Chapter 10

A preliminary survey of amphibians and reptiles on the Nassau and Lely plateaus Eastern Suriname

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INTRODUCTION

Amphibians and reptiles are a species-rich and often conspicuous component of many neotropical forests. Three aspects of amphibians and reptile biology make them a valuable focal group for biological surveys: (1) the small body size of many species often results in high population densities, making it possible to collect a large amount of data in a relatively short period of time; (2) they perceive their environment on relatively small scales and many species show strict habitat requirements, making it possible to compare diversity patterns across finely-defined habitats; (3) their intermediate role in food webs ties them to both primary and secondary consumers. Amphibians are of particular interest because their moist, permeable skin makes them more sensitive to changes in their environment (e.g., contamination, climate change) than other vertebrate groups, and the biphasic lifestyle of many species exposes them to changes in both aquatic and terrestrial environments. Widespread reports of enigmatic amphibian declines in seemingly pristine locations are of urgent conservation concern (Lips 1998), and it appears that amphibians as a group are more threatened than other terrestrial vertebrates (Stuart et al. 2004, Beebee and Griffiths 2005). As part of the CI RAP survey in eastern Suriname, we surveyed the herpetofauna of Nassau and Lely mountains for six days each. Here we compare three response metrics (species richness, species composition, and an estimate of density) between the two mountains, and place these preliminary observations in a regional context by making comparisons with other sites in the Guayana Shield and the Amazon Basin. We also describe the distribution of species at a regional scale and among macrohabitats at the two sites, and discuss the conservation implications of our observations.

METHODS

We surveyed amphibians and reptiles for six days each at the Nassau mountain (25 – 30 October 2005) and Lely mountain (1 – 6 November 2005) using a combination of opportunistic surveys and time-constrained Visual Encounter Surveys (VES). Opportunistic surveys require actively searching for animals over large areas (i.e., up to several square kilometers) in order to increase the probability of encountering as many different species as possible. This method is effective for sampling species richness (Donnelly et al. 2004), but because not all individuals encountered are recorded, and cryptic or inactive individuals may be easily overlooked, the method is inappropriate for comparing density. In contrast, VES involve intensive sampling over small areas (i.e., a few hundred square meters) and all individuals encountered are recorded, making it possible to calculate an index of density by comparing the number of individuals encountered per unit time (Crump and Scott 1994). We conducted opportunistic surveys throughout the range of habitats available at each site, walking trails, forest creeks, and searching in natural and anthropogenic clearings both day and night throughout our stay. We conducted ten VES (eight nocturnal and 2 diurnal) at each site, concentrating effort in forest and forest stream habitats (Table 10.1).