

**Title** Interspecific associations among stored-grain beetles  
**Author** Christian Nansen, Paul Flinn, David Hagstrum, Michael D. Toews and William G. Meikle  
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### Abstract

Recent increases in prices of raw grain, including wheat, will reduce action thresholds for insect damage and therefore justify more research into management practices and understanding of pest ecology in stored grain. Compared to most other habitats, natural or man-made, a filled grain silo constitutes a unique and fairly homogeneous habitat in which food availability for many grain-feeding insects is unlimited. A fundamental aspect of stored-grain insect ecology is a better understanding of associations among common beetle species. We analyzed the densities of three important stored-grain beetle species, *Rhyzopertha dominica* (F.) (Coleoptera: Bostrichidae), *Cryptolestes ferrugineus* (Stephens) (Coleoptera: Laemophloeidae), and *Tribolium castaneum* (Herbst) (Coleoptera: Tenebrionidae) in wheat samples collected in 1999–2001 from 129 grain silos in Kansas. The beetles studied here are highly mobile, and the number of insects in each grain sample is a result of the beetles' preference for favorable micro-environmental conditions and possibly of intra- and interspecific associations. In general, the number of *T. castaneum* in a grain sample increased as the number of *R. dominica* increased, but the number of *C. ferrugineus* was not correlated with the number of *R. dominica*. The densities of both *T. castaneum* and *R. dominica* decreased as the number of *C. ferrugineus* increased. *Cryptolestes ferrugineus* and *T. castaneum* can be predators and the species composition of insects in a grain sample may be modified by predation. As *T. castaneum* populations increased, so did *R. dominica* but not *C. ferrugineus*. Our analysis of the species composition in grain samples is discussed in an ecological context.