

Argentine stem weevil

Listronotus bonariensis (Kuschel)



Figure 1. Lateral dorsal and ventral views of *Listronotus bonariensis* (Kuschel).
Scale bar =1 mm Image © Fera

Background

The Argentine stem weevil *Listronotus bonariensis* (Kuschel) (Coleoptera: Curculionidae) is an II/A1 EU listed quarantine pest of pasture grasses and cereals that is native to South America. It has since spread across the Pacific region and is most notably a pest in New Zealand having first been detected there in the late 1920's. In early 2010 a number of dead adult specimens were detected in a grass seed mixture. The mixture contained seed from three different geographical sources including *Lolium perenne* seed that had originated in New Zealand and this was considered to be the most likely origin of the beetles. Later in 2010 a visual check of a consignment of *Trifolium repens* seed again from New Zealand found considerable numbers of dead *L. bonariensis*, although *T. repens* is not a host for *L. bonariensis*. Between March and July 2011 there were a further 8 interceptions of *L. bonariensis*, from New Zealand, four of which were associated with *Lolium perenne* seed.

Geographical Distribution

Native to South America including Argentina, Bolivia, Brazil, Chile and Uruguay, and has been introduced into Australia and New Zealand.

Host Plants

Various grasses, most notably important pasture species such as *L. perrene* (perennial ryegrass) *L. multiflorum* (Italian ryegrass) but also *Anthoxanthum puelii*, *Agrostis capillaris*, *Cyanosurus cristatus*, *Dactylis glomerata*, *Festuca rubra*, *Phleum pratense*, *Poa* sp.. *Zea mays* (Maize) is a significant host for this beetle and it has also been recorded from other cereals including *Avena* sp. (Oats), *Hordeum* spp. (Barley) and *Triticum* spp. (Wheat). *Listronotus bonariensis* is on occasion recorded as an incidental in a variety of legume and crucifer seeds moving in trade.

Description and Detection

To the naked eye adults of this species are rather small unremarkable brown weevils that measures 3 mm in length by 1.5 mm in width (Fig. 1) Their most distinctive feature is the brown cuticle which bears a mixture of small circular, flattened waxy scales that vary from white to dark brown in colour and short, stiff upright brown hairs (Fig. 2). The thorax appears to have three longitudinal pale stripes, one central and two lateral and these are formed by lines of the pale waxy scales (Fig. 3).

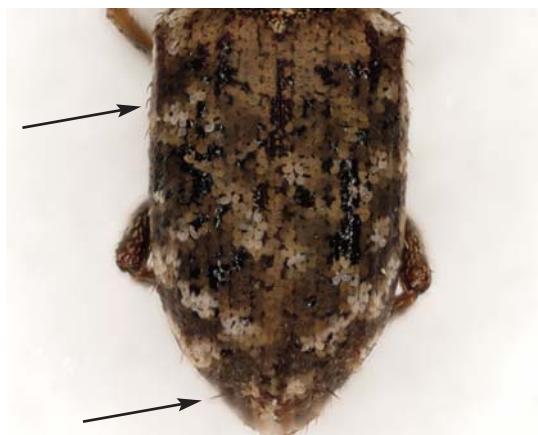


Figure 2 Elytra covered in waxy scales and stiff upright hairs (arrowed)



Figure 3. Stripes on the thorax formed by pale scales

The waxy scales and hairs are easily rubbed-off and are often missing from specimens (Fig. 4). This could potentially lead to specimens being overlooked. In addition there are other small brown weevils, some with scales that may be mistaken for *Listronotus* in the field.



Figure 4. A rubbed specimen of *L. bonariensis*



Figure 5. *L. bonariensis* amongst *Lolium* sp. seeds

Thus far *L. bonariensis* has only been detected as dead adults specimens in consignments of seeds shipped from New Zealand, and in particular grass seed of the genus *Lolium*. Adult beetles are of a comparable in size to these seeds and so cannot be separated by sieving (Fig. 5). It has been found that the most effective method of detection is to spread small quantity (50g) of seeds over a white tray and to then remove any suspected specimens and check them using a hand lens or dissecting microscope.

Biology, Damage and Control

The following is based on the wealth of data generated by workers in the southern hemisphere and in particular New Zealand.

Biology

Adults are mainly nocturnal climbing up grass or cereal stems at night to feed on leaf blades. Females lay their eggs in small clusters in the leaf sheaths that surround the main stem of the host. Each female can produce up to 37 eggs over a 40 day period, depositing from one to six eggs at each oviposition site. The smooth, shiny, cylindrical eggs are less than 1mm long, and 3 times longer than wide; initially white in colour they slowly darken to a smoky black colour within a day of being laid. Depending on environmental conditions the eggs can take from 9 days to more than 30 day to hatch. Newly emerged larvae then mine into a tiller and feed downward into the crown of the plant. If more than one larva develops per stem then usually only one survives. The larvae develop through four larval instars over a period of 14-66 days, again depending on the time of year, and when fully developed bore an exit hole in the stem of the plant, fall to the ground and form a small (5-6mm diameter) pupation cell below ground level in which they pupate. Adults emerge 7-15 days after pupation. Adult can live for between 62 and 179 days with two (and occasionally three) generation being produced each year (New Zealand). Second (and third) generation adults enter reproductive diapauses in the autumn and cease to lay eggs. These adults over-winter in plant litter on the soil surface or within the crown of the host plant and become active again the following spring, when they mate and start the cycle over.

Damage

Listronotus bonariensis is a major economic pest in New Zealand and has the subject of intensive study. Conversely in its native range in South America *L. bonariensis* is not known to be of any economic importance.

Adult feeding activity cause narrow rectangular holes to form on leaves near the tips causes a windowing effect. This and adult feeding on the cotyledons of young plants can be destructive, particularly in dry weather, but it is the feeding activity of the larvae that is the cause of most damage. The larvae feed on the vascular tissues within stems and around nodes causing vegetative tillers to wilt and yellow from the centre outwards, and flowering tillers to form whiteheads (non-fertile seeds). In addition as stems become physically compromised they can break and lodging can occur.

Control

Naturally occurring and benign fungal epiphytes of the genus *Acremonium* confer resistance to *L. bonariensis* in infected hosts. There are also three parasitic wasps that will attack *L. bonariensis*, namely *Potasson atomarius* (eggparasite), *Heterospilus* sp. (larval parasite) and *Microtones hyperodae* (an adult parasitoid).

Advisory Information

Suspected outbreaks of Argentine stem weevil or any other non-native plant pest should be reported to your local Fera Plant Health and Seeds Inspector, or
Tel: 01904 465625
Email: planthealth.info@fera.gsi.gov.uk
Web: www.defra.gov.uk/fera/plants/plantHealth

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The Food and Environment Research Agency (Fera). Updated September 2011
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