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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Discrete Monotype Population Models and One-dimensional Stochastic Differential Equations -- Birth and Death Processes -- Scaling Limits for Birth and Death Processes -- Continuous State Branching Processes -- Feller Diffusion with Random Catastrophes -- Structured Populations and Measure-valued Stochastic Differential Equations -- Population Point Measure Processes -- Scaling limits for the individual-based process -- Splitting Feller Diffusion for Cell Division with Parasite Infection -- Markov Processes along Continuous Time Galton-Watson Trees -- Appendix.
Sommario/riassunto	In this contribution, several probabilistic tools to study population dynamics are developed. The focus is on scaling limits of qualitatively different stochastic individual based models and the long time behavior of some classes of limiting processes. Structured population dynamics are modeled by measure-valued processes describing the individual behaviors and taking into account the demographic and mutational parameters, and possible interactions between individuals. Many quantitative parameters appear in these models and several relevant

normalizations are considered, leading to infinite-dimensional deterministic or stochastic large-population approximations. Biologically relevant questions are considered, such as extinction criteria, the effect of large birth events, the impact of environmental catastrophes, the mutation-selection trade-off, recovery criteria in parasite infections, genealogical properties of a sample ofindividuals. These notes originated from a lecture series on Structured Population Dynamics at Ecole polytechnique (France). Vincent Bansaye and Sylvie Méléard are Professors at Ecole Polytechnique (France). They are a specialists of branching processes and random particle systems in biology. Most of their research concerns the applications of probability to biodiversity, ecology and evolution.