Brief Report

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Population Density of *Cercopithecus mona* on the Caribbean Island of Grenada

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Key Words

Mona monkey · *Cercopithecus mona* · Guenon · Grenada · Caribbean · Population density · Census methods

Introduction

The density of a population is an indicator of its relative success when compared to other populations within the same species. Few studies have examined population densities of *Cercopithecus mona* in its original range in Africa [1, 2]. Previous to this study, no population surveys had been conducted in the introduced range of *C. mona* on the Caribbean island of Grenada. The mona monkey was introduced to Grenada sometime between the late 17th and 18th centuries during the height of the slave trade to the Americas [3]. The population of *C. mona* now on Grenada was most likely started from only a few breeding individuals as slave traders usually carried only a small number of monkeys or other exotic animals as cargo at one time [4, 5]. In this paper, an overall population density estimate for *C. mona* on Grenada is presented and compared to information provided in the literature regarding African *C. mona* population densities.

Study Site and Methods

Surveys were conducted between October 28, 1994, and April 5, 1995, within a 4-km^2 census area in the Grand Etang National Park and Forest Reserve (12°6′ N, 61°42′ S; fig. 1). The park and forest reserve occupy approximately 1,540 ha of mountainous, tropical rain forest, 55% of which is mature forest [3]. Dense vegetation and steep terrain severely limited visibility throughout most of the park and forest reserve. *C. mona* is the only primate found on Grenada, and few other animals are present. Grenada mona monkeys have no natural predators and little competition for resources.

Modified line transect surveys were used to estimate population densities. The basic formula for estimating the number of animals in a census area using line transects is $N = nA/a$, where N is the total number of animals in the census area, n equals the number of animals recorded, A is the total census area, and a equals the sample area calculated from the length and width of the transect [6]. I used the observer-to-animal and maximum-reliable-sighting-distance method to estimate transect width as recommended by the National Research Council [6] for the conditions found within my study area

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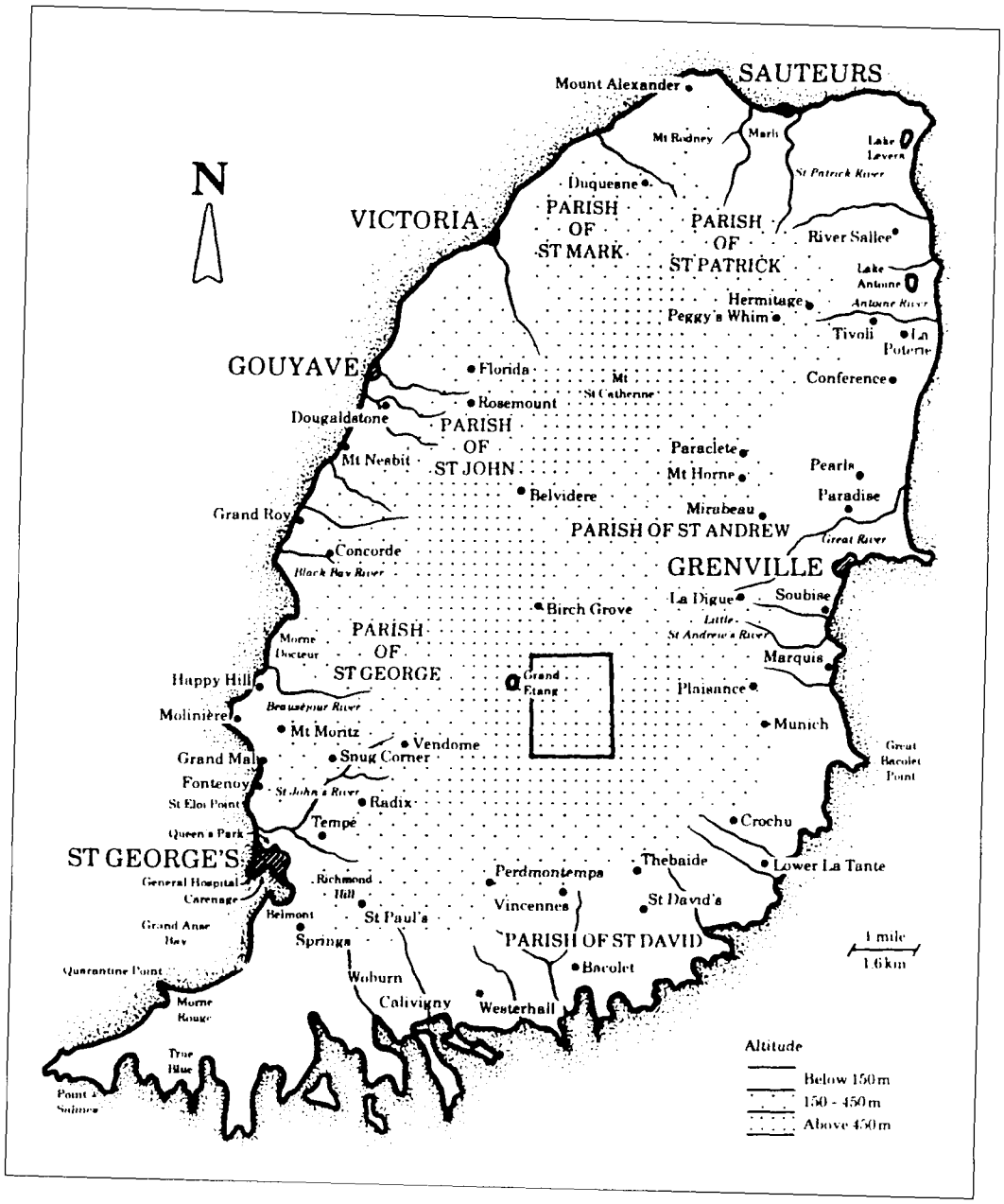

Fig. 1. Location of census area (indicated by square) on the island of Grenada.

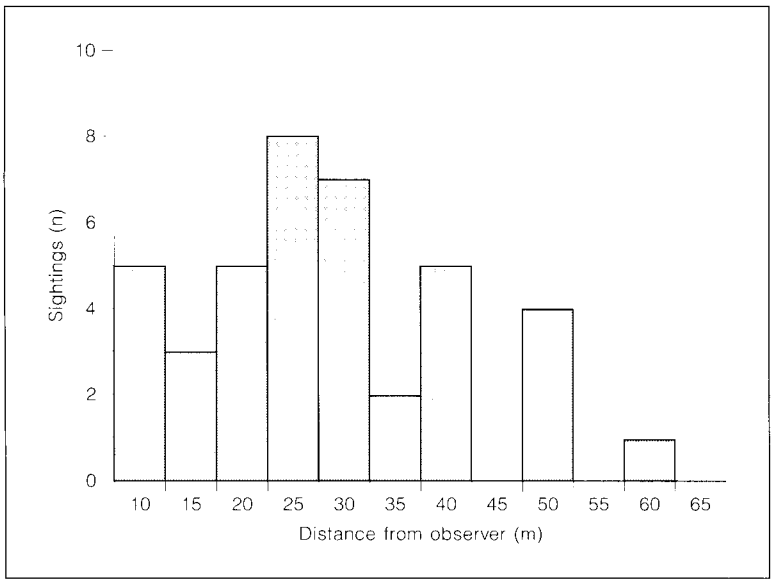

Fig. 2. Frequency distribution of monkey sighting distances during line transect surveys.

(i.e. unhabituated monkeys, a large proportion of sightings occurring on the transect line, steep terrain and dense vegetation). The estimated observer-to-animal distance was determined using the first monkey encountered, regardless of its position in the group. The maximum reliable sighting distance for all line transect surveys was determined by plotting distances on a frequency distribution and noting where the curve sharply dropped.

Eighty-six kilometers were walked during 40 surveys. Two survey routes were used, measuring 2.1 and 2.2 km. Both routes traversed all forest types found in the Grand Etang [see ref. 3 for description of forest types]. Twenty surveys were made on each route, and neither route was surveyed on consecutive days. Ten surveys on each route were made (1) in the morning starting between 6.00 and 7.30 h, and (2) in the afternoon starting between 15.30 and 16.30 h. In order to detect any movement or noises, survey routes were walked at a rate not exceeding 1 km/h. The following information was recorded during each survey: the number of individual monkeys seen, the number of mixed-sex groups encountered, the distance between the observer and the first monkey seen in each group, the location of each individual or group encountered, and the time of each sighting. Separate density estimates were calculated for both the number of individuals and groups encountered. No more than 10 min were spent counting and/or estimating numbers of individuals present during monkey sightings. Observers never moved more than 10 m away from the transect during surveys. If rain fell continuously for more than 15 min, the survey was canceled.

Mean population density estimates for the number of individuals seen or groups encountered between morning and afternoon surveys and the two different survey routes were compared using t tests (two-tailed). The level of significance was set at 0.05.

Results

The maximum reliable sighting distance was set at 50 m (fig. 2). No significant differences were found between the mean number of individuals seen or groups encountered (1) during morning and afternoon surveys, or (2) on the two survey

keys have greatly increased in number since their introduction indicate instead that the Grenada mona monkeys have successfully adapted to their new island environment. More density surveys conducted over the entire African range of mona monkeys will show just how well.

Acknowledgments

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