

Management Guidelines:

- ❖ Map taro populations around your wetland and along your waterway
- ❖ Hand remove small populations in open water immediately. Carefully weed out corms and remove from site
- ❖ Target small infestations in good vegetation before they spread. These areas are often quickly recolonised by natives
- ❖ **Plan ahead** for removal of large infestations:
 - Think about bank stabilisation issues
 - Collect seed
 - Grow on plants if necessary
 - Organise a work crew
 - Decide how to dispose of biomass
- ❖ Remove entire population - this may take several weeks
- ❖ Observe carefully and note any regeneration of local plant species
- ❖ If necessary, put back elements of the native understorey as quickly as possible. Try direct seeding or spreading vegetative material on those native perennial species that propagate easily
- ❖ Collect all propagation material from native plant communities as close to your restoration site as possible (Make sure that what you have collected is not a weed!)
- ❖ Remain vigilant - check area whenever possible and weed out new taro plants when they appear



The native slender knot weed (*Persicaria decipiens*)

Reference and further information:

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CALM Urban Nature Program

The Department of Conservation and Land Management's Urban Nature program aims to increase the level of technical advice and support available to all bushland managers.

Urban Nature offers advice, training, and best practice guidance on urban bushland and wetland conservation management.

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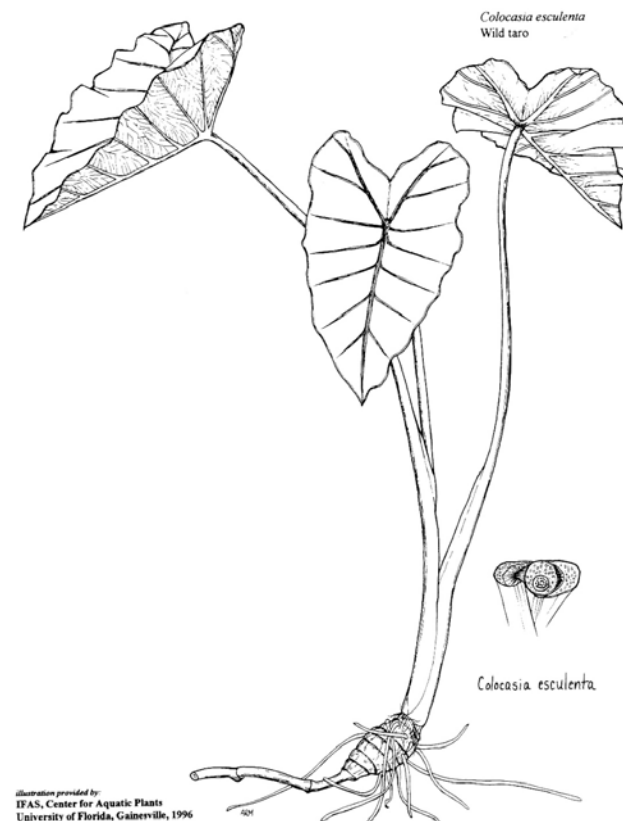
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MANAGING WEEDS IN BUSHLAND



TARO
Colocasia esculenta Schott

Colocasia esculenta – taro

In Australia, taro (*Colocasia esculenta*) is most often associated with Asian and Polynesian cooking or tropical gardens. However, **taro is fast growing, able to spread in favourable conditions, and capable of becoming a serious weed of wetlands.** It forms dense stands along water courses and on the edge of lakes and swamps, displacing native plant species.

Taro is a perennial herb to 2 metres high. Numerous leaf stems sprout from the upright tuberous root stock, or corm. Large dark green velvety leaves are supported by thick succulent leaf stalks, coloured from green through red to a deep purple. Stalks are attached near the centre of the leaf base - a character which distinguishes them from other similar species in the arum family. Flowers, which are uncommon, occur on a shorter stem, the pike of greenish white flowers enveloped by a long yellow leaflike bract.

A diverse species, taros fall into two main groups, upland and wetland taros.

Distribution – where does it grow?

Taro appears to originate in India and south east Asia. It has been cultivated for more than 6000 years and is found throughout much of the tropics and subtropics. Considered native to some parts of the Kimberley, it is scattered throughout Northern Australia. However, it is known to have been introduced to Beagle Bay by Trappist Monks as a food source, and was possibly introduced to other areas.

Edible cultivars and garden varieties have been introduced into Australia more recently. Taro is now naturalised in the Perth region and possibly elsewhere in south west WA. First recorded as a weed at Maylands in 1982, taro is increasingly becoming a cause for concern along the water ways of the Swan and Moore River catchments. It prefers slightly acid, moist or wet soils rich in organic matter.

Some interesting taro biology:

- ❖ Prefers moist wet, acidic, organically rich soils and partial shade
- ❖ Tolerates intense sunlight and dense shade as well as permanent inundation
- ❖ Excessive nitrogen favours biomass production
- ❖ Dormant over winter in south-west Western Australia
- ❖ Flowers infrequent, produced in autumn, seed uncommon and of low viability
- ❖ Reproduction primarily vegetative; by cormules and stolons
- ❖ Allelopathic, can inhibit growth of other plants
- ❖ Contains calcium oxalate crystals which can deliver a mild sting or severe rash

How does it spread?

Taro spreads by cormules, which grow off the side of the main corm, or slender stolons or both. The stolons are approximately 1 metre long by 1 centimetre thick, while the cormules are 4 - 6 centimetres in diameter.

Taro dispersal:

- ❖ Dispersal between waterbodies is primarily by deliberate or unintentional movement of vegetative fragments
- ❖ Cormules can also be carried by water downstream
- ❖ Population expansion is by stolons and cormules

Control and Management:

Understanding the distribution:

Accurate distribution maps allow targeted control of infestations and provide evidence of where the program has and has not been effective. Knowledge of any nearby infestations, which may invade your area, is also useful. It is important to protect areas that are free of taro and remove small isolated clumps before they spread. Updating maps regularly provides good feedback to workers on the effectiveness of their efforts.

Physical Control:

Mechanical control/slashing does not control taro as regrowth from corms is rapid. Plants can be dug out. Ensure that all corms, corm segments, stolons and cormules are removed. Physical removal of plants is a very effective control measure. However, it produces an enormous amount of plant material that requires careful disposal.

Because of its growth and spread the entire taro infestation should be removed in one concentrated effort. After this any emerging plants should be pulled out when spotted.

All tubers **must** be removed from wet or damp areas or they will resprout. The tubers can be composted or rotted down. Be warned, the smell is rather foul.

Chemical control:

With larger infestations hand removal will not be practical and chemical control may be the only option.

❶ **Cut the leaf stalk** close to the corm and **wipe or paint** with a 50% glyphosate + metsulfuron (0.05g/L) mix.

❷ **Follow up four weeks** later by a carefully applied spray to any emerged healthy leaves (2% glyphosate + 0.05 g/L metsulfuron + 2ml/L Pulse).

This work should be carried out in **late summer**. In early summer, the copious sap oozing from the cut stems may push the herbicide away.

❸ **Careful follow up is necessary**, involving either spraying or physical removal of isolated plants that survive the initial treatment.

Herbicide Use in Bushland:

A minor off-label-use permit (No. PER4579) covers the control of some environmental weeds in non-crop areas in WA. Herbicide application must comply with all conditions of the permit which expires 30th September 2006. A copy may be obtained from the Western Australian Department of Agriculture.

For more information on herbicide use in bushland refer to *Bushland Weeds* (Brown & Brooks, 2002), pages 96-97.

Regeneration of the native plant community:

Work at Gingin Brook has shown that when infestations of taro are removed from the fringing vegetation of the Brook, the space is rapidly recolonised by native species. Some of these, such as the tassel sedge (*Carex fascicularis*) and the freshwater paperbark (*Melaleuca raphiophylla*) come up from seed while others such as the native fern (*Cyclosorus interruptus*) and slender knot weed (*Persicaria decipiens*), move into the site vegetatively. These are all fast growing plants that cover bare ground quickly. Native plants with these attributes are often common in wetland environments with high levels of natural disturbance.

As taro can totally displace the native understorey removal of large infestations may open up vast areas of bare ground. Regeneration of the native understorey following removal of large infestations may therefore require some assistance. Erosion of banks and rapid colonisation by other weeds are potentially serious problems. Careful planning and a long term commitment to site maintenance is required in these situations.

Before undertaking such a project you may like to give some thought to the following:

- ❖ When acquiring funding for your project be aware that it will take three to four years of consistent follow-up work to eradicate taro from a site
- ❖ Consider controlling other serious weeds before taro is removed
- ❖ It is necessary to carry out work on taro in summer when water levels are low and the plants are actively growing. Any works program needs to take this into account
- ❖ Consider putting back some elements of the native understorey as quickly as possible. Direct seed or spread vegetative material of some of the easily propagated native herbaceous perennials
- ❖ It is important that all propagation material is collected from native plant communities as close to your restoration site as possible