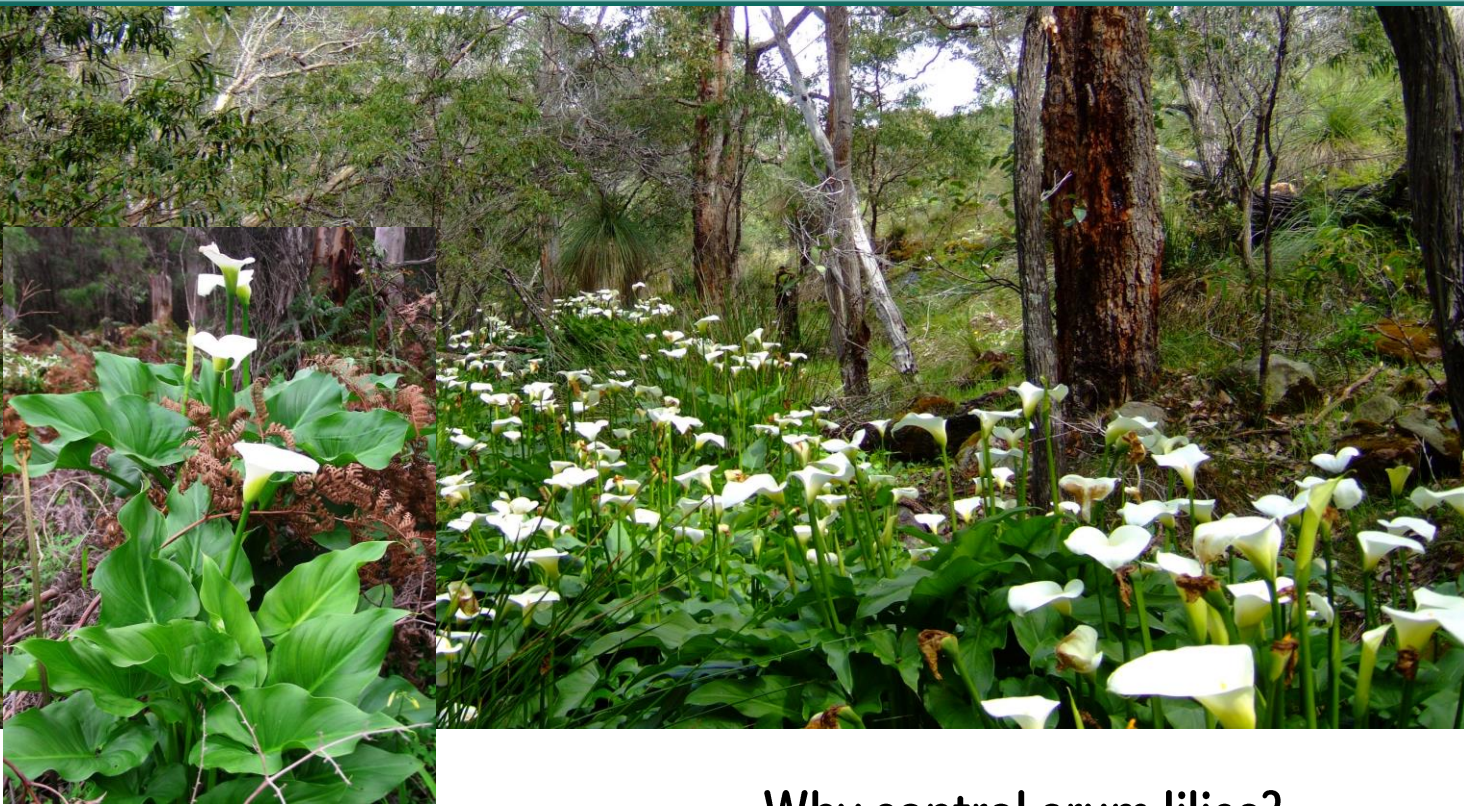


# ARUM LILY CONTROL

## Nature Conservation Information Sheet



### Why control arum lilies?

Arum lily (*Zantedeschia aethiopica*) is native to South Africa and was introduced to Australia as an ornamental garden plant. It has become a serious weed in the south west of Western Australia in both pasture and bushland, particularly in damp areas but also invading drier sites. Arum lily is spread by birds and invades areas of good quality native vegetation. Often forming dense monocultures it out competes native understorey species reducing biodiversity and decreasing habitat and food resources for native animals.

Arum lily is poisonous to most stock, pets and humans. Symptoms can include swelling of the lips, tongue, and throat, stomach pain, vomiting and severe diarrhoea. Ingestion of the plant may be fatal. The toxicity is due to sequestering of calcium oxalate crystals and possibly other toxic compounds by the plant.

Arum lily is listed as a Declared Plant under the Biosecurity and Agriculture Management Act 2007.

### Understanding the plant biology

Arum lily is a perennial plant. Each year the above ground part of the plant dies back to an underground tuberous rhizome. New leaves begin to regrow in autumn and flowering generally occurs from August to December. The plant then dies back in summer.

As well as reproducing via seed, arum lily reproduces vegetatively. Vegetative propagation is by small rhizomes, which are produced on the sides of the main tuber. A 2 cm tuber can produce 25-30 small rhizomes in a year. Even very small rhizomes are capable of producing new growth or new plants if they are detached or the tuber dies.

Plants produce large amounts of seed towards the end of the flowering season. The seeds are held within succulent berries and birds are the main vectors of dispersal. Seed rarely remains viable in the soil for more than four months.

## Planning and monitoring arum lily control

Arum lily control will be most effective if it is coordinated across the landscape to reduce re-infestation. Go to [natureconservation.org.au](http://natureconservation.org.au) to register with the Arum Lily Blitz and contact your neighbours to discuss your control program with them.

### Step 1: Understanding the distribution

Mapping the extent and density of the arum lily infestation is recommended. This will enable a targeted control strategy to be developed and will also allow monitoring of success over time.

### Step 2: Developing a control plan

Where to begin? Protect areas of good quality native vegetation. Keep uninfected areas clear and remove isolated infestations within bushland before they spread. Consider working from intact bushland out towards more disturbed areas to limit the spread – especially where the infestation cannot be controlled in one concentrated effort. Develop a plan to be implemented over time if the infestation is extensive and a number of years spraying will be required.

### Step 3: Monitoring effectiveness of control

To evaluate the success of the control program you may wish to record information about the extent of the arum lily infestation. Monitoring methods including mapping and photo monitoring are explained below.

### Step 4: Undertaking an on-going control program

**Physical Control:** Hand removal of the plant is only effective if the tuberous rhizome and daughter rhizomes are removed. The resulting soil disturbance may encourage germination and establishment of other weeds. Removal of flowers will prevent birds spreading seeds.

**Chemical control:** Correct application of the appropriate herbicide is very effective at killing arum lily and is expected to result in a 90% kill rate. However, the small rhizomes attached to the main arum lily tuber are not always killed by the herbicide application that kills the parent plant. **Follow up spraying is therefore essential. Plants growing from the surviving daughter rhizomes are not usually visible until two years after the initial spraying.** The likelihood of reinfestation from surrounding areas also requires an on-going program of control.

## Photo monitoring

The aim of photo monitoring is to take photos of the same sites regularly to enable comparison.

- Mark on a map the photo locations so that you return to the same locations.
- Include a recognisable feature in the photo.
- More is not necessarily better – stick to a few good locations and take good photographs.
- Take photographs on a cloudy but bright day – try to avoid shadows.
- Take a copy of the previous photographs with you to ensure the new photographs will be taken the same way.
- Do not use a wide angle or telephoto lens as this alters the perspective of the photograph and makes it difficult to repeat.
- Sometimes an elevated position, such as standing on the back of a vehicle, can give a better result, especially if you wish to show understorey density.



August 2013



August 2014

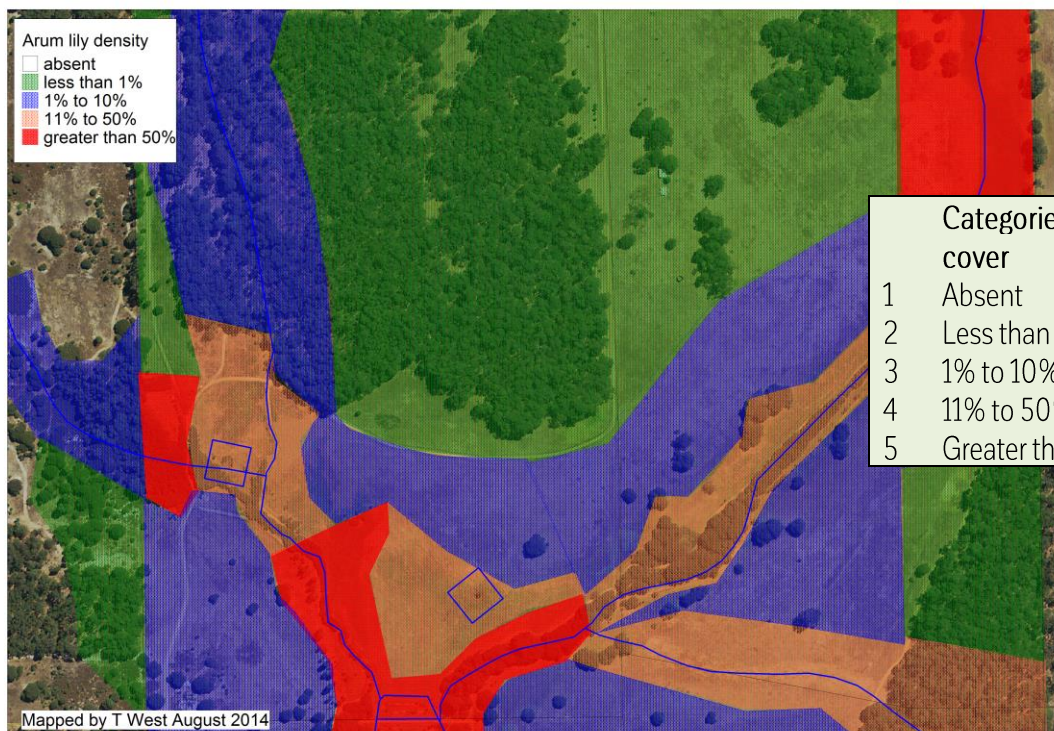
## Weed mapping

Mapping the arum lily infestation prior to undertaking control and then in subsequent years will demonstrate the effectiveness of the control program. The location and the density of the weed should be mapped.

When weed mapping, try enlarging an image of the area to A4 so it can be used with a standard clipboard. A clear overlay can be placed over the map. A grid pattern drawn on the overlay will be helpful. Label and date the map. The date is essential if the map is to be used as a monitoring tool.

Start at one edge and walk across the site at regular, parallel, intervals. The intervals can be around 10 to 50 metres apart depending on the vegetation type and the visibility of the weed. A compass may be helpful. If the site is dissected by paths, roads or creeklines mapping within the sections of the property created can be more accurate.

Suggested categories of percentage cover are included in the table below. Different colours or symbols can be used to represent each category. Importantly, be consistent and use the same categories and colours each year.



	Categories of % cover	Colour code
1	Absent	clear
2	Less than 1%	green
3	1% to 10%	blue
4	11% to 50%	orange
5	Greater than 50%	red

## Chemical control

The herbicide chlorsulfuron provides good control. It should be applied when the plants are actively growing between July and late October. The optimum time to spray is when at least 50-70% of flowers are present but spraying is effective as long as applied before the flowers start to wither in late spring/early summer. Rhizomatous tubers that begin actively growing later in the season will be missed if spraying occurs too early in the season. In winter wet areas, spray before the water levels have risen or after they have fallen.

Use a mixture of 1 gm of chlorsulfuron per 10 L water plus 25 mL of a penetrant such as Pulse, Sprinta or Brushwet. Spray leaves to the point of runoff. Off-target species can also be killed so it is important to apply the herbicide carefully to the arum lily leaves only. Chlorsulfuron is a very slow acting chemicals. Be aware that the plants may not yellow and die until months after they are sprayed. **Glyphosate (Roundup) is ineffective in killing arum lilies.**

Correct application of the appropriate herbicide is very effective at killing arum lily and is expected to result in a 90% kill rate. However, the small rhizomes attached to the main arum lily tuber are not always killed by the herbicide application that kills the parent plant. **Follow up spraying is therefore essential. Plants growing from the surviving daughter rhizomes are not usually visible until two years after the initial spraying.**

Always wear appropriate protective clothing when using herbicides. After mixing in the spray unit, use spray within a maximum of 24 hrs to ensure the herbicide is still effective. If left to stand for an extended period re-agitation of the mix may be required.

## Restoration of the native plant community

Where arum lily occurs sparsely or in isolated patches in good quality native vegetation, the gap created by removal is small and quickly colonised by native species. However, where arum lily grows as a dense monoculture removal will leave an area susceptible to invasion by other weeds. Control of these weeds may help facilitate establishment of native plants. To improve biodiversity you can direct seeding or revegetate with local native species.

## Management actions

- Contact Nature Conservation and neighbours to develop a neighbourhood wide control program.
- Map the arum lily infestation and take photos to enable evaluation of the success.
- Spot spray small populations or isolated plants.
- Target infestations in good vegetation before they spread. These areas are often quickly recolonised by natives.
- Develop a plan for control of large infestations.
- Apply the appropriate herbicide between July and late October – when plant is actively growing. **Glyphosate (Roundup) is not effective at killing arum lily.**
- Assess regeneration of native species and undertake seeding or planting of local native species if needed.
- **Do follow up control** – don't waste your efforts and herbicide use by failing to follow up in subsequent years.

## References and further information

- Brown, K & Brooks, K (2002) *Managing Weeds in Bushland – Arum Lily*. Environmental Weeds Action Network
- Moore, J & Wheeler, J (2008) *Southern Weeds and their control*. Department of Agriculture and Food WA.
- HerbiGuide [www.herbiguide.com.au](http://www.herbiguide.com.au) - Detailed information about weed species and control methods.
- Brown, K & Brooks, K (2002) *Bushland Weeds A practical guide to their management*. Environmental Weeds Action Network