SIZE-CLASS DISTRIBUTIONS FOR FOUR LIZARD SPECIES FOUND IN SUIKERBOSRAND NATURE RESERVE, GAUTENG, SOUTH AFRICA

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INTRODUCTION & METHODS

Size-class distribution data for populations of lizard species in southern Africa are not readily available in the literature. While field guides e.g., Branch (1998) report the size ranges and maximum sizes of reproductively-active lizards that are housed in museum collections, museum collections do not constitute a representative sample of the sizes of individuals within any localised population.

Terrestrial trap arrays are non-discriminatory and capture individuals of multiple species and a wide range of sizes. We captured individuals of *Trachylepis capensis* (Scincidae), *Trachylepis varia* (Scincidae), *Gerrhosaurus flavigularis* (Gerrhosauridae) and *Nucras lalandii* (Lacertidae) using terrestrial trap arrays, comprising drift fences, pitfall traps and funnel traps, between 18 November 2009 and 26 March 2010. Trap arrays were situated in the recently-acquired, northern extension to Suikerbosrand Nature Reserve, Gauteng, South Africa (see Masterson et al. 2009). The extension to Suikerbosrand Nature Reserve comprises 6 936 ha of mixed agricultural lands, undisturbed grasslands and small rocky koppies (Masterson et al. 2009). We measured the snout-vent length (SVL) of captured lizards to the nearest 1 mm and toe-clipped them in order to identify recaptured individuals. Data for the size-class distributions of each species exclude all recaptured individuals. For the three larger species i.e., *Trachylepis capensis*, *G. flavigularis* and *N. lalandii*, we used a bin width of 10 mm, but for the smaller *T. varia*, we used a bin width of 5 mm.

RESULTS & DISCUSSION

Summary statistics for the four lizard species are shown in Table 1. We captured 205 individuals of *T. capensis*, 173 *G. flavigularis* individuals, 17 *T. varia* individuals and nine individuals of *N. lalandii* during the five months of trapping. The size class distributions for the four lizard species are shown in Figure 1. The most frequently occurring size class of *T. capensis* and *G. flavigularis* individuals in the extension of Suikerbosrand Nature Reserve is the size class between 70 - 80 mm SVL, 35 - 40 mm for *T. varia* and 90 - 100 mm for *N. lalandii.*

Trachylepis capensis is a widespread and abundant species in the extension of Suikerbosrand Nature Reserve (Masterson et al. 2009). Adult *T. capensis* are reported to

range between 80 - 120 mm SVL (Branch 1998) with a maximum SVL of 135 mm (FitzSimons 1943). The mean SVL of the *T. capensis* individuals we captured was 72.3 ± 22.3 mm, with a maximum SVL of 128 mm and a minimum of 27 mm (Table 1). Thirty-two percent of the individuals we captured fell within the range of adult sizes reported by Branch (1998).

Table 1: Summary statistics for four size class distributions of four species of lizards

Species	N	Median (mm)	Mean (mm)	SD (mm)	Max (mm)	Min (mm)
Trachylepis capensis	205	71	72.3	22.3	128	27
Gerrhosaurus flavigularis	173	75	73.9	20	125	37
Trachylepis varia	17	37	36.9	4.3	47	29
Nucras lalandii	9	91	88.8	8.1	99	72

Gerrhosaurus flavigularis is also widespread and abundant in the extension to Suikerbosrand Nature Reserve but is reported to be more sensitive to agricultural land transformation than *T. capensis* (Masterson et al. 2009). Adult *G. flavigularis* is reported to range between 110 - 130 mm SVL (Branch 1998) with a maximum SVL of 140 - 150 mm (FitzSimons 1943) or 142 mm (Branch 1998). The mean size of the *G. flavigularis* individuals we captured was 73.9 ± 20 mm, with a maximum SVL of 125 mm and a minimum SVL of 37 mm (Table 1). Four percent of the individuals we captured fell within the range of adult sizes reported by Branch (1998).

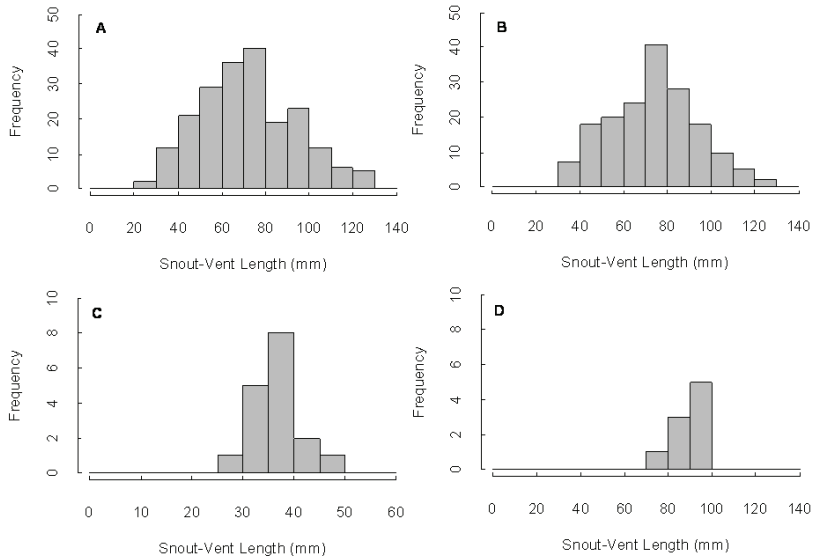

Fig. 1: Size-class distributions for four species of lizards in Suikerbosrand Nature Reserve, Gauteng, South Africa. A) *T. capensis*, B) *G. flavigularis*, C) *T. varia*, D) *N. lalandii.*

Trachylepis varia is less widespread and abundant in the extension of Suikerbosrand Nature Reserve than the two previous species, but is not as patchily distributed as *N. lalandii* (Masterson et al. 2009). Adult *T. varia* are reported to range between 50 - 60 mm (Branch 1998) with a maximum SVL of 65 mm in southern African specimens (FitzSimons 1943, Branch 1998). The mean SVL of the 17 *T. varia* individuals captured was 36.9 ± 4.3 mm, with a maximum SVL of 47 mm and a minimum SVL of 29 mm (Table 1). Zero percent of the individuals we captured fell within the range of adult sizes reported by Branch (1998).

Nucras lalandii is one of the least frequently detected species of lizard in the extension of Suikerbosrand Nature Reserve, and appears to be very sensitive to habitat modification associated with historical agricultural land use in the area (Masterson et al. 2009). The population of *N. lalandii* in southern Gauteng appears to be isolated from the main distribution of the species (Branch 1998) and seems to occur in small numbers in the patches of undisturbed grassland in the extension of Suikerbosrand Nature Reserve (Masterson et al. 2009). Adult *N. lalandii* are reported to range from 75 - 95 mm SVL with a maximum SVL of 110 mm (Branch 1998). The mean SVL of the *N. lalandii* we captured was 88.8 ± 8.1 mm, with a maximum SVL of 99 mm and a minimum SVL of 72 mm (Table 1). Eighty-nine percent of the individuals we captured fell within the range of adult sizes reported by Branch (1998).

Size-class distributions for the four species presented range from close to poor approximations of the normal distribution based on the number of individuals we captured. If we assume that the likelihood of capturing an individual in a trap is not affected by its size i.e., equal capture probabilities between size classes, and we assume that the frequency of capturing an individual of a particular size class is related to the proportional abundance of that size class in the population, we note with interest that the proportion of adults in the populations of the four species ranges from 0 - 89 %. Our data suggest that the size of adult individuals of *G. flavigularis* and *T. varia* may be smaller than the sizes currently reported in the literature and that the recruitment of *N. lalandii* may be limited. Alternatively, we may be incorrect in our assumption regarding the capture probabilities of the size classes of each species, particularly *N. lalandii*. Lastly we point out that we could not explicitly assess gonadal condition in the animals we captured as they had to be released according to the requirements of another study. We assert that reports of size class distributions for populations of reptile species in southern Africa are valuable for basic ecological purposes.

References

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