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I discuss various properties of stochastic models for population dynamics. I construct and analyze some stochastic delay models and non-delay models, produced using the infinitesimal mean and variance given by birth and death rate functions. Delay models are a result of allowing birth and death rates to depend on the population size at a prior time which would take the maturity time in to account. Drift terms are set up in the form of the logistic growth and delayed logistic growth functions. I discuss the existence and uniqueness of the global solution, boundedness of the moments of the solution and non-negativeness of the solution and, for some models, the boundedness of the path. Uniqueness is guaranteed using a regularization of the non-Lipschitz diffusion terms. That also causes the solutions to be persistent. Some models are discussed as Itô diffusions with absorbing barriers. Hitting times are also discussed for non-delay models and a new idea is presented for analyzing the hitting times of a class of discrete delay models. (Received September 16, 2013)