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**Bald Eagle Nest Removal: Making a Case and Building Consensus among Various
Agencies and Organizations for Amicable Removal**

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Addendum to
Bald Eagles: A Threatened Species becomes a Threat to Aviation

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Abstract. The bald eagle is an iconic symbol representing strength and freedom throughout the Americas and evokes strong public emotion and sentiment. Despite tremendous population recovery in the United States resulting in its removal from the U.S. Department of Interiors Endangered Species list, state and federal agencies are hesitant to approve activity that could be interpreted as detrimental to eagles. Florida accounts for more than 85% of the entire southern bald eagle population and has between 1000 to 1200 mated pairs. Habitat loss and expanding populations are forcing eagles to adopt alternative nesting sites including the airport environment. Eagle / aviation conflict will most likely continue as air traffic and eagle populations increase. Cooperation from regulatory fish and wildlife agencies and conservation organizations is probable when airport operators provide a demonstrable history of wildlife abatement.

1.0 Introduction

This report outlines the approach and strategies of the Orlando International Airport to win the support and approval of regulatory agencies and local conservation organizations to remove a bald eagle nest as well as characterize the growing threat that they pose to aviation operations.

2.0 Perspective and Probability

Bald Eagle management from the perspective of regulatory agencies and the general public consist primarily of protections for eagles. Incumbent to aviation personnel including wildlife biologist is providing an alternative perspective which portrays possible catastrophic results for both eagles and humans. Illustrating the potential hazard(s) with strike data is essential to garner support and raise awareness of all wildlife hazards to aviation. The ranking of species groups as relative hazards to aircraft composed by the USDA, listed in Advisory Circular 150/5200-33A clearly distinguishes differences among species in terms aviation hazards (Table 1). Eagles rank relatively high in terms of damage, major damage and effect on flight.

A history of strike data is also beneficial. Comprehensive information including species struck (Table 2) strikes by runway (Table 3) and damaging strikes (Table 4) can be influential factors to show that bird / wildlife effects on aviation are not anomalies and the consequences of inaction increases strike probability as adults fly to and from nest to growing chicks and ultimately fledgling(s) that may find the open expanse of the airfield an ideal place to hunt and explore. We documented similar experiences with Red-Tailed Hawks and their fledglings.

Eagles nesting on or near the Air Operations Area are a continual presence that significantly increase strike probability unlike birds that randomly or periodically visit the vicinity.

3.0 Components of a Successful Nest Removal

Eight components beneficial to nest removal include but are not limited to; Consistent Monitoring, Early Detection, Quantification, Documentation, Coordination, Mitigation, Prevention and Comprehensive Media Releases. Collectively they address concerns, solicit input, resources and expertise from regulatory agencies, the media and local conservation groups necessary for a solution acceptable to all parties involved.

Airport operators required to administer a Wildlife Hazard Management Plan by title 14 of the Code of Federal Regulation (CFR) section 139.337 should conduct periodic or ongoing bird / wildlife monitoring. Consistent bird and wildlife surveillance demonstrates plan commitment and establishes a foundation of credibility among agencies and organizations with extensive, specialized experience with eagles. They will want to know if, when previous incidents occurred and how they were handled.

Detection prior to or early in the nesting season limits the situation to the mated pair. Regulatory agencies and conservation groups for good reasons proceed much more cautiously when eggs or chicks are involved. If eggs or hatchlings are produced prior to Removal authorization the airport operator has demonstrated due diligence to mitigate the hazard. Regular occurrence of adult eagles on or around the Air Operations Area could be an indication of nest in the vicinity.

Quantify the situation to the best of your ability before initiating the removal process. Know how many birds and or nest pose a risk so they can be addressed collectively. Take the opportunity to survey other areas suitable for nesting on and around airport property. Repeatedly revisiting situations that could be addressed at one time can erode support from regulatory agencies, the public, conservation and environmental groups and possibly create public opposition.

Documentation provides evidence to support nest removal. Reports of previous eagle strikes, ecological surveys, permits, correspondence between state and federal fish and wildlife agencies, average number of daily operations and type of aircraft are influential factors when presenting your position for nest removal to agencies and organization that may object. It serves as proof to possible opposition of continual commitment to wildlife abatement and that your intentions are not a reactionary response to a prominent, conspicuous situation.

Coordination is essential to plan construction and implementation. A consensus must be achieved from multiple agencies with various regulatory and operational objectives at the local, state and federal level. Communication among participants is critical to plan progression to ensure the availability of permits, personnel, and resources at the appropriate time. All participating parties should be briefed during each phase of the project even if they are not involved to maintain unification and prevent the dissemination of inconsistent information.

Consider mitigation options for the loss of reproductive habitat and / or the possible loss of bird(s). Financial or in kind services donated to local conservation or environmental organizations that directly or indirectly provide rehabilitative care, conserve habitat or provide public education about eagles or birds of prey demonstrates a commitment to continuing environmental stewardship. Willingly make concessions when appropriate.

Identify and implement preventative measures immediately. Solicit suggestions from participating agencies for reducing the probability of recurrence. Trim existing candidate nesting trees so they are incapable of supporting a nest or remove them. Emphasize increased vigilance detecting and dispersing eagles to personnel responsible for wildlife abatement. Identify, eliminate or reduce attractants such as food sources and roosting areas favored by eagles. At Orlando International Airport (MCO), thousands of fish are removed each year in an effort to reduce available forage for eagles and osprey.

Eagles are large and conspicuous don't assume that the general public is unaware of their presence. A comprehensive press release should be disseminated at the conclusion of the process. Accommodating media during the process is an additional encumbrance to a multi agency coalition dealing with permitting and logistics of nest removal, egg and or chick translocation and dispersing adults. Describe the actions taken and their necessity in terms of safety for the traveling public as well as for the eagles. Also take the opportunity to illustrate significance of wildlife abatement and a wildlife hazard management plan in reference to aviation safety.

4.0 Discussion

The bald eagle nest removed from Orlando International Airport was located on the air operations area, on a small island in a lake that separated two airside terminals approximately 450 feet from a busy vehicle refueling terminal, 900 feet from the closest aircraft gate, and 2696 feet from a runway. The nest was discovered in October, 2006 and removed with the nest tree in mid January, 2007. One hatchling was produced and relocated to a foster nest in an adjacent county. This was the first known eagle nest discovered on airport property which created several first for the Aviation Authority, U.S. Fish and Wildlife Service, and Florida Fish and Wildlife Conservation Commission which is in part responsible for the lengthy delay, allowing the birds to lay an egg and its subsequent hatching.

Bald Eagles constitute a periodic but growing wildlife concern at Orlando International Airport. From 2000 through 2005, four eagles were struck or recovered from runways. In 2006 one eagle was recovered from a runway. Four months into 2007, three eagles were recovered from runways. As populations increase and preferential habitats are reduced eagle incursions on and around the air operations area are expected to increase. Continual coordination and communication between agencies and organization is fundamental for timely resolutions in the future.

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U.S. Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5200-33A. <http://www.faa.gov/>

Table 1. Ranking of 25 species groups as to relative hazard to aircraft (1=most hazardous) based on Three criteria (damage, major damage, and effect on flight) a composite ranking based on all three rankings, and relative hazard score. Data were derived from FAA National Wildlife Strike Database January 1990-April 2003.

Species Group	Ranking by criteria			Composite ranking	Relative hazard score
	Damage	Major damage	Effect on flight		
Deer	1	1	1	1	100
Vultures	2	2	2	2	64
Geese	3	3	6	3	55
Cormorants/Pelicans	4	5	3	4	54
Cranes	7	6	4	5	47
Eagles	6	9	7	6	41
Ducks	5	8	10	7	39
Osprey	8	4	8	8	39
Turkey/Pheasants	9	7	11	9	33
Hérons	11	14	9	10	27
Hawks	10	12	12	11	25
Gulls	12	11	13	12	24
Rock Pigeon	13	10	14	13	23
Owls	14	13	20	14	23
H. Lark/S.Bunting	18	15	15	15	17
Crows/ravens	15	16	16	16	16
Coyote	16	19	5	17	14
Mourning Dove	17	17	17	18	14
Shorebirds	19	21	18	19	10
Blackbird/Starling	20	22	19	20	10
American Kestrel	21	18	21	21	9
Meadowlarks	22	20	22	22	7
Swallows	24	23	24	23	4
Sparrows	25	24	23	24	4
Nighthawks	23	25	25	25	1

Table 2. Species struck or remains found Orlando International Airport 2000-2005

<u>Species</u>	<u>Number of Strikes or Remains found on Runway</u>	<u>Annual Average</u>
Unknown	36	6
Cattle Egret	27	4.5
Mourning Dove	21	3.5
Ring-Bill Gull	16	2.6
Killdeer	15	2.5
Sandhill Crane	15	2.5
Kestrel	10	1.6
Vulture	7	1.1
Nighthawk	6	1
Swallow	6	1
Great Blue Heron	5	0.8
Mottled Duck / Mallard	4	0.6
Wood Stork	4	0.6
Bald Eagle	4	0.6
Red-Tail Hawk	3	0.5
Anhinga	2	0.3
Grackle	2	0.3
Owl	2	0.3
Osprey	1	0.1
Merlin	1	0.1
Pectoral Sandpiper	1	0.1
Loggerhead Shrike	1	0.1
Least Sandpiper	1	0.1
Ibis	1	0.1

Table 3. Strikes by runway Orlando International Airport 2000-2005

(* New runway, average calculated from 2 instead of 6 years)								
	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>Totals</u>	<u>Annual Average</u>
17R/35L	5	18	8	12	4	9	56	9.3
17L/35R	0	0	0	0	11	11	22	11*
18L/36R	10	11	9	17	9	18	74	12.3
18R/36L	5	4	5	6	2	10	32	5.3

Table 4. Damaging Strikes Orlando International Airport 2000-2005

Damaging Strikes 2000-2005		
Date & Time	Species	Damage Description
June 13, 2001 10:42 AM	Mourning Dove	US Air B-737, departing 18L, turbine blades and engine damage
August 5, 2001, 5:00PM	Mourning Dove	Delta, B-737, departing 17R, damage to number 2 engine
March 16,2002, 6:35 PM	Red-Tail Hawk	US Air A320, departing 18L, damage to number 1 engine
June 17, 2003, 12:15PM	Red-Tail Hawk	US Air B-737, departing 18L, damage to number 1 engine
February 5, 2005, 4:05 PM	Cattle Egret	United A320, departing 36R, broken nose wheel light
February 22, 2005, 11:19AM	Cattle Egret	US Air B-757, landing 36R, broken landing light
June 24, 2005 9:05 AM	Sandhill Crane	America West B-757, departing 36L, number 1 engine damage
July 24, 2005, 5:40 PM	Sandhill Crane	Southwest B-737, landing 35R, engine damage
December 26, 2005, 9:25PM	Great Horned Owl	America West B-757 departing 36R, damage to number 2 engine