



STAFF REPORT

TO: Environment & Planning Committee

FROM: Andrew Burton, Resource Scientist

REFERENCE: L213

SUBJECT: **WILLOW SAWFLY MONITORING PROGRAMME – REPORT EP05/06/06** – Report Prepared for 1 June 2005 meeting

1. REPORT FOR THE 2004/2005 SUMMER MONITORING PERIOD

The willow sawfly (*Nematus oligospilus*) was first identified in the Tasman Region in early 2002. It was first discovered in New Zealand, at Auckland, in February 1997. It is widely distributed through the Northern Hemisphere. In the Southern Hemisphere the sawfly was found for the first time in southern Africa in 1993/1994. Overseas, the sawfly has been known to heavily defoliate and even kill willow trees. Even for the brief period it has been in New Zealand the same potential has been demonstrated. Willows are used throughout this region for riverbank stability, stream and gully control, to a limited extent for hill-slope stability, and also horticultural shelterbelts. In an effort to know how far it has spread in our region and also its potential effect on our willows a monitoring programme was developed. Monitoring was instigated in the summer of 2002/2003, repeated in 2003/2004 and again this year 2004/2005

This summer monitoring of the willow sawfly was carried out monthly in December 2004, February, March and April 2005. The monitoring procedures used are those described in the report “Willow Sawfly Monitoring Programme.”

2. RESULTS

Over the complete monitoring period, the sawfly had been identified at nine of the 15 sites monitored throughout the region. Those sites where the sawfly was not identified were; the Wai iti River at Wakefield, Hope River at Glenhope, Buller River at Murchison, Takaka River at Lindsays Bridge, Aorere River at Ferntown, Aorere River at Bainham, .

At all of sites where the sawfly has been observed an infestation rating of not more than “slight” was recorded. No sites were observed to have an infestation rating of “moderate”, “severe” or “extreme”. (Infestation rating descriptions are outlined in the appendix).

In November 2004 only two sites were observed to have any degree of infestation. In February 2005 the number of infested sites remained at two. In March 2005 the number of infested sites had increased to four and in April 2005, seven sites were infested.

Four different willow species, in total, are present at the monitoring sites. They are *S. fragilis* (crack), *S. Matsudana*, *S. Matsudana x alba* and *S. purpurea* (booth). The sawfly was found on all species. Some sites contained more than one willow species. At some of these sites the sawfly was found on only one of the species but not the other.

Willow Sawfly Monitoring Programme Sites

Tasman District

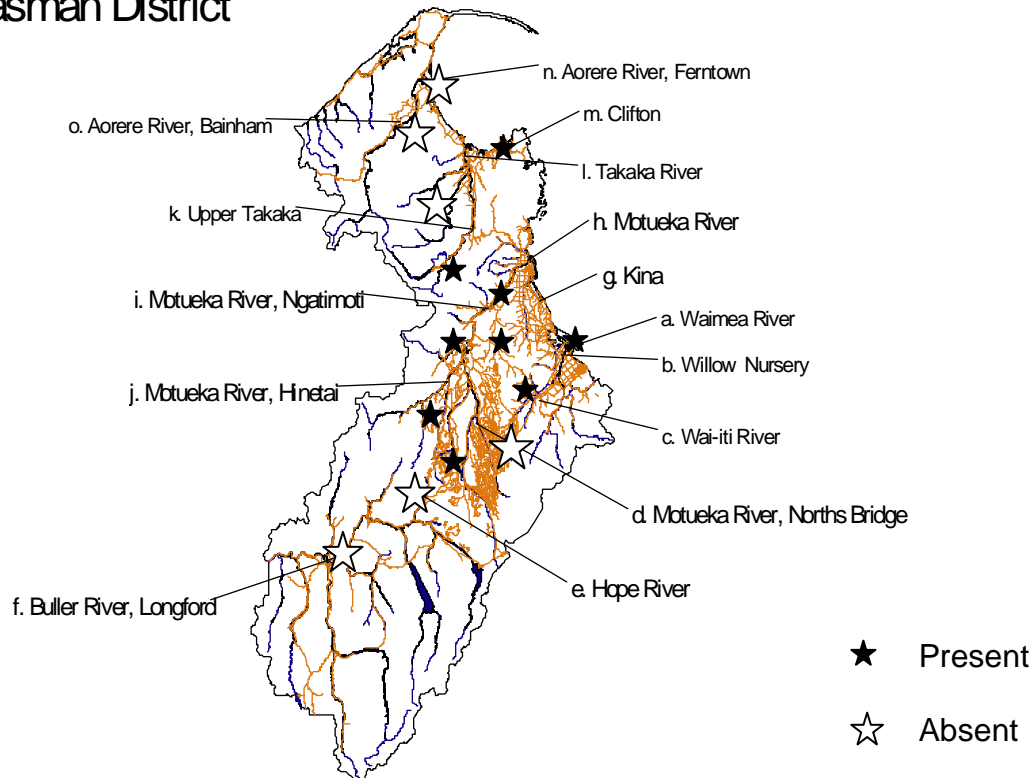


Figure 1. Sites where the sawfly was present and absent in 2004/2005

3. COMPARISON WITH PREVIOUS YEARS RESULTS: (2002/2003) (2003/2004)

The number of sites where the sawfly was recorded has dropped from 12 sites in 2002/2003 to nine sites in 2003/2004 and 2004/2005. No new infested sites were recorded this year.

Three sites that were infested in 2002/2003, being the Wai iti River at Wakefield, the Takaka River at Lindsay's Bridge and the Aorere River at the Collingwood–Puponga Main Road Bridge were not infested this summer.

Comparing the monthly results between the three summers, in 2002/2003 only three sites were infested in February and this rose to ten sites recorded in both March and April. In 2003/2004 six sites (double that of the same month the previous summer) were infested in February, this remaining the same in March and declining to four infested sites in April. (None of the sites infested in February 2002/2003 were the same as the sites infested in February 2003/2004). As already described, this summer's results indicate a similar trend to 2002/2003 with a gradual increase throughout the year with the highest numbers recorded in April.

One “moderate” infestation rating was recorded in 2002/2003. At the same site this summer the sawfly was still present at that site but only at a “slight” rating.

Of the willow species monitored, *Salix matsudana* was not infested in 2002/2003. *Salix purpurea* (booth) was not infested in 2003/2004 and all species were infested in 2004/2005.

4. DISCUSSION

A gradual increase in the number of infested sites does appear to occur as the summer progresses. The 2003/2004 results, which differ from that trend, could well have been influenced by the atypical weather experienced throughout that mid to late summer period. February 2004 was the Tasman District’s wettest and coldest February on record. It is recognized that weather conditions strongly influence willow sawfly population establishment with settled warm weather conditions being conducive to successful populations.

The monitoring results do also indicate that the willow sawfly is wide spread throughout the district. Only at the Buller, Hope River and Bainham sites has the sawfly not been found. This could be due to either the sawfly not yet spreading to these inland areas or the climatic conditions in these areas not being conducive to its survival. Looking at what is happening nation wide neither reason appears to be strong.

For this summer the infestation rating at sites where the sawfly was identified was “slight”. The “slight” rating is classified as “occasional larvae found, no evidence from a general observation of defoliation”. This indicates that the active larvae were present in low numbers and the probable impact on the health of the infested trees was negligible. Indeed all trees that were assessed appeared to be healthy.

The willow species monitored at the sites are all known to be the host of the sawfly. The reason that there appears to be a slight preference changes of the sawfly between willow species between summers is unknown. Although the number of willow species in the monitoring programme is low it does represent the vast majority of willow species used along our waterways for protection work, hence the information gathered should be adequate for council’s purposes.

Over the past two years HortResearch has facilitated a nation wide monitoring programme to determine the spread of willow sawfly throughout New Zealand. Sites are being monitored by Regional Council staff on a regular basis, in order to try and understand more about the factors that are influencing the distribution and severity of willow sawfly attack. These results are sent back to HortResearch scientists for further analysis and interpretation.

Results collected to date show that the sawfly has now spread as far south as Southland. Infestation levels throughout the country vary considerably. Little in the way of trends are showing up. In Auckland, Waikato and the Bay of Plenty, where the sawfly first became well established, the sawfly is still widespread but infestation levels have remained low and the "population explosions" they experienced in previous years that resulted in the death of many willows is not evident. Hawke's Bay, on the other hand, is still experiencing severe infestations in some parts of the district. Again, some areas of willows planted for river control were completely defoliated by January this summer. Hawke's Bay Regional Council staff have observed that some willows that have been affected in previous years have died and that those that do survive are weak. Regrowth on these weak trees generally occurs along the main trunk but many of the tree limbs die off. It is thought that secondary infection by silver leaf and other diseases is contributing to this die back. Hawke's Bay Regional Council staff have been trialing insecticide use to control the sawfly with some success.

Over the last two years Hortresearch has also been involved with research work into the willow sawfly. As well as investigating lifecycle details it has been active in assessing its host range and bringing in new willow species and varieties that are likely to be resistant. The investigations carried out by Hortresearch are done in cooperation with the Willow and Poplar Research Collective and the Rivers Managers' Group. Both these groups are made up of representatives from Regional and District Councils. The main source of funding is through the Foundation for Research, Science and Technology (FRST) under the Public Good Science Fund. However no funding for the project and other related poplar and willow work was approved in the latest round of funding. At present other means of financing the work is being investigated. Until such time as funding becomes available all work currently being carried out on the willow sawfly and into alternative exotic and native species has been scaled back.

Further monitoring is still required to assess the effect the sawfly will have on willows in the region. The scale of monitoring can be reduced from previous years as we have already established what the distribution of the sawfly is in the region and can predict that the spread to areas not already affected is inevitable. The severity of infestation is still important information to have in order to assess the effect on the health of willows and their ability to maintain the function we demand of them.

It is recommended that monitoring be carried out in the 2005/2006 summer at ten sites throughout the region and that the monitoring be carried out in the months of November January and April. Effectively this halves the funding required to carry out the programme. The estimated cost of the programme for 2005/2006 is \$2,500.

5. RECOMMENDATIONS

That Council receive this report and endorses the requirements for further monitoring for the 2005/6 Summer.

Andrew Burton
Resource Scientist (Land)

Infestation Assessment: (assessment of larvae only)

“none”: no sign of any larvae on leaves

“slight” occasional larvae found, no evidence from a general observation of defoliation.

“moderate”: from a general observation, some defoliation is evident. (generally defoliation starts on lower branches and works its way up.)

“heavy”: defoliation is apparent over the whole tree

“extreme” little if any leaf is left on the tree.

(Note: account should be taken of other possible causes of defoliation such as drought and opossums)