DRAFT

December 31, 2003

Species Conservation Guidelines

South Florida

Key Deer

The Species Conservation Guidelines (Guidelines) for the Key deer (*Odocoileus virginianus clavium*) 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 deer. Here we describe what actions might have a detrimental impact on the Key deer and how these effects can be avoided.

Life History

The U.S. Fish and Wildlife Service (Service) listed the Key deer as endangered on 11 March, 1967, due to hunting pressure. The ecology of the Key deer in South Florida is summarized in Service (1999). As a result of over-hunting, the Key deer population was reduced to estimated 50-80 individuals by the late 1940s. By the early 1950s, only 25 deer remained. The protection afforded the Key deer through habitat management, land acquisition, and prohibitions on hunting have resulted in significant population increases (Service 1999). In 1970, the Key deer population was estimated at 250-300 individuals, and it is currently estimated at 700-800 individuals (Lopez and Silvy 1999, Lopez 2001). A translocation project began in early 2003. A total of 48 adult (greater than one year old) Key deer (24 females and 24 males) will be translocated to Sugarloaf and Cudjoe Keys at the rate of 16 deer per year during three years. This should increase populations on Sugarloaf and Cudjoe Keys. Females will be trapped and translocated during March of each year, beginning in 2003. Males will be trapped and translocated in May of each year, beginning in 2003, when antler growth allows for the attachment of antler transmitters. Breeding season for Key deer begins in September, peaks in October, and declines through December and January (Hardin 1974, Hardin et al. 1976). Folk and Klimsta (1991) reported that fecundity, and the rate of reproductive potential, is lower in the Key deer than in any other North American deer population.

Habitat

Key deer utilize all habitat types within their range, including pine rocklands, hardwood hammocks, buttonwood salt marshes, mangrove wetlands, freshwater wetlands, and disturbed/developed areas. Although Key deer utilize a variety of habitats, hammocks which comprise the majority of uplands on most Keys, serve as critical fawning areas for Key deer (Service 1999). Key deer forage on mangroves in tidal wetlands and use open areas for foraging and resting. The Key deer's diet varies seasonally with availability of specific plants and

changes in nutritional requirements (Carlson et al. 1989, Klimstra and Dooley 1990). Many of the important food plants occur in pine rocklands and are stimulated by fire, which arrests succession, reduces the canopy, promotes understory growth, decreases invasion by woody species, increases plant palatability, and reduces ground litter (Carlson et al. 1989, Peterson et al. 2002).

Key deer also use residential and commercial areas extensively where they feed on ornamental plants and grasses, and where they can seek refuge from biting insects. The destruction or degradation of these habitats may have reduced the reproductive potential of the Key deer. Pine rocklands are essential to Key deer survival since these sites hold fresh water year-round. Only 5 of 26 islands occupied by Key deer have significant pine rocklands (Service 1999).

Distribution

The Key deer's historical range probably extended from Key Vaca to Key West (Klimstra 1992). The current range includes approximately 26 islands from Big Pine Key to Sugarloaf Key (Folk 1991). Despite this increase in population, there has been a contraction in the range of Key deer from 1970 to 1999. Key deer have become increasingly abundant on Big Pine Key and adjacent islands, but have decreased to near zero on more distant islands such as Cudjoe and Sugarloaf Keys. Although Key deer were never abundant on Cudjoe and Sugarloaf Keys, they now exist at such low numbers that local extirpation is likely in the near future (Lopez 2001). The contraction in range has decreased the overall viability of the Key deer population by increasing the probability that a stochastic event, such as a severe hurricane or disease epidemic, may have catastrophic impacts to the core population on and around Big Pine Key. The main threat to the survival of the Key deer is the degradation, destruction, loss, and fragmentation of habitat caused by residential and commercial construction activities. Other human-related impacts or disturbances include road mortality, fencing, fire suppression, fresh water availability, invasive exotic plants, and urbanization (Service 1999). Check the consultation area in Figure 1. Boundaries for the consultation areas were developed using Cox and Kautz (2000). No critical habitat has been designated for the Key deer.

Determination

The SLOPES flow chart (Figure 2) can help determine the impact of your project on the Key deer.

If your project is outside the consultation area, then no effect to the Key deer is anticipated. If, by chance, you encounter a Key deer on your site outside the consultation area, appropriate conservation 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 deer includes pine rocklands, hardwood hammocks, buttonwood salt marshes, mangrove wetlands, freshwater wetlands, and disturbed/developed areas. Since key deer occur in most habitat types found in the Keys, a survey for Key deer occupancy should be conducted. Key deer presence/absence can be determined using fecal-pellet surveys.

If your project is inside the consultation area and includes pine rocklands, hardwood hammocks, buttonwood salt marshes, mangrove wetlands, freshwater wetlands, and disturbed/developed areas, you should assume that Key deer is present, and consultation is necessary. A survey of the hammock habitat should be conducted, and results should be summarized in a biological assessment. See the SLOPES introduction for details on the proper way to prepare a biological assessment.

Conservation Measures

The National Key Deer Refuge was established in 1957 for the purpose of protecting and maintaining the remaining 1596 ha (3,943 acres) of habitat for the Key Deer and actively managing the Key deer population. To date, the FWS has acquired over 3133 ha (7,741 acres) to be managed as part of the National Key Deer Refuge and Great White Heron NWR. Acquisition of these lands is the most significant recovery action to protect the Key deer. Management and restoration of habitat is a major conservation effort that involves prescribed burning, mowing of clearings and fire breaks, filling ditches to prevent fawn drowning and limit influx of saline water, removing exotic vegetation and planting native vegetation, and development and protection of habitat corridors.

The Service also coordinates with the South Florida Water Management District (SFWMD) to improve water resources by removing cesspools and installing septic tanks, allowing no net increase of pollution. To alleviate road mortality, the Service is cooperating with the Florida Department of Transportation (FDOT) and Monroe County to establish and enforce speed zones and maintain warning signs for deer crossings. Service law enforcement is working to minimize human interactions with Key deer, especially feeding by the public. Other management activities include guzzler (water tank) maintenance, relocation of nuisance and rehabilitated animals, and coordination of volunteer activities including exotic plant removal, law enforcement, and public education. Below are some protective measures that might be incorporated into your project to minimize impacts to Key deer.

1. Avoid impact by moving project, reducing footprint, or maintaining habitat on-site. These habitats are unique in Florida and support a wide range of wildlife. Return of a natural fire regime through prescribed fire.

2. If habitat modification is necessary, then restore habitat in other areas through exotics removal and the planting of native vegetation.

3. If occupied habitat is impacted, mitigation of land through conservation easements with terms. Continue land acquisition by the Federal and state government, as well as non-governmental organizations. Make the purchase of properties adjacent to public lands a high priority. Protect or establish corridors that will allow movement of deer between various habitat patches.

4. Minimization of traffic mortalities through: (1) speed limit reduction; (2) increase the enforcement of speed zones; (3) identification of deer crossings; and (4) evaluation of fencing to reduce collisions.

5. Eliminate the accidental drowning of fawns by filling mosquito ditches on public lands.

6. Contribute to public awareness and stewardship through sponsoring educational materials and public workshops.

7. Contribute to the reintroduction of Key deer to areas of suitable habitat within the Key Deer National Wildlife Refuge.

Literature Cited

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GIS Layers

keydeer_ca.shp Key deer consultation area

Appendices