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Research Article

DIVERSITY OF *CALOTES VERSICOLOR* (IGUANIA: AGANIDAE) IN PERIYANAICKENPALYAM VILLAGE, COIMBATORE DISTRICT, TAMILNADU, INDIA

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ABSTRACT

The study examined the diversity of *Calotes versicolor* (Iguania: Aganidae) in Periyanaickenpalyam village, Coimbatore district as there is no adequate information pertaining to Indian garden lizard (*C. versicolor*) diversity of this region. The present study was carried out during September 2018 to January 2019. The only species identified was *C. versicolor.* The species belonged to the order squamata and class Reptilia and order Agamidae and family Chamaeleonidae. During the five months of observation (SEP 18- JAN19), totally 35 *C. versicolor* were recorded in different trees. Among the species, the highest number of species representation in *Musa acuminate* (n=5). During month wise abundance September, *C. versicolor* movement is rich in number (n=12) and less in January (n=2) in the study area.

Keywords: *Calotes versicolor,* Chamaeleonidae, *Musa acuminate, Diversity*.

INTRODUCTION

Chameleons or chamaeleons (Family; Chamaeleonidae) are a distinctive and highly specialized clade of Old World lizards with 202 species described as of June 2015. These species come in a range of colors, and many species have the ability to change color. Life–history and ecological distribution of chameleons (Reptilia; Chamaeleonidae) from the rain forests of Nigeria: conservation implications. The family Chamaeleonidae represents an ancientgroup of saurian reptiles, supposed to have biogeographic patterns associated with the Gondwanan break-up of Madagascar and Africa. The origin of the group is estimated to be more than 60 million years ago (Hofman *et al*., 1991; Klaver & Bohme, 1986). More than 130 species of the Chamaeleonidae have been described to date and monophyletic origin of the family is supported by several studies (Frost, 1989; Hillenius, 1986; Klaver, 1981).

One species that makes up this group is the Common Chameleon, *Chamaeleo chamaelon*. Although it has not been classified as an endangered species, recent efforts have been made in their conservation in the coastal regions of Spain and Portugal (Miraldo *et al*., 2005).The Common Chameleon, *C. chamaeleon*, belongs to the family Chamaeleonidae. These Old World lizards possess unique features that make them easily distinguishable from other lizards. This includes their zygodactyl feet (Keren-Rotem *et al*., 2006) and laterally compressed body (Cuadrado, 1999). Their adjacent digits are fused on each foot, forming opposing grasping pads (Keren-Rotem *et al*., 2006). The coloration of chameleons is specific to the mating season (Cuadrado, 2000). Cuadrado, (2000) study revealed that when not in the mating season, both male and female chameleons show cryptic coloration, but when in the mating season, distinctive social coloration is displayed. Furthermore, he found that while males present colors to attract female partners, females exhibit colors of receptivity or non receptivity's. *Chamaeleon* has been listed as a species of interest; there have been some studies on its behavior, though perhaps not sufficient enough to come to its full understanding.

Much of its activity was recorded in the daytime, since the common chameleon is a diurnal animal. The coloration of the common chameleon depends on the time in relation

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to the mating season, as well as its response to health, temperature, and social interactions (Cuadrado, 2000). Since *C. chamaeleon* is found in more humid regions, they are able to withstand both humid and dry conditions (Jin *et al*., 2003). Chameleons are distinguished by their zygodactylous feet; their very extensive, highly modified, rapidly extricable tongues; their swaying gait; and crests or horns on their brow and snout.

Chameleons are mostly oviparous, with some being ovoviviparous. The oviparous species lay eggs three to six weeks after copulation. The female will dig a hole from 10–30 cm (4–12 in), deep depending on the species and deposit her eggs. Clutch sizes vary greatly with species. Small *Brookesia* species may only lay two to four eggs, while large veiled chameleons (*C. calyptratus*) have been known to lay clutches of 20–200 (veiled chameleons) and 10–40 (panther chameleons) eggs. Clutch sizes can also vary greatly among the same species. Eggs generally hatch after four to 12 months, again depending on species. The eggs of Parson's (*Calumma parsonii*), a species which is rare in captivity are believed to take more than 24 months to hatch. Burger & Gochfeld, (1981).The ovoviviparous species, such as the Jackson's chameleon (*Trioceros jacksonii*) have a five- to seven-month gestation period. Each young chameleon is born within the sticky transparent membrane of its yolk sac. The mother presses each egg onto a branch, where it sticks. The membrane bursts and the newly hatched chameleon frees itself and climbs away to hunt for itself and hide from predators. The female can have up to 30 live young from one gestation.

MATERIALS AND METHODS

Study area

The field work was conducted in the Periyanaickenpalyam village, Coimbatore district, TamilNadu. Coimbatore lies at 11°1′6″N, 76°58′21″E, in south India at 411 metres (1349 ft) above sea level on the banks of the Noyyal River, in south-western Tamil Nadu (Figure 1). The average annual rainfall is around 700 mm (27.6 in) with the northeast and the southwest monsoons contributing to 47% and 28% respectively to the total rainfall. Periyanaickenpalayam is a neighborhood in Coimbatore in the Indian state of Tami Nadu. It is located along National Highway NH 67, Mettupalayam road, an arterial road in Coimbatore.

Figure 1. Geographical position of sample collection area.

Field methods

The species observed was *Calotes versicolor*. Field work was performed from September 2018 to January 2019. The whole area has a tropical climate, with the wet season from September and dry season from October to November. In this time the *C. versicolor* were rich in number. Mainly the Indian golden lizard observed by different trees and concrete areas, we observed following behaviors like (1) 'Freezing behaviour' (26): chameleon remains immobile but follows the observer with its eyes. Sometimes, it changes its position, turning behind the branch used as a perch so as to remain unobserved.

(2) 'First movement'**:** chameleon starts to move slowly, turning the body towards the centre of the bush.

(3) 'Fleeing': chameleon increases speed and flees more quickly to cover.

(4) 'Mouth opening': while fleeing, the chameleon opens and turns the mouth towards the observer, as if trying to bite, and emits a hissing sound.

RESULTS AND DISCUSSION

They are commonly found among the Undergrowth in open habitats including highly urban areas.

Table 1 showing the *Calotes* associated with many trees. Five months of observing (Sep- Jan), the species highly abundant in *Musa acuminate* (n=5). Followed by *Cassia fistula, Carica papaya* and *Gmelia arborea* (n=4), *Prosopis juliflora, Ficus religiosa* and *Cocos nucifera* (n= 3). The density of *C. versicolor* was low in *Tamarinds indica, Delonix, Bambuseae, Mangifera indica, Santalum album, Ficus benghalensis, Azadirachta indica* (n=2) followed by *Shorea robusta and Thespepsia populnea* (n=1). Absent in *Toona ciliate* (n=0). Table 2 showing monthly abundance of *Calotes versicolor* species in Periyanaickenpalayam village, different areas wise concrete, agriculture and highways areas. In Concrete areas the species abundance were rich in number (n= 19) followed by agriculture area (n=16) and less in high ways or road side areas (n=5).

The present study was done in observing the Indian garden lizard in various tree species in Periyanaickenpalyam village. Our survey was done in five months of observing (Sep- Jan) the Indian garden lizard which is found abundance in *Musa acuminate* (n=5). Followed by *Cassia fistula, Carica papaya* and *Gmelia arborea* (n=4), *Prosopis juliflora, Ficus religiosa* and *Cocos nucifera* (n= 3). The *Calotes versicolor* amount were less in *Tamarinds indica, Delonix, Bambuseae, Mangifera indica, Santalum album, Ficus benghalensis, Azadirachta indica* (n=2) followed by *Shorea robusta and Thespepsia populnea* (n=1). Absent in *Toona ciliate* (n=0).

Table 1. Showing trees association with *Calotes versicolor*.

Common name	Scientific name	Abundance (*Calotes versicolor)*
Neem tree	*Azadirachta indica*	2
Sal	*Shorea robusta*	1
Coconut	*Cocos nucifera*	3
Banyan	*Ficus benghalensis*	2
Sacred fig	*Ficus religiosa*	3
Sandal wood	*Santalum album*	2
Mango	*Mangifera indica*	2
Toona	*Toona ciliate*	0
White teak	*Gmelina arborea*	4
Bamboo	*Bambuseae*	2
Papaya	*carica papaya*	4
Karuva	*Prosopis juliflora*	3
Porita tree	*Thespepsia populnea*	1
Gulmohar	*Delonix*	2
Tamarind	*Tamarinds indica*	2
Indian laburnum	*Cassia fistula*	4
Banana tree	*Musa acuminate*	5

Table 2. Showing the monthly abundance of *Calotes versicolor*.

Months	Concrete	Agriculture	High ways
September	5	6	1
October	2	5	2
November	6	2	0
December	3	1	0
January	3	2	2

Table 3. Showing the relative abundance of *Calotes versicolor* (Indian garden lizard).

Months	Total abundance	Relative abundance %
September	12	34.28
October	9	25.71
November	8	22.85
December	4	11.42
January	2	5.71

During our survey we calculate the total and relative abundance of the *Calotes vercicolor* species. Table 3 showing the month of September total number of species were rich in number (n=12) followed by relative abundance (34.28%), followed by October (n=9) and (25.71%) and November (n=8), (22.85%). The month December and January the species abundance were less in number comparing the December month, in January species total abundance were very less in value (n=2) with relative abundance (5.71%).

Monthly abundance of *Calotes versicolor* species in Periyanaickenpalayam village were also recorded different area wise like concrete, agriculture and highways areas. In Concrete areas the species abundance were rich in number (n= 19) followed by agriculture area (n=16) and less in high ways or road side areas (n=5).

The monthly wise abundance of *Calotes versicolor* were also recorded, in the month of September total number of species were rich in number (n=12) followed by relative abundance (34.28%), followed by October (n=9) and (25.71%) and November (n=8), (22.85%). The month December and January the species abundance were less in number comparing the December month, in January species total abundance were very less in value (n=2) with relative abundance (5.71%) was observed. Observations of free–ranging chameleons were made opportunistically during more general surveys for other forest vertebrates (mainly snakes; for the general survey methods, see (Burger & Gochfeld, 1981; Luca Luiselli *et al*., 1998; Luiselli *et al*., 1996).Camouflage (i.e. the ability of a prey species to melt into its background, (cf. Endler, 1978), and (Endler, 1984) is an anti-predatory adaptation that make detection of prey difficult for visually oriented predators (e.g. Carrascal *et al*., 1992; De Ruiter, 1951; Endler, 1984; Eterovick *et al*., 1997; Hanlon *et al*., 1999).

The capacity for camouflage should also influence the escape behaviour of a prey species when the prey detects a predator or the predator attempts to capture it. Remarkably little is known about the effects of crypsis on escape decisions (Eterovick *et al*., 1997; Hanlon *et al*., 1999). In lizards, escape decisions are known to be influenced by microhabitat characteristics (Cooper Jr, 1998; Martin & López, 1995; Martín & López, 2000), perch diameter (Losos & Irschick, 1996), thermal conditions (Andrén, 1982; Cooper, 1998), locomotors abilities (Martín & López, 1995, 1996) and reproductive conditions. The repertoire of defensive displays of chameleons has been qualitatively described elsewhere. Chameleons are certainly among the most conspicuous lizards of Afro–tropical rainforest habitats (de Witte, 1965) and they have undergone a remarkable adaptive radiation in montane habitats of the central–western regionof Africa, particularly Cameroon(Bauer *et al*., 2006; Klaver & Böhme, 1992; Luiselli *et al*., 1999; Necas, 1994; Wild, 1993, 1994). The rainforest zone of southern Nigeria is ecologically connected with the western Cameroon forests, and the whole region is an important hot–spot for conservation because many species of flora and fauna are endemic in the area (Kirch & Weisler, 1994).

CONCLUSION

Obviously, our research has raised as many questions as it has answered and thus is only a preliminary examination of chameleon ecological morphology; much work remains to be done. We have shown that substantial morphological variation exists among chameleons and that some of this variation is related to a crude measure of habitat use. Further interpretation, however, is studied by our lack of knowledge about chameleon behaviour, ecology, and functional morphology. We hope that the near future will see a blossoming in research on chameleon biology and that this study may highlight interesting patterns requiring further study**.**

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