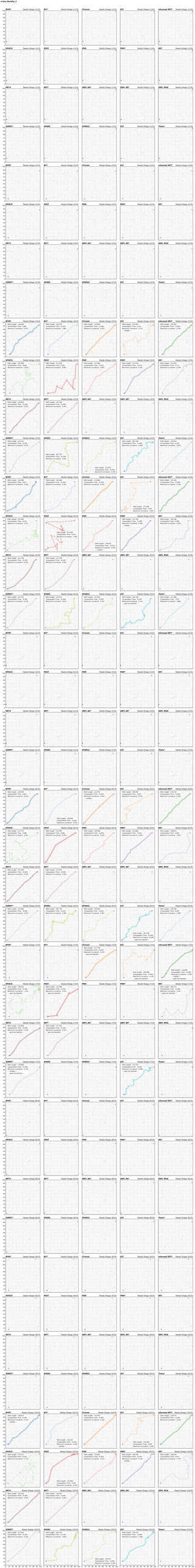cross_density_1