

Key Largo Woodrat and Key Largo Cotton Mouse Assessment Guide

July 29, 2013

The U.S. Fish and Wildlife Service's (Service) FEMA Biological Opinion (BO) dated April 30, 2010, and modified on December 14, 2010, identified 3,261 at-risk parcels, representing 977 acres, intersecting habitats that may occasionally be used by the endangered Key Largo woodrat (*Neotoma floridana smalli*) and/or the endangered Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*), all within unincorporated Monroe County. The BO also identified an additional 287 acres of at-risk lands outside Monroe County's parcel layer not subject to the Rate of Growth Ordinance (ROGO) program. In addition, the BO noted that the ROGO program would allow for the construction of 153 new residences (with a potential for 139 associated cats); 77 residences (70 cats) in potentially suitable Key Largo woodrat and/or cotton mouse habitat and 76 residences (69 cats) in adjacent buffer lands. New residences in the buffer areas may have an indirect effect on predation of the Key Largo woodrat and/or cotton mouse due to associated free-roaming cats (see Tables 19, EA-8a and EA-8b in the BO).

The at-risk properties were determined by overlaying the County's property parcel layer onto the County's 2009 land cover boundary maps (Monroe County 2009). The County's land cover boundary maps included 13 land cover types. Developed land, undeveloped land, impervious surface, and exotic are considered non-native land cover types. Hammock, pineland, scrub mangrove, freshwater wetland, salt marsh, buttonwood, mangrove, and beach berm are considered native land cover types. The water classification is also considered a native cover type. The minimum mapping unit for land cover polygons was 0.35 acre for hammock and 0.5 acre for all other cover types.

The County's boundary map land cover types containing suitable habitat for the Key Largo woodrat and cotton mouse included undeveloped land, hammock, and beach berm. Undeveloped land and beach berm cover types were included as these mapping units could also include small inclusions of tropical hardwood hammock. Based on the mapping, there are 413 parcels, representing 251 acres in North Key Largo and 2,848 parcels, representing 1,013 acres in South Key Largo.

The Key Largo woodrat and cotton mouse occupy the same area of the Keys and have nearly identical habitat requirements. Suitable habitat is tropical hardwood hammock in North Key Largo, north of the U.S. 1 and S.R. 905 intersection, and tropical hardwood hammock extending south of this intersection to South Key Largo, but not including Tavernier. Although suitable hardwood hammock exists in South Key Largo, there have been no documented occurrences of either woodrats or cotton mice on South Key Largo in recent years.

Species Profile: The Key Largo cotton mouse builds leaf-lined nests in logs, tree hollows, and rock crevices. The entrances measure 1.2 to 3.5 inches in diameter. The cotton mouse often partially covers entrances with leaves or bark. Their holes are usually located at the bases of trees, or near or in woodrat nests. They also use recently burned areas where bracken fern (*Pteridium aquilinum*) dominates ground layers (Goodyear 1985).

The Key Largo cotton mouse feeds on leaves, buds, seeds, and fruits. They breed throughout the year and produce two to three litters annually. The average litter is four and the cotton mouse's average life expectancy is 5 months. However, individuals may live for 2 to 3 years (Service 2009).

Key Largo woodrats are active climbers, seem to have definite trails, and often use fallen trees to move over the forest floor. They, like other members of the genus *Neotoma*, have a habit of building large stick nests. Woodrats construct their nests out of sticks, twigs, and various other objects that they assemble into mounds that can reach 4 feet high and 6 to 7 feet in diameter. They frequently build their nests against a stump, fallen tree, or boulder and may use old sheds, abandoned cars, rock piles, and machinery as nest sites. Their nests have several entrances and a single, central nest chamber.

Key Largo woodrats feed on a variety of leaves, buds, seeds, and fruits. They are capable of reproducing all year, although there are seasonal peaks. Reproductive activity is highest during the summer and lowest during the winter. Litter sizes range from one to four although a litter typically contains two young. Females can produce two litters per year, with both sexes reaching sexual maturity in about 5 months. The life expectancy of the Key Largo woodrat is unknown, but is probably similar to other subspecies of *N. floridana*, which may live for 3 years, but probably averages less than 1 year in the wild.

Threats: The Key Largo woodrat and cotton mouse were formerly distributed throughout Key Largo, but are now restricted to hardwood hammocks on North Key Largo (Frank et al. 1997). The majority of high quality hammock available on North Key Largo has been protected through acquisition and is being managed for conservation by the Service and State of Florida. Because of these efforts and current land use regulations in place by Monroe County, the threat of occupied habitat loss from development on North Key Largo is low.

Contiguous tracts of hammock remain on South Key Largo, but no longer appear to support these species (Frank et al. 1997). Brown (1978 and 1978b) and Hersh (1981) attributed the possible extirpation of the cotton mouse in South Key Largo to land clearing and development. In addition, predation by feral and domestic cats is also suspected (Frank et al. 1997). However, given the historic presence of the species in this area, the secretive nature of these species and the lack of systematic trapping on South Key Largo, the Service considers these habitats suitable and potentially occupied.

Assessment Guide: In order to provide assistance in assessing threats to the Key Largo woodrat and cotton mouse from a given project, the Service has developed the following guidance and recommendations that, if implemented, will minimize adverse effects to these species. If this guide results in a determination of "no effect," the Service supports this determination. If this guide results in a determination of "not likely to adversely affect" (NLAA) for these species and a cat brochure is provided, then the Service concurs and no additional correspondence is necessary. If the use of this guide results in a "may affect" determination, then additional coordination with the Service is necessary prior to permit issuance. For projects that result in a "may affect" determination, if, after reviewing the specific project and assessing its potential effects to federally listed species, the Service determines that the project will result in take, the

Service will notify FEMA and the acreage of impacts will be subtracted from the take limits provided in the BO. This guide is subject to revision as necessary.

NOTE: The Service recommends that all new residences in the Key Largo woodrat and Key Largo cotton mouse focus area or buffer, except on South Key Largo or as outlined in couplet G (below), be subject to a covenant restriction which prohibits keeping free-ranging cats, per Monroe County Ordinance 015-2012, Section 122-8(d)2-i. A new residence for which the applicant does not agree to such a restriction shall be subtracted from the allocated residences take (couplet H).**

- A. Parcel is located in the species focus area, buffer area, or on the Real Estate (RE) parcel list.....*go to B*

Parcel is not in the species focus area, the buffer area, or on the RE parcel list.....*no effect*
- B. Parcel is in the species focus area in North Key Largo. The Service will examine the site-specific parameters of the habitat and proposed development.....*may affect*

Parcel is located in the buffer area (a zone extending 500 meters [1,641 feet] from the focus area). If a parcel is mapped as being both within the species focus area and the buffer zone, it should be wholly considered a species focus area.....*go to F*

Parcel is in South Key Largo.....*go to C*
- C. The applicant proposes no removal or modification of these species’ native habitat (hammock, beach berm, and native habitat in the undeveloped lands classification)..
.....*NLAA*

The applicant proposes removal or modification of these species’ native habitat (hammock, beach berm, and native habitat in the undeveloped lands classification). A vegetation survey is required to document the native plant species and size present on the property and a general description of the surrounding properties within 500 feet is also required. Once these have been completed *go to D*
- D. The property is within a developed subdivision or canal subdivision and the area within 500 feet of the parcel is greater than 60 percent developed or scarified*NLAA*

The property is not as above and contains and/or is adjacent to contiguous tracts of this species’ native habitat greater than 1 acre in size. Further coordination with the Service is necessary and a small mammal survey may be required.....*may affect*

Native habitat (hammock, beach berm, and native habitat in the undeveloped lands classification) will be impacted but neither of the above applies to the property.....*go to E*
- E. The applicant has proposed either on-site or off-site habitat compensation* commensurate with the amount of native habitat lost.....*NLAA*

The applicant is not proposing habitat compensation* or habitat compensation* does not meet minimum compensation requirements.....*may affect*

F. The applicant proposes the construction of a new residence and does not agree to enforceable cat restrictions***go to G*

Proposal is for actions other than a new residence OR is for a residence with enforceable cat restrictions**. Provide cat brochure*NLAA*

G. Parcel is within a canal subdivision and is separated by a canal, open water, or US-1 from these species’ native habitat in the buffered woodrat/cotton mouse focus area OR the parcel is adjacent to less than 1 acre of these species’ native habitat in the buffered woodrat/cotton mouse focus area. Provide cat brochure.....*NLAA*

The parcel is not as above..... *go to H*

H. The new residence is proposed in the buffer area, does not result in a cumulative loss of species habitat, and the total number of new residential permits issued in buffer lands has not exceeded 76. Provide cat brochure.....*take exempted in BO, additional consultation with the Service not required*

The proposed new residence in the buffer exceeds the limits of take in the 2010 BO (76 residences)..... *may affect*

***Habitat Compensation**

The minimum recommended habitat compensation is replacement of lost vegetation through protection or restoration of habitat, and/or monetary contributions to accomplish the aforementioned activities, according to the participating community’s land development regulations. The Service has reviewed the following participating communities’ Codes of Ordinances governing habitat compensation and found them to meet minimum recommended habitat compensation: Monroe County, Part II, Chapter 18, Sections 118-2 and 118-8; City of Marathon, Article 2, Chapter 106; Village of Islamorada, Part II, Chapter 30, Article VII, Division 4, Section 30-1616; and Key West, Part II, Subpart B, Chapter 110, Article V, Section 110-223 and Section 110-225, and Article VI, Division 2, Section 110-287 and Division 3, Section 324 and 327. The cities of Key Colony Beach and Layton were determined to not have ordinances that meet the minimum recommended habitat compensation. If the participating community proposes to modify the habitat compensation requirements of their ordinance, additional review by the Service will be necessary.

If habitat compensation is being provided in excess of the minimum recommended, the Service may consider the additional compensation as a credit to the not-to-exceed habitat acreage losses referenced in the BO. To be considered for credit, the compensation must be like for like habitat compensation and credit will be granted at half value. For example, if 4 acres of additional compensation are provided, the credit granted would be 2 acres. This partial credit is considered

appropriate as existing vegetation currently provides benefit and the credit vegetation may not provide the same habitat benefit until later in time.

****Enforceable Cat Restrictions**

On June 20, 2012, the Monroe County Board of Commissioners passed Ordinance 015-2012. Section 122-8(d)2-i of this ordinance requires property owners applying for new construction permits in Key Largo wood rat and Key Largo cotton mouse habitat to agree to execute and record a covenant restriction in favor of Monroe County which prohibits keeping free-ranging cats.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects and to track incidental take exempted for these species, it is important for FEMA and the NFIP participants to monitor the number of permits and provide information to the Service regarding the number of permits issued. In order to meet the reporting requirements in the BO, we request that FEMA and/or the NFIP participants send to the Service an annual database summary consisting of: project date, permit number, project acreage, native impact acreage, amount of acres and/or number of trees/plants replaced as habitat compensation, and project location in latitude and longitude in decimal degrees.

Literature Cited

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