How Have Exotic Forest Pests Impacted Europe?
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Introduction
The forests of Europe, predominantly coniferous, span a wide range of age and species. For example, in the former USSR, forest cover has been present for many thousands of years, whereas in the UK, the present coniferous forest cover is typically less than 100 hundred years old. The range of pests present in any area and, more importantly, the damage they cause reflect this age and species range. Thus, efforts directed at either controlling or in some areas, keeping the pests out varies among regions. This paper examines three categories of pest risk facing Europe, with special emphasis on the author's homeland.

A Threat from Within
The first pest I chose to identify, the great European spruce bark beetle (*Dendroctonus micans*), is already widespread in Europe. First records of this pest date back to 1794, on Norway spruce (*Picea abies*) the normal European host in western Europe, Sitka spruce (*P. sitchensis*), also is an important host. There are some records of sporadic attacks on Scots (*Pinus sylvestris*), and other pines, and isolated records of attack on European silver fir (*Abies alba*) and European larch (*Larix decidua*). Severe damage appears confined to spruce, however, as the pest has gradually moved westward over the last century, reaching into all countries of central and western Europe, with the exception of Ireland. Countries in southern Europe appear to be outside the natural range of this beetle. Over the years, many countries have taken measures to limit the damage; however, many now appear to accept its presence as inevitable and, in some cases, little if anything is done to mitigate its effects.

In the UK, *D. micans* was discovered in August 1982, and immediate statutory measures were put in place in an effort to eradicate the infestation. Surveys showed that measures of infestation first became established in 1973 and now extend to most of Wales and the adjoining English counties in what has been named the *Dendroctonus Micans* Control Area (DMCA). Within the DMCA, surveys and treatment are confined to all spruce growing within a 10-kilomet “Peripheral Zone” bounding the area. The objective of the area is to prevent further spread by sanitation felling, and to release the specific predator, *Rhizophagus grandis*. The predator is largely responsible for controlling population levels of *D. micans* and the damage they cause. In late 1996, a fresh outbreak was detected outside the DMCA, near Ashford, Kent. Here, the objective is eradication, and all trees showing signs of attack were felled and the predator subsequently released. In August 2000, trees in the Bedgebury National Pinetum (about 20 kilometres from Ashford), were also showing symptoms of attack. This latter situation is still being evaluated.

Are continued control measures justified and, if so, should they be modified in any way? The basic factor used in determining
whether to control is one of cost: i.e., does the value of the crop being protected justify the expenditure in controlling it? The conclusion in 1998 was that the present controls were justified (cost-effective analysis of options within an Integrated Crop Management regime against great spruce bark beetle, *Dendroctonus micans*, Kug.: O’Neill and Evans). Since then, the world timber market has slumped, and UK-grown timber prices are as much as 45% lower, with no signs of early recovery. Should we now abandon controls if the balance has swung the other way and leave the pest and its predator to their own devices? Would this leave our forests weakened and thus more susceptible to successful invasion from another pest, for example *Ips typographus* (the eight-toothed spruce bark beetle)?

**A Threat from Another Continent**

An Asian longhorn beetle, *Anoplophora glabripennis* (ALB), has received widespread publicity in recent years. Details can be found at [www.aphis.usda.gov/](http://www.aphis.usda.gov/). I want to use this example to show how the Plant Health Directive of the European Communities enables a Member State to take immediate unilateral emergency action and how this can quickly be transposed into EU-wide controls.

In September 1998, a UK citizen correctly identified a strange-looking beetle he had found in his garden from a newspaper photograph covering the outbreak in the United States. It transpired that he received a wooden crate of floor tiles from China earlier that summer. The remnants of the crate, with clear evidence of infestation, were still in his garden. The importer’s warehouse revealed other infested crates and customs records helped identify other floor tile importers, who either remembered seeing similar damage or who had examples of damaged crates in stock. Checks on importers of other kinds of goods (stone, metals, etc.) gave similar results. A pest risk assessment, completed previously, showed that all the necessary conditions for establishment and damage were present, although climatic data suggested that damage would be confined to the warmer, southern areas of the UK and continental Europe. It is interesting to note, however, that the first live specimen was caught in the rather cooler, higher altitudes of the Lake District.

Statutory measures were quickly put in place, imposing special landing requirements on all hardwood packing material originating in China. These requirements complemented existing controls on coniferous packing material against pine wood nematode (*Bursaphelenchus xylophilus*), and the European Commission and other Member States were notified, as is required under the Plant Health Directive (currently article 16 of 2000/29/EC). Under this article, the Standing Committee on Plant Health must decide whether to endorse the emergency measures and implement them community wide, possibly with amendments, or require the initiating Member State to revoke them. Here, the UK’s measures were adopted, with an added requirement that Member States carry out enhanced import inspections and notify the results to the European Commission. These measures are currently under review and are likely to be made permanent.

Questions that this example poses include whether countries should wait until they actually intercept infested material before they attempt to justify taking action or should they be entitled to impose protective measures based on Pest Risk Assessment.

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Before attempting to answer, perhaps we should consider the impact of our answers. If we elect the former, all of the costs of import inspections, public awareness campaigns, and surveys of trees are borne entirely by the taxpayer in the country at risk. If the precautionary principle is applied and controls implemented on the basis of perceived risk, then the cost of compliance falls to the exporting country, albeit partially passed on to the consumer through higher costs. Costs to the importing country will be confined, as in all other cases, to monitoring inspections at the time of import.

**A New Pest**

My final example is another fairly recent pest, previously unknown, and the origin of which is unclear. The horse-chestnut leafminer, *Cameraria ohridella*, was first observed in Macedonia in 1985, and was described as a new species. In 1989, it unexpectedly appeared in Austria, and has since spread throughout major parts of central and eastern Europe. It is now known to also reside in Belgium, Croatia, the Czech Republic, France, Germany, Hungary, Italy, The Netherlands, Poland, Serbia, Slovenia, and Switzerland. While movement of ornamental planting material could exacerbate spread, most dispersal is undoubtedly through hitchhiking in cars, lorries, and railway wagons. The damage is striking, with complete leaf loss, although, there are no records of mortality (the older, weaker branches may die). Eradication is considered impossible, although controls on specific trees, through collection and destruction of recently fallen leaves, can provide protection from damage. An excellent example taken from a Munich Beer Garden can be viewed on [www.cameraria.de](http://www.cameraria.de).

If we follow the established pest risk analysis route, we quickly conclude that *C. ohridella* does not qualify as a quarantine pest. Thus, phytosanitary controls would fall foul of the Sanitary and Phytosanitary Agreement set up under the auspices of the World Trade Organization. There appears, to me at least, to be a degree of analogy with gypsy moth (*Lymantria dispar*) and the interstate controls to inhibit spread of this pest within the United States.

In the UK, where this pest has never been recorded or intercepted in imported planting material, we have been questioned about the absence of import controls, especially as we recognize that the pest’s entry and establishment is inevitable. This pest however, poses no economic threat. Should import controls be required for pests that will cause only social and environmental damage rather than direct economic damage in the form of plant mortality?