A simple-biology, stage-structured population model of the spring dynamics of Calanus chilensis at Mejillones del Sur Bay, Chile

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The population dynamics of Calanus chilensis (Copepoda: Crustacea) was analyzed using a mixture of field data and mathematical models. Field data were obtained in the Humboldt Current upwelling area, at Mejillones del Sur Bay (northern Chilean coast) during the spring of 1990 and 1991. Those data were used to set the parameter values and functions of a stage-structured population model (SSPM). The model was built and run with STELLA-II version 3.07, an interactive, iconographic modeling software. The results show that C. chilensis has a generation time of 20 days, and that its population dynamics in the spring is controlled by upwelling events, which affect both its growth rate (food dependence) and its local population size (advection).