

Analysis of Bald Eagle Nesting Data for Lee County, Florida

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The purpose of this analysis is to provide an accurate assessment of bald eagle (*Haliaeetus leucocephalus*) nesting behavior and trends in Lee County relative to proximity of nests to land development activities. The fundamental question is whether nesting pairs of bald eagles are more likely to abandon otherwise active nests if land development occurs within 660 feet of active nests. The issue that has stimulated a need for this analysis is a recent statistic that has been entered into the public record at a Southwest Florida Regional Planning Council (SWFRPC) hearing that a 54% probability exists that an active bald eagle nest will be abandoned if land development occurs within 750 feet of the nest.

We analyzed the available data from the Florida Fish and Wildlife Conservation Commission (FWC) Bald Eagle Nest Database (Database) through the 2005-2006 nesting season⁵ to evaluate whether nesting bald eagles have responded differently to land development (e.g. construction of homes, businesses or other buildings) in Lee County dependant upon the distance those activities have occurred from nest sites. The hypothesis we tested was that bald eagles may respond negatively to land development activities that occur within some close distance to nests, and should such negative response occur the behavior would be reflected in a decrease in annual frequency of nesting behavior observed at nests that are closer to development than would be observed for those nests that are more distant from development. The hypothesis was tested by stratifying all Lee County nests that are considered “active” in the Database for the past five nesting seasons in accordance with the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region* (U.S. Fish and Wildlife Service [USFWS] 1987) (Guidelines) by distance from existing land development (e.g. 0’-330’, 330’-660’ and beyond 660’) and comparing the relative occurrence of nesting activity for nests within each of those distance categories for differences. We used those distances as test criteria for two reasons: 1) The buffer distances between active bald eagle nests and planned land development currently being recommended by the FWC and USFWS are 330 or 660 feet, depending upon timing of construction and the nature of other conservation measures proposed for the activity; and 2) Those distance criteria would provide a more rigid test of the hypothesis than used by the SWFRPC.

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⁵ Nesting data for the 2006-2007 nesting season were not available at the time of this analysis.

This analysis was based upon the 73 nests that are documented in the FWC Database for Lee County. Thirty-six (36) of those nests were visited to ground-truth distances between nests and closest existing human development activities relative to aerial coordinates indicated in the Database for each nest. Only those nests that generally could be accessed or observed without trespassing on private property were ground-truthed; otherwise, distances to closest human development were based upon FWC coordinates. The accuracy of distances between nests and development activities was improved for ground-truthed nests, resulting in two nests being adjusted from the “beyond 660 feet of development” category to the “between 330 –660 feet” category. However, the relative occurrence of nesting behavior did not change for the most recent nesting season as a result of ground-truthing. The Database also was used to confirm whether each nest was considered “active” during the 2005-2006 nesting season and whether nesting behavior was initiated in each of those nests during that nesting season. A nest is considered “active” in accordance with the Guidelines if nesting behavior (e.g., presence of the pair at the nest, nest repair, incubation and/or care of eaglets) has been documented at the nest during the most recent five-year period (i.e. 2001-2002 through 2005-2006 nesting seasons). The Guidelines also recommend protection of a nest as “active” through five consecutive nesting seasons within which no nesting behavior is documented before considering the nest as “inactive” or to no longer exist as an active nest. Nests that are considered as “active” or “inactive” in accordance with the Guidelines are referred to as “existing” or “no longer existing” in our discussion of this analysis. Therefore, we considered every nest in the Database for Lee County as “existing” if nesting behavior was documented at that nest during any nesting season since 2001-2002. The relative occurrence of nesting behavior was calculated as the percentage of “existing” nests at which nesting behavior was documented in the Database to have occurred during a given nesting season. Land development was defined as one or more man-made structures of at least one story in height.

Seventy-three (73) bald eagle nests have been documented into the Database for Lee County since 1973. Fourteen (14) of the 73 nests “no longer exist” due to factors that include storm damage, occupancy by great horned owls (*Bubo virginianus*), death of the nest tree, atypical tree selection, or unknown causes that occurred prior to 1999. Fifty-nine (59) bald eagle nests exist in Lee County to date, and 18, 12, and 29 of those nests occur 0-330, 330-660, and beyond 660 feet, respectively, from existing land development. Fifty-one (51) percent of the 59 existing bald eagle nests in Lee County exist within 660 feet of homes, businesses or other buildings. Nesting behavior was documented at 78 percent of all existing nests (59) during the 2005-2006 nesting season, and the relative occurrence of nesting behavior that was documented by distance criteria was 89%, 58% and 79% of those nest within 0-330, 330-660 and beyond 660 feet, respectively, of land development during that season (Table 1). These observed occurrences are consistent with annual statewide averages. It also should be noted that 13 (62%) of the 21 new nests that have been constructed in Lee County since 2000 have been constructed within 660 feet of existing land development, and nesting behavior was documented at 85% of those nests during the 2005-2006 nesting season.

A goal of the draft *Florida Bald Eagle Management Plan* (FWC draft document) is to maintain nesting at 68% of “active” nests on the average each year. Buehler (2000) reported that 20% of bald eagle pairs do not nest in a given nesting season, and an average 73% success rate for

“active” territories in Florida is reported in the *Biological Status Report for the Bald Eagle* (FWC 2006). The analysis demonstrates that bald eagle nesting behavior and trends in Lee County are consistent with or exceed proposed FWC goals and reported success. The analysis also revealed that no differences exist in relative occurrence of nesting behavior regardless of distance between the nest and land development in Lee County.

Table 1. Summary of bald eagle nesting trends for the 2002-2006 nesting seasons in Lee County, Florida.

Distance from Nest to Land Development Activities	Number of Existing Nests and Percentage of Existing Nests at which Nesting Behavior was Documented per Nesting Season									
	2001-2002 Nesting Season		2002-2003 Nesting Season		2003-2004 Nesting Season		2004-2005 Nesting Season		2005-2006 Nesting Season	
	Number of Nests	Percentage with Documented Nesting Behavior	Number of Nests	Percentage with Documented Nesting Behavior	Number of Nests	Percentage with Documented Nesting Behavior	Number of Nests	Percentage with Documented Nesting Behavior	Number of Nests	Percentage with Documented Nesting Behavior
0' to 330'	11	91%	12	83%	14	79%	14	86%	18	89%
330' to 660'	8	63%	10	90%	10	70%	11	55%	12	58%
Beyond 660'	21	90%	23	83%	25	92%	28	89%	29	79%
TOTALS	39	87%	44	86%	48	85%	53	81%	59	78%