

## Plant Health Leaflet No 9A (April 2005)

### ***Dendroctonus micans* (the Great Spruce Bark Beetle) – minimising the damage and preventing its spread**

#### **Foreword**

Statutory controls against the spread of *D. micans* were first put in place in Great Britain in 1982. Following the discovery of three new outbreaks outside the main infested area, the Forestry Commission reviewed the controls and carried out a consultation exercise with the forestry industry. We consulted on two options: extension of the designation of the infested area and a continuing policy of movement restrictions into Scotland and the north-east of England, or revocation of our EU protected zone status. The second of these options was agreed and the EU Plant Health Directive (Council Directive 2000/29/EC) has been amended by Commission Directive 2005/16/EC. This means that from 15 May 2005 the movement within Great Britain of conifer wood and conifer bark is no longer subject to any treatment requirements. We shall instead rely on the specific predator *Rhizophagus grandis* for management of the pest, with the designation of part of the west of Scotland as a 'pest-free area' out of which wood and bark can be moved under the EU plant passport regime without treatment.

#### **A history**

Figure 1



*Dendroctonus micans* Kugelann (Figure 1) is present throughout much of the Eurasian region, practically everywhere that spruce is growing. It was first discovered in Great Britain in August 1982 although, subsequently, earlier attacks have been identified, dating back to 1973. Initial controls relied on the scheduling of the known area of infestation and imposing

controls on the movement of spruce wood growing in that area. Sanitation felling of all infested trees was also carried out. Logs had to be taken to 'Approved Mills' for debarking and bark had to be treated or buried. All spruce wood leaving the scheduled area, known as the *Dendroctonus Micans* Control Area, had to be free of bark and consignments had to be accompanied by a movement licence issued by the Forestry Commission. In some areas with long-established *D. micans* populations and particularly vulnerable trees, tree mortality has been as high as 10%.

After the initial period of felling in the main infested area, carried out soon after the discovery of *D. micans*, sanitation felling has been limited to an area roughly 10 kilometres wide on the northern and eastern perimeter of the *Dendroctonus Micans* Control Area referred to as the Peripheral Zone. Intensive annual surveys were carried out in the Peripheral Zone and the

boundary adjusted when necessary to take account of spread of the pest. The last boundary adjustment was made in 1993.

Also in 1993, the EU Single Market was completed and areas known to be free of certain pests were designated "Protected Zones". That part of Great Britain outside the DMCA became one such protected zone and was prescribed in Schedule 6 of the Plant Health (Forestry)(Great Britain) Order 1993 (SI 1993 No. 1283). Plant passports replaced our system of movement licences, although conifer wood that is free of bark does not require a plant passport because, unlike most treatments, compliance can be verified visually.

### **Rhizophagus grandis – a success story**

Figure 2



In 1984, the specific predator of *D. micans*, the beetle *Rhizophagus grandis* (Figure 2) was introduced and released into infested sites under licence. In the early days, breeding *R. grandis* for release was a difficult and time consuming process that was also quite expensive with each beetle costing about £2 to rear. Considerable progress has been made in improving the

rearing system so that, even though the adult predators will only lay their eggs when some *D. micans* larvae are present, we can now rear the larval predators on easily obtained alternative prey. This increase in efficiency and flexibility means that each adult beetle now costs around 10 pence to rear for release. *R. grandis* has an extremely well developed ability to find its prey and a rapid reproductive rate. In the light of this information gathered from our research into the biology of the predator, we have adopted inoculative release using only a low number of predators, typically around 100, per site. While they will never entirely eliminate the population of *D. micans*, they will reduce populations of their prey by between 80% and 90% and death of trees is now less than 1%, and usually as low as 0.25%. Research into the populations of *D. micans* in the originally infested forests in Wales and the Marches, has provided clear evidence that *R. grandis* reduces populations of the pest to virtually undetectable levels within 5-7 years of release. Nevertheless, there are still small populations of the bark beetle present, which ensures the continuing survival of this remarkable predator.

In summary, *R. grandis* is far more efficient at locating and controlling *D. micans* than the earlier system of surveys, sanitation felling and controls on the movement of wood and bark residues. Movement controls are, however, still essential to prevent the introduction of the pest into protected zones elsewhere in the EU.

## **Protecting the protected zones**

A Protected Zone is an area where, despite favourable conditions for specific pests to establish, they have not done so and keeping pests out of protected zones is a key objective of the EU's controls set out in the Plant Health Directive. Host material coming from third countries outside the EU must be accompanied by a phytosanitary (plant health) certificate confirming that the entry requirements (e.g. bark-freedom, kiln-drying etc) have been met and imports are subject to inspection on arrival. Similar material originating within the EU must meet the same requirements and, for conifer wood, unless it is bark-free it must have a plant passport.

There are three options for sending conifer wood into a protected zone:

- The wood can be bark-free (no plant passport required);
- The wood can be kiln-dried (plant passport required, unless it is also bark-free);
- The wood can originate in an area known to be free of the pests listed as being of concern to the protected zone (plant passport required, unless the wood is also bark-free).

Similar controls apply to consignments of conifer bark which must always be accompanied by a plant passport. This will confirm either that the consignment originated in a pest-free area or that it has been treated by fumigation or another recognised treatment against bark beetles.

The protected zones and the relevant pests are listed in Commission Decision 2001/32/EC, as amended. Plant passports must be completed with the relevant code for the protected zone to which the wood is being sent.

For a Member State to keep its protected zone status it must carry out annual surveys to demonstrate absence of the pest or pests concerned and publish the results. (In some cases it is possible to retain protected zone status even though the pest is present. However, appropriate measures aimed at eradicating the pest must be in place).

## **Exemptions from the plant passport requirements**

Under the Plant Health Directive, where there is no fear of spreading pests, Member States can exempt certain material other than plants for planting from the plant passport requirements where it is being moved within a local market. Under these provisions, we have decided not to require plant passports to accompany either conifer wood or conifer bark where the destination is within Great Britain.

## **Pest-free areas**

A pest-free area, unlike a protected zone, is an area which is less likely to harbour specific pests because of factors such as the biology of the pests concerned, including their survival potential and means of dispersal, as well as the degree of isolation of and ecological conditions in the area. Once an area has been designated as pest-free, registered forestry traders can be

authorised to issue plant passports to accompany consignments originating in it which have not been treated in any way.

In Great Britain, the Forestry Commission is maintaining a survey programme following the protocol set out in an International Standard for determining a pest-free area<sup>1</sup>. An area in west Scotland bounded by the Kyle of Lochalsh to the north-west, to Spean Bridge and then south to the Firth of Clyde (Figure 3) is being surveyed regularly at appropriate times of the year and has been found to be free of *Dendroctonus micans*, *Ips sexdentatus* (the Six-toothed Spruce Bark Beetle) and *I. cembrae* (the Large Larch Bark Beetle). These bark beetles all occur in other parts of Great Britain but have never been recorded in or close to this area. All three are pests against which Ireland, including Northern Ireland have protected zone status and where a market for roundwood currently exists. The designation of this part of Scotland as being free of these pests enables producers within the pest-free area to supply this market without the need for ensuring bark-freedom or kiln-drying. Those wishing to consign wood from other parts of Great Britain to any of the relevant EU protected zones must continue to either ensure that the wood is bark-free or has been kiln-dried.

The relevant protected zones are Cyprus, Greece, Ireland, Northern Ireland, the Isle of Man and Jersey.

### **Hygiene precautions to prevent the accidental spread of bark beetles**

A pest-free area differs from a protected zone in that it does not have to have a statutory listing and there do not need to be any official controls to prevent the spread of new pests into it. However, in order to minimise the risk of accidental introduction, and therefore possible establishment of new pests in the area, a few simple hygiene precautions are recommended. Lorries and forestry machinery should be cleaned of all plant debris, especially loose bark and branch wood or chips before starting their journey to the pest-free area. On arrival at the destination in the pest-free area they should be checked again and any such debris removed and safely disposed of. If these simple measures are followed the area may continue to remain free of pests for some time to come.

As soon as any evidence of any or all of the bark beetles of concern is found in a pest-free area, all authority to issue plant passports will have to be withdrawn while the situation is investigated. Depending on the outcome of surveys it will be necessary either to re-define the pest-free area, or remove it entirely.

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<sup>1</sup> ISPM No. 4 "Requirements for the Establishment of Pest Free Areas": Secretariat of the International Plant Protection Convention, FAO, Rome (1996).

**Figure 3 - Pest Free Area – West of Scotland**

