Best-practice Willow control – planning and methodologies

River Management & Willow Control Workshop – 26th March 2021

Starting point – what are we trying to manage?

Tools available to help build our knowledge base include:

1. Natural Values Atlas Reports

2. Biological surveys

3. Remote sensing cameras

4. Vegetation Condition Assessments

- These tools can help us to identify the ‘natural values’ present.

- Document the current condition state of the asset.

- Provide a starting point or baseline which can help us to monitor change over time.

Research the life cycle of your target weeds

- Is it an annual, biennial, perennial?
- When is it actively growing and when does it flower?
- How does it reproduce – seed, vegetative, bulb etc?
- How does it spread – wind, water, animals……..?
- Where does it prefer to grow?

Very dense infestation of Foxglove – Digitalis purpurea

Even a basic understanding of weed biology will help guide your decision making and management regime.

Define Management Objectives - What are you trying to achieve?

- Generally based on your personal values, ethics and world view.
- Can be 'trade offs' between social, economic and environmental values.
- May include statutory requirements e.g managing Declared weeds.

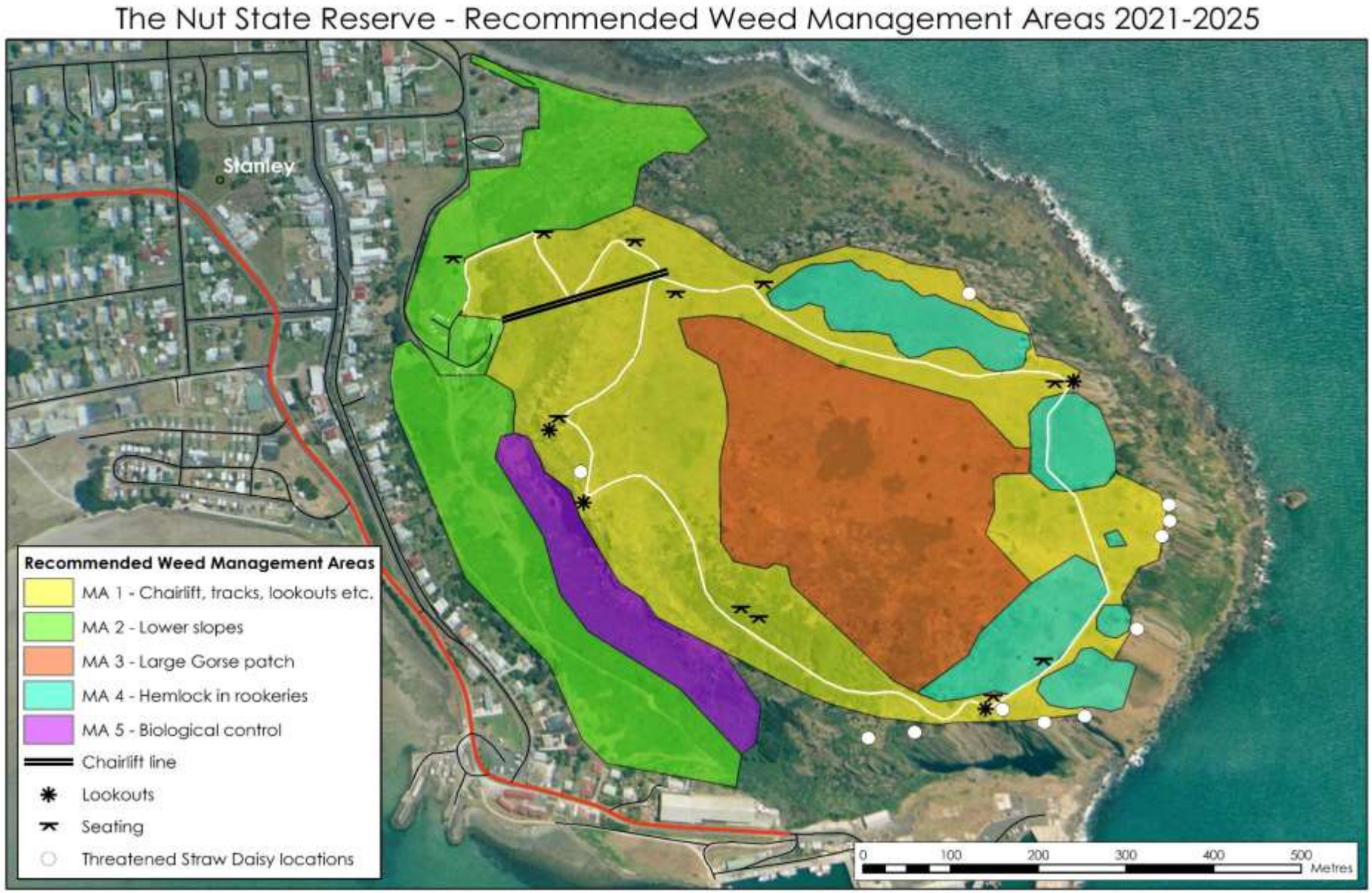
A broad goal: "*We aim to protect the waterway by controlling the declared & environmental weeds over the next 5 years*".

A specific target: "*Reduce the density of Crack Willow from 30% cover to <5% in area X between 2021 and 2026*".

Develop a plan - How to achieve your objectives

- Consider the **risks** posed to specific 'assets' – ecological, cultural, production, infrastructure.
- **Define** and **map** each Management Area. Can be based on quality of native veg, density of infestation, access, methodology…….
- List the required **actions,** with methodology, for each Management Area.
- **Stage the works** to factor in the **ongoing commitment** of resources – money, time, energy, motivation, discipline, patience.

Example of defined management areas – The Nut State Reserve WMP



Example of specific actions for MA1 – The Nut State Reserve WMP

Management Area 1 – Chairlift, tracks, lookouts, revegetation areas and straw daisy buffers

Total area : Approximately 20 hectares. **Weed density / cover:** Sparse 6-25% cover. Individual plants are well separated. Other plant species dominate and typically occur between the target species. Small clumps may occur.

Objective : Follow up control to manage ongoing weed regrowth and improve the aesthetics for visitors to the Nut, improve the native vegetation condition, and create a weed buffer zone around each of the endangered Straw Daisy populations.

Method : Spot spraying with knapsacks & chainsawing. **Timing :** The best results have been achieved when actively growing between Spring-Autumn.

Herbicides : Broadleaf selective for woody weeds (Grazon Extra) active ingredient *Triclopyr* and *Picloram*, or (Garlon) active ingredient *Triclopyr* or (Brushoff) active ingredient *Metsulfuron methyl*, with a surfactant and marker dye. For Thistes and Hemlock (MCPA 500) active ingredient *MCPA*, or (Lontrel Advance) active ingredient *Clopyralid*, with a surfactant and marker dye.

Table 1: Recommendations for Management Area 1 over the next 5 years:

Year	Description of activities	Contractor costs		PWS staff labour required
		Knapsack / chainsaw	Herbicide	
1	**Target Species:** African Boxthorn, Broom, Cape Ivy, Elderberry, Hemlock, Horehound, Gorse, Three Cornered Garlic, and Thistles.	180 Hrs. x $70/hr. = $12,600	$600	23 days x 1 person
2	**Target Species:** African Boxthorn, Broom, Cape Ivy, Elderberry, Hemlock, Horehound, Gorse, Three Cornered Garlic, and Thistles.	180 Hrs. x $70/hr. = $12,600	$600	23 days x 1 person
3	**Target Species:** African Boxthorn, Broom, Cape Ivy, Elderberry, Hemlock, Horehound, Gorse, Three Cornered Garlic, and Thistles.	180 Hrs. x $70/hr. = $12,600	$600	23 days x 1 person
4	**Target Species:** African Boxthorn, Broom, Cape Ivy, Elderberry, Hemlock, Horehound, Gorse, Three Cornered Garlic, and Thistles.	128 Hrs. x $70/hr. = $8,960	$400	16 days x 1 person
5	**Target Species:** African Boxthorn, Broom, Cape Ivy, Elderberry, Hemlock, Horehound, Gorse, Three Cornered Garlic, and Thistles.	128 Hrs. x $70/hr. = $8,960	$400	16 days x 1 person
TOTAL		**$55,720**	**$2,600**	**115 days**

Weed ID & management….where to go for help

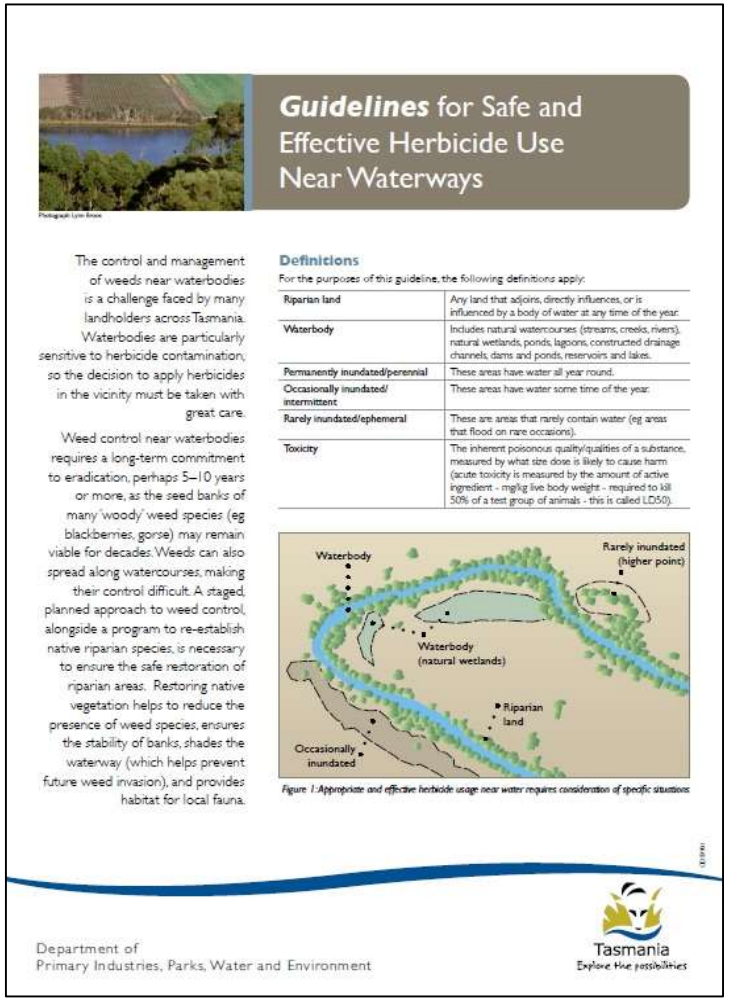
- Reference books and field guides

  - Tasmanian Weed Handbook (Hyde-Wyatt and Morris, 1975)

- Online herbariums e.g. Key to Tasmanian Vascular Plants
- Tasmanian Weeds Facebook page – click here.
- The DPIPWE Invasive Species Branch – Weeds website
- Professional service providers e.g. local nurseries & contractors

For an example of one of our detailed weed management plans – click here.

Essential reading before working on waterways



Guidelines for Safe and Effective Herbicide Use Near Waterways

The control and management of weeds near waterbodies is a challenge faced by many landholders across Tasmania. Waterbodies are particularly sensitive to herbicide contamination, so the decision to apply herbicides in the vicinity must be taken with great care.

Weed control near waterbodies requires a long-term commitment to eradication, perhaps 5–10 years or more, as the seed banks of many 'woody' weed species (eg blackberries, gorse) may remain viable for decades. Weeds can also spread along watercourses, making their control difficult. A staged, planned approach to weed control, alongside a program to re-establish native riparian species, is necessary to ensure the safe restoration of riparian areas. Restoring native vegetation helps to reduce the presence of weed species, ensures the stability of banks, shades the waterway (which helps prevent future weed invasion), and provides habitat for local fauna.

Definitions

For the purposes of this guideline, the following definitions apply:

Riparian land	Any land that adjoins, directly influences, or is influenced by a body of water at any time of the year.
Waterbody	Includes natural watercourses (streams, creeks, rivers), natural wetlands, ponds, lagoons, constructed drainage channels, dams and ponds, reservoirs and lakes.
Permanently inundated/perennial	These areas have water all year round.
Occasionally inundated/ intermittent	These areas have water some time of the year.
Rarely inundated/ephemeral	These are areas that rarely contain water (eg areas that flood on rare occasions).
Toxicity	The inherent poisonous quality/qualities of a substance, measured by what size dose is likely to cause harm (acute toxicity is measured by the amount of active ingredient - mg/kg live body weight - required to kill 50% of a test group of animals - this is called LD50).

Figure 1: Appropriate and effective herbicide usage near water requires consideration of specific situations

Department of Primary Industries, Parks, Water and Environment

Tasmania Explore the possibilities

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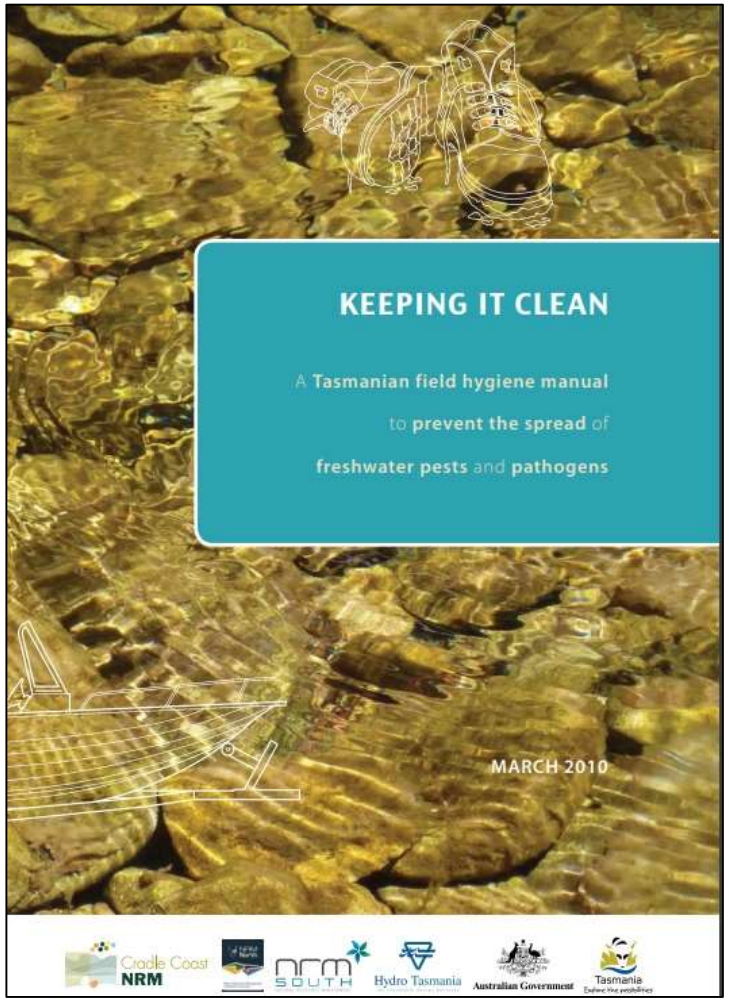

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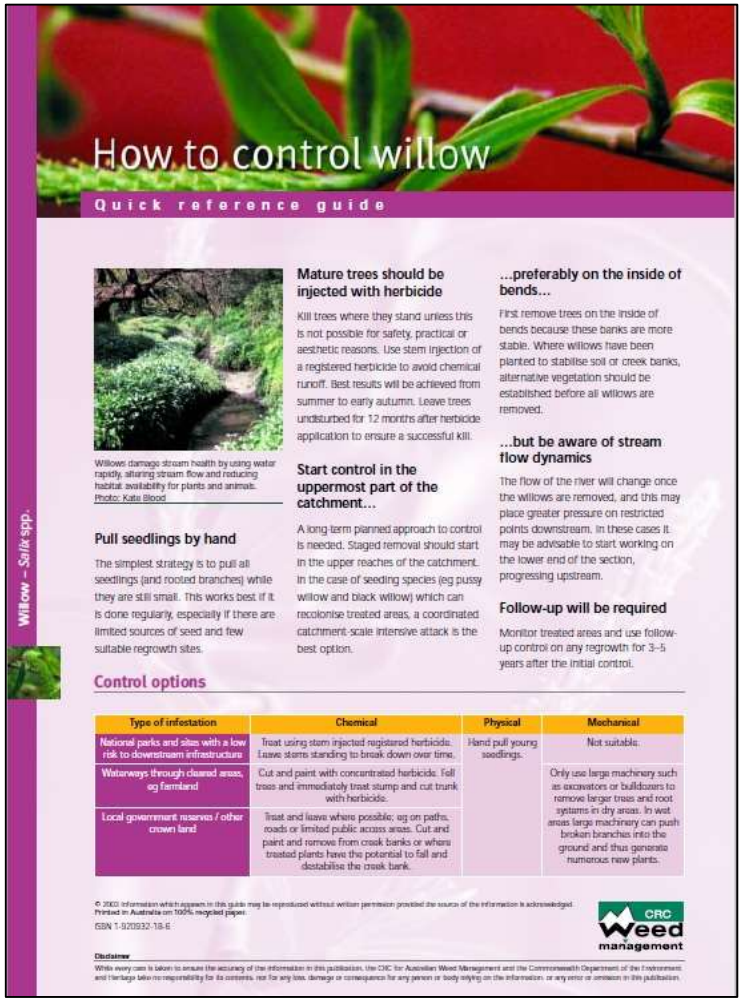
Best practice management guide - Willows



[Click here to download the Best practice management guide for Willows]

Example of Willow control using hand pull method

Leven River, North Motton, TAS.

Example of Willow control using drill & fill method

Paris Creek, Adelaide Hills, SA.

Example of Willow control using ringbarking method

Murray River, Swan Reach, SA.

Example of Willow control using cut and paint – leaving roots insitu

Cooee Creek, Burnie, TAS.

Example of Willow control using machinery – complete removal

Duck River, Smithton, TAS.

Example of Willow control using machinery – complete removal

Murray River, Wellington, SA.

Weed management - Take home messages

- Choose the appropriate method/s for your specific situation - every site has its own unique challenges to manage to achieve the best possible outcome.
- Plan the project with clear objectives.
- Weeds like to colonise bare ground, especially after disturbance. Minimise bare ground and be prepared to take action after disturbance.
- Prevention is the most cost-effective form of weed management.
- Follow up monitoring & maintenance is vital & ongoing.