

Simulating Dust Emission and Biota Transport from Playa Systems using a Wind Tunnel

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An important component of invertebrate dispersal and colonization is the ability for their resting stages to be entrained into the atmosphere. Aquatic invertebrate eggs fall within the mean size of airborne dust and sand grains, are less dense, and aerodynamically shaped. We have shown that aquatic invertebrates can be dispersed long distances in dust storms but the extent of transport of taxa based on diapausing egg size/morphology has not been investigated. Here, we controlled the wind erosion process in a wind tunnel to test entrainment of diapausing stages of brine shrimp, clam shrimp, tadpole shrimp, fairy shrimp, *Daphnia*, and the rotifers *Brachionus plicatilis* and *B. calyciflorus* into the air by saltation. Diapausing eggs were fluorescently labeled and mixed with sterilized wind-erodible playa-like soil. Aeolian sediment was collected from three points in the wind tunnel system and rehydrated with sterile media. Viability was confirmed from all organisms in all three sections of the wind tunnel which represent distance from a source playa. This study establishes aeolian transport as a viable method of the dispersal of resting stages of arid land aquatic invertebrates and a viable pathway for successful colonization of new habitats.