INTRODUCTION

The Deodar weevil, *Pissodes nemorensis*, was first detected in South Africa in 1942. Its first appearance was in pine plantations in the southern Cape and it is now widely distributed in all pine growing areas. This insect is commonly associated with stressed trees, but it also attacks vigorously growing young pines. *Pissodes nemorensis* is native to North America where it causes significant damage in pine plantations. It is closely associated with the pitch canker fungus, *Fusarium circinatum* and thus implicated in Pitch Canker, which is a serious disease of pines in the United States. The recent detection of the pitch canker fungus in South African nurseries contributes significantly to the importance of *P. nemorensis* in South Africa.

Figure 1. Pine leader dead due to feeding

HOST RANGE

Pissodes nemorensis feeds and breeds on all of the major commercially grown pine species in South Africa. These include *Pinus patula, P. radiata, P. taeda, P. elliottii* and *P. pinaster*. However, some species appear to be more susceptible to attack than others. Infestation levels are high on *P. radiata* in the Cape. Damage can also be severe on *P. elliottii* in Zululand and Mpumalanga, but the basis for this difference has not been established.

IDENTIFICATION

Adult *P. nemorensis* are typical weevils with long, curved snouts and cylindrical, posteriorly-tapered bodies, reddish brown in colour with two patches of light grey scales on their backs. The body length of the adults ranges from 6-8mm. The larvae are yellowish white, cylindrical and legless, with light brown heads, and they are about 6mm long when fully grown. The pupae are about the same size as the adults. They are shiny white at first, darkening during maturation, with well developed wings and legs, and the developing heads bear a prominent snout.

BIOLOGY

Adult *P. nemorensis* males and females fly or crawl to the terminal parts of pine shoots and begin to feed and mate. The female begins laying eggs soon after mating. Eggs are laid at the tip of the shoots, just under the apical buds, in feeding punctures, which are then covered with a fecal plug. After hatching, the larvae move downwards on the shoots under the bark and begin to consume phloem tissue. Pupation takes place between the bark and the wood in chambers excavated in the xylem and covered with wood fibers (castings), commonly known as “chip cocoons”. They also breed on slash and dead or stressed older trees.

Figure 2. Emergence holes on the bark

SYMPTOMS

In addition to the presence of adults or larvae, the occurrence of *P. nemorensis* can be verified based on the following symptoms:

- Dying or dead pine shoots (Figure 1). This often results in forking or branching of trees

- Circular emergence holes on the bark of the main stem, which DO NOT penetrate the wood (Figure 2). These exit holes lead from the pupal chambers or “chip cocoons” between the bark and the wood (Figure 3). Emergence holes of the woodwasp *Sirex noctilio* are similar to those of *Pissodes*, but *Sirex* holes continue into the wood and are usually larger than those of *Pissodes*.

MANAGEMENT STRATEGIES

Damage to pines by *P. nemorensis* can be managed through one or a combination of control practices. Control options include silvicultural, host resistance, biological control and the use of chemicals, at times of a sudden outbreak covering a small area. Silvicultural control mainly involves avoidance of stress on pines by proper species-site matching and clearing of slash that is used by the weevils for breeding. Major success in managing *P. nemorensis* and other species of *Pissodes* elsewhere has been obtained through breeding programs for host tree resistance. Use of selected and less hazardous chemicals on small and particularly high value orchard trees has been recommended in North America. This might be feasible in seed orchards in South Africa. Biological control is desirable, although attempts to use a few parasites in North America against *P. strobi* have not yielded satisfactory results. Potential candidate parasites and predators that could be used in an Integrated Pest Management (IPM) system exist. The Tree Protection Cooperative Programme at the University of Pretoria is currently undertaking research to evaluate the potential of some native insect parasites to control *P. nemorensis*.

Figure 3. *Pissodes* chip cocoons under the bark. The holes in the chip cocoons indicate that the adults have already emerged

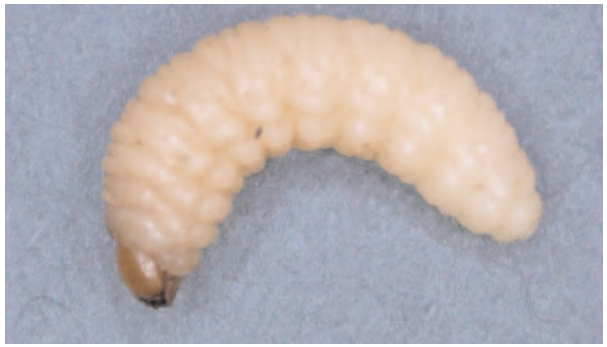

Figure 4. *Pissodes* larva

PLEASE REPORT OCCURRENCES OF THIS PEST TO:

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Cover photo: **Adult *Pissodes nemorensis***

The Tree Protection Co-operative Programme represents a collaborative venture between the University of Pretoria and the major players in the South African Forestry Industry to reduce the impact of pests and diseases and promote forest biotechnology. Members include: Mondi Ltd, Hans Merensky, GFP, Komatiland Forestry, Sappi Ltd, NCT, CTC, TWK, MTO, the Dept. of Water Affairs and Forestry and the ICFR.

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FABI

THE DEODAR WEEVIL, *PISSODES NEMORENSIS*, A PEST OF PINES IN SOUTH AFRICA

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