

SECONDARY SEED DISPERSAL BY THE EARTHWORM, *Lumbricus terrestris*.  
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Field experiments and surveys were conducted to determine the importance of the earthworm, *Lumbricus terrestris* (common nightcrawler), in the movement of seeds from the soil surface into the seedbank. *Lumbricus terrestris* lives in permanent vertical burrows and forages at the soil surface for organic matter such as leaves, twigs and seeds, which it drags inside its burrow for later feeding as the plant tissues decompose. In a foraging preference study, *L. terrestris* collected seeds of six large-seeded weed and crop species, but preferred giant ragweed, common sunflower, and burcucumber. We monitored *L. terrestris* seed gathering activity under conditions of natural seed dispersal in a fallowed crop field with an established, dominant stand of giant ragweed and a natural *L. terrestris* population. *Lumbricus terrestris* collected and cached over 60% of the giant ragweed seed rain in its burrows. The subsequent spring, over 60% of all giant ragweed seedlings emerged from *L. terrestris* burrows in the same field, indicating that many of the cached seeds retain their viability within the burrows. A survey of giant ragweed populations at two other sites showed a similar distribution of giant ragweed plants emerging from *L. terrestris* burrows. Studies with seeds to which threads were glued showed that *L. terrestris* buried most giant ragweed seeds in the upper 10 cm of the soil profile, which is within emergence limits for this species. Field experiments in which access to giant ragweed seeds was manipulated to allow or exclude *L. terrestris* and seed predators (i.e., mice) showed that giant ragweed seed predation was reduced when *L. terrestris* was present compared to when it was excluded, probably due to seed burial by *L. terrestris*. Collectively, these data provide evidence that *L. terrestris* forages selectively for seeds and can exert a strong influence on the secondary dispersal of large weed seeds, potentially decreasing their vulnerability to predation, increasing seed bank formation and seedling recruitment.