Table S1. Observational evidence for dung beetle regulation of direct life-cycle helminth transmission. The widely observed negative correlation between dung beetle abundance and emergence rates of direct life-cycle helminths of livestock is likely driven by a combination of both direct and indirect mechanical interference. Asterisk denotes density in individuals per gram feces.

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| **Reference** | **Parasite** | **Time interval** | **Beetle species** | **Beetle density\*** | **Mean percent change in larval emergence** | **Larval recovery location** |
| Bergstrom (1983) | *Dictyocaulus hadweni* | 4-36 hrs | *Aphodius vittatus, A. coloradensis, A. fimetarius, A. homisus, Canthon sp.*  | 1.5 | -84.7 | Soil surrounding feces |
| Bergstrom et al. (1976) | *Trichostrongylus colubriformis* | 22-29 hrs | *A. vittatus, A. coloradensis, A. granarius* | 2-10 individuals/5-30g | -54 | NA |
| Bergstrom et al. (1976) | *Nematodirus sp. Ostertagia sp. Marshallagia marshalli* | 22-29 hrs | *A. coloradensis, A. fimetarius, C. practicola* | 2-10 individuals/5-30g | -46 | NA |
| Bryan (1973) | 27% *Haemonchus placei*, 11% *Cooperia pectinata*, 62% *Oesophagostomum radiatum* | NA | *Onthophagus gazella* | 0.01 | -50 | Herbage samples (0-30cm from feces) |
| Bryan (1973) | 27% *H. placei*, 11% *C. pectinata*, 62% *O. radiatum* | NA | *O. gazella* | 0.01-0.008 | -48 | Herbage samples (0-30cm from feces) |
| Bryan (1973) | 27% *H. placei*, 11% *C. pectinata*, 62% *O. radiatum* | NA | *O. gazella* | 0.004 | -84 | Herbage samples (0-30cm from feces) |
| Bryan (1976) | not stated | 84 days | *O. gazella* | 0.002 | -40 | Herbage samples (0-45cm from feces) |
| Bryan (1976) | not stated | 84 days | *O. gazella* | 0.01 | -74 | Herbage samples (0-45cm from feces) |
| Bryan (1976) | not stated | 84 days | *O. gazella* | 0.02 | -66 | Herbage samples (0-45cm from feces) |
| Bryan and Kerr (1989) | *Cooperia spp., H. placei, O. radiatum* | 133 days | *O. gazella, Liatongus militaris, Euoniticellus intermedius, Sisyphus spinipes*  | Minimal beetle activity - light feeding, pats were tunnelled, but did not fracture | -57% x control | Herbage samples (10-60cm from fecal deposit) |
| Bryan and Kerr (1989) | *C. spp., H. placei, O. radiatum* | 133 days | *O. gazella, L. militaris, E. intermedius, S. spinipes*  | Moderate beetle activity - more intense feeding, pats fractured with exposure | -90% x control | Herbage samples (10-60cm from fecal deposit) |
| Bryan and Kerr (1989) | *C. spp., H. placei, O. radiatum* | 133 days | *O. gazella, L. militaris, E. intermedius, S. spinipes*  | Intense activity - pats completely reduced to a sawdust-like residue by removal of feces for construction of brood balls.  | - 94% x control | Herbage samples (10-60cm from fecal deposit) |
| English (1979) | Equine strongyles (not specified) | 150 days | *O. gazella* | 0.2-0.3 | -34.8 % over a 5 month period | Herbage adjacent to fecal mass |
| Fincher (1973) | *Ostertagia ostertagi*  |  10 weeks | *Phanaeus vindex, P. igneus, Dichotomius carolinus, Canthon pilularius, Copris minutus, Onthophagus hecate, 0. pennsylvanicus, 0. concinnus, 0. oklahomensis* | 5-10x background levels | -14.7% x control | Herbage samples (0-15cm from feces) |
| Fincher (1975) | *O. ostertagi*  | 108 days | *Phanaeus vindex, P. igneus, Dichotomius carolinus* | 4-5x background levels | -82.7% x control | NA |
| Fincher (1975) | *H. placei* | 108 days | *P. vindex, P. igneus, D. carolinus* | 4-5x background levels | 71.4% x control | Recovered from calf abomasum |
| Fincher (1975) | *Cooperia oncophora, C. pectinata, and C. punctata* | 108 days | *P. vindex, P. igneus, D. carolinus* | 4-5x background levels | -75.9% x control | Recovered from calf small intestine |
| Fincher (1975) | *O. radiatum*  | 108 days | *P. vindex, P. igneus, D. carolinus* | 4-5x background levels | -62.8% x control | Recovered from calf large intestine |
| Gormally (1993)  | *Dictyocaulus viviparus*  | 90 hrs | *A. fossor* | 0.5 | -96.7 | Feces |
| Gormally (1993)  | *D. viviparus*  | 90 hrs | *A. fossor* | 1 | -84.2 | Feces |
| Gormally (1993)  | *D. viviparus*  | 90 hrs | *A. luridus*  | 1 | -91.9 | Feces |
| Gormally (1993)  | *D. viviparus*  | 90 hrs | *A. luridus*  | 2 | -56.4 | Feces |
| Gormally (1993)  | *D. viviparus*  | 24 hrs | *A. foetidus* | 6 | -27.5 | Feces |
| Houston (1984) | Equine strongyles (not specified) | 31 days | *O. gazella* | 0.044 | Differences not significant relative to control | Herbage adjacent to fecal mass |
| Houston (1984) | Equine strongyles (not specified) | 31 days | *O. gazella* | 0.088 | Differences not significant relative to control | Herbage adjacent to fecal mass |