



SHORT NOTE ON MICROHABITAT UTILIZATION OF NILGIRI SALEA (*SALEA HORSFIELDII*) IN UDHAGAMANDALAM, THE NILGIRIS, TAMIL NADU

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ABSTRACT

Salea horsfieldii (subfamily: Draconinae) is a high-elevation agamid, which exhibits ornamentation in both juvenile and adult stages. Nilgiri Mountains are located north of the Palakkad gap, in the Western Ghats. In their range, they are found in abundance on low bushes and hedges. The present study explores the microhabitat utilization by Nilgiri Salea (*Salea horsfieldii*) in Udhagamandalam, The Nilgiris, Tamil Nadu. Visual Encounter Surveys (VES) involve searching an area or habitat and recording *Salea horsfieldii* encountered. To avoid complications of factors such as visibility, fixed time was used to survey all habitats to be compared. Totally 110 individuals of *Salea horsfieldii* were recorded in the Udhagamandalam areas of Nilgiris. We categorized the microhabitats such as on the bush, tree trunk, on the boulders, on the fallen log, bare ground, and on the grass. *Salea horsfieldii*. Among the 110 recorded individuals of *Salea horsfieldii* most of them were recorded in the bushes (n=57; 52%) followed by a tree trunk (n=18; 17%), on the boulder (n=12; 12%), on the fallen logs (n=9; 9%), bare ground (n=7; 7%) and on the grass (n=7; 7%). The Nilgiris generated important data regarding the microhabitat utilization of *Salea horsfieldii*. This may aid in present and future conservation (in-situ and ex-situ) and management of this unique endangered endemic lizard species in Udhagamandalam, The Nilgiris.

Keywords: Bush, Microhabitat, Mountains, Nilgiris, *Salea horsfieldii*

SHORT NOTE

A habitat can be defined as the sum of the specific resources that are needed by organisms (Thomas 1979) which include food, cover, water, and special factors needed by a species for survival and reproductive success (Leopold 1933). Macrohabitat and microhabitat are two relatable terms, which depend

on the scale of the landscape and relate more to a specific animal being studied rather than to a type of habitat (Krausman, 1999). According to Johnson (1980), microhabitat usually refers to finer-scaled habitat features, which are at the lower levels of the hierarchical structure of habitats. Since lizards are ectothermal animals, they tend to depend highly on smaller microhabitats for thermoregulation. However, microhabitat selection may also depend on the morphology and behavioral preferences of the animal (Adolph 1990). According to Arnold (1983) force of natural selection on specific aspects of morphology, physiology, and behaviour leads to differences in functional capabilities, which, in turn, are adaptive to the differing demands of different environments (Schulte et al., 2004). Therefore, animal populations develop certain traits, which increase their fitness in the given habitat (Arnold, 1983) which is also reflected in microhabitat utilization (Adolph 1990). The term microhabitat utilization can be defined as the practical and effective use of the available microhabitats by a species. Thus, understanding the microhabitat requirements and the utilization of those microhabitats by a species requires considering different life history strategies, morphometry, behavioural characteristics as well as environmental parameters (Krausman 1999). *Salea horsfieldii* (subfamily: Draconinae) is a high-elevation agamid, which exhibits ornamentation in both juvenile and adult stages. Nilgiri Mountains are located north of the Palakkad gap, in the Western Ghats (Bhupathy and Kannan 1997). In their range, they are found in abundance on low bushes and hedges (Bhupathy and Kannan 1997). The present study explores the microhabitat utilization by Nilgiri Salea (*Salea horsfieldii*) in Udhagamandalam, The Nilgiris, Tamil Nadu

We conducted the study for a period of one year from January to December 2017 in the Udhagamandalam areas of the Nilgiris, Tamil Nadu, India. Udhagamandalam is a town and a municipality in the Nilgiris district of the South Indian state of Tamil Nadu. It is located 86 km (53 mi) northwest of Coimbatore, 100 km (65 mi) northwest of Tirupur, 128 km (80 mi) south of Mysore, and is the headquarters of the Nilgiris district. It is a popular hill station located in the Nilgiri Hills. Many of the forested areas and water bodies are off-limits to most visitors to protect this fragile ecosystem.

Visual Encounter Surveys (VES) involve searching an area or habitat (Campbell and Christman, 1982), and recording *Salea horsfieldii* encountered. To avoid complications of factors such as visibility, fixed time was used to survey all habitats to be compared. As in the quadrat method, all microhabitats were searched during the study period. Totally 110 individuals of *Salea horsfieldii* were recorded in the Udhagamandalam areas of Nilgiris. We categorized the microhabitats such as on the bush, tree trunk, on the boulders, on the fallen log, bare ground, and on the grass. *Salea horsfieldii*. Among the 110 recorded individuals of *Salea horsfieldii* most of them were recorded in the bushes (n=57; 52%) followed by a tree trunk (n=18; 17%), on the boulder (n=12; 12%), on the fallen logs (n=9; 9%), bare ground (n=7; 7%) and on the grass (n=7; 7%). The present study observed that the microhabitat utilization of *Salea horsfieldii* was unimodal. Among these arboreal habitats like trees and bushes, usage was high when compared to other microhabitats. This result may be related to the greenish body colour of this species, which is easily camouflaged with leaves and leafy branches rather than darker tree trunks. They were also found on low shrubs and the ground as well. Arboreality of agamid lizards especially the *Calotes* and *Salea* lizards was

well documented. (Bhupathy and Kannan 1997, Daniel 2002, Ishwar *et al* 2003, Bhupathy and Nixon 2004). *Salea horsfieldii* displayed arboreality and predominantly they were found at about 1.2m from the ground and the similar perch height used was recorded in Puerto Rican Anolis lizard, *Anolis cooki* (Genet 2001). Perch height gradually increased from morning to midday. This result indicates that *Salea horsfieldii* starts from lower sleeping perches to reach thermally suitable perches to help their activity. They used high perches for basking and feeding during morning and mid-day periods. The perch height gradually decreased from midday to evening. Similar behaviour has been observed by De Silva (2007) and Somaweera and Somaweera (2009). This is because *Salea horsfieldii* descend to sleep in more thermally preferable lower shrubs and grasses during colder late evenings and nights. Foliage structure, microclimate, and prey availability may all interact or affect the foraging and perch height of arboreal dwellers (Lillywhite and Henderson 1993). Preference of thickets by species such as *Salea horsfieldii* may protect themselves from avian predators as it has been reported by Fellers and Drost (1991), who worked on the ecology of the Island night lizard, *Xantusia riversiana* in Santa Barbara Island. The effect of perch diameter on the escape behaviour of Anolis lizards from predators has been documented (Losos and Irschick 1996). In the present study in the Udthagamandalam, The Nilgiris generated important data regarding the microhabitat utilization of *Salea horsfieldii*. This may aid in present and future conservation (in-situ and ex-situ) and management of this unique endangered endemic lizard species in Udthagamandalam, The Nilgiris.

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