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Fluid dynamics of two-dimensional pollination in Ruppia (widgeon grass)[1] NAGA MUSUNURI, DANIEL BUNKER, SUSAN PELL, IAN FISCHER, PUSHPENDRA SINGH, NJIT — The aim of this work is to understand the physics underlying the mechanisms of two-dimensional aquatic pollen dispersal, known as hydrophily, that have evolved in several genera of aquatic plants, including Halodule, Halophila, Lepilaena, and Ruppia. We selected Ruppia, which grows in the wetlands of the New Jersey/New York metropolitan area, for this study. We observed two mechanisms by which the pollen released from male inflorescences of Ruppia maritime is adsorbed on a water surface: 1) inflorescences rise above the water surface and after they mature their pollen mass falls onto the surface as clumps and disperses as it comes in contact with the surface; 2) inflorescences remain below the surface and produce air bubbles which carry pollen mass to the surface where it disperses. In both cases dispersed pollen masses combined with others to form pollen rafts. The formation of porous pollen rafts increases the probability of pollination since the attractive capillary force on a pollen raft towards a stigma is much larger than on a single pollen grain.

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