

## PESTS

### Pissodes nemorensis Deodar weevil Pinus species

**Distribution:** Throughout South Africa.  
**Status:** Pest populations are high, but don't always cause serious damage. The exception is in stands of *P. radiata* where feeding on the tips can result in tip die-back.  
**Description:** Adults have long, curved snouts and are 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.  
**Symptoms:** Dying or dead pine shoots, often resulting in forking or branching of trees. Circular emergence holes on the bark of the main stem, which DO NOT penetrate the wood. These exit holes lead from the pupal chambers or 'chip cocoons' between the bark and the wood.  
**Management:** Remove dying and dead trees, as these provide food for the population of the beetle to increase. A native parasitoid has been detected parasitising the larvae.



### Sirex noctilio Sirex woodwasp Pinus species

**Distribution:** Throughout South Africa.  
**Status:** Populations have generally decreased, but there are still areas of high infestation.  
**Description:** The adult wasps are metallic blue with two pairs of membranous wings. The female adult has a pointed projection at the rear of the abdomen that covers the ovipositor (egg tube). The male has a broad orange band covering most of its abdomen. The length of the adult ranges from 10-40mm. The larvae are creamy white in colour and have a characteristic dark spike at the posterior end. The larvae are found in the sawwood.  
**Symptoms:** Wilted pine needles, first turning yellow and then brown. Small resin droplets on the bark of infested stems. Circular emergence holes of adults which go through the bark and into the sawwood; from about 3-10mm in diameter. Larval tunnels in sawwood.  
**Management:** Silvicultural practices to increase vigour of trees within stand, including thinning to remove the stressed and sub-dominant trees which are the primary host of *Sirex*. Biological control agents, parasitic wasps *Deladenus siricicola* and *Ibalia leucospoides*, have been released.



Above: Larvae exit holes. Top left: Resin droplets. Right: Early signs of infestation.

### Thaumastocoris peregrinus Bronze bug Eucalyptus species and hybrids

**Distribution:** Throughout South Africa.  
**Status:** Populations vary through the year.  
**Description:** Adults are small (2-4mm), light-brown sap-sucking insects. Eggs are small, oval and black, and can be laid singly or in clusters.  
**Symptoms:** Initial reddening of the canopy leaves which become reddish-yellow or yellow-brown, coupled with some leaf loss and the visible abundance of adults, nymphs and black egg capsules in clusters. During severe infestations, loss of leaves leads to canopy thinning and branch dieback.  
**Management:** An egg parasitoid wasp, *Cleruchoides noackae* (Myrmecidae) has been released as a biological control agent, with the first releases taking place in 2013.



### Leptoclybe invasa Bluegum chalcid Eucalyptus species and hybrids

**Distribution:** Throughout South Africa.  
**Status:** High populations in many parts of the country.  
**Description:** A small wasp; average length of 1.2mm. Head and body are brown in colour with a slight to distinct blue to green metallic shine.  
**Symptoms:** Causes galls on the mid-ribs of leaves, and on the petioles and stems, resulting in the curling of leaves and malformation of stems. Severe infestations result in 'feathering' of leaves, stunted growth, and possible death of small trees.  
**Management:** Selection of more resistant planting material is possible. A biological control agent, *Sellichrodes neseri*, was released in 2012.



### Glycaspis brimblecombei Red gum lerp psyllid Eucalyptus species and hybrids

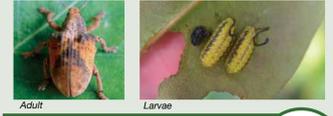
**Distribution:** Throughout South Africa.  
**Status:** High infestations reported in many areas.  
**Description:** Small sap-sucking insect (2.5-3.1mm). The nymph has a flattened body and is covered with a white conical shelter (lerp) of wax and sugar. Adults are winged and disperse widely.  
**Symptoms:** Infested leaves are covered with waxy secretions and honeydew, on which sooty mould grows. Feeding results in drooping leaves and drying of leading shoots and heavy infestations can totally defoliate and kill trees.  
**Management:** Selection of resistant planting material. Biological control is being investigated.



Infested leaves with typical white lerp and recently moulted adult psyllid.

### Gonipterus species Eucalyptus weevil/snout beetle Eucalyptus species, particularly E. dunnii, E. smithii, and hybrids

**Distribution:** Throughout South Africa.  
**Status:** Outbreaks in KZN and Mpumalanga. This insect was previously misidentified as *G. scutellatus* and the new species name is in the process of being confirmed.  
**Description:** The adult beetles are brown to red-brown, about 8-9mm in length and have a characteristic 'X' marking on the back. The larvae are yellow to yellow-orange, about 10mm when fully-grown, legless, with black spots and two black lateral stripes. The larvae produce a thin thread of excrement when feeding. The eggs are light yellow, about 1mm in length and 0.5mm in width. The eggs are deposited horizontally in rows and covered with excremental material to form a hardened dark brown egg capsule.  
**Symptoms:** Both the foliage and young shoots of *Eucalyptus* trees are eaten by *Gonipterus*. The damage caused may result in stunted growth and tree mortality in severe cases. Adults feed primarily along the leaf margin, resulting in a characteristic scalloped appearance of the leaves. Both the adult and larval stages prefer new growth.  
**Management:** Selection of more tolerant planting material is possible. A biological control, *Anaphes nitens*, has been released.



### Spondylaspis c.f. plicatuloides Shell lerp psyllid Eucalyptus species

**Distribution:** Reported on non-commercial *Eucalyptus* species in Gauteng, Mpumalanga and KZN, but currently not widespread.  
**Status:** Not yet detected on commercially grown species.  
**Description:** Small sap-sucking insect. The nymphs are reddish-orange in colour and are covered with a brown sea shell-like shelter, called a lerp. The adults are winged and reddish-brown in colour.  
**Symptoms:** Brown sea shell lerp and reddish lesions on leaf.  
**Management:** Selection of resistant planting material.



### Ophelimus maskelli Eucalyptus gall wasp Eucalyptus species

**Distribution:** Currently only reported in Gauteng.  
**Status:** Not yet detected on commercially grown eucalypt species, but known to be a serious pest of eucalypts in other parts of the world.  
**Description:** Small brownish-black wasps, 0.83-1.07mm in length.  
**Symptoms:** Causes small green to reddish blister-like galls on both sides of the leaf blade; gall diameter ranging in size from 0.9-1.2mm. Heavy galling may result in premature shedding of the leaves.  
**Management:** Selection of resistant planting material and biological control. The biological control agent *Closterocerus chamaeleon* has already been detected in South Africa, presumably introduced with *O. maskelli*.



O. maskelli galls on leaf O. maskelli (Photo: S. Bush)

### Chaliopsis (Kotochalia) junodi Wattle bagworm Acacia mearnsii

**Distribution:** Throughout South Africa.  
**Status:** Sporadic outbreaks.  
**Description:** The caterpillars live in a bag made of silk and wattle leaves. The size of the bag will depend on the age of the larvae, but can range from 2-65mm long. The adult male is a small moth with clear wings. The female does not develop, but remains grub-like.  
**Symptoms:** Defoliation of leaves.  
**Management:** Chemical control.



### Lygidolon laevigatum Wattle mird Acacia mearnsii

**Distribution:** Throughout South Africa.  
**Status:** Sporadic outbreaks.  
**Description:** Adults are about 3mm in length, black or chestnut-brown, with a yellow spot on the back. Nymphs are similar, but green.  
**Symptoms:** Injects toxic saliva and sucks sap. Necrotic (dead and dying) tissue develops around the feeding site. Causes early aging of leaves, multiple branches and witches broom.  
**Management:** Chemical control.



### Coryphodema tristis Cossid moth/Quince borer Eucalyptus nitens

**Distribution:** Found on high elevation sites in Mpumalanga, where *E. nitens* is grown extensively. It has recently also been reported infesting *E. nitens* in the KZN Midlands.  
**Status:** Very prevalent.  
**Description:** The eggs are about 1mm long, oval in shape and dull cream coloured. Larvae are about 30-40mm long when fully grown. Fully grown larvae have a brown head and the body is light yellowish in colour with reddish blotches. Pupae are about 25-35mm long, with rows of spines present on the abdomen, and the head terminates in a spine. Adults are rarely seen and short lived (about one week). They have a wingspan of 25-50mm, greyish brown body, front wings are mottled brown and hind wings are mottled light grey.  
**Symptoms:** Round holes penetrating the sawwood. Trunk and branches of infested trees turn black. Resin and sawdust appear on trunks and branches. Extensive tunnelling of larvae is found in the sawwood and heartwood. Pupal casings protrude from emergence holes or can be found on the forest floor. Sawdust is found at the bases of trees.  
**Management:** Selection of resistant planting material (only *E. nitens* is attacked).



Adult Larvae Larvae tunnels in the wood

## KEY



Pine



Wattle



Eucalyptus

## Management tips

- Always be on the lookout for pests and diseases
- Make sure you are well informed about pests/diseases and the latest outbreaks
- Do not move infected material, especially into areas where the pest/pathogen is not yet known
- Practice good silviculture - pests and diseases are more likely to attack stressed trees
- Select the right species for the site conditions.

## Enquiries

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## DISEASES

### DISEASE ALERT!

#### Puccinia psidii (Eucalyptus/guava/myrtle rust pathogen) now in RSA Affects Eucalypts and native Myrtaceae

**Distribution:** Currently known from KZN south coast, Gauteng and Limpopo (New Agatha, Wolkeberg) on native Myrtaceae.  
**Symptoms:** Leaf spots and death of young new shoots. These are often covered by bright yellow spore masses.  
**Biology:** Requires high humidity and periods of low light for germination and infection. Mostly a problem in sub-tropical areas of the world.  
**Management:** Report immediately to TPCP and destroy plants once disease has been confirmed. Selection and breeding is possible to manage the disease. Do not move infected plants.



Yellow spore masses (uredinia) on underside of leaves.

#### Chrysosporthe austroafricana Chrysosporthe canker Eucalyptus, Tibouchina & Syzygium species

**Distribution:** The pathogen is widespread, but the disease on Eucalypts is found mainly in Zululand, with isolated reports from Tzaneen and White River.  
**Status:** Mostly under control due to effective breeding programmes.  
**Symptoms:** Results in death of young *Eucalyptus* and stem cankers on older trees. Disease on young trees first becomes visible when the foliage changes colour and dies. Dark brown discoloration of the bark and cambium of the root collar area. Symptoms on older trees include cracking and splitting of the bark at the bases of trees or the formation of sunken, target shaped cankers higher up the stems, often associated with branch stubs. Stem cankers may result in wind breakage and reduced growth.  
**Management:** Selection and breeding of disease-tolerant hybrid clones has proven highly successful.



Cracked, flaking bark. The disease has killed this young tree.

#### Kirramyces stem canker (also known as measles disease) Teratosphaeria zulesis Eucalyptus species

**Distribution:** Mainly Zululand, but also Limpopo.  
**Status:** Continuous outbreaks in Zululand, wherever susceptible clones are planted.  
**Symptoms:** Infection first becomes visible on young, green tissue as small sunken, necrotic lesions. On older material, infection is characterised by measles-like spots that penetrate into the pith of trees, or in the case of tolerant trees, are restricted to the bark. Small, black fruiting bodies may be visible on the dead bark between the cracks. Causes twig and branch die-back of young succulent material.  
**Management:** Select disease-tolerant material.



Lesions on young branch (left) and typical spot on older stem (right).

#### Mycosphaerella and Teratosphaeria species

**Leaf blotch**  
*E. nitens, E. globulus, E. smithii, E. grandis*  
**Distribution:** Throughout South Africa.  
**Status:** Continuous outbreaks on susceptible cold tolerant Eucalypts, especially at juvenile leaf stage.  
**Biology:** MLB require high relative humidity for spore release and germination, survive on leaf litter and when conditions are suitable, will infect leaves on the lower branches of trees.  
**Symptoms:** First becomes visible as individual spots on the upper, under or both sides of the leaves. Symptoms become visible on the lower branches first. The disease then spreads up into the canopy. Most severely affects juvenile leaves on cold tolerant *Eucalyptus* species. May result in complete defoliation.  
**Management:** Planting of disease-tolerant provenances. Site species/provenance matching.



Leaf blotch on juvenile E. nitens.

#### Fusarium circinatum Pitch canker Especially on, but not exclusive to, P. patula, P. greggii, P. radiata

**Distribution:** The disease of mature trees (5+ years) has been recorded from the W, E and NE Cape and KZN midlands. On young trees (<5 years) in KZN midlands, Limpopo and Mpumalanga.  
**Status:** Common in all pine nurseries, but increasingly reports of outbreaks on trees older than five years.  
**Symptoms:** *Fusarium* can affect trees in the nursery and in the field. Symptoms in seedlings and newly planted trees include tip die-back and discoloration of roots and root collar. Stress to plants is often the catalyst of symptoms becoming evident in seedlings in the nursery or the field. In mature trees symptoms include flagging (dead branches/tops in crowns), resinous lesions on stems, resin running down stems and resin soaked timber.  
**Management:** Selection and breeding of disease-tolerant planting material is important. Off-site planting of genotypes should be avoided, as well as high nitrogen levels, since stress and nitrogen increases the incidence and impact of *F. circinatum*. The pathogen infects through wounds, therefore pruning should be restricted to winter. The management of insect populations, such as the pine deodar weevil, will also reduce disease, since this and other insects are vectors of the pathogen. Plant trees sourced from SGASA certified nurseries only.



Resin on stems of infected trees.

#### Uromycladium acaciae Wattle rust Acacia mearnsii, Acacia decurrens

**Distribution:** Throughout South Africa as mild leaf spot (uredinal stage). In 2013 severe disease, associated with the telial stage was reported from *A. mearnsii* plantations in the KZN midlands.  
**Status:** Increasing reports of outbreaks of Wattle rust in young *A. mearnsii* compartments in the KZN midlands and S Mpumalanga.  
**Biology:** *Uromycladium acaciae* has multiple life stages, including the production of spermatogonia, telia and uredinia. Disease is more severe during moist, warm periods of the year. Spores can be spread by wind, rain splash and insects.  
**Symptoms:** In mild form, visible as isolated, chlorotic spots on pinules, sometimes leading to loss of older pinules. In severe form, brown powdery spore masses and galls occur on leaves and branches. Has also been found on seed pods. Under moist conditions gummy exudations may be visible from stems and branches, and on leaflets. May result in complete defoliation and death of young shoots.  
**Management:** Research is currently underway to test the effectiveness of chemical treatments. Breeding and tree selection.



Uromycladium acaciae on leaves gummosis

#### Ceratocystis albifundus Ceratocystis wattle wilt Acacia mearnsii, A. decurrens

**Distribution:** Throughout South Africa.  
**Status:** Regular outbreaks, especially after hail/singling damage to trees.  
**Biology:** *Ceratocystis* species are wound infecting, insect-associated pathogens. Infection and disease are especially common after hail and wind damage, as well as mechanical weeding and thinning operations during hot, humid conditions in summer.  
**Symptoms:** Results in rapid wilt and death of susceptible *A. mearnsii* trees. In some cases stem cankers and gummosis may be visible.  
**Management:** Selection of disease tolerant planting material is possible. Wounds should be prevented/minimised as much as possible. Thinning and weeding operations should be restricted to cooler, drier periods of the year and should be done on smaller diameter stems/branches.



Above left: Streaks in the xylem after infection of a cut stem. Centre: Bark discoloration, gummosis and blister lesions. Right: Cross cut through infected wood showing xylem discoloration.

#### Botryosphaeriaceae canker Diplodia pinea (on pinus) Botryosphaeria, Neofusicoccum species (Eucalyptus, Acacia mearnsii)

**Distribution:** Occurs throughout South Africa.  
**Status:** Continuous outbreaks, especially after hail, frost and drought.  
**Biology:** The *Botryosphaeriaceae* are opportunistic pathogens that result in disease and death of stressed trees. Disease is especially common on trees planted off-site or affected by frost, hail and drought. These fungi are endophytes and can infect trees without causing immediate symptoms.  
**Symptoms:** Tip and branch death, red/black lesions on the bark, dark brown discoloration of cambium, blue stain, gummosis/resin exudation.  
**Relative importance:** Results in stem cankers and death of young trees after frost damage and during droughts. Causes kino rings in Eucalypts and *A. mearnsii*, impacting negatively on wood for sawn timber and transmission poles. *Diplodia pinea* is especially problematic on *P. patula* after hail damage. The fungus also results in blue stain and tip die-back.  
**Management:** Avoid off-site planting, and areas prone to frost. Avoid planting *P. patula* in areas prone to hail damage. Selection and breeding of disease tolerant trees as well as site matching to reduce stress.



(Left) Splitting bark, kino exudation and the production of epicormic shoots of infected Eucalyptus tree; (right) stem cross-section of infected tree.

#### Armillaria fuscipes Armillaria root rot Pinus, Eucalyptus Acacia and Podocarpus species

**Distribution:** Widespread in Africa, but the disease of *Pinus* and *Eucalyptus* species is most prevalent in Mpumalanga and Limpopo, with isolated reports from KZN.  
**Status:** Regular outbreaks in Mpumalanga and Limpopo, especially where native forest occurred previously.  
**Symptoms:** The foliage of trees becomes discoloured and trees die. In some cases resin exudation and cracking of the bark is visible at the bases of infected trees. To confirm *Armillaria*, it is necessary to chop into the base or root collar of trees to reveal the white fungal growth (mycelial fans) between the bark and the wood. Under favourable conditions, the fruiting bodies (mushrooms) of *Armillaria* may be found at the bases of affected trees or emerging above ground from infected roots. Disease often starts with a single tree, from where it spreads to kill trees in patches.  
**Management:** Avoid establishment of plantations on areas cleared of indigenous tree species as *Armillaria* species is common on indigenous trees. Remove infected stems/roots.



Developing mycelial fans between the bark and wood of a Pinus tree. Mature fruiting bodies of A. fuscipes.

#### Phytophthora root rot Phytophthora cinnamomi, P. nicotianae and others Acacia mearnsii, A. decurrens, Eucalyptus species

**Distribution:** Occurs throughout the country wherever susceptible species are planted.  
**Status:** Regular outbreaks in Mpumalanga (Lothair area) and KZN midlands.  
**Biology:** *Phytophthora* species are motile and can 'swim' and actively spread in water. They are soil-borne, commonly infecting the roots and root collars of trees. Resting spores germinate under favourable conditions (water availability is a requirement) to infect trees. Infection results in the death of roots and girdling of stems.  
**Symptoms:** Rapid wilt and death of susceptible trees is common, especially when the trees are young. Infection often results in basal cankers characterised by black discoloration and cracking of bark and exudation of gum. In *A. mearnsii*, these cankers affect the ease of bark stripping and dry out the thickest, most valuable bark at the bases of trees.  
**Management:** Avoid planting trees in water-logged areas. Also avoid off-site planting of tree species. Select disease tolerant provenances.



Reddening of foliage (left) and discoloration of bark at base of tree (right).

