



## **Erosion of sediment displacement: animal foraging promotes sediment, water and seed movement in a semi-arid woodland**

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An emerging area of interest in geomorphology over the past two decades has been the effects of biota on ecosystem processes. There is now increasing recognition that soil disturbance by animals contributes substantially to the movement of water, sediment, seed and organic matter in resource-limited environments. We use three case studies to show how the displacement of soils by animals has substantial effects on ecosystem processes. Substantial quantities of soil are displaced during the construction of foraging pits of soil-disturbing heteromyid rodents (*Dipodomys* spp.) in the Chihuahuan Desert (USA) and the burrowing bettong (*Bettongia leuseur*) and greater bilby (*Macrotis lagotis*) in eastern Australia. These pits act as traps for litter, and have higher levels of carbon, nitrogen, infiltration and seed than adjacent surfaces. The conical-shaped foraging pits of the Short-beaked echidna (*Tachyglossus aculeatus*) influence time to initiation of runoff, the generation of sediment and the capture and dispersal of seed. Runoff and erosion processes associated with small-scale animal foraging pits may provide a mechanism for coupling critical resources such as seed, water and soil in space to promote the development of fertile patches.

Keywords: foraging pits, soil displacement, resource capture, semi-arid, arid, biotic controls on surface movement