Coffee Break
3:00 PM – 3:30 PM — Oakes North Room & Foyer

Session 2: Bird Strike Analysis Part 1
3:30 PM – 5:00 PM — Oakes South Room
Moderator: Rolph Davis

Interspecific variation in wildlife hazards to aircraft: implications for airport wildlife management
3:30 PM
Travis L. DeVault

Understanding relative hazards of wildlife to aircraft is important for developing effective management programs. We used Federal Aviation Administration National Wildlife Strike Database records from 1990-2009 to rank the relative hazard of wildlife to aircraft. We summarized data for 77 species or species groups with >20 records where collisions occurred ≤500 ft (152 m) above ground level. We also assessed the effects of avian body mass, body density, and group size on relative hazard scores. The 3 most hazardous species or species groups in composite rankings were mule deer, white-tailed deer, and domestic dogs. "Other geese" (snow goose, brant, and greater white-fronted goose) was the most hazardous bird group, 61% as hazardous as mule deer. Ten of the 15 most hazardous bird species or species groups are strongly associated with water. Avian body mass was strongly associated with percentage of all strikes that caused damage, but not for species exceeding median body mass (1,125 g) of birds in damaging strikes. In contrast, percentage of damaging strikes increased when multiple birds were involved, but only for those species with body mass ≥1,125 g. We recommend use of exclusion (e.g., fences) for managing large mammals and habitat modifications (e.g., reductions in standing water) accompanied by hazing for reducing bird use of airports. Managers should prioritize efforts that will reduce habitat suitability for those species most hazardous to aircraft. We also recommend that evaluations of jet turbine engine performance following bird ingestions consider using multiple birds with body mass >1,000 g.

Reporting multiple-impact birdstrikes: What's in the soup?
4:00 PM
Carla J. Dove

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Comparison Of Wildlife Strike Data Among Airports Improve Aviation Safety
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Richard A. Dolbeer

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Bird Strike Association of Canada Annu General Meeting
5:00 PM – 6:00 PM — Oakes South Roo
Gary Searing

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Welcome Reception
6:00 PM – 8:00 PM — Oakes North Roo

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Bird Strike Committee USA Meeting

7:00 AM – 9:00 AM Oakes South Room
John E. Ostrom

Session 3: Radar Part 1

9:00 AM – 10:30 AM
Moderator: Scott Snow

Bird Strike Prevention version 3.0

9:00 AM
Arie Dekker

Traditionally, bird strike prevention involves the removal of birds from airfields, using a variety of scaring techniques. In time this has been supplemented with habitat management as a more preventive method. These approaches can be considered as bird strike prevention version 1.0 and 2.0. Bird strike statistics indicate that a minimum ratio is reached. For a further decrease the traditional measures have to be complemented with attention towards birds overflying airports. This implicates that apart from legal and ethical issues much more knowledge on bird mobility needs to be acquired. Satellite tracking of birds show that home ranges not only vary between seasons but also between and within species. In a number of examples we show that home ranges vary enormously. Breeding Buzzards on Leeuwarden airbase occupy an areas varying from 25 to 70 Hectares while non breeding Buzzards in the same season wander distances of more than 200 kilometres. A breeding Lesser Black backed Gull travelled from the colony in the Waddensea to Amsterdam (100 Km) and back in a single day. Because of the complicated mobility and often extreme large source areas of flying birds, large scale lethal methods are likely to be both ineffective and inefficient in dealing with overflying birds. Instead, aircraft avoiding flocks of flying birds is a promising alternative strategy. Effort should be put on the development of concepts of operations that include the use of avian radars in a real time setting.

Update on the Avian Radar Performance Assessment Program

9:30 AM
Edwin E. Herricks

In 1999 the Federal Aviation Administration initiated a program with the University of Illinois Center of Excellence for Airport Technology to assess new safety technologies for commercial airports. The emphasis in that program shifted to the assessment of commercially available sensors and systems in 2006 resulting in the deployment of avian radar systems at the Naval Air Station Whidbey Island, Seattle Tacoma International Airport, Vancouver International Airport, O'Hare International Airport, John F. Kennedy International Airport, and Dallas Fort Worth International Airport. In the assessment, multiple sensors in S-band, and X-band, including magnetron and solid state marine radars, and multiple configurations of avian radar systems, including advanced L-band and Frequency Modulated Continuous Wave radars have been assessed. The program has operated avian radars continuously for up to 4 ½ years, amassed over 6 tera bytes of data, and has supported the publication of an Advisory Circular (AC 150-5220-25) in November 2010. Issues of deployment, operations and maintenance, data management, and integration into airport operations have been assessed. This paper will review the status of the avian radar performance assessment program and provide examples of applications in wildlife management at airports and the use of avian radar data in operations at civil airports.

3-D Radar Sampling Methods for Ornithology and Wildlife Management

10:00 AM
Robert C. Beason

Ornithologists and wildlife biologists have used visual and auditory sampling techniques to monitor the composition of avian communities for decades, even centuries. These sampling techniques have been standardized to compare among different communities and geographical locations. From these temporally and spatially restricted samples, biologists have extrapolated to local avian communities, although not all species, individuals, or behaviours were detected and recorded. Avian radar complements the limitations of visual and auditory sampling with greater temporal and geographic sample sizes. Radar operates continuously and has a greater detection range. Its sampling volume is dictated by the coverage pattern projected by its antenna as it scans. Dish antennas provide 3-D data and standard array antennas provide 2-D data in either a horizontal or vertical plane within the volume of interest. We present new radar sampling methods that provide 3-D data of birds within a full cylinder of coverage, with typical dimensions of 6-mile radius, 10,000-ft tall representing a volume of interest at most airfields. Like the standardized visual and auditory sampling methods, these methods allow users to make comparisons among samples from different locations, systems with different configurations, and with visual sampling techniques. These methods provide rich and complete datasets of avian behaviour that can be presented visually in a grid format for conceptual overview or numerically for statistical analyses. Examples include densities (birds/sq mile) in selected habitats or Traffic Rates of migration. These analyses enhance a biologist's ability to manage birds within the landscape of his/her responsibility.

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10:30 AM – 11:00 AM Oakes North Room & Foyer

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10:30 AM – 11:00 AM Oakes North Room & Foyer

Session 4:
Management of Habitats on and off the Airport Part 1

11:00 AM – 12:30 PM Oakes South Room
Moderator: Scott Snow

Tools for birds' ecological carrying capacity management at airports
11:00 AM
Ofer Bahat

An airport should be looked at as an ecological environment which holds a variety of resources, with different availability for birds. Two year study at an IAF airbase clearly demonstrated the correlation between the ecological characteristics of various niches and the bird species which exploit the available resources at these niches. Based on these results, the present paper proposes management as a major tool for the reduction of carrying capacity for birds at the different niches. The management techniques should include general steps which address a variety of bird species. However, in addition, species specific measures that address the ecological needs of a species in order to significantly reduce the availability of its ecological resources should also be implemented. The management tools may include simple techniques such as removal of debris (used as raptor hunting posts), removal of trees (used as hunting posts, nesting, or roosting). In addition, decrease of vegetation using environmentally-friendly methods (such as coverage of open areas to prevent seed development) and prevention of open water reservoirs use by birds should also be considered. Moreover, the proposed approach prioritizes highest carrying capacity areas at the airport and its vicinity. These areas should be managed side by side with the use of intensive detection methods (e.g. cameras and radars) along with intensive deterrence activities (e.g. acoustic and visual). The combination of the management and control activities at high priority ecological niches provides the best outcome in the reduction of bird activity at these prioritized areas.

Risk Fauna Management in Mexico: ASA Airports Experiences
11:30 AM
Magdalena Colunga

An Integrated Fauna Management Plan (IFMP) has been a very successful experience over the past 6 years in Mexican airports. Fifteen out of eighteen ASA airports so far are applying such Plans and nowadays, we observe important results in the reduction of fauna strike risk. The IFMP considers four basic stages: Diagnose, proposal of management measures within a Management Plan, the execution of such plan and a Training Program. We present our results for three ASA airports: Matamoros (MAM), Ciudad Obregon (CEN) and Nuevo Laredo (NLD), discussing their differences, particular problems involved and fauna management solutions and results. Daily monitoring of fauna within airport boundaries was done, personnel interviews, and trap cameras for fauna identification were used. Also, attractors in the nearby area within a ratio of 13 km around each airport were identified and monitored. Fauna species composition for each airport was obtained and scaled within five classes according to their implied risk considering their size, abundance, behavior, frequency and previous reports. Protected species were identified as they required special management measurements. Management plans were defined and applied for each airport considering a general phase (habitat management) and a specific phase (capture and relocation or control measures). Also, more than 100 ASA members were trained considering all field and desk activities involved in the IFMP and a data base for each airport, as well as a national data base are being developed. We conclude that management actions have been successful in reducing risk fauna incidence within airport boundaries.

You Can't Fight Progress... Or Can You?
12:00 PM
Lauren Caister

Almost inevitably, land development around airfields eventually leads to proposed developments that may potentially act as bird attractants (e.g. landfills, quarries, lakes and ponds), which will predictably increase the bird strike hazards already faced at these locations. Oftentimes, airfields would prefer to block these types of developments entirely. Unfortunately it is generally not practical to achieve this goal. The first reaction of the airfield is typically to attempt to outright prevent the construction of these proposed developments. This may, however, not be the best reaction. An adversarial and obstructive stance can often lead to extensive legal battles, poor public relations, and protracted disputes over the development that can negatively impact all parties. This presentation will look at using a cooperative, rather than an oppositional, method of dealing with new wildlife attractions on lands surrounding airfields. Specifically we will discuss the utilization of letters/contracts of agreement between the owning entity of the airfield and the owners of the proposed development. Several case studies will be examined to illustrate how these arrangements should be drafted, as well as why supporting these developments, while counterintuitive, may ultimately produce a better and safer end result than taking a hostile stance.

Networking Lunch
12:30 PM – 1:30 PM Oakes North Room & Foyer

Session 5:
Research & Wildlife Studies Part 1

1:30 PM – 3:00 PM Oakes South Room
Moderator: Timothy J Nohara

Native vegetation conservation v.s. induced grass covered surfaces as a control measure for risk fauna: 12 ASA airports case study in Mexico
1:30 PM
Norma Fernández

Flora and fauna in Mexico are within the most diverse in American countries. As human population growth trends towards airports, species have been pushed into the confinement of native vegetation protected by airport boundaries. As a result, airports have turned out to be high diversity islands within an urban/agricultural ocean. Airport fauna control in Mexico considers the development of several measures; which will reduce aircraft operational risk and potential environmental damage. One of such measures involves de conservation of native vegetation within the airport.
Results in 12 different ASA airports show that native species such as cardinals, mocking birds and whrens, rarely leave their territories within tree canopies, reducing the potential risk they will represent for aircraft operation. On the other hand, induced grass cover in the security fringes and other airport zones, constitutes an invitation for none native generalists, such as ravens, doves, rodents, rabbits, and peccaries, as well as their natural predators and stray cats and dogs. These two later, particularly feral dogs represent a higher risk for aviation in Mexico.
Our proposal is to preserve natural vegetation, at least at some parts of the airport, for the substitution of tree and shrub strata, by induced grass surfaces, results in counter-productive measures. Also maintenance costs can be reduced.
Keeping native vegetation in most parts of the airport is a useful, low cost and environmental friendly way for the control and management of fauna in airports.

Grand Cayman Owen Roberts International Airport (ORIA) Hazardous Wildlife Study
2:00 PM
Andrew McLaughlin

A one-year study was conducted at Owen Roberts International Airport in Grand Cayman, B.W.I. to determine the temporal and spatial distributions of potentially hazardous wildlife species in and around the airport grounds. The resulting data provide important information that can be used by airport safety and wildlife managers at this and other similar airports in the Caribbean. A total of 45 species were observed including 2 species of reptile (iguana and terrapin), 1 mammal (rat), 1 invertebrate (land crab), and 41 species of birds. Rainfall and standing water are strong attractants to certain species of wildlife at this airport. One species of high concern (snowy egret) is particularly attracted to standing rainwater during the rainy season, while iguanas, ducks, and larger egret and heron species are more attracted to permanent ponds. Adjacent natural wooded, wetland, pond, ocean, landscaped and field areas serve as sources and refuges for wildlife that visit the airport grounds. Adjacent restaurant, grocery store and condominium facilities attract chickens, pigeons and other wildlife. The landfill, 2.27 km away from the airport, attracts large numbers of cattle egrets, snowy egrets and barn swallows to the area, while other external sites do not attract large numbers of wildlife. Many other small, infrequent, or ground-dwelling species were also present, and all data are summarized in this report. The observed patterns and identified wildlife attractants can help managers at this and similar airports to better anticipate wildlife hazards and to reduce some hazards with minor habitat manipulations.

Missing In Translation- Does Research Have A Place In Resolving The Bird Strike Problem?
2:30 PM
Tom Kelly

The need for research is conspicuously absent from many of the key documents relating to wildlife hazards to aviation. And research now appears to have a very low priority among some of the more prominent international bodies dealing with the problem. Indeed the term "academic" has distinctly pejorative connotations in some circles dealing with the wildlife hazard problem. However, it is also the clear responsibility of researchers to show how relevant the results of their research may be in reducing the risk posed by, for example, bird strikes. The direct application of research findings to reducing specific problems is sometimes referred to as "translation". In this presentation we review statistically analysed research data and illustrate how it was applied to mitigating the scale of the hazard posed by birds at Dublin Airport Ireland.

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3:00 PM – 3:30 PM Oakes North Room & Foyer

Session 6:
Management of Habitats on and off the Airport Part 2

3:30 PM – 5:00 PM Oakes South Room
Moderator: Timothy J Nohara

Specific Endophyte-Infected Grasses For The Aviation Industry Now A Reality.

3:30 PM
Chris Pennell

The advantages of endophyte-enhanced grasses for bird management at airports have been discussed now for some years. The concept of a grass harboring fewer insects that also induces avoidance behaviour in grazing birds is now being exploited as a realistic supplement to wildlife management. We first introduced the concept in Minneapolis in late 1999. As a consequence some airports have tested wildtype endophytes in tall fescue cultivars but the results have been unspectacular with poor survival levels (10-70%) and no bird data. Scientific data from trials comparing our specific AVANEX™ products in tall fescue and ryegrass plots with non-selected wildtype endophytes in the same cultivars show a significant reduction in insects, both above (69%) and below (88%) ground, over 3 seasons. Three 15ha plus trials at Christchurch, Hamilton and Auckland airports in New Zealand, comparing AVANEX™ with existing airport vegetation, have shown reductions in bird numbers averaging 95% over 10 months. Grass renewal is a long term strategy of controlling wildlife at airports that must be based on reducing the attractiveness of the area so there are fewer visitations. Airport managers need to be sure their choice of grass/endophyte has had the research to give them confidence of a reliable proven product. The AVANEX™ product has been tested and is now available through PGG Wrightson seeds.

Interplanting of Grass Species Among Native Vegetation to Reduce (or Eliminate) Bird Strike Incidence with Dove

4:00 PM
Rebecca Smith

Hurlburt Field has recently noted the congregation of mourning dove (Zenaida sp.) in sparsely vegetated, sandy soils around runways. In studies of the potential threats of wildlife to aviation, dove have been found to present a strike hazard. Mourning dove are primarily ground feeding, seed-eaters and often congregate in areas of suitable feeding habitat. They forage in sparsely vegetated areas on a variety of grasses and seed-producing forbs, including Croton sp. Dense ground-layer vegetation hinders their ability to locate and consume small seeds. Adding dense, ground-cover to areas near airfields should discourage the use of these areas by dove. The reduction in numbers of dove feeding near airfields would eliminate a common prey species for raptors and potentially diminish the occurrence of hawks in these areas. Habitat modification is proposed to discourage dove use of areas near runaways. The deep sandy soil with low nutrient and moisture holding capacity warrant the use of native or non-native grass species tolerant of these conditions. The objective is to increase the density of living ground cover along the edges of the runway using grass species that will tolerate infrequent mowing. Secondarily, the presence of dense grass cover may diminish the establishment of additional plants which serve as food for dove and at present attract dove to these areas. Two grass species considered as potential candidates include Gulf bluestem (Schizachyrium maritimum Chapman (Nash)[Poaceae]) and 'Coastal' bermudagrass (Cynodon dactylon (L.) Pers. var. dactylon [Poaceae]).

The Effect of Grass Heights on Bird Presence on Airports

4:30 PM
John Watterson

In general, airports are made up of many environments ranging from grass to wetlands, making airport property potentially attractive to wildlife. The largest of these habitats is typically grass, making mowing one of the most readily available management techniques. Because of their threat to aviation, birds and other wildlife are deterred from airport property to avoid aircraft-wildlife interaction. Therefore, proper management of airport property is paramount in minimizing the threat that wildlife poses to aviation and reducing the attractiveness of airport property. Our study investigated relationships between grass height on airport property and bird presence. All data were collected through point-count surveys as part of Wildlife Hazard Assessments. Data were collected at 5 airports in the eastern U.S. Grass heights were categorized into 10 cm groups for analysis. Only birds exhibiting behavior related to grass height were considered. Collected data suggests that fewer birds are present on airport property when grass height ranges between 31-40cm, where greater bird numbers are present when grass height is less than 31cm ($P=0.03$). Species composition was also different between grass height categories ($X2=245.1$, $df=45$, $p<0.01$). Waterfowl were present in the greatest proportions in the 0-10 cm category. Raptors utilized the 11-20 cm grass heights in the greatest proportions. Future aspects of this study will consider feeding rates at different grass heights, habitat features surrounding the airport, bird behaviors at different grass heights, as well as increasing the sample size.

Military Breakout Session
7:00 AM – 8:00 AM — Oakes South Room

Air-Force Breakout Session
8:00 AM – 9:00 AM — Oakes South Room

Navy Breakout Session
8:00 AM – 9:00 AM — Niagara Room (located on Level 3)

Session 7: Radar Part 2
9:00 AM – 10:30 AM — Oakes South Room
Moderator: Gary Searing

BSTAR Avian Surveillance and Warning System
9:00 AM
Barry Clark

SRC Inc. wishes to present this paper as an opportunity to provide information on our new avian radar system called BSTAR™. SRC has developed this advanced L-Band avian radar for deployment to US civilian airports and military airfields. This paper describes the numerous features of BSTAR and discusses the advantages of choosing L-Band for airport avian radar design. SRC believes that the BSTAR system will provide the user with a highly significant increase in the quantity and quality of avian data for use by wildlife control officers. BSTAR offers unique technology that allows for actionable "detect and avoid" alerts on bird activity. BSTAR is a solid state, fully coherent radar that provides 3-D electronic scanning in azimuth and all-weather detection, tracking and classification of small, slow-moving birds while suppressing stationary clutter. The result is a product that offers the enhanced capability of accurately tracking and recording of bird movements with respect to the bird(s) estimated biomass, speed, geographic location, and height-above-ground-level out to ranges beyond the airport critical area. Equally significant are the tools that BSTAR offers the user for data visualization and analysis. A new user-configurable Google Earth-based 3D Display has been developed for BSTAR. An automated database records all track and detection activity for later analysis by the BSTAT Avian Analyzer that provides a toolset for trend analysis and data mining. A new powerful Hazard Warning System and a Hazard Analysis Toolset will be described.

Operational Use of Merlin Bird Detection Radar System at King Shaka International Airport, South Africa.
9:30 AM
Ronald Merritt

The new King Shaka International Airport opened on 1 May 2010. This airport is located approximately 60 kilometers north of the old Durban International airport and is situated 2.3 kilometers northeast of a major roosting area for barn swallows. Estimates of over 2 million barn swallows have been suggested for this roost which is active for this species from late in September through April each year. A 2007 radar study documented this activity and in 2009 a permanent radar installation was completed. During the summer of 2009 and fall 2010 radar data were calibrated with video data and site specific risk algorithms were developed to provide real time risk assessment to the tower and wildlife control officers. In the spring of 2010 and summer of 2011 (September 2010 – April 2011), the Merlin bird detection radar system with the special swallow detection algorithm was operational and providing real time risk advisories to the King Shaka tower and wildlife control staff. This presentation will provide a summary of the first year of those advisories to determine how frequently severe conditions were present and how the current aviation restrictions were implemented to meet aviation safety requirements. We will also discuss how these radar data were used to as address environmental issues identified in environmental planning documents and permits. The use of bird detection radar systems at other international airports in Latvia and Nigeria will also be presented.

The Avian Radar for Airport Risk and Hazard Assessment: A Biologist's Tool
10:00 AM
Maxime Allard

A good knowledge of bird density and behaviour is required to adequately evaluate bird strike risks around airports. The avian radar is a new tool to monitor bird populations that constitute airport safety hazards. During the last year, we used this radar technology for the airport bird hazard risk assessment of the 4 Wing Cold Lake military airport (Alberta, Canada). It permitted to monitor every bird movement within a 20 km radius around runways, year-round, on a 24 hour basis. Over 30 million paths were recorded (more than 80 billion detections). It provided information about the position and the trajectory of birds, in addition to their size. Hence, daily and seasonal bird activity periods were identified. A movement density map was also produced, permitting to identifying areas that birds utilize. For airport managers and wildlife agents, it provides relevant information to focus their efforts in particular locations or during a certain time of the day. For example, it permitted to identify sites that can be attractive to birds (ex: landfill facilities, golf courses, lakes, etc.), but it also provided a way to assess the risk hazard relative to these sites. In the case of a military airport, the procedure and schedule of tactical trainings can then be adapted to minimize the bird hazard risk to aircraft. In conclusion, the radar has proven to be a very cost-effective addition to the risk assessment analysis of military airports and should be considered for application in civilian airports.

Coffee Break
10:30 AM – 11:00 AM — Oakes North Room & Foyer

Canadian Military Airport: New Risk Assessment Procedure
2:30 PM
Pierre Molina

A standard airport bird-hazard risk analysis process (ABRAP) is proposed by Transport Canada for civilian airports. It usually takes into account the risk associated with aircrafts, bird populations and their land-use around the airport. This method cannot be directly applied to military airports because of the different types of aircraft and because of their particular flight pattern. We developed a new risk assessment procedure suitable to Canadian military airports based on Transport Canada guidelines. Firstly, we advanced a ranking system to assess the bird strike hazard for every type of movement of each aircraft model. Secondly, we combined usual on-site bird sampling techniques with an innovative radar technology to monitor and survey bird populations at and around the airport. Land surveys permitted to identify bird species and abundance on the airport site, while the radar allowed to accurately map surrounding areas where birds mostly fly. Then, the landscape was characterized by remote sensing and photo-interpretation. By analysing flight patterns, bird surveys and landscape characteristics, we were able to produce regional bird strike hazard probability maps from which bird hazard zones can be generated for each aircraft type. In addition, airport managers can easily identify areas used by birds and have a better idea of the risk hazard relative to each kind of habitat. This methodology has the advantage to be based on quantitative information specific to the studied airport, resulting in a highly accurate tool for airports' safety management system (SMS).

Integrating Wildlife Hazard Management into SMS
3:00 PM
Amy Johnson and Wayne Clifton

A Safety Management System (SMS) is an organized approach to proactively managing safety. Jacksonville International Airport (JAX) was chosen as part of a FAA Part 139 SMS Implementation Study. One study task was to complete a risk assessment of wildlife hazards at their airport. Risk assessments, an important component of SMS, determine the need for new risk controls. Using two risk factors (likelihood and severity) and wildlife data collected at JAX throughout 2010, a risk assessment was completed that identified wildlife hazards, potential risk factors, and risk management strategies to be implemented for the future. By evaluating risk using a SMS risk matrix, JAX was able to identify critical controls and prioritize management strategies that will ultimately reduce risks associated with wildlife. The SMS team assessed risks for 24 different wildlife hazards located within the movement areas, on JAX property outside the movement areas, and on adjacent off-site properties. Of the 24 identified hazards, 17 were given a "High Risk" rating. These hazards include geese, feral hogs, coyotes, vultures, wading birds, raptors, etc. Based on these identified "High Risk" hazards, corrective actions were recommended and assigned to various airport departments for implementation. These recommendations will be included in the JAX wildlife management program. Moving forward, it is likely that all Part 139 airports will have to integrate their wildlife hazard management programs into a SMS. Using JAX as an example, wildlife coordinators at airports can learn how to integrate wildlife hazard management into SMS.

Perspectives On Private Sector Involvement In Airport Wildlife Hazard Assessments (WHAs): An Update
3:30 PM
Jay Tischendorf

The exhilarating realm of airport WHAs provides challenge and opportunity for private sector biologists/consultants seeking to expand their personal, professional and financial horizons. In the USA, federal money for WHAs is provided via contracts through individual airports. Oddly, the US Department of Agriculture, functioning as a private vendor, is able to compete with the private sector for these contracts. This situation is highly irregular in the USA marketplace. As a result, there is much consternation among the private sector, which feels that government competition for federal contracts is inappropriate and a violation of the free-enterprise system. This topic was broached at the 2010 Bird Strike Committee Meeting. This paper will provide further perspective and updates, citing the most recent examples in which WHA contracts have been awarded to USDA in order to highlight the subjectivity of current regulations and FAA and USDA oversight. The paper will also characterize the implications of recent changes to FAA guidance and regulations, as well as the entry of the Bureau of Alcohol, Tobacco and Firearms (BATF) into the regulatory picture. Finally, it will illuminate current FAA and USDA statistics on airport wildlife work and the short, mid, and long-range outlook for private sector participation in WHAs and abatement.

Vole Control Workshop

4:00 PM – 5:30 PM Oakes South Room
Gary Searing and Nick Atwell

This workshop will provide participants an opportunity to explore together current issues in small mammal management at airports including population control, habitat management, research needs and any other hot issues on the minds of participants.

Workshop attendance is limited. Please sign up at the Conference Registration & Information Desk located in the Foyer outside of the Exhibit Hall.

Session 10: Case Studies

8:30 AM – 10:30 AM
Moderator: Pierre Molina

Oakes South Room

Risk Species In 12 ASA Mexican Airports Under Tropical, Arid, Semideciduous And Urban Conditions.

8:30 AM
Arturo Ortiz

Mexico is one of the largest and diverse countries in America due to its privileged geography and geological history. It has a variety of climates which are translated in different types of flora fauna habitats. As population growth trends towards airports, species have been pushed into the confinement of the native vegetation protected by airport boundaries; therefore the responsibility for species conservation, in particular, local endemics, enters in conflict when such flora and fauna need to be control within airports. Several airports in Mexico are surrounded by urban development, restraining native fauna within airport limits, some of which are protected by law. Fauna control measures need to be authorized by environmental authorities, which is not always obtained. Tropical, arid and semi deciduous vegetation environments are the predominant types in Mexico, therefore our risk fauna differs from that registered on temperate countries. Also, the nearby presence of humans and alteration of natural habitats in surrounding area has led into the incursion of exotic and domestic fauna within airports, which in our experience constitutes the highest risk for airport operation. Control and management measures need to be designed under these three premises. In this paper we make a comparison of native and urban induced risk species in 12 Mexican airports, with more temperate environments risk species reported for Canada and the U.S. We make emphasis in specific control measures that had to be taken under consideration within the management plans of these airports.

A Decade of Change for the Israeli Air Force

9:00 AM
Nicholas B. Carter

Over the past decade, the Israeli Air Force has undergone a dramatic transformation in its approach to birdstrike prevention in its implementation of comprehensive wildlife control programs for all of its major airbases. The results have been dramatic. Damage from strikes has gone from yearly costs of millions of dollars to less than $10,000/yr. Birdstrikes have been reduced by more than 90 percent, from an average of 15.84 birdstrikes per month per base to less than one per month. All this has occurred in the presence of more than 500 million birds that migrate each year from eastern Europe and western Asia to Africa, and back again in the spring. The IAF has managed this feat through the development of a national strike database and mandatory reporting, renovation of its airbase environments, development of a national network of radar observation posts, and implementation of comprehensive harassment programs implemented by professional biologists. The IAF has also eliminated agricultural initiatives and undergone large-scale modifications in airfield maintenance practices, despite significant economic and political costs. This presentation will address the problems confronted by the IAF over the past ten years in birdstrike prevention and the innovative approach taken to resolve these issues.

From Beginning To End: How A Comprehensive Wildlife Management Plan Prior To Airport Construction Can Successfully Reduce The Risk Of Bird Strikes

9:30 AM
Melody Henderson

When construction of Houston Executive Airport was initially proposed, it was said by some that it could become "North America's most dangerous airport". Nested within the Katy Prairie (an area of well over ten thousand acres of unique wildlife habitat) and located directly along one of the North American migratory flyways, all signs appeared to point to the potential for heavy avian/aircraft conflict. Upon mandate by the FAA, Houston Executive Airport adopted a comprehensive wildlife management plan whose development and implementation coincided with construction of the airport. Since 2006, Houston Executive Airport has continued to focus on long-term wildlife management in an effort to reduce the probability of bird and wildlife strike collisions. The wildlife management team's active involvement from prior to the airport's groundbreaking and continued through the present has lead to enormous strides in reducing overall avian abundance on the property, despite the yearly presence of tremendous numbers of migratory waterfowl and other birds. As a result of the wildlife management team's early involvement, beginning during the airport's construction, key habitat alterations and other areas of concern were immediately identified and addressed. Improved drainage, agricultural practice shifts, grass height management, and active harassment were just some of the methods used to make the area less suitable for wildlife, months before the first plane ever left the airport. The airport has experienced an average of less than one birdstrike per year, a tremendous achievement considering its location in the heart of one of North America's most heavily concentrated bird populations.

The North Shore Marine Transfer Station – A Case Study

10:00 AM
James E. Hall and Ken Paskar

The extremely controversial North Shore Marine Transfer Station is currently under construction approximately 2200 feet from the approach end and directly under the approach and departure path of La Guardia Airport's runways 13/31. The Port Authority of New York and New Jersey (PANYNJ) are the operators of LaGuardia Airport under a lease agreement with the City of New York who own the airport. Despite the fact that construction of the transfer station is within the Runway Protection Zone and is not an enclosed facility, construction of the transfer station continues under the exception for fully enclosed transfer stations. FAA Advisory Circular 150/5200-33b 2-2(d). This case study will explore how the construction of the North Shore Marine Transfer Station, a bird magnate, continues to be constructed contradicting the law and the FAA's own mission and policies and how the FAA and the USDA relied upon a controversial 2 month study (panel report) in

the dead of winter rather than a full and complete wildlife study adapting the protocols as required by law to determine whether the transfer station is a hazard to aviation. The overarching question in this project remains. Why build a hazard and have to mitigate it when the facility can be built somewhere else?

Coffee Break

10:30 AM – 11:00 AM Oakes North Room & Foyer

Session 11: Methodologies

11:00 AM – 12:30 PM Oakes South Room
Moderator: Pierre Molina

Using Nighttime Falconry for Roosting Blackbird Abatement at Dallas Fort Worth International Airport

11:00 AM
Cathy Boyles

Dallas-Fort Worth International (DFW) Airport is comprised of 18,000 acres of varied habitat surrounded by a developing Metroplex area. Its five terminals are located in the center of the property. Designed in the late 1960s and opened in 1974 before wildlife issues were fully appreciated, the now-mature landscape design includes Live Oak trees in the original four terminals, providing dense cover and unbroken canopies that attract roosting blackbirds during the winter roosting season (typically October – April). Over the years, blackbird populations built up to thousands of birds that migrated to the Central Terminal Area (CTA) for the roosting season. This seasonal migration combined with daily migrations between the roosting and feeding grounds created a safety concern as well as customer service issues. Various deterrent and dispersal methods were tried over the years, but failed to be effective over the long term. In Spring 2007, a nighttime falconry demonstration showed promising results. Male Harris Hawks were deployed into one densely-populated terminal area and dispersed the roost. A beta test was applied during the 2007/2008 roosting season to cover a larger area, again with good results. A full scale deployment was initiated in Fall 2008 for the 2008/2009 roosting season to include the entire CTA. Nighttime Falconry has shown to be the most effective method of bird dispersal used in the CTA so far, with promising long-term results. The concept of using nighttime falconry at DFW Airport, a history of challenges, and its efficacy to date will be presented.

Program for the sterilization of beavers (Castor canadensis) in the area of Pierre-Elliott-Trudeau International Airport of Montréal

11:30 AM
Marc-André Fortin

The Beaver, by building its dam network, creates considerable pools of water as well as blocking the drainage systems for the airport and the adjacent territory. These newly flooded areas attract aviary species such as ducks, swans, geese and great herons, all being priority concerns in the battle against aviary risks in an Airport setting. The Beaver is a prolific animal with little or no natural predators in an urban or semi-urban environment. This being said, this species can grow in numbers and cause serious head-aches for people such as ourselves in Wildlife Management. By simply trapping using conventional means is not always effective in the medium to long-term, especially when this rodent is abundant in the surrounding area. When we remove Beavers from a given area, others show up rather quickly and often in greater numbers to fill the void. A territory that has supported Beavers in the past will continue to attract more of the same. The presentation will cover the general biology of the Canadian Beaver, its lifestyle habits and territorial instincts as the basis for the sterilization and relocation program for the dominant couple. The preferred capture techniques as well as the equipment used will also be explained. The various procedures will be illustrated (traps, correct handling, and surgical procedures, etc...). Result from research studies on the presence of beaver colonies found near the Montreal Airport as well as the Canadian Armed Forces Garrison located in Farnham will be presented. The effects before and after the project will also be shown. The evaluation of the populations will also be shown.

Bird Strike Prevention – some Japanese Activity

12:00 PM
Yasushi Takeda

A project to develop a "Bird Monitoring System in Airport Area" has been initiated by MLIT (Ministry of Land, Infrastructure and Transport and Tourism), which facilitates to capture a variety of bird activity inside and in vicinity of airport. The captured information might be used for bird strike prevention such as repelling activity by bird patrol as well as habitat control on the airport environment. The system comprises bird detection radars, image capturing and analysis system and bird repelling equipments. A multiple bird radar system would detect flying birds in the airport to obtain information on their movement. Bird image capturing and analysis system will collect information needed for identifying bird species. It is also expected to work to cover the area which cannot be monitored by bird radar system. Obtained information on the bird activity will be given to the bird patrol for their repelling activity. The system would be installed in the Tokyo International Airport at Haneda.
Usage of image analysis for bird strike prevention is rather new. It would work complementarily to bird radar system. We have confirmed the principle on bird detection by image analysis and the system is being designed to realize the various functions such as bird vector detection, identification of species etc. Various conditions for capturing the images of flying birds were tested and designing the system configuration is under progress. These activities will be presented.
A Bird Strike Committee Japan is being prepared to launch. Their planned activity is also introduced.

Networking Lunch

12:30 PM – 1:30 PM Oakes North Room & Foyer

Session 12:
Bird Strike Analysis Part 2

1:30 PM – 2:30 PM Oakes South Room
Moderator: Pierre Molina

Fourteen-year Summary of Canadian Bird Strike Identifications at the Smithsonian Institution Feather Identification Lab
1:30 PM
Kevin Kerr

The Smithsonian Institution Feather Identification Lab has been assisting with the identification of Canadian bird strike remains for many years. Since 1997, the remains of 104 avian specimens involved in collisions with Canadian aircraft have been identified using a combination of morphological feather characters and DNA analysis (i.e. DNA barcoding). The number of specimens submitted for analysis has been relatively low and constant until recently, with 16% of all cases to date occurring in 2009 and nearly 28% in 2010. Although samples have originated from locations spread broadly across Canada (including eight provinces) the recent surge of cases is largely attributable to submissions from Edmonton International Airport and Canadian Forces Base Moose Jaw. The number of Canadian bird strikes identified by Smithsonian staff is not representative of the total number of incidences that occur. In 2009, there were 1513 bird strikes reported in Canada. Of these birds, nearly 46% were recorded as unknowns. Of the remainder, many birds were lumped into broad categories (e.g. 8.2% of species were labeled as "gulls"). Identification of bird strike remains involves comparisons of plumage characters, feather microstructure, and DNA sequences to achieve accurate species identifications – even when sampling material is minimal. This information is valuable for both analyzing incidences on airfields and for future management practices. Because permit logistics and funding issues make international shipment of bird remains arduous or otherwise unfavourable, we suggest creating a similar centre in Canada for the identification of bird strike remains.

Collecting Birdstrike Remains for ID: Recipe for Success
2:00 PM
Marcy Heacker

For many years, the Smithsonian Feather Identification Lab has provided avian species identifications from birdstrike remains for military and civil aviation. Over the years, the volume of cases has grown to nearly 6,000 identifications annually and the Lab's identification methods have evolved with over 60% of cases initially going to the DNA lab. Since the type and condition of remains influences the identification process, proper collection of birdstrike remains in the field is an important first step in keeping this process as efficient and accurate as possible. Current recommendations for collecting remains for a variety of material will be reviewed. Additionally, guidelines for reporting, shipping and interpreting results will be discussed.

Closing Remarks

2:30 PM – 2:45 PM Oakes South Room

Gary Searing
Executive Director, Bird Strike Association of Canada

John Ostrom
Chair, Bird Strike Committee USA