



Paropsis research update

Tara Murray

- Major eucalypt pest arrived 1916
- *Eucalyptus nitens*
- 1987 control with *Enoggera nassaui*
- 2002 additional control by *Neopolycystus insectifurax*



- Hyperparasitoid *Baeoanusia albifunicle* discovered
- Control by *Enoggera* disrupted?
- Will *Neopolycystus* compensate?
- Studying biology & overlap in distribution



- High rate of hyperparasitism in lab and field
- Equally long life, high fecundity & high female sex ratio relative to *Enoggera*
- Obligate hyperparasitoid
- *Neopolycystus* is not attacked





- *Enoggera* still **present** throughout the country
 - ▶ Gap in survey
 - ▶ No data on abundance so can't really say if this presence is still sufficient to effectively control *Paropsis*



- Unclear what went on in the field this year
 - ▶ BoP - 1st generation not as bad as usual?
 - 2nd generation worse?
 - ▶ Northland vs. Canterbury
- Confounded by spraying?



- Unlikely to have reached equilibrium
- Predictions (North Island)
 - ▶ *Neopolycystus* beginning to dominate over *Enoggera* due to hyperparasitoid?
 - ▶ Hyperparasitoid reducing number of *Enoggera* going into winter?
 - ▶ Increase of *Paropsis* in spring
 - ▶ Maybe a lower peak in late summer with *Neopolycystus*
 - ▶ *Enoggera* never was great in spring



- Predictions
 - ▶ Not sure South Island will change much
 - ▶ Parasitoids not suited to cooler weather
 - ▶ Historical patterns not clear
- Would like to consider monitoring under next FRST programme





Buddleia biological control update

Michelle Watson

The buddleia leaf weevil
Cleopus japonicus



- **Buddleia (*Buddleia davidii*)**
 - ▶ Woody shrub from China
 - ▶ Weed of plantation forests and natural areas
- **Buddleia leaf weevil (*Cleopus japonicus*)**
 - ▶ Leaf feeding weevil from China
 - ▶ Imported into quarantine '93, ERMA approval 2005





- Aims: Establish weevil in NZ & study effect of climate on weevils
- 5 sites in commercial forests in North Is.

- Whakarewarewa
- Kinleith
- Lake Taupo
- Esk
- Rawhiti





- Weevil releases Oct 2006 - Jan 2007
- Total = 1000 weevils released at each site
- Central release point





Sites closely monitored:

- ▶ Establishment
- ▶ Dispersal
- ▶ Feeding damage



What have we found?



- Weevils established at all sites
- Feeding damage found over 100m from release
- At least 2 generations a season
- Significant defoliation to release plants in first season.....



October 2006



April 2007





- Finding damage and weevils (hide)
- Determining 'who-dun-it'
- Big buddleia
- Other weeds



What does this mean?

will this solve our buddleia woes ?



- Biocontrol agents typically take many years to build to damaging numbers
- Sustained feeding to plants needed to reduce growth



- Weevil likely to be most beneficial in newly planted stands with small buddleia



- Continue to monitor release sites
- Extend experimental release sites into South Is.
- This season weevils were made available to forestry companies, councils, DoC and other weed managers
- A complimentary agent?



A stem-boring weevil – *Mecysolobus erro*



- This work was funded by FRST
- The Conservation Company - monitoring Esk Forest site
- Forestry companies with release sites (and those who assisted with searching for one):
 - ▶ Rayonier - Esk Forest
 - ▶ Hancock Forest Management - Kinleith Forest
 - ▶ Timberlands - Whakarewarewa Forest
 - ▶ Lake Taupo Forest Trust & NZ Forest Managers - Lake Taupo Forest
 - ▶ Tempest and Associates Forestry - Rawhiti Forest Farm
- The Scion Entomology group:
 - ▶ Belinda for rearing thousands of weevils
 - ▶ John Bain, Dave Hayes, Andrea Sharp, Lisa Berndt, Pam Taylor, Katrin Walbert, Judy Gardner, Anneke Hermans and the countless other summer students...