

## RED NEEDLE CAST UPDATE

In Forest Health News 256 (May 2015) we reported that the first red needle cast sample of the year was confirmed from a forest near Palmerston North. Since then we have received positive samples from Nelson and the central North Island and have noted hot spots of disease in the Taranaki area. Records of significant disease have not been received this year from the East Cape or Northland, instead there have been reports of the occasional tree showing symptoms from a few areas in those regions. In the central North Island the disease appeared later than usual with a number of reports being made from early September onwards. This is in keeping with previous observations where timing, location and severity of disease has varied considerably from year to year.



In September we started a new study in which sites were selected for long term disease monitoring. In the central North Island a total of 40 sites, along with 11 sites on the East Cape, have been selected for annual assessment of disease severity. By doing so we are hoping to determine the specific set of conditions (i.e. weather and microsite) that contribute to outbreaks of red needle cast. This knowledge will help growers make decisions on control when an operational chemical control solution becomes available or on deployment of plants with low disease susceptibility.

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## MAJOR INTERNATIONAL EVENTS LEAD TO INCREASING SPREAD OF FOREST PESTS AND DISEASES

The international trade in plants for planting has long been identified as a major pathway for the introduction of pests and diseases in new areas (see Forest Health News 259, August 2015). It has also recently been recognised that major international events, and associated large-scale landscaping, may considerably increase the rate of establishment for new pests and diseases.

The box tree moth *Cydalima perspectalis*, a pest causing severe damage to box trees (*Buxus spp.*), illustrates this issue. *C. perspectalis* is native to subtropical regions of Eastern Asia, but has also proved to be a highly successful invader in other parts of the world. In Europe it was first discovered in Germany in 2006, and has since invaded more than twenty countries on the continent, including England and Turkey. The moth also benefited from live plant trade from Italy to Russia to establish in 2012 in the main Olympic Village in Sochi, where the XXII Winter Games were in preparation. Larvae of the moth were first detected in a nursery used for temporary storage of European box, *Buxus sempervirens*, intended for landscape gardening. Despite insecticide treatment, a massive spread of the moth was observed the next year onto urban plantings. Urban ornamental boxwood plantings in Sochi almost completely lost their aesthetic value by mid-summer of 2013, such that urban services there had to remove most of the box plantings. Today, massive defoliation associated with box tree mortality is observed throughout the greater part of Sochi and along the Black Sea coastal region. Initial observations in the region showed that the pest produces 2-4 generations per year. More problematically, the moth is also spreading into the natural forests of the coastal region of the Caucasus. This may aggravate the poor condition of the natural relics of *Buxus colchica* that comprise the under-growth of indigenous fir and beech forests which are already affected by the pathogenic epiphytic fungus *Cylindrocladium buxicola*.



**Ideal décor for Halloween: The European box *Buxus sempervirens* turned into disfigured hedges of bare skeleton-like branches sheltering webbing of the box tree moth. Photo credit: State Institute for Nature Protection (Croatia).**



**Larvae of the box tree moth *Cydalima perspectalis*. Photo credit: Centro MiRT - Fondazione Minoprio (Italy).**

Large-scale landscaping impacts in terms of redistribution of agricultural and forests pests and diseases are not without precedent. In 1992, the World Expo held in Seville (Spain) led to the importation of high numbers of new plant diseases. In 2004, the XXVIII Summer Olympic Games in Athens (Greece) coincided with the first arrival of the red palm weevil *Rhynchophorus ferrugineus*. In the case of the XXIX Summer Olympic Games in Beijing in 2008, a campaign was organised to limit the possible impacts of invading species associated with the import of about forty million plants to landscape and decorate the main venues. However, it did not prevent 44 species of herbivorous arthropods, belonging to 6 orders and 26 families, from being imported from other Chinese regions. Eight of these species were identified as new records for Beijing, and at least one of these has been proven to establish locally.

In most of these examples the plants were not only sourced locally but were also transported from considerable distances away, in some cases with no phytosanitary requirements (as was the case in Beijing). Transplanting large numbers of at the same time to the same destination considerably increases the risk of establishment for invasive species. Large numbers of host material and their associated pest assemblages facilitate pest mating, initial host finding, and cooperative exploitation of host material. One wonders what is in store for the UK during the aftermath of the World Cup Rugby competition (in terms of pest invasions, not the disintegration of the England team).

Further reads:

Gninenko, Y.I., Shiryayeva, N.V., Surov, V.I. 2014. The box tree moth - a new invasive pest in the Caucasian Forest. *Plant Health - Research and Practice* **1**: 36-39.

Li, S., Guo, L., Ren, S., De Barro, P.J., Qiu B.-L. 2014. Hosting major international events leads to pest redistributions. *Biodiversity and Conservation* **23**: 1229-47.

Roques, A., 2010. Alien forest insects in a warmer world and a globalised economy: Impacts of changes in trade, tourism and climate on forest biosecurity. *New Zealand Journal of Forestry Science* **40**: S77-94.

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