

## Lower Keys Marsh Rabbit 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 3,710 at-risk parcels, representing 4,331 acres, intersecting habitats that may occasionally be used by the endangered Lower Keys marsh rabbit (LKMR; *Sylvilagus palustris hefneri*) in Monroe County. The BO also identified an additional 1,427 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 871 new residences (with a potential for 787 associated cats); 296 residences (268 cats) in potentially suitable LKMR habitat and 575 residences (520 cats) in adjacent buffer lands. New residences in the buffer areas may have an indirect effect on predation of the LKMR due to associated free-roaming cats (see Tables 19, EA-11a and EA-11b 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 LKMR included pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, and beach berm. We also noted that potential habitat is present only in unincorporated Monroe County (Lower Keys only).

*Species Profile:* The LKMR's historic range extended from Big Pine Key to Key West, encompassing a linear distance of about 30 miles. It occurs on some of the larger keys from Boca Chica, just north of Key West, to Big Pine Key. The LKMR is habitat specific, depending upon a transition zone of grasses and sedges for feeding, shelter, and nesting. The majority of potential suitable habitat areas lie in transitional zones between marine environments and uplands. The current population estimate is about 500 rabbits in the Lower Florida Keys (Perry, personal communication, 2006). Although habitat loss is responsible for the original decline of the LKMR, high mortality from predation from feral cats has also occurred and may be the greatest current threat. Feral cat control is an ongoing operation on Naval Air Station Key West (NASKW) and lands within the National Key Deer Refuge (NKDR). However, feral cat control activities outside NASKW and the NKDR are unknown.

Typical LKMR habitat includes wetlands with a dense herbaceous cover that is dominated by a mixture of grasses, sedges, and forbs. This community is considered a transitional plant community that is similar in form and species composition to comparable communities interspersed among the mangrove forests of mainland Florida (Forys and Humphrey 1994). Forys (1995) concluded that marsh rabbits spend most of their time in the mid-marsh (seaside

oxeye) and high-marsh (cordgrasses and marsh fimbry) and avoid areas with mature buttonwoods and high canopy cover.

Marsh rabbits have been documented to feed on at least 19 different plant species (Forys 1995). However, the most abundant species in the rabbit's diet is seashore dropseed, glassworts, cordgrass, seaside oxeye, red mangrove, and white mangrove.

Marsh rabbits are sexually mature at about 9 months of age. During this time, the majority of the males disperse. Sexually maturing females are not as likely as males to disperse. Like other marsh rabbit subspecies, LKMRs are polygamous, and generally breed throughout the year (Holler and Conway 1979). Although LKMRs do not display an apparent seasonal breeding pattern (Service 1994), the highest proportion of females with litters occurs in March and September; the lowest proportion occurs in April and December.

The Service issued a Section 10(a)(1)(B) Incidental Take Permit (ITP) to Monroe County, Florida Department of Transportation, and Florida Department of Community Affairs (applicants) in June 2006 for adverse effects from development on Big Pine and No Name Keys. The ITP was issued to the applicants based upon their development of a Habitat Conservation Plan (HCP) that sets guidelines for development activities on Big Pine and No Name Keys to occur progressively over the permit period (20 years). The take will be incidental to land clearing for development and recreational improvements. The HCP provides avoidance, minimization, and mitigation measures to offset impacts to covered species. Mitigation includes the protection of three mitigation units for each development unit of suitable habitat within the plan area.

The HCP includes specific development restrictions in LKMR habitat and within a 1,640-foot (500 meter) buffer surrounding this habitat. The distance of 1,640-feet is based on the use of upland areas by this species and the estimated distance domestic cats will travel from their homes (Frank, personal communication, 1996). The ITP does not authorize incidental take of suitable marsh rabbit habitat, but does authorize incidental take of up to 40 acres of buffer lands surrounding suitable marsh rabbit habitat. Since incidental take of suitable marsh rabbit habitat was not exempted in the Big Pine and No Name HCP, the potential direct, indirect, and cumulative effects of NFIP actions on at-risk marsh rabbit habitat were addressed in the 2010 FEMA BO.

*Threats:* The LKMR is vulnerable to predation by free-roaming cats, habitat loss and degradation, fire suppression, vehicular traffic, hurricanes, sea level rise, fire ants, and exotic constrictor snakes. The greatest threats to the continued existence of the LKMR are predation by cats, habitat loss and degradation, and hurricanes (Service 2007). These threats not only directly affect the viability of local subpopulations, but also reduce the probability of successful dispersal among the increasingly fragmented habitats. Connectivity among suitable habitat patches is necessary for LKMR dispersal among patches (Forys and Humphrey 1999), and dispersal is a necessary process if rabbit metapopulations are to remain self-sustainable.

*Assessment Guide:* In order to provide assistance in assessing threats to the LKMR from a given project, the Service has developed the following guidance and recommendations that, if

implemented, will minimize adverse effects to this 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 LKMR focus area or buffer, except 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 or on the Real Estate (RE) parcel list.....*go to B*

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 as being in the species focus area.....*go to F*

Parcel is not in the species focus area, the buffer area, or on the RE parcel list...*no effect*

**B.** Parcel is on Big Pine Key or No Name Key..... *refer to HCP for coverage*

Parcel is not on Big Pine Key or No Name Key.....*go to C*

**C.** The applicant proposes no removal or modification of this species’ native habitat (pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, and beach berm).....*go to F*

The applicant proposes removal or modification of this species’ native habitat (pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, and beach berm). 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 ..... *go to F*

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 (pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, and beach berm) 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.....*go to F*

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, and/or US-1 from this species’ native habitat in the buffered LKMR focus area OR the parcel is adjacent to less than 1 acre of this species’ native habitat in the buffered LKMR focus area. Provide cat brochure.....*NLAA*

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

- H.** The new residence is proposed in the species focus area, does not result in a cumulative loss of species habitat, and the total of new residential permits issued in the focus area lands has not exceeded 296. Provide cat brochure.....*take exempted in BO, additional consultation with the Service not required*

The new residence is proposed in the buffer area and the total number of new residential permits issued in buffer lands has not exceeded 575. Provide cat brochure. ....*take exempted in BO, additional consultation with the Service not required*

The proposed new residence exceeds the limits of take in the 2010 BO (296 residences in the focus area, 575 residences in buffer lands).....*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 LKMR 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 the LKMR, 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**

- Forys, E.A. 1995. Metapopulations of marsh rabbits: a population viability analysis of the Lower Keys rabbit (*Sylvilagus palustris hefneri*). Ph.D. Thesis. University of Florida; Gainesville, Florida.
- Forys, E.A. and S.R. Humphrey. 1994. Biology and status of the Lower Keys marsh rabbit. Final Report, Contract No. N62467-90-C-0766. Florida Game and Fresh Water Fish Commission, Tallahassee, Florida.
- Forys, E.A. and S.R. Humphrey. 1999. Use of population viability analysis to evaluate management options for the endangered Lower Keys marsh rabbit. *Journal of Wildlife Management* 63:251-260.
- Frank, P. 1996. Personal Communication. Biologist. Florida Game and Fresh Water Fish Commission, Cudjoe Key, Florida

Holler, N.R. and C.H. Conaway. 1979. Reproduction of the marsh rabbit (*Sylvilagus palustris*) in South Florida. *Journal of Mammalogy* 60:768-777.

Monroe County. 2009. Geospatial Land Cover Dataset of the Florida Keys. Photo Science, Inc. St. Petersburg, Florida

Perry, N.D. 2006. Personal communication. Texas A&M University. College Station.

U.S. Fish and Wildlife Service. 1994. Recovery Plan for the Lower Keys marsh rabbit. U.S. Fish and Wildlife Service; Atlanta, Georgia.

U.S. Fish and Wildlife Service. 2006. Biological Opinion. Big Pine and No Name Keys Habitat Conservation Plan. Monroe County, Florida. Atlanta, Georgia.

U.S. Fish and Wildlife Service. 2007. Lower Keys marsh rabbit, 5-year status review. Atlanta, Georgia.