

Population Density Estimates for a Green Iguana (*Iguana iguana*) Colony in a Florida State Park

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INTRODUCTION

The Green Iguana (*Iguana iguana*) is a widely distributed, well established, exotic reptile species in southern Florida (Townsend et al. 2003; Meshaka et al. 2004a,b), where it is expanding its geographic range (Meshaka et al. 2004b). Well-established colonies exist in several state parks (Meshaka et al. 2004b, Smith et al. 2006), and in urban areas (Meshaka et al. 2004a, McKie et al. 2005) of this region. With its successful colonization of the region comes a need for natural history data to help explain its success and to evaluate possible management options. Using six years of removal data from a state park, we provide the first density estimates of this large primarily herbivorous exotic lizard in southern Florida.

STUDY AREA AND METHODS

Bill Baggs Cape Florida State Park (CFSP) is a small, urban park located in Miami-Dade County, Florida, USA, on Key Biscayne approximately seven miles southeast of metropolitan Miami. The park consists of 131.5 ha of uplands and 42.9 ha of tidal and freshwater wetlands for a combined total of 174.4 ha (FDEP 2001). CFSP is completely encapsulated by urban high-rise infrastructure to the North, the Atlantic Ocean to the South and East, and Biscayne Bay to the West. Terrestrial access is only at the Northern interface.

As of 2007, the park consisted of 10 distinct natural communities in various stages of succession (FDEP 2001). Principal upland habitat communities include 2.4 ha of beach dune, 61.5 ha of coastal strand, 35.6 ha of maritime hammock, and 4.4 ha of coastal grassland (FDEP 2001). During the wet season, CFSP contains about 4.0 ha of freshwater in five interdunal swale ponds (FDEP 2001). There are 4.4 ha of ruderal habitat, and 21.8 developed hectares (FDEP 2001).

For active removal of the Green Iguana during

2001 - 2006, road edges, picnic areas and other locations where trees and grasses occurred together were surveyed on sunny days by foot or by vehicle. More effort was made on suitable days following cool and/or rainy weather. Most Green Iguanas were taken by means of a monofilament noose attached to the end of a fishing pole. The noose was placed over the head of the animal and used to keep it from fleeing until the animal could be picked up by hand. Iguanas that were at first beyond reach in tall vegetation were pulled to the ground and then collected. This method worked very well initially on nearly all size-classes. Over time, however, some captures became more difficult as animals repeatedly exposed to failed collection efforts became more wary. Other captures were made by staking nets or placing heavy monofilament snares over the mouth of actively used burrows and waiting for entering or exiting iguanas to be caught.

An opportunistic road-kill survey was also con-

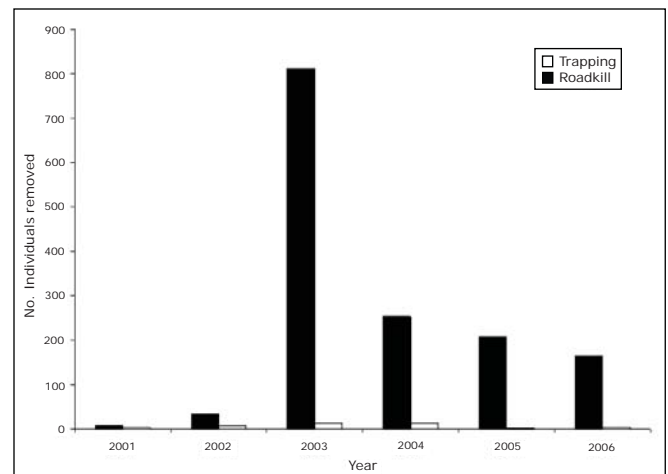


Figure 1. Numbers of Green Iguanas (*Iguana iguana*) removed from Bill Baggs Cape Florida State Park in Miami-Dade Co., Florida, during 2001 - 2006.

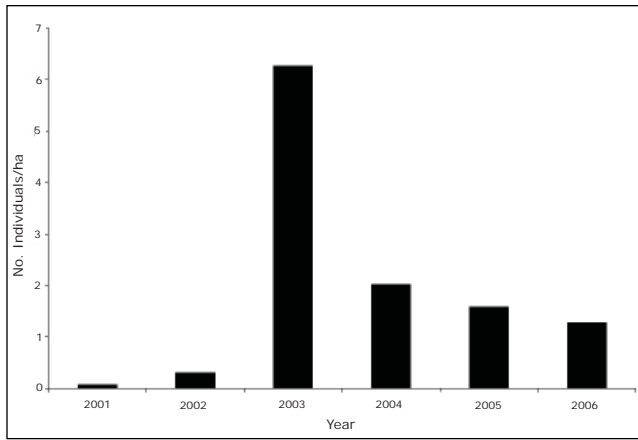


Figure 2. Population density estimates of the Green Iguana (*Iguana iguana*) from Bill Baggs Cape Florida State Park in Miami-Dade Co., Florida, during 2001 - 2006.

ducted during 1996 – 2006 at CFSP along ca. 2 km of paved, two-lane road (with variable speed limits of 24.1 – 40.2 km/hr) by park rangers and other staff. However, this survey was not as rigidly standardized as reported for other Florida state parks (see reviews in Smith et al. 1994, Bard et al. 2002, Smith et al. 2003); more data were opportunistically collected during various staff activities involving transit on roadways.

RESULTS AND DISCUSSION

Green Iguanas were first documented in CFSP on 30 September 1997. The date of their initial introduction to the park is unknown. The Green Iguana population in CFSP grew very slowly at first until a biotic burst occurred in the early 2000s at which time the species suddenly became prevalent in the park (HTS pers. obs.). Under both Florida Park Service policy, and the Florida Wildlife Code (39 F.A.C.), trapping and removal of Green Iguanas was initiated in 2001 to greatly reduce the population size. A combination of trapping and incidental road-kill removal resulted in a peak of 824 individuals removed during 2003, 811 of which were trapped (Figure 1). In 2006, 165 individuals were trapped out of 169 individuals removed from the park (Figure 1).

Based on the totals presented in Figure 1 by year, the absolute minimum densities of Green Iguanas for available terrestrial habitat (131.5 ha) in CFSP during 2001 - 2006 peaked at 6.27 individuals / ha in 2003 (Figure 2). These population density estimates, although high, are also conservative in light of the fact that they do not include any individuals remaining in the park by year-end, nor those removed by predators and/or scavengers. We also note that many of the individuals that were removed were hatchlings or very young individuals whose future survivorship was presumably much less than that of larger, older individuals. Nonetheless, the 2003 high population density estimate totaling 626.6 iguanas / km² at CFSP may not be an endpoint for populations lacking various controls

(see Smith et al. 2006).

Concerns relate to the Green Iguana in Florida, such as potentially negative interactions with the Florida Burrowing Owl (*Athene cunicularia floridana*) (McKie et al. 2005), seed dispersal through ingested fruit of the exotic Surinam Cherry (*Eugenia uniflora*) in Florida state parks (HTS pers. obs., S. Sekscienski unpubl. data), potential airplane collision hazards on Florida runways as noted on those in Puerto Rico (Engeman et al. 2005), its growing ubiquity in southern Florida (Townsend et al. 2003, Meshaka et al. 2004a,b), and its ability to colonize managed lands such as CFSP. In light of these concerns, our findings underscore the importance of control of what we quantified here as a potentially abundant exotic species in a restored park of an otherwise increasingly degraded Florida landscape.

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