

Willow Sawfly



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Introduction

Adapting willow management strategies to deal with spread of the willow sawfly

- Victoria State government agencies
- \$500,000 over 4 financial years
- 3 seasons
- Started April 2006

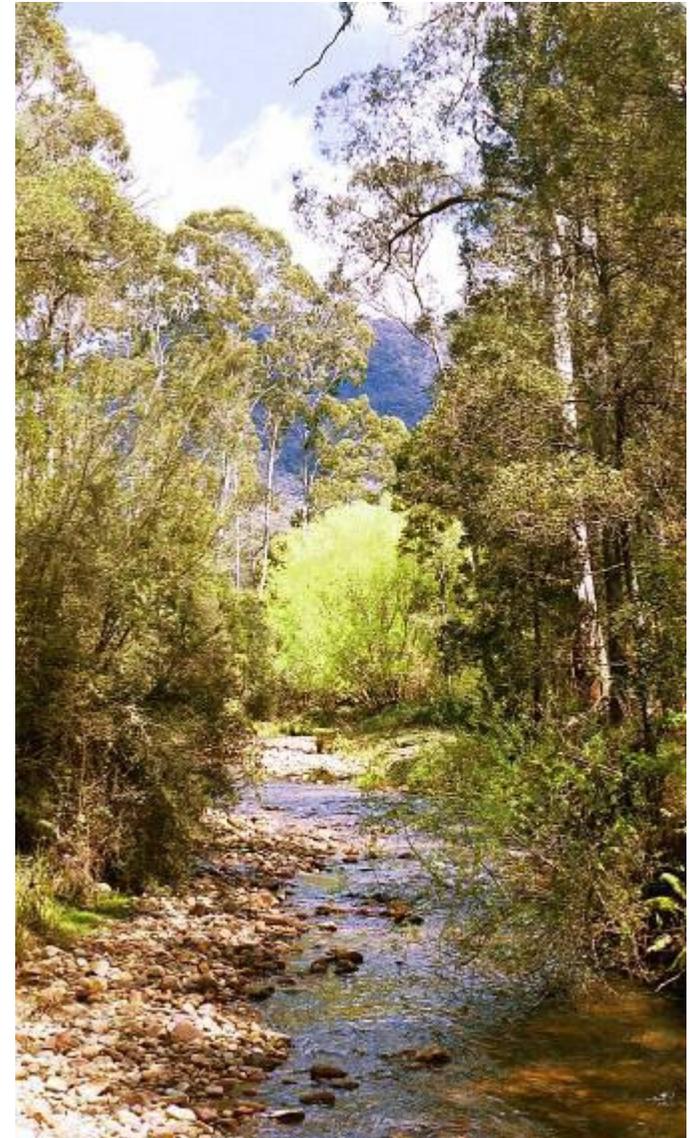
Impact of willow sawfly on willows and riparian vegetation

- Rate of tree death



Acknowledgements

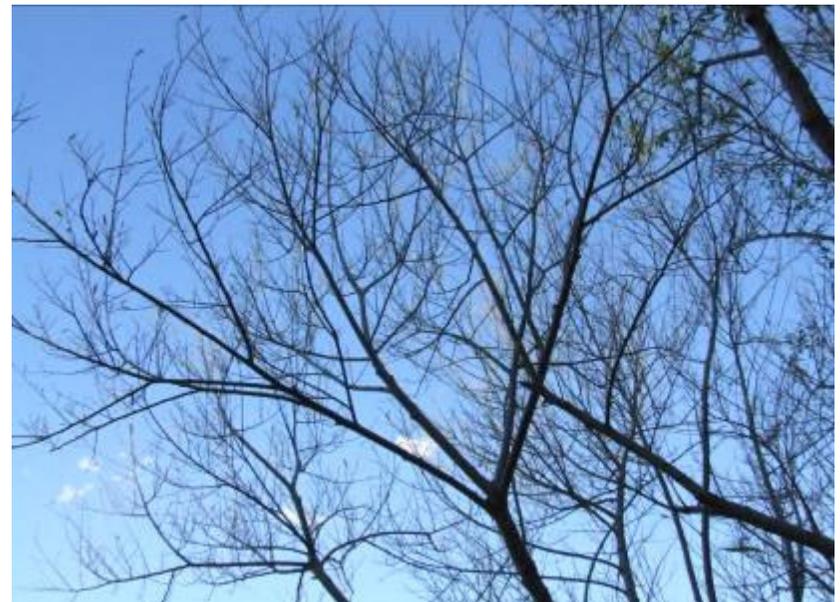
- **Department of Sustainability and Environment, Victoria**
- **Melbourne Water**
- **Parks Victoria**
- **North East CMA**
- **North Central CMA**
- **Goulburn Broken CMA**
- **West Gippsland CMA**
- **East Gippsland CMA**



Introduction

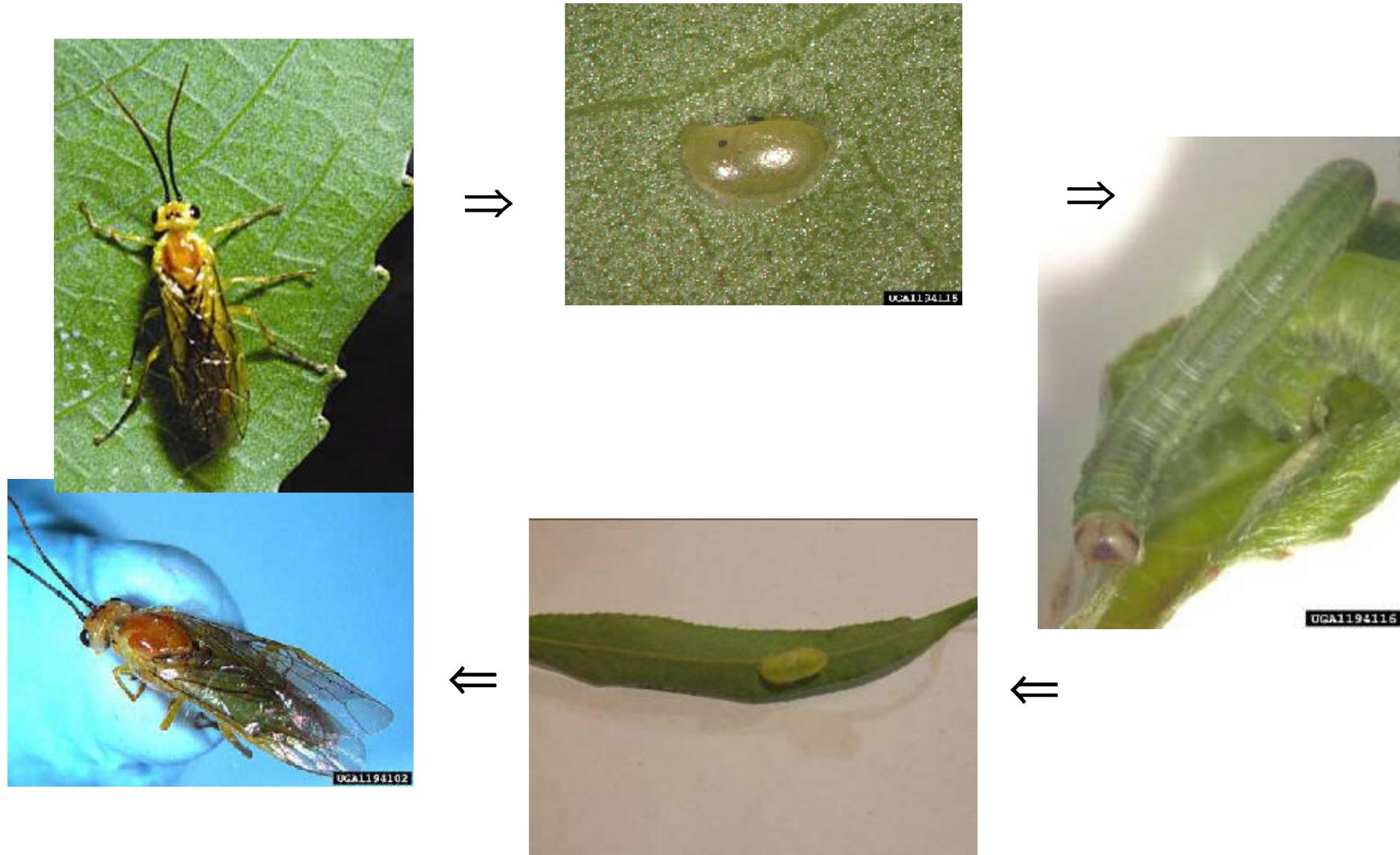
Objectives

- **Monitor spread of willow sawfly across Victoria**
- **Assess impact of willow sawfly on willows**
- **Determine consequences for riparian vegetation**
- **Train public and private land managers**
- **Amend willow & riparian management guidelines**



Life Cycle of *Nematus oligospilus*

Egg \Rightarrow Larva \Rightarrow Pupa \Rightarrow Adult

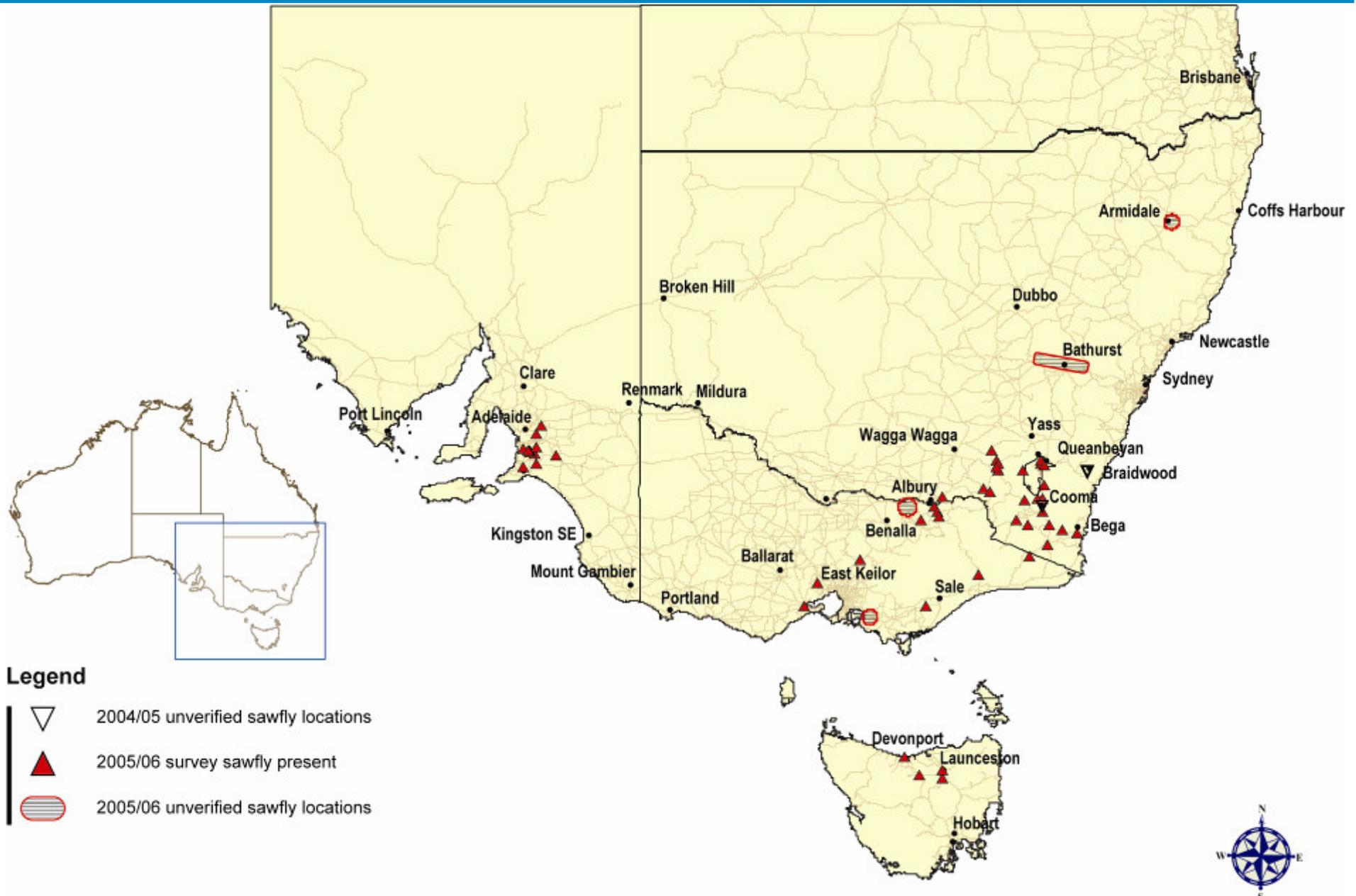


Reasons for Concern

- 4 week life cycle in good conditions (in lab)
- Unclear what environmental or biotic factors affect population levels
- Repeat defoliations can kill trees
- Crack, black, golden and hybrids susceptible
- Weepers less so
- Shrubs willows?



Willow Sawfly Reports by April 2006



Assessing Willow Sawfly Impacts

Field Program

- 4 sites in north east Vic, 4 in West Gippsland
- 6 weekly intervals:
 - Defoliation
 - Willow sawfly population
 - Leaf area
 - Tree canopy density
 - Understorey vegetation
 - Light levels
- Temperature loggers
- 3 weekly - assess defoliation and sawfly populations
- Monitor other taxa, sites





Results

Defoliation

- **Only Kiewa Valley site**
- **First defoliation observed in Nov**
- **Since, no discrete defoliation/refoliation events**

Distribution

- **Found willow sawfly at several new sites**
- **Limited popn increases over season**
- **Some defoliation has been reported**



Results

Activity

- Most active prior to Christmas?
- Few willow sawfly currently observable

Taxa

- Crack, golden, black, weeping, *S. matsudana* & NZ hybrids, Chilean pencil willow
- Purple osier
- Grey sallow!



Implications for Management

Resource Issues

- If willow sawfly kills trees, shift resources to other taxa or areas where lower impact
- Loss of bank stability and ability to revegetate rapidly enough
- Willow control if sawfly affected

Debris

- OH&S issue
- Infrastructure



Gaps – Future Work

- **Effect on tree growth (stems are included, roots and seeding are not)**
- **Factors that influence development of population**
- **Time lag between initial willow sawfly arrival and eventual tree death**
- **Relationship between willow sawfly populations and tree deaths**
- **Effects on ecosystem components**

... PhD

PhD – Valerie Caron

1. Origin and Spread

- How closely related are different populations?

2. Host preference and adaptation

3 Advantages of males?

4. Ecological Impacts

- Parasitoids and/or predators
- Biodiversity

