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Species Conservation Guidelines**South Florida****Key Largo Cotton Mouse**

The Species Conservation guidelines for the Key Largo cotton mouse (*Peromyscus gossypinus allapaticola*) provides a tool to assist the user in determining if their project, *i.e.*, a Federal permit, a Federal construction project, or other such action, may adversely affect Key Largo cotton mice. Here we describe what actions might have a detrimental impact on the Key Largo cotton mouse and how these effects can be avoided.

Life History

The U.S. Fish and Wildlife Service (Service) listed the Key Largo cotton mouse as endangered on 21 June, 1983, due to a substantial loss of habitat. The ecology of the Key Largo cotton mouse in south Florida is summarized in Service (1999). The Key Largo cotton mouse breeds throughout the year, usually producing two or three litters, with an average of four young per litter (Brown 1978). Life expectancy of the species is only five months, although some individuals may live for two or three years (Humphrey 1992). The Key Largo cotton mouse constructs a nest in hollow tree stumps, fallen logs, and crevices in limestone outcrops (Barbour and Humphrey 1982). Nests are leaf-lined and are often partially covered by leaves or bark that are near or in Key Largo woodrat (*Neotoma floridana smalli*) nests (Goodyear 1985). Smith (1982) stated that reproduction may be affected by agonistic behavior by males or decreases in the food supply. Fourteen cotton mice were translocated to Lignumvitae Key in 1970 in an attempt to establish a viable population (Brown and Williams 1971). Although one individual was trapped in 1977, subsequent trappings in 1984 and 1990 yielded no individuals (Wells, pers. com, in Service 1999). Humphrey (1988) estimated that the remaining forest on north Key Largo supported approximately 18,000 individuals (50.6 individuals/acre). However, Humphrey (pers. com. in Service 1999) felt that the population has been decreasing from a peak population in 1984.

Habitat

The Key Largo cotton mouse is dependent upon the structure, composition, and quality of tropical hardwood hammocks, and utilizes a number of tropical hardwood habitats including recently burned, early successional, and mature hammock forests, as well as *Salicornia* coastal strands adjacent to these forests (Humphrey 1992). Hammocks provide a shady, humid microclimate with less variation in ambient temperature and wind than found in more exposed habitats. Individuals are often found utilizing woodrat holes, nests and runways. The species is omnivorous and feeds on a wide variety of plants and animals (Humphrey 1992). Tropical hardwood hammocks on Key Largo include a number of West Indian tree and shrub species.

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Species composition include gumbo limbo (*Bursera simaruba*), Jamaican dogwood (*Piscidia ferreum*), and mahogany (*Swietenia mahagani*), as well as a number of other tropical species. Some common understory and ground cover species include torchwood (*Amyris elemifera*), wild coffee (*Psychotria undata*), and snowberry (*Chicocoea alba*). Cotton mice have also been trapped in recently burned areas where bracken fern (*Pteridium aquilinum*) predominates (Goodyear 1985).

Distribution

Although the cotton mouse formerly occupied hardwood hammock forests throughout Key Largo, Monroe County, Florida, it is now restricted to an area north of the U.S. 1-C.R. 905 Intersection (Barbour and Humphrey 1982, Humphrey 1992). Habitat loss and fragmentation has caused the isolation of Key Largo cotton mouse populations. Tropical hardwood hammock fragments up to 3.9 ha (9.6 acres) in size remain on south Key Largo, but may no longer be able to support Key Largo cotton mice. These hammocks may be too small and isolated to support viable cotton mouse populations (Frank et al. 1997). The physical separation caused by these activities makes it increasingly difficult to locate a mate and to disperse (Humphrey 1988). Historically, the species was found as far south as Plantation Key, near Tavernier (Layne 1974, Humphrey 1992). Check the consultation area in Figure 1. Boundaries for the consultation areas were developed from Cox and Kautz (2000). No critical habitat has been designated for the Key Largo cotton mouse.

Determination

The SLOPES flowchart (Figure 2) can help you determine the impact of your project on the Key Largo cotton mouse.

If your project is outside the consultation area, then no effect to the Key Largo cotton mouse is anticipated. If, by chance, you encounter a Key Largo cotton mouse on your site outside the consultation area, appropriate protective measures must still be implemented (see below) and you should contact the Service to discuss how best to proceed.

If your project is inside the consultation area, you should check for the presence of suitable habitat. Suitable habitat for the Key Largo cotton mouse is tropical hardwood hammock. If there is no tropical hardwood hammock in your project area, then no effect on the Key Largo cotton mouse is anticipated.

If your project is inside the consultation area and tropical hardwood hammock is present, then the project may affect the Key Largo cotton mouse. You can assume that the Key Largo cotton

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mouse is present and initiate consultation. Or survey the hammock habitat for Key Largo woodrat stick nests. Barbour and Humphrey (1982) reported that the Key Largo cotton mouse and Key Largo woodrat are highly sympatric. The Key Largo cotton mouse will often use these sites for cover. Although the two species occur together, the Key Largo cotton mouse often occurs in burned-over habitat managed for woodrats (Goodyear 1995). If the Key Largo cotton mouse is present at a project site then survey results should be summarized in a biological assessment (see Service 2003 for details).

If suitable habitat is present at the project site, but no individuals are detected during surveys, the project is not likely to adversely affect the species. However, if Key Largo cotton mice or woodrats are detected, then the project is likely to adversely affect the Key Largo cotton mouse and formal consultation is required.

Conservation Measures

Tropical hardwood hammocks are a unique and highly diverse ecosystem that provides vital habitat for a number of federally listed species. More than 70 percent of the tropical hammock trees and shrubs produce fruits and berries that may provide important forage for the Key Largo cotton mouse (Service 1999). Rapid loss of this habitat type has led to the listing of a number of plant and animal species including the Key Largo cotton mouse. Cooperation between the Service, state and local governments, non-governmental organizations and private land owners, could forge partnerships to preserve the remaining forests in north Key Largo, and begin restoration efforts in highly modified tropical hammocks. Below are some protective measures that might be incorporated into your project to minimize impacts to the Key Largo cotton mouse.

1. Maintain tropical hardwood hammocks intact and protect through conservation easements. If modification of the habitat is necessary, limit the size of the footprint.
2. Restore highly modified hammocks through the removal of invasive exotic vegetation, and restore native vegetation to these sites.
3. If substantial habitat loss is proposed for the project, then acquisition of occupied, and unoccupied (but suitable) habitat through lands purchases and/or conservation easements to maintain no net loss of habitat.
4. Translocation of individuals to areas of restored habitat.
5. Establish protective buffers around hammocks with known Key Largo cotton mouse

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populations.

6. Minimize mosquito spraying which may impact the availability of food resources.
7. Removal of potential predators, such as feral cats and dogs, black rats, raccoons and fire ants. Eliminate food sources and home sites for feral animals as well as black rats and raccoons. Enforce deed restrictions on cat control at the Ocean Reef Club and other areas.
8. Contribute to public awareness and stewardship through sponsoring educational materials and public workshops.

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GIS Layers

Appendices