

Silver Rice Rat 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 3,985 at-risk parcels, representing 4,134 acres, intersecting habitats that may occasionally be used by the endangered silver rice rat (rice rat) (*Oryzomys palustris natator* [= *O. argentatus*]) in Monroe County. The BO also identified an additional 3,358 acres of at-risk lands outside Monroe County's parcel layer not subject to the Rate of Growth Ordinance (ROGO) program. The BO noted that the ROGO program would allow for the construction of 871 new residences; 522 in potentially suitable rice rat habitat and 349 in adjacent buffer lands. New residences in the buffer areas may have an indirect effect on predation of the rice rat due to associated free-roaming cats (see Tables 19, EA-14a and EA-14b 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 rice rat include hammock, pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, mangrove, and beach berm. We also noted that potential habitat is present only in unincorporated Monroe County (Lower Keys only).

Species Profile: The rice rat occurs on 13 islands in the Lower Keys: Big Pine, Little Pine, Howe, Water, Middle Torch, Big Torch, Summerland, Raccoon, Johnston, Ramrod, Cudjoe, Upper Sugarloaf, and Saddlebunch Keys (Vessey et al. 1976, Goodyear 1984, Wolfe 1987, Forsys et al. 1996, Perry 2006, Service 2008). Based on the availability of suitable habitat and proximity to existing populations, the rice rat may also occur on several other islands in the Lower Keys such as Little Torch. Range-wide surveys confirmed that rice rat populations are not established on Boca Chica, Geiger, East Rockland, or Big Coppit Keys (the islands that encompass Naval Air Station Key West) (Perry 2006).

The rice rat is restricted to a narrow range of wetland habitat types. Populations are widely distributed and occur at extremely low densities. Rice rats use low intertidal and low salt marsh habitats during activity periods, and swales in the low salt marsh are primary foraging sites. Buttonwood transitional salt marsh is at a higher elevation than other salt marsh habitats, and is used for foraging and nesting (Goodyear 1987). Forsys et al. (1996) found that the rice rat occurs at comparable densities in both scrub and fringe mangrove communities. Mitchell (1996) conducted additional work on rice rats and found that reproductive activity occurs in freshwater habitat and that animals regularly use freshwater marsh on Big Torch Key.

Silver rice rats are generalized omnivores that eat a variety of plant and animal material (Wolfe 1982). The diet of the rice rat includes seeds of saltwort, mangroves, *Borrchia* spp., coconut palm (*Cocos nucifera*), and invertebrates, including isopods (Spitzer 1983; Goodyear 1992). However, they probably eat a greater variety of foods than those listed above.

A variety of ecological factors likely influence reproduction in rice rats throughout the year (Wolfe 1982). The reproduction peak occurs after the wet season, from October to November. The gestation period for rice rats is 21 to 28 days, with litter sizes ranging from 4 to 6. Spitzer (1983) studied a pregnant female rice rat during winter and observed litter sizes of 3 to 5. The average number of litters that are produced in a year has not been documented. Forsy et al. (1996) found that juvenile rice rats comprised only 14 percent of the total number of individuals captured in their study. Although there is high survivorship of rice rats in the Keys, the low proportion of juveniles in this population may indicate a low reproductive rate.

Threats: The primary threat to the rice rat is degradation and loss of wetland habitat (Barbour and Humphrey 1982). Rice rats require expanses of high quality salt marsh habitat. They are extremely limited in habitat occupancy, occurring in salt marsh and transitional buttonwood habitats. Construction activities typically result in the direct loss of habitat, as well as secondary effects that extend into surrounding habitats. Related secondary effects include habitat fragmentation and an increase in the densities of black rats and domestic cats. Cats are predators of rice rats and there is evidence of habitat competition between rice rats and black rats.

Assessment Guide: In order to provide assistance in assessing threats to the rice rat 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 rice rat focus area or buffer, except as outlined in couplet F (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 G).**

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 a species focus area.....**go to E**

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

- B.** The applicant proposes no removal or modification of this species' native habitat (hammock, pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, mangrove, and beach berm).....*go to E*

The applicant proposes removal or modification of this species' native habitat (hammock, pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, mangrove, 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 C*

- C.** 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 E*

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, pinelands, scrub mangrove, freshwater wetland, salt marsh, buttonwood, mangrove, and beach berm) will be impacted but neither of the above applies to the property.....*go to D*

- D.** The applicant has proposed either on-site or off-site habitat compensation* commensurate with the amount of native habitat lost.....*go to E*

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

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

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

- F.** 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 rice rat focus area OR the parcel is adjacent to less than 1 acre of this species' native habitat in the buffered rice rat focus area. Provide cat brochure.....*NLAA*

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

- G.** 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 522. 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 349. 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 (522 residences in the focus area, 349 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 silver rice rat 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 silver rice rat, 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.

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