



COMPARISON OF NEST AND HATCHING SUCCESS OF TWO ALLOPATRIC AGAMID LIZARD SPECIES IN SRI LANKA

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ABSTRACT

Calotes nigrilabris and *Calotes versicolor* are two allopatric lizard species of the genus *Calotes*. *C. nigrilabris* is restricted to montane habitats over 1000 m a.s.l. while *C. versicolor* is more widely distributed and occurs below 1000 m a.s.l. Due to this elevation difference in distribution, significant differences can be observed in the habitat and environmental variables of their naturally occurring sites. One major variation is the temperature, which is <20 °C above 1000 m and > 20 °C below 1000 m on average. This study was carried out obtaining representative samples from sites located within these two regions (Horton Plains; 10 nest sites, Home gardens/ forest patches of Western and Southern Provinces; 11 nest sites). Nest sites were located by focal sampling gravid female lizards. They were not disturbed during oviposition. When egg laying was over, each nest site was examined. Nest microhabitat conditions and nest hole characteristics were recorded. Egg diameter, egg width and egg temperature were measured. Eggs were deposited back in the original nest after the measurements. Nests were re-examined once in two days for possible hatching after 50 days of natural incubation. Naturally hatched eggs were identified by the presence of openings in the shell where hatchlings emerged and were assumed successes. Dull colored and shrunk eggs without openings in the shell were categorized as unsuccessful. There was a significant difference (*Mann-Whitney U-test*, $p < 0.05$) in the egg size of the two species considered. Eggs of *C. nigrilabris* (length; 17.98 ± 1.04 mm, width; 10.36 ± 0.72 mm) were significantly larger when compared to *C. versicolor* eggs (length; 13.84 ± 0.73 mm, width; 9.28 ± 0.73 mm). However, the clutch size of *C. nigrilabris* did not exceed 4 (3.9 ± 0.32) whereas, clutch sizes of 6-17 (12.1 ± 3.56) were recorded for *C. versicolor*. Despite the close morphometric similarity between these two species, both the egg size and clutch size showed significant differences (*Mann-Whitney U-test*, $p < 0.05$) implying that they have adapted differently to thrive in the two geographical areas considered. *C. nigrilabris* which inhabit thermally challenging colder montane habitats relies more on the quality of the eggs rather than the number. Therefore, they produce a fewer number of eggs with possibly high yolk levels to generate stronger offspring with better survival probability (hatching success rate 97.3 %). *C. versicolor* which lives in more stable and relatively higher temperatures produce a higher number of eggs with smaller size and possibly low yolk levels. Decrease in the size of the egg and increase in the clutch size has resulted in reduced hatching success rates (40.3 %) for *C. versicolor*.

Keywords: Egg morphometry, Hatching success, Clutch size, Breeding strategies