

Trogoderma longisetosum and *Trogoderma variabile* (Coleoptera, Dermestidae) as Two New Stored Product Pests for the Czech Republic

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Abstract

STEJSKAL V., KUČEROVÁ Z., HÁVA J. (2005): *Trogoderma longisetosum* and *Trogoderma variabile* (Coleoptera, Dermestidae) as two new stored product pests for the Czech Republic. *Plant Protect Sci.*, **41**: 42–45.

A revision of material from the stored product pest collection of the Research Institute of Crop Production, Prague, was carried out. While so far five species of *Trogoderma* (all synanthropic) have been known from the Czech Republic, the revision revealed two new species and two new stored product pests for the Czech Republic: *T. longisetosum* and *T. variabile*. A key to determine *T. longisetosum* and *T. glabrum* is given. Faunistic records of the former quarantine species *T. granarium* are listed.

Keywords: faunistics; Coleoptera; Dermestidae; *Trogoderma*, determination key; Czech Republic

Stored product pests (SPP) cause enormous losses to various commodities throughout the world. Although most of the SPP are cosmopolitan species, the geographical distribution and status of a pest may change in time. It is useful to monitor and record changes of the SPP fauna in various countries and geographical areas. Therefore, staff of the Department of Stored Product Pest Control (Research Institute of Crop Production – RICP, Prague-Ruzyně) periodically surveys the fauna of the (i) agricultural and food storage facilities in the Czech Republic (e.g. VERNER 1965; ŽĎÁRKOVÁ 1998; HUBERT *et al.* 2002; KUČEROVÁ *et al.* 2003; STEJSKAL 1991, 1993, 1995; STEJSKAL & VERNER 1992, 1996; STEJSKAL *et al.* 2003), and (ii) commodities imported to the Czech Republic (e.g.

STEJSKAL & KUČEROVÁ 1993, 1996; STEJSKAL *et al.* 1999). The reference collection of SPP arthropods (*Acarina*, *Psocoptera*, *Coleoptera*, *Lepidoptera*, *Diptera*) found in then Czechoslovakia was established in 1958. This collection is still maintained and continuously updated. It serves as reference material for the Pest Diagnostics Laboratory of the RICP and as long term evidence of SPP occurrence in the Czech Republic.

The revision of specimens from the family *Dermestidae* collected during the years 1962–1975 was done recently, and the following report deals with the genus *Trogoderma*. The genus *Trogoderma* contains about 130 species worldwide (HÁVA 2003). So far five species were known from the Czech Republic; all synanthropic. The revision

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of the reference collection at RICP revealed two species of *Trogoderma* as new stored product pests for the Czech Republic. In this paper we present a few notes on *T. longisetosum* and *T. variabile*. Faunistic records of the former quarantine species *T. granarium* are also given.

MATERIAL AND METHODS

All examined specimens originated from the RICP collection, Prague-Ruzyně. Microscopic slides of male genitalia were prepared. Beetles were identified using PEACOCK (1993), CHAO and LEE (1966), OHBAYASHI (1985) and HÁVA (2001, 2003).

RESULTS AND DISCUSSION

Trogoderma longisetosum Chao and Lee, 1966

Material examined: 27 spec. labelled: Boh. [Bohemia] oc. [occidentale], 6.7.[19]67, Děčín, store of groundnut (*Arachis hypogaea*) from China, lgt. P. Verner; 10 spec. labelled: Boh. [Bohemia] 22.7.[19]71, Děčín, lgt. P. Verner. All specimens J. Háva det. and deposited in Research Institute of Crop Production, Prague-Ruzyně, Czech Republic.

Differential diagnosis. *T. longisetosum* is habitually very similar to the species *T. glabrum* (Herbst, 1783), but differs by the forms of antennae and male genitalia.

Determination key:

– terminal antennal segment without tooth, male genital bridge medially straight *T. longisetosum* (Figure 1)

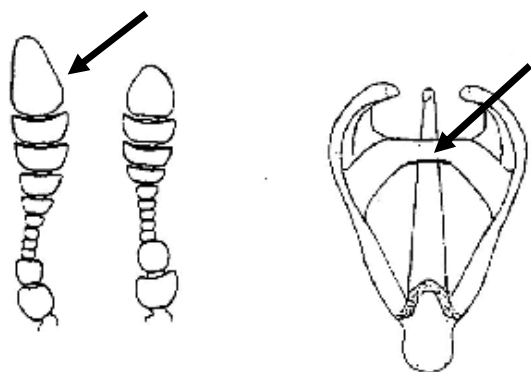


Figure 1. *T. longisetosum* – antennal segments (male, female), male genitalia

– terminal antennal segment with tooth, male genital bridge convex with central depression *T. glabrum* (Figure 2)

Distribution. Species described from China (CHAO & LEE 1966), recorded from Japan (OHBAYASHI 1985). This is the first record both from the Czech Republic and Europe as a species introduced from China.

Trogoderma variabile Ballion, 1878

Material examined. 5 males, 8 females labelled: [Bohemia centralis] Praha 7, 5.12.1975, Balírný obchodu, lgt. P. Verner. All specimens J. Háva det. and deposited in Research Institute of Crop Production, Prague-Ruzyně, Czech Republic.

Differential diagnosis. *T. variabile* is similar to the species *T. versicolor* (Creutzer, 1799), but differs by the forms of antennae, elytral maculation and male genitalia (GORHAM 1991).

Distribution. The species is known from Armenia, England, Finland, Italy, Latvia, Sweden, South Africa, Canada, Mexico, U.S.A., Afghanistan, Caucasus, China, Iran, Kazakhstan, Mongolia, Saudi Arabia, Tadzhikistan, Turkmenistan, Uzbekistan, and Australia (HÁVA 2003). This is the first record from the Czech Republic as introduced species.

T. variabile is a polyphagous pest, particularly of grain, seeds, cereals, legumes and a wide range of other high-protein products. Larvae have been known to damage zoological collections and herbaria (PEACOCK 1993).

Trogoderma granarium Everts, 1898

Material examined. 4 spec. labelled: [Bohemia] Praha, 25.9.[19]62, from Bamako, Mali, lgt. Verner;

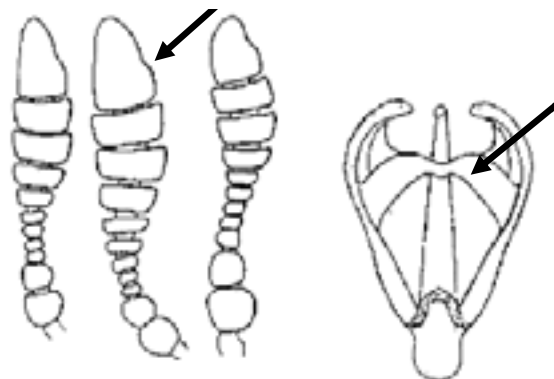


Figure 2. *T. glabrum* – antennal segments (male, female), male genitalia

10 spec. labelled: Boh. [Bohemia] b. [borealis], 28.6.[19]63, Ústí n. [nad]/Lab. [Labem] – peanuts from Mali, CH 48; 13 spec. labelled: Boh. [Bohemia] b. [borealis], 21.1.[19]66, Děčín – peanuts from Nigeria; 2 spec. labelled: Boh. [Bohemia], iii.1972, Děčín, groundnut Sudan, lgt. Brabec. All specimens J. Háva det. and deposited in Research Institute of Crop Production, Prague-Ruzyně, Czech Republic.

Distribution. *T. granarium* is a cosmopolitan species. It is known as synanthropic species from Bohemia and Moravia (HÁVA 2001). Specimens mentioned in the examined material were introduced to the Czech Republic from Mali, Nigeria and Sudan.

T. granarium, as a former quarantine species, is a serious pest of various stored products, especially cereal grain and cereal products, and is currently placed on the list of regulated pests in Europe (ANONYMOUS 2002).

References

- ANONYMOUS (2002): Diagnostic protocols for regulated pest – *Trogoderma granarium*. EPPO Bulletin, **32**: 299–310.
- CHAO Y., LEE H. (1966): A study of Chinese *Trogoderma* Berthold (Coleoptera, Dermestidae). Acta Zootaxonomia Sinensia, Peking, **3**: 245–252, 2 pls.
- GORHAM J.R. (1991): Insect and Mite Pests in food. U.S.D.A., Agriculture Handbook No.655.
- HÁVA J. (2001): Seznam československých brouků (Coleoptera: Dermestidae). Studie a zprávy Okresního muzea Praha-východ, **4**: 75–79.
- HÁVA J. (2003): World Catalogue of the Dermestidae (Coleoptera). Studie a zprávy Oblastního muzea, Praha-východ v Brandýse nad Labem a Staré Boleslavi, Supplementum 1.
- HUBERT J., STEJSKAL V., LUKÁŠ J. (2002): Current importance of various groups of arthropods as sources of allergens in stored grain in Czech Republic. Allergie, **1**: 27–33.
- KUČEROVÁ Z., AULICKÝ R., STEJSKAL V. (2003): Accumulation of pest-arthropods in grain residues found in an empty store. Zeitschrift für Pflanzenkrankheiten Pflanzenpathologie und Pflanzenschutz, **110**: 499–504.
- OHBAYASHI N. (1985): Dermestidae. In: KUROSAWA T., HISAMATSU S., SASAJI H. (eds): Coloured Illustrations of the *Coleoptera* of Japan. Vol. III. Hoikusha Public, Osaka: 125–130.
- PEACOCK E. R. (1993): Adults and larvae of hide, larder and carpet beetles and their relatives (Coleoptera: Dermestidae) and of derodontid beetles (Coleoptera: Derodontidae). Handbooks for the Identification of British Insects, **5**: 1–144.
- STEJSKAL V. (1991): Faunistic records: *Latridius pseudominutus* a new stored product beetle to Czechoslovakia. Acta Entomologica Bohemoslovaca, **88**: 79.
- STEJSKAL V. (1993): The first record of *Periplaneta brunnea* (Blattodea) from Central Europe. Anzeiger für Schädlingkunde, Pflanzenschutz, Umweltschutz, **66**: 150–151.
- STEJSKAL V. (1995): The first record of damage to tabletted brewer's yeast caused by *Dienerella filum* (Coleoptera, Latridiidae). Anzeiger für Schädlingkunde, Pflanzenschutz, Umweltschutz, **68**: 128.
- STEJSKAL V., VERNER P.H. (1992): *Sulcatogibbium punctaticolle* (Pic) (Coleoptera: Ptinidae) from corn store in Mali: a new stored-product beetle and a new distribution record. Coleopterists Bulletin, **46**: 289.
- STEJSKAL V., VERNER P.H. (1996): Long-term changes of cockroach infestations in Czech and Slovak food-processing plants. Medical & Veterinary Entomology, **10**: 103–104.
- STEJSKAL V., KUČEROVÁ Z. (1993): Survey of stored-product pests in rice imported from Vietnam. Plant Protection, **29**: 189–191.
- STEJSKAL V., KUČEROVÁ Z. (1996): *Reesa vespulae* (Col. Dermestidae) – a new pest in seed stores in the Czech Republic. Plant Protection Science, **32**: 97–101.
- STEJSKAL V., ZUSKA J., WERNER P., KUČEROVÁ Z. (1999): Survival over the winter of *Rhyzopertha dominica* F. (Coleoptera: Bostrichidae) in hot spots caused by improper grain storage technology: the first record in the Czech Republic. Plant Protection Science, **35**: 23–25.
- STEJSKAL V., HUBERT J., KUČEROVÁ Z., MUNZBERGOVÁ Z., LUKÁŠ J., ŽĎÁRKOVÁ E. (2003): The influence of the type of storage on pest infestation of stored grain in the Czech Republic. Plant, Soil and Environment, **49**: 55–62.
- VERNER P. (1965): Výzkum fauny závodů potravinářského průmyslu. [Závěrečná zpráva.] ÚVÚPP, Praha.
- ŽĎÁRKOVÁ E. (1998): Mite fauna of stored grain in the Czech Republic. Plant Protection Science, **34**: 49–52.

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Abstrakt

STEJSKAL V., KUČEROVÁ Z., HÁVA J. (2005): *Trogoderma longisetosum* a *Trogoderma variabile* (Coleoptera, Dermestidae) dva nové druhy skladištních škůdců v České republice. Plant. Protect. Sci., 41: 42–45.

Na základě revize materiálu sbírky skladištních škůdců (Výzkumný ústav rostlinné výroby, Praha-Ruzyně) je publikován seznam druhů rodu *Trogoderma* (Dermestidae). Z České republiky bylo doposud známo 5 druhů, všechny synantropní. Revizí sbírky byly zjištěny další 2 druhy tohoto rodu a zároveň 2 nové druhy skladištních škůdců *T. longisetosum* and *T. versicolor* v České republice. V práci jsou uvedeny jednotlivé nálezy dříve karanténního druhu *T. variabile*.

Klíčová slova: faunistika; Coleoptera; Dermestidae; *Trogoderma*; Česká republika

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