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## Modeling of the Pacific sardine *Sardinops caeruleus* fishery of the Gulf of California, Mexico

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We used a stochastic age-structured model with density-dependent recruitment to study the fishery and population dynamics of the Gulf of California Pacific sardine (*Sardinops caeruleus*) stock for the period 1972-1973 to 1989-1990. To determine the value of fishing mortality (F) which corresponds to the long-term optimum yield and cost-benefit ratio (C/B), we simulated fished population trajectories over a period of 50 years. Our results indicated a good fit between observed and predicted annual recruitment and catch. Quasiperiodic oscillations of a five year periodicity for an unfished population faded with increasing F. Maximum yield and C/B were obtained with  $F=0.475$  and  $0.275$ , and the simulated population began declining with  $F \geq 0.5$  and  $\geq 0.3$ , respectively. It is proposed that  $F < 0.25$  would be adequate for this fishery.

Palabras clave: Specialist, Recruitment, *Sardinops caeruleus*, Pacific sardine, Catch, simulation

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