The Role of Wave-induced Drift in Seed Dispersal

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Exploring the dispersal patterns of seeds within tidal channels and the likelihood of reaching their ideal habitat during their survival period is important for wetland ecosystem restoration. However, there are few studies on wave-induced drift of seeds. In order to study the drift motions of artificial seeds of different densities, sizes and shapes with wave parameters, a calculation method was proposed based on slope slip theory and water wave theory, which can quickly predict the drift velocity and drift trajectory of seeds under the action of regular waves. And a series of laboratory experiments were carried out, using two cameras to capture the real-time transport of seeds, and the effectiveness of the calculation method was verified by comparison. The results show that the proposed method can accurately predict the drift motion of seeds, the drift trajectory of seeds can be divided into pitch motion and drift motion along the wave propagation direction, and the drift velocity of seeds is proportional to the square of wave height; the drift velocity of spheres is the largest, and the change of density has less effect on it. By studying the drift motions of seeds under wave action, we can provide some theoretical guidance for accelerating the reconstruction of plant community by seed dispersal.