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Ross A. Chiquet* (rchiquet@louisiana.edu), **A. S. Ackleh, B. A. Ma, T. Tang, A. Veprauskas, H. Caswell** and **N. Sidorovskaia**. *Analysis of Lethal and Sublethal Impacts of Environmental Disasters on Sperm Whales Using Stochastic Modeling.*

We develop autonomous and nonautonomous matrix population models to study lethal and sublethal impacts of environmental disasters, such as oil spills, on the Gulf of Mexico sperm whales. We investigate how reductions in the survival probabilities and in fecundity affect the sperm whale population. We then investigate the long term effect of an environmental disaster on the population by assuming that the lethal and sublethal effects are for a fixed period of time after which the vital rates recover to their original values. We also inspect the effects of demographic stochasticity on the recovery probabilities and the recovery time of the population and develop formulas to calculate the sensitivity of the recovery time to changes in the initial population distribution, reduction proportion and reduction time. (Received September 20, 2016)