A Trait Based Model From Scale Free Assumptions

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We model our ecosystem by keeping track of the abundance $N(w, w_*, t)$ of fish of weight w at time t. Here w_* denotes the weight of the fish at maturity. We suppose the maturity weight w_* represents the species of the fish, in the sense that fish of the same weight can act differently in our model, only if they have different maturity weights. We allow w and w_* to vary continously, and to take any possitive values, and hence we are assuming a continiuum of species, characteriezed by different size traits w_*. The abundance