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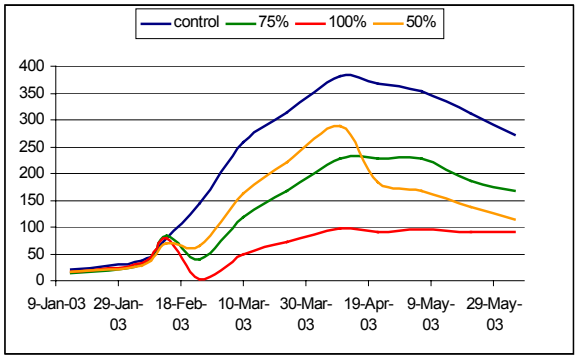
- **BUDDLEIA BIOCONTROL? – MODELING ITS POTENTIAL VALUE**

Buddleia (*Buddleja davidii*) is an attractive flowering shrub from central China grown as a perennial garden ornamental in many countries. However, it produces wind-dispersed seed in large quantities, and in the North Island has become widely naturalised as a weed of open and disturbed habitats. It affects native ecosystems in places such as stream beds and land slips, and in pine plantations must be controlled with herbicide on moist fertile sites for release of the young trees during the establishment phase. Research is currently underway to provide a safe inexpensive alternative by introducing a biological control agent to repress buddleia. *Cleopus japonicus*, a defoliating weevil from China, has been identified as a promising candidate, since grazing by adults and larvae results in leaf mortality.

The success of *Cleopus japonicus* as a biocontrol agent will depend on its feeding behaviour, its capacity for population increase and dispersal, and the manner in which its life cycle interrelates with the seasonal development of its host plant. Staff at Forest Research are therefore constructing a computer model designed to predict the likely future for buddleia if *C. japonicus* is brought into New Zealand. Colonies of the insect are being studied in strict quarantine at the Forest Research containment facility in Rotorua to provide data on the life cycle, host specificity, and feeding activity under controlled conditions. It has already been determined that with two or three generations developing each season, and as long as *C. japonicus* is able to survive during the winter, it will probably take several years after release before the population increases to abundant levels. Some of the studies are being undertaken to quantify the effect of insect numbers. For instance, in one experiment, 20 larvae on each of a number of small buddleia plants were sufficient to cause a reduction of at least 40% of the total photosynthetic area. However, the effect of browsing may not become significant until mid-summer, so the spring flush could survive each season with little damage. It may therefore be necessary to introduce a second insect targeted towards a different part of the plant, to ensure that the vigour and abundance of buddleia are reduced to an acceptable level using two agents in combination. One possibility is the long leg weevil (*Mecysolobus erro*) which attacks buddleia shoot tips leading to stunted growth.



Mean leaf area on a buddleia branch during one season after removing given percentages of foliage in February (and again in April for the 50% treatment). Benjamin Benharrosh.

It has been determined that the selected biocontrol organism must reduce buddleia height growth by at least 50% if it is to promote increased early growth of *Pinus radiata* significantly. In order to provide host data for the model, field plots of buddleia have been established to determine the effects of simulated insect feeding. Quantities of foliage were removed manually at different times during the growth season (December-April), and the plants were monitored regularly for height, crown width, ground level stem diameter, and leaf area. Initial results showed that severe defoliation does reduce weed growth, particularly above ground level, but that leaf browsing damage must continue on after February if there is to be a sustained impact on the host.

It is essential to ensure that feeding by this insect is confined to the target weed, and yet is substantial enough to provide effective control. The information obtained from this work will form part of an application for the release of *C. japonicus* to be submitted to the Environmental Risk Management Authority (ERMA).

(*Editor, based on the work of Nod Kay, Toni Withers, Eckehard Brockerhoff, Brian Richardson, Benjamin Benharrosh, Jerzy Zabkiewicz, Mark Kimberley, Stefan Gous, Bill Faulds, Belinda Gresham, Diane Jones and Judy Gardner, Forest Research and X. Zhang, W. Zhou. and Y. Xi, Nanjing Agricultural University, China*).

- **EXOTIC LONGHORN BEETLES FOUND AT TAURANGA**

On Tuesday 15 July 2003, a live adult male citrus longhorn beetle (*Anoplophora chinensis* form *malasiaca*) was found by a staff member on a concrete slab outside a warehouse in Tauranga. The specimen was collected on the following day by David Moore (Environment Bay of Plenty) and delivered on 17 July to Roger Crabtree (Forest Research), who immediately notified the Ministry of Agriculture and Forestry (MAF). On 18 July a site investigation was conducted by an Incursion Investigator from the MAF National Plant Pest Reference Laboratory (NPPRL) accompanied by a MAF Quarantine Service officer. This was followed by a second visit on 24 July.

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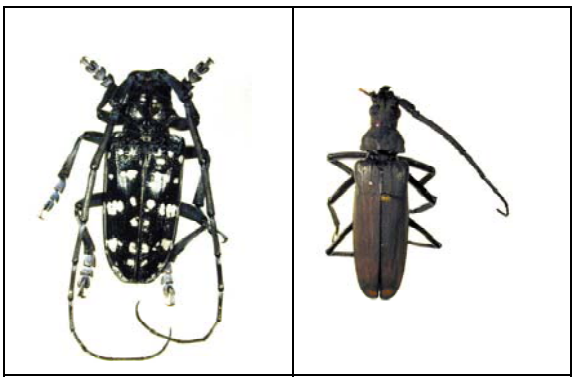

***Anoplophora chinensis* form *malasiaca* (left) and *Megopis* sp.**

During the examination a range of exotic organisms was collected from five wooden reels of wire rope from China, which had been present on the site since November 2002. These included a cast larval skin of the citrus longhorn beetle, an adult and larvae of the thin-winged longhorn beetle (*Megopis sinica*), a number of darkling beetles (*Plesiophthalmus* sp.), and various live fungi. Longhorn beetle frass and workings were present in all five reels, the damage on two of them being recent. Three exit holes were found on one reel, two in a section of wood that yielded two *Megopis* sp. larvae, and the third in another panel where the *A. chinensis* cast larval skin was found. Similar damage with no exit holes was found in three more wooden reels from the same consignment, two in Auckland, and one in Nelson, and two other reels are being traced. All reels found to date have been fumigated or incinerated. The discovery of these insects is of concern, since the longhorn beetles in particular have the potential to attack living trees. Inquiries have revealed that the wooden reels were not treated at the border because there was no indication of a need for biosecurity clearance, since they had not been declared in the importing manifest. This is being followed up. (*Mark Bullians and Alan Flynn, MAF*)

- **HEALTH AND LONG LIFE - A FOREST RISK?**

The Australian Quarantine and Inspection Service (AQIS) recently reported that they had intercepted over 1500 items of unsolicited junk mail containing sachets of *Ganoderma lucidum*. The fungal material was raw and unprocessed, and so potentially still capable of growing. *Ganoderma lucidum* is not found in Australia[1] or New Zealand and as the cause of a significant butt and root rot of hardwoods it constitutes an unwanted pest in the region.

Processed ling zhi medicinal gift pack, but not all such products are equally biosecure (Bryce Kendrick, The Fifth Kingdom; http://www.mycolog.com/fifthtoc.html).

The fungus, known medicinally as *ling zhi* or 'the sacred mushroom of immortality', is being distributed by a European-based company, Friedrich Mueller International House of Nature from a number of addresses in Germany, Austria and Switzerland. The accompanying documentation describes claims for *G. lucidum* that the product will improve circulation, reduce cholesterol, lower blood pressure, boost the immune system, destroy tumours, and help in losing or gaining weight as required.

All mail entering New Zealand is screened for items of biosecurity concern. However, the quantity of mail entering means that there is always a risk that something might slip through. As New Zealand is a potential target for a postal marketing campaign of this type there is a need for vigilance. If items like the medicinal *G. lucidum* arrive unsolicited in the mail they should be reported to MAF immediately. (*Geoff Ridley, Forest Research*)

[1]Related species do occur in Australia.

- **NEW RECORDS**

The following records reported by the Forest Health Reference Laboratory (*Forest Research*) result from a general surveillance programme comprising public enquires, and small block and risk site surveys, funded by the Ministry of Agriculture and Forestry. Members of the public are encouraged to submit to this laboratory any samples of pests or pest damage on trees or shrubs that they suspect might be new to New Zealand. This is a free service funded by Ministry of Agriculture and Forestry for the detection of new pest introductions.

In the June issue of FH News there was a new host record of *Lindingaspis rossi* (Diaspididae) on *Leptospermum laevigatum*. The Bioregion was given as Auckland; this should be amended to Nelson.

New host record for New Zealand – Fungus: *Botryosphaeria obtusa*; **Bioregion:** Auckland; **Host:** *Quercus ilex*; **Coll:** C Inglis, 04/06/2003; **Ident:** K Dobbie, 30/07/2003; **Comments:** This cosmopolitan species was first recorded in NZ in 1921. It is primarily known as a pathogen of fruit trees but has been associated with dieback of oaks overseas. Only moderate tip dieback was recorded in this instance.

New host record for New Zealand – Alga: *Cephaleuros virescens*; **Bioregion:** Auckland; **Host:** *Angophora floribunda*; **Coll:** C Inglis, 30/07/2003; **Ident:** M Dick, 01/08/2003; **Comments:** This is a common plant pathogen on a very wide range of hosts. It is not of any known economic importance.

New host record for New Zealand – Fungus: *Harknessia globosa*; **Bioregion:** Auckland; **Host:** *Sequoia sempervirens*; **Coll:** C Scott, 10/08/2003; **Ident:** K Dobbie, 20/08/2003; **Comments:** This species has been recorded from *Eucalyptus* spp. (leaf spots) and *Podocarpus* spp. (tip dieback). This sample had dieback of small shoots but the tree was under extreme stress and the fungus was most likely acting as a weak, opportunistic pathogen.

New host record for New Zealand – Insect: *Uraba lugens* (Nolidae); **Bioregion:** Auckland; **Host:** *Eucalyptus pilularis*; **Coll:** C Inglis, 11/07/2003; **Ident:** R Crabtree, 29/07/2003; **Comments:** Until recently this species was the subject of an eradication campaign in Auckland but this is now not considered to be viable. Biological control options are being considered.

New host record for New Zealand – Insect: *Eriococcus coriaceus* (Eriococcidae); **Bioregion:** Auckland; **Host:** *Eucalyptus conferruminata*; **Coll:** C Inglis, 08/08/2003; **Ident:** R Crabtree, 12/08/2003; **Comments:** This Australian species is a common scale insect on *Eucalyptus* spp. in NZ. It was first found here in 1900 at Timaru. It is usually well controlled by an introduced predator – *Rhyzobius ventralis* (Coccinellidae).

New host record for New Zealand – Insect: *Ceroplastes destructor* (Coccidae); **Bioregion:** Auckland; **Host:** *Choisya ternata*; **Coll:** C Inglis, 18/07/2003; **Ident:** R Henderson, 04/08/2003; **Comments:** This species is abundant in Africa and also found in Australia, Papua New Guinea, Norfolk Is. and Solomon Is. It has a very wide host range overseas but in NZ had been recorded only from *Actinidia deliciosa* and *Citrus* spp.

New host record for New Zealand – Insect: *Diaspidiotus perniciosus* (Diaspididae); **Bioregion:** Auckland; **Host:** *Araucaria cunninghamii*; **Coll:** C Inglis, 15/08/2003; **Ident:** R Crabtree, 21/08/2003; **Comments:** This cosmopolitan species was first recorded in NZ in 1908. It is polyphagous but prefers rosaceous fruit and nut trees. We have previously recorded it on *Araucaria bidwillii* and *A. heterophylla.*

Extension to known distribution – Insect: *Holocola sp.* – undetermined, in *triangulana* species complex (Tortricidae); **Bioregion:** Waikato; **Host:** *Acacia floribunda*; **Coll:** J Bartram, 14/08/2003; **Ident:** T Withers, 15/08/2003; **Comments:** This Australian species was first found in NZ in 1999. Other hosts here are *A. longifolia* and *A. melanoxylon*. It is now quite widespread in the North Island.

(*John Bain, Forest Research*)