1. PaDIL Species Factsheet

Scientific Name:
Cryptolestes ferrugineus (Stephens, 1831)
(Coleoptera: Laemophloeidae)

Common Name
flat grain beetle
Live link: http://www.padil.gov.au:80/pests-and-diseases/Pest/Main/135832

Image Library
Australian Biosecurity

Partners for Australian Biosecurity image library

Museum Victoria

CRC National Plant Biosecurity

Plant Health Australia

Department of Agriculture, Fisheries and Forestry

Department of Agriculture and Food, Western Australia
2. Species Information

2.1. Details
   **Specimen Contact:** Cameron Brumley - cameron.brumley@agric.wa.gov.au
   **Author:** Andras Szito
   **Citation:** Andras Szito (2006) flat grain beetle (*Cryptolestes ferrugineus*) Updated on 2/13/2012 Available online: PaDIL - http://www.padil.gov.au
   **Image Use:** Free for use under the Creative Commons Attribution 3.0 Australia licence

2.2. URL
   Live link: http://www.padil.gov.au:80/pests-and-diseases/Pest/Main/135832

2.3. Facets
   **Status:** Exotic Species Occurrence in Australia
   **Group:** Beetles
   **Commodity Overview:** General, Horticulture
   **Commodity Type:** Grains, Stored Products, Rice
   **Distribution:** USA and Canada, Central and South America, Europe and Northern Asia, Mediterranean Basin, Africa, South and South-East Asia, Australasian - Oceanian, Cosmopolitan

2.4. Other Names
   - **rust-red grain beetle**
   - **rusty grain beetle**

2.5. Diagnostic Notes
   Click here to view live footage of this beetle:

   Live footage

Laemophloeidae is a small family of beetles including only about 500 species worldwide. The latest overview of the biology, ecology, morphology and classification was provided Thomas and Leschen (2010). The family is reviewed for the USA, Europe and Africa but there has not been a revision or any recent work on the family in Australia.

The pest species of *Cryptolestes* were reviewed by Halstead in 1993. In his excellent revision he provided an identification key and also very detailed descriptions. The author listed nine pest species occurring in stored products: *C.* capensis (Waltl), *C.* cornutus (Thomas and Zimmermann), *C.* divaricatus (Grouvelle), *C.* ferrugineus (Stephens), *C.* klapperichi (Lefkovitch), *C.* pusilloides (Steel and Howe), *C.* pusillus (Schönherr), *C.* turcicus (Grouvelle) and *C.* ugandae (Steel and Howe). Out of the listed species so far, only the cosmopolitan *C.* ferrugineus, *C.* pusillus and *C.* pusilloides have been detected in Australia.

In spite of Halstead (1993) and Banks (1980) publications, *Cryptolestes* specimens are usually identified to generic level only. The reason being that reliable identification requires genitalia dissection. Until one examines cleared specimens — particularly genitalia — under the microscope, one doesn't realise how
inadequate the images are in Banks' paper or how difficult is to associate the line drawings in Halstead's paper with real specimens. This is a result of the small image size, similarity of the species and the poor imaging and printing technology available at that time.

Species level identification has become important since 2007 with the finding that _C_. _ferrugineus_ is capable of developing high level of phosphine resistance, particularly when the grain is stored in poorly sealed silos or the fumigation regime not carried out correctly. In any case, when results of the identifications have significant impact on biosecurity, the identification should be based on genitalia dissections (performed by a beetle taxonomist) and the identification must be validated by an independent beetle taxonomist.

Simplified key to the identification of the three introduced stored product pest _Cryptolestes_ spp. occurring in Australia.

1

**1**
- First and second elytral interspace with 3 complete rows of setae _C_. _pusilloides_ (Steel and Howe)
- First and second elytral interspace with 4 complete rows of setae in the first and second elytral interspace

2

**2**
- Head without posterior transverse sulcus (this feature separates the species from all other _Cryptolestes_ pests) _C_. _ferrugineus_ (Stephens)
- Head with posterior transverse sulcus _C_. _pusillus_ (Schönherr)

2.6. References


2.7. Web Links


Australian Insects Common Names: http://www.ento.csiro.au/aicn/name_s/b_1196.htm

Urban entomology species differences: http://www.ento.montana.edu/ebeling/ebeling7.html#cryptolestes%20pusillus
3. Diagnostic Images

**Antenna Image:** Clare McLellan Museum Victoria

Cryptolestes ferrugineus elytra. Ex: Australia 2010. det: A. Szito
**Cryptolestes ferrugineus elytra:** Pia Scanlon DAFWA

Cryptolestes ferrugineus cleared female abdomen. Ex: Australia 2010. det: A. Szito
**Cryptolestes ferrugineus female abdomen:** Pia Scanlon DAFWA

Cryptolestes ferrugineus cleared female genitalia. Ex: Australia 2010. det: A. Szito
**Cryptolestes ferrugineus female genitalia:** Pia Scanlon DAFWA

Cryptolestes ferrugineus cleared male abdomen. Ex: Australia 2010. det: A. Szito
**Cryptolestes ferrugineus male abdomen:** Pia Scanlon DAFWA
Cryptolestes ferrugineus cleared male. Ex: Australia 2010. det: A. Szito

Cryptolestes ferrugineus male dorsal: Pia Scanlon DAFWA

Cryptolestes ferrugineus male genitalia. Ex: Australia 2010. det: A. Szito

Cryptolestes ferrugineus male genitalia: Pia Scanlon DAFWA

Cryptolestes ferrugineus cleared male head. Ex: Australia 2010. det: A. Szito

Cryptolestes ferrugineus male head: Pia Scanlon DAFWA

Australia

Dorsal Image: Simon Hinkley & Ken Walker Museum Victoria


Elytra Image: Clare McLellan Museum Victoria

Australia

Head Front Image: Simon Hinkley & Ken Walker Museum Victoria
4. Other Images

China, ex dried mushrooms AQIS NSW. Note: images are for reference only and are inadequate for species level identification

Cryptolestes pusilloides: Simon Hinkley & Ken Walker Museum Victoria

Samoa, ex annato seed. Note: images are for reference only and are inadequate for species level identification

Cryptolestes pusillus: Simon Hinkley & Ken Walker Museum Victoria

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