

Ecology and evolution of stunted growth in freshwater fishes

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Stunted growth is a frequently observed phenomenon in many freshwater fish populations. In stunted populations the growth of fish is much lower than the potential of the species and stunted or dwarf individuals are observed. Our hypothesis for the occurrence of stunting is that in stunted populations the main form of population regulation is resource limitation, which results in decreased growth rate. Stunting will occur when other forms of population regulation decrease in importance. Furthermore, because of phenotypic plasticity, fish may adaptively respond to these ecological changes by altering their reproductive strategy, e.g. age at maturity. We show by simulating a discrete-time age-structured model that incorporating density dependence to yearly growth increment can produce dwarf forms of fish.