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Todd J. Pitlik

Elizabeth Hermann

Eric Peralta

Brian E. Washburn

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To Live and Fly in LA: Using Bird Strike and Management Program Information to Improve Safety at Airports in the Los Angeles Basin

Todd J. Pitlik
United States Department of Agriculture, APHIS, Wildlife Services, Los Angeles, California
Elizabeth Herrmann
United States Department of Agriculture, APHIS, Wildlife Services, San Jose, California
Eric Peralta
United States Department of Agriculture, APHIS, Wildlife Services, Los Angeles, California
Brian E. Washburn
United States Department of Agriculture, APHIS, Wildlife Services, NWRC, Sandusky, Ohio

ABSTRACT: Wildlife-aircraft collisions (wildlife strikes) pose a serious safety risk to aircraft. Wildlife strikes can be evaluated at different levels, include efforts to examine these problems at the national, regional, or state level, or for an individual airport. Similarly, wildlife strikes involving individual wildlife species or guilds can be examined at varying scales. Although wildlife strike analyses at the national, regional, or species/guild level are valuable, airport-specific analyses are essential for the effective implementation and evaluation of integrated wildlife damage management programs as these actions are conducted at the airport level. The species that present hazards to safe aircraft operations varies among airports, even when considering airports that are very close to each other (spatially).

We developed a strategic planning framework to increase the efficacy and appropriateness of wildlife hazard mitigation programs, using the three Los Angeles World Airports as examples. This framework is intended to be simple, adaptable, and useful to airport wildlife biologists and their co-operators (i.e., airport manager and operations personnel). First, we reviewed the airport-specific wildlife strike information to determine if trends or patterns exist. Second, we categorized the wildlife species (primarily birds) based on their direct mitigation potential, feeding behaviours, seasonality, and migration patterns. Lastly, we reviewed the graphs of direct mitigation actions that were conducted each year. Using each individual airport's wildlife strike data, direct mitigation effort information, and the life history/ecological characteristics of individual wildlife species, we devised a matrix of four categories (i.e., I to IV) to simply the evaluations, thus allowing us to group wildlife species or guilds according to their behavioural patterns and direct mitigation potential. Species included in Category I are those species that are invasive, are resident (i.e., non-migratory), and have a moderate to high direct mitigation potential. Category II includes species that typically have a semi-resident or migratory life history and have moderate direct mitigation potential. Species that are migratory and are winter residents at the airports but have a low to moderate direct mitigation potential were included in Category III. Category IV species are typically summer residents at the airports or migratory oceanic waterbirds with minimal to low direct mitigation potential.

For each wildlife species of interest, we graphed the number of reported wildlife strikes (for non-damaging, minor damage reported, and substantial damage reported) for each year using information extracted from the Federal Aviation Administration's National Wildlife Strike Database. Risk values (i.e., low/medium/high) were assigned to each individual wildlife species of interest based on the frequency of damaging strikes that occurred at each airport. We graphed the available direct mitigation data involving each wildlife species of interest at each airport. Direct mitigation actions included lethal removal of problematic individuals, live-trapping and translocation of problematic individuals, and non-lethal hazing. Once each wildlife species or guild of interest was subjectively classified into one of the four categories, strategic planning efforts can be conducted to evaluate and modify an airport's wildlife damage management plan and activities. Recommendations regarding the potentially most effective direct and indirect mitigation recommendations can then be made for each category based on the findings related to the wildlife strike information and direct mitigation activities previously conducted at the airport.

Our efforts resulted in a simple, adaptable, and useful strategic planning framework to conduct airport-specific planning and evaluations of wildlife damage mitigation actions. However, because our approach is flexible, there is great potential for modification and improvement (depending on the wants and needs of a specific airport program). The use of standardized willdlife strike rates, incorporation of risk metrics, and considerations of hazardous wildlife abundance data are potential sources of information that could be used within our framework.

KEY WORDS: airports, birds, management, raptors, vertebrate pest control, wildlife strikes