Public Abstract

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Incidental take is the permitted killing, harming, harassing or destroying habitat of an endangered species under endangered species law. Legislation assumes that endangered or threatened populations can somehow compensate for the potentially negative effects of incidental take. However if the species in question does not have the assumed capacity to compensate it is possible for incidental take to dramatically lower abundance and lead to decreasing population trends for a protected species. With this research I explored the concept of incidental take from an ecological and demographic stand point to evaluate the basis and application of the policy. I reviewed literature on incidental take, compensatory mortality, and harvest theory to elucidate the conditions under which incidental take might be sustainable from a demographic perspective. I also developed and used a predictive population model for Piping Plovers in the Great Plains to evaluate the potential effects of currently permitted take of eggs and chicks in the Missouri River on plover population viability. Lastly I examined the use of science and specifically quantitative population models in incidental take permitting decisions by reviewing biological opinions for Piping Plovers from throughout their range. Biological opinions are the official documents prepared and released by the US Fish and Wildlife Service detailing the ecology and biology of an incidental take action and determining whether and under what conditions incidental take can proceed.