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**Development of a Bald Eagle Habitat Assessment Tool and Its Application in Highway Planning**

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**Abstract**

Florida has the largest population of nesting bald eagles (*Haliaeetus leucocephalus*) in the Continental US. Bald eagles are currently listed as a federal and state threatened species. The bald eagle population in Florida has recovered to the point that the US Fish & Wildlife Service (USFWS) has indicated that it no longer warrants protection under the Endangered Species Act (ESA). However the species will continue to be managed and protected by federal and state guidelines. Until recently application of management guidelines could only be based on subjective assessment of the individual nest site. Habitat management guidelines have been developed and successfully implemented to accommodate human and bald eagle habitat needs on a limited basis. Here we are describing a data based model which was used to assess each nest site in Florida based on its current and future comparative importance to the population. The results of this process are then overlaid on the Florida Intrastate Highway System (FIHS) map layer. This provides a mechanism whereby the Florida Department of Transportation (FDOT) has advanced warning of potential issues relating to bald eagle habitat.

The Florida Department of Transportation (FDOT) and FFWCC has worked cooperatively through a contract with ARMASI Inc. to develop a Bald Eagle Habitat Index of Vulnerability (BEHIV) environmental management tool. This vulnerability index evaluates each eagle nesting site in Florida to provide a quantitative assessment of the current and predicted effects of various anthropogenic and natural modifications to the long term viability of these sites. Multiple habitat aspects associated with each nest site, including land use, distance to water, and density or proximity of nest habitat areas, were systematically grouped into data layers. The various layers used in the construction of the BEHIV were incorporated into the model through a weighting process based on their relative importance to eagle nest viability (Nesbitt et al. manuscript). The weighted value assigned to each layer was developed through the review of historical data, ongoing studies, and expert opinions. The relative score compiled from the model and associated map data was used to delineate the various habitat constraints and resources associated with each of the more than 1200 nest sites in Florida. This natural setting score provides a characterization of the quality of each habitat area based on the weighted data variables compiled.

In addition to the natural setting profile an evaluation of the potential for future disruption was compiled using a Conservation Land and Future Land Use coverage with a similar weighting scheme. The amount of area for each future land use or proposed zoning land use categories contained within each habitat buffer was calculated and summarized to arrive at a potential for disruption score.

This qualitative ranking process and the database of individual component values for each nest offers a consistent means of ranking habitat areas across the state. The results of this analysis are used to determine the number of nests within a certain distance of the FIHS system along with their associated BEHIV score. We created a buffer file for each FIHS segment. The resulting buffer files were then overlain on the Eagle nest BEHIV file and the two files were then merged and summarized by FIHS segment to get a preliminary BEHIV score for each segment. Three buffer distances are used to indicate the potential for disruption of nest in proximity to the FIHS network. The buffer distances are a 750 feet Primary Alert buffer, a 1500 feet Secondary Alert buffer, and a 1 mile notification buffer (these distances are expected to be reduced once the species has been delisted).

The results of this project are intended to compliment existing information related to the FIHS maintenance and right of way development. The incorporation of the BEHIV/ASSESS into the FIHS provides a means by which FDOT personnel can be alerted to environmental concerns at an early stage in the planning process. This project and its application offers some insight to the potential for adding other environmental layers to FDOT planning areas. The results have been submitted to FDOT and the BEHIV process is currently under review by FFWCC staff for incorporation into the Bald Eagle Management Plan.