reported in the USA of which 433 Canada goose and 166 "goose" strikes caused damage. Damage to an engine was reported in 154 cases. The number of reported Canada goose and "goose" strikes per year increased, in concert with the increase in the population, from 39 in 1990 to 115 in 1998. However, reported strikes declined since 1998 to 96 in 2003 in spite of the continued increase in the overall resident population. This decline is likely due to aggressive Canada goose management programs that have been implemented at many airports. These programs must be continued and expanded to reduce this significant hazard to aviation.

(P7) TECHNIQUES FOR IDENTIFYING BIRD STRIKE REMAINS

Carla Dove, Marcy Heacker, and Greg Concepcion, National Museum of Natural History, Smithsonian Institution, MRC 116, PO Box 37012 Washington, DC 20013-7012 USA

Remains from bird/aircraft strikes are identified using whole-feather characters, microscopic analysis of downy barbules, and by use of DNA sequences. This poster describes the techniques used for identification of fragmented feather remains at the Smithsonian Institution and presents the results of species identifications from civil and military cases sent to the Feather Lab in 2003. Progress on the FAA-sponsored DNA project are discussed.

(P8) INTEGRATION OF AVIAN RISK MANAGEMENT TOOLS TO CHARACTERIZE REGIONAL MIGRATION PATTERNS TO IMPROVE AIRFIELD SAFETY

Gino J.M. Giumarro, Robert D. Roy, and Steven K. Pelletier, Woodlot Alternatives, Inc., 30 Park Drive Topsham, ME 04086 USA

There is a range of avian collision services and systems for use with military, commercial air carrier, and public airport use that focus on engineering, long-term monitoring, and modeling. However, many of these solutions ignore specific bird migration dynamics necessary to conduct a regionally specific analysis of bird-aircraft collision risk. This poster highlights the applicability of using an integrated set of avian risk management tools to assess regionally specific BASH risks at airfields. A multiple methodology approach was used for assessing wind farm and communication tower impacts on birds. Potential impacts of wind farms and communication towers on bird populations were assessed from an integrated set of state-of-the-art avian surveys. The initial step was to conduct a landscape analysis that characterized the relationships between species and ecological communities to determine presence likelihood. Breeding bird field surveys were conducted within the region of influence to document species breeding in the region and to detect species not included in the landscape analysis. Nocturnal bird surveys were conducted to characterize nighttime movements of songbirds through and over the project area during migration periods. These nocturnal surveys used a variety of techniques, including ceilometers, moonwatching, radar surveys, acoustic recording, and NEXRAD weather radar data analysis. The combination of these methods resulted in a robust data set regarding migratory species, timing, volumes, and migration directions within the project area. The final step involves creation of a dynamic three-dimensional model of the region to observe migration data in a real-world setting. The model provides a visual depiction of bird movements with respect to major topographic features in the study area. These topographic features, such as