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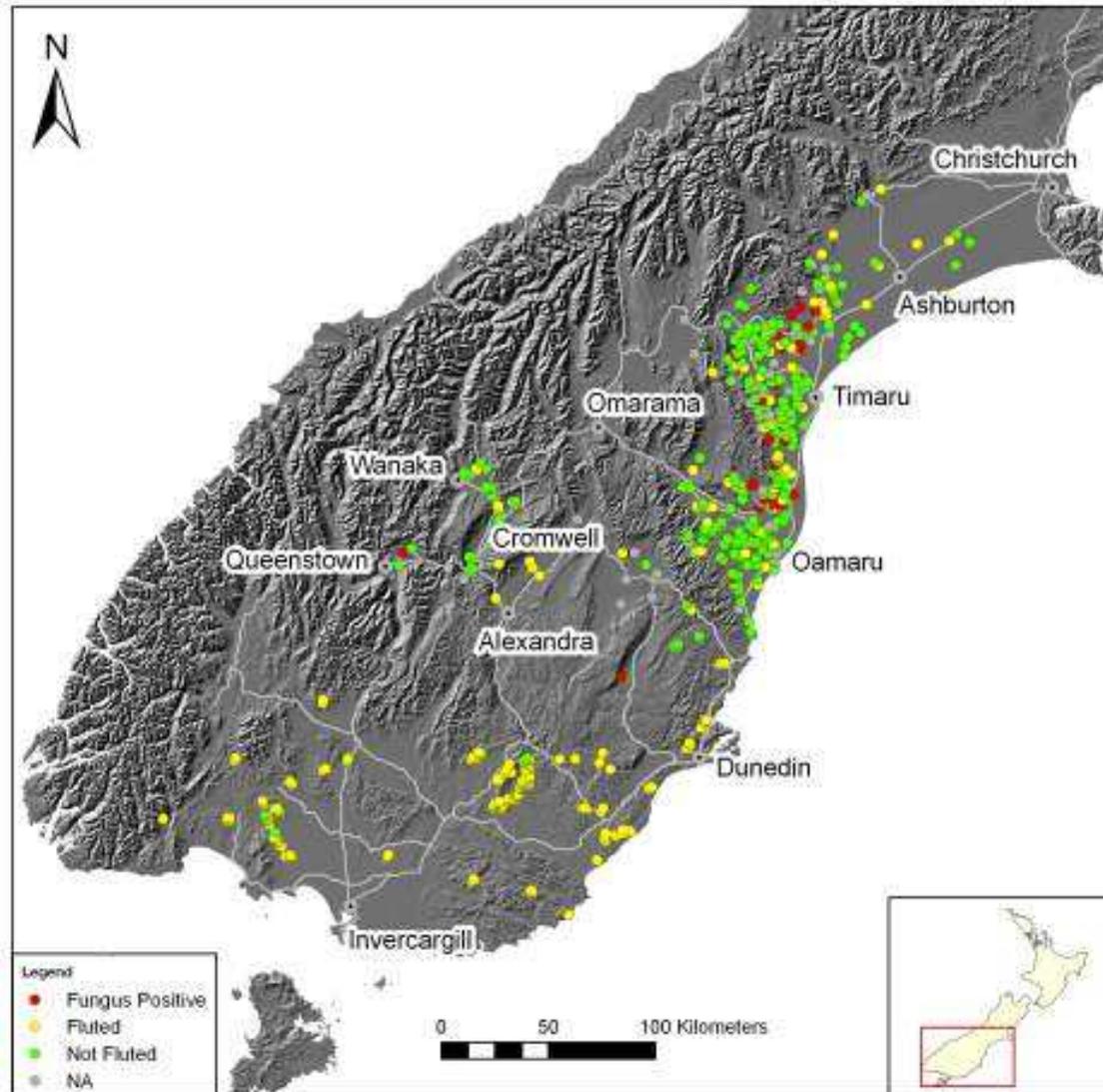
## Ensis Forest Biosecurity and Protection

# *Nectria* in pruned and unpruned trees

# *Nectria fuckeliana*

- Widely distributed throughout Otago/Southland
- Believed to be the causal agent of Flute Canker

## Nectria disease distribution



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# *Nectria fuckeliana*



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# Hypothesis

- Pruning wounds provide infection courts for *Nectria fuckeliana*, leading to initiation of the flute canker disease.
- Test: Use pathogen DNA to compare the presence of *Nectria* in pruned and unpruned trees.

# Trial design

- 180 trees total, 90 pruned, 90 unpruned
- Four different stands.
- Three forests.

# Stand Histories

- Stand one: Planted 2002, first pruned October 2005.
- Stand two: Planted 2000, first pruned September 2005.
- Stand three: Planted 1998, first pruned August 2004.
- Stand four: Planted 1997, first pruned January 2004, second pruning March 2005.



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# Stand one



Planted 2002, first pruned October 2005



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# Taking cores



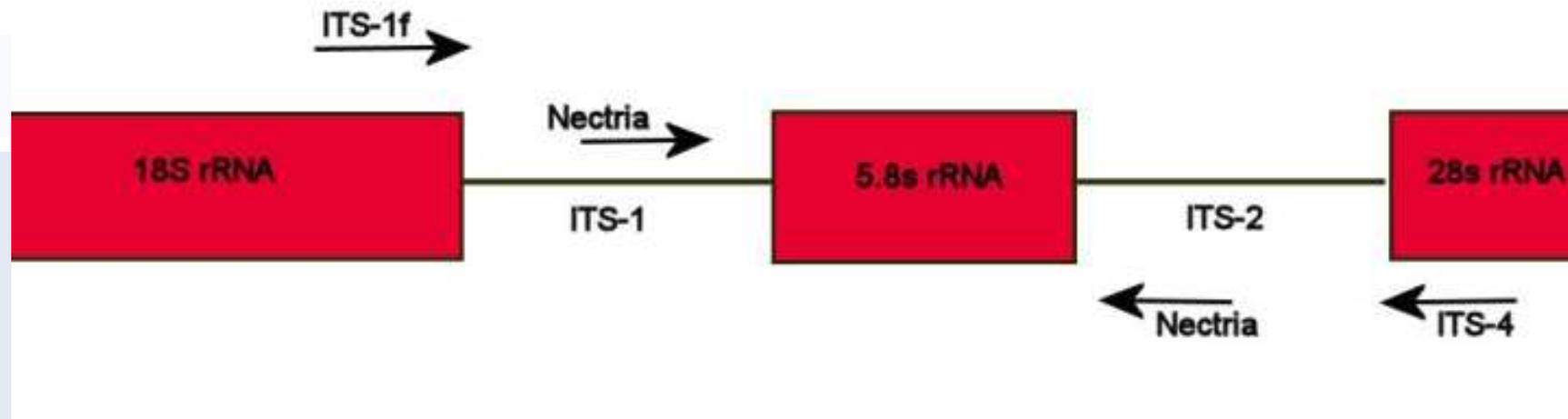
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# Protocol

- Grind core in Liquid Nitrogen
- Extract DNA from powder using kit
- ITS PCR reaction
- *Nectria*-specific PCR reaction

# The PCR Protocol



- Nested protocol more sensitive

# DNA Results 2006

Pruning Status	Nectria present	Nectria absent
Pruned	19	68
Un-Pruned	22	64

- Chi-square results: no significant difference
- **Conclusion: pruning wound not necessary for infection**



# 2007 Update

- All trees resampled (19 – 26 Feb).
- Samples removed from all increment cores and surface sterilised and plated.
- DNA extracted from all samples. PCR reactions carried out – too be repeated

# 2007 field assessment

- All trees were visually inspected.
- Perithecia observed on one dead tree.
- Pictures that follow are all of trees that tested DNA positive in 2006.

# 2007 field assessment

- Tree 116
- Pruned
- Fluted
- Culture positive



# 2007 field assessment

- Tree 131
- Not pruned
- Fluted
- Culture positive



# Results 2007

Pruning Status	Nectria present	Nectria absent
Pruned	17 (6)	73
Un-Pruned	22 (5)	68

- 11 of the sterilised samples identified as *Nectria fuckeliana*
- Chi-square results: no significant difference



# DNA Results 2007

- 7 of the 11 positive *Nectria* cultures were confirmed as *Nectria* through PCR
- 49% of the 2007 positive samples were positive in 2006
- 51% of the 2007 positive samples were negative in 2006
- 54% of the positive 2006 samples came back negative in 2007

# To do

- DNA testing currently in progress.
- *Nectria* positive unpruned trees to be cut down and examined 2008
- Trees have been retagged for future observation if required.

# Conclusions

- Unexpected results
- Nectria found in both pruned and unpruned trees
- Implications for forest owners
- Further work needed – different method of infection?

# Acknowledgements

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