

A STUDY ON THE FOOD OF *MABUYA MULTIFASCIATA*, FOOD PARAMETERS AND ITS ELEMENT COMPOSITION

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Abstract

Mabuya multifasciata is a skink belonging to the family Scincidae. It exhibits a broad geographical range throughout Asia with little genetic differentiation across the range. As skinks are the poikilotherm reptiles, they require the sun's energy to regulate their body temperature, thus affecting their activity pattern. Previous studies have shown that temperature influences many biological processes in organisms and has consequences on their habitat requirements and hence special distribution (Tinkle and Gibbons, 1977; Angilletta et al., 2002.). The study was aimed to determine the diet of *Mabuya multifasciata* in Assam. The ecology of the study sight also understood. Faecal samples were collected and holding individuals for 24 hours and collecting any faeces. Opportunistic collection also made. Invertebrate like insects are predominant food sources from both the faecal analysis and observation data. Among insects Coleoptera species are predominant. For element composition of food, different biochemical analysis were done during the study.

Keywords: *Mabuya multifasciata*; Food parameter; Element composition

INTRODUCTION

Evolution of lizards on the earth are dated back to 250 million years ago (Ahmed et al., 2009). It is hard to find the detailed initiation of any ecological and taxonomical works on the lizards of Northeastern region. The inventory of highly rich lizard fauna in the sub-tropical forest of Assam are the result of few investigations and present day knowledge of the species are mainly based on the earlier studies (Gogoi et al., 2001). With regard to Assam and India, there is little information about habitat and its biology of *Mabuya multifasciata*. Though its immense role in the environment their habitat, number of individuals and diversity has constantly been reducing. As one of the biodiversity hotspot area, Assam provides the vast ground for the reptilian species as nesting and breeding ground. Therefore an aimed investigation is targeted towards the study of the element composition of food and analysis of food parameters of *Mabuya multifasciata* Fitzinger in Darrang district of Assam.

METHODS

The present study was done in Assam. Assam is one of the richest biodiversity hot-spot regions. It is the home of numerous and valuable wildlife and plant species. Because it did not create much disturbance to the species, VES (visual encounter method) method was used for the survey (Doan, 2003; Flint and Harris, 2005). Study Area: In generally *Mabuya multifasciata* is a ground dwelling skink. They also live in burrows. All the field data are collected in 2011-2012 at the study site in plain area of Assam. Randomized VES was used to study the habitat for terrestrial herpatofauna. VES are standard method for study (Nautiyal et al., 2015). Faecal samples were collected and holding individuals for 24 hours and collecting any faeces. Opportunistic collection also made. Samples were kept in glass tubes which had species, data collected and habitat. These were air dried before being soaked in clean water and dissected under a microscope. Complete or near complete invertebrate parts, plant materials etc. were

removed and air dried again before being taped to 2 mm graphpaper for further identification. Preservation of faecal materials was also done on 10% formalin for further identification. Fresh stools of *Mabuya* were also collected, washed thoroughly and the undigested materials were identified as the food item of the species (Angelici et al., 1997). After dissection of the stomach the prey items were identified up to genus level in taxonomic order. The biochemical estimation of undigested food components from stomach content was also estimated. Protein estimation was done using Lowry et al., 1951, total carbohydrate estimation was done by using Nelson and Somogyi (Oser,1965) and fats were estimated by soxhlet method. By using the method of Kahnke 1966, certain elements such as Ca, Mg, Fe, Cu, Zn and Se were estimated.

crickets, Arachnidan species like spiders, squamates like small lizards, Hymenopterans like ants are predominant. In different period of the season optional feeding was also noticed like some plant materials and others.

The faecal sample was dissected and taped to 2 mm graph-paper with the notes on the observed mater, habitat and date of capture.

Table 1: Element composition of food :

Component	Amount (µg/g)
Protein	234± 2.02
Fats	134± 1.03
Carbohydrates	132±1.08
Ca	300±2
Mg	123±1.76
Fe	12±1.8
Zn	08± 0.68

RESULTS

Faecal Analysis

In total 20 faecal samples were collected. Analysis of percentage of each food class was done. It indicates that invertebrates are the

The chemical analysis yielded information about biochemical composition of undigested food from stomach of *M. multifasciata*. It was estimated that the food content had protein composition of 234 microgram and Ca of 123 microgram per gram were estimated.

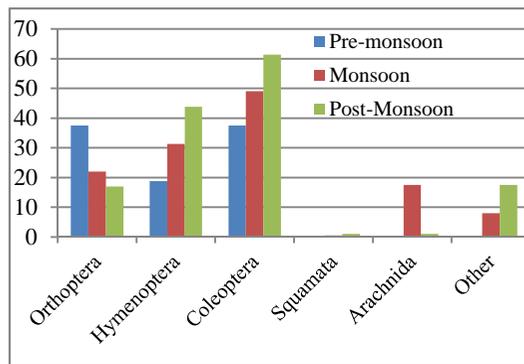


Fig 1: Diet of *Mabuyamul fasciata* at the three different season of the year

predominant food. Coleopteran species like beetle, Orthopteran species like cockroach,

DISCUSSION

Food spectrum and food preference analysis of *M. multifasciata* in this study prescribed the range of food items chosen by the species for food. In captivity, *M. multifasciata* observed over a period of 7 days, showed that they fed on wide range of arthropods (spiders, ants, beetles, grasshoppers, small lizards, etc.). They also fed upon molluscs in certain provinces in the world. Previous study by Brooke and Houston (1983), showed that cannibalism was observed in the skink *Trachylepsis* sp., eating their own shed skin and a large proportion of faecal samples contained intact skin fragments. This

is positively identified in *Mabuya multifasciata* too. Faecal matter analysis showed it. *Mabuya multifasciata* also eat their own species after its death as optional feeding. Invertebrate like insects are predominant food sources from both the faecal analysis and observation data. Among insects Coleoptera species are predominant. In Pre-monsoon Coleopteran comprises 37.5 %, Orthoptera % 37.5 %, Hymenoptera 18.75 %, Arachnida 0.062 % and others 0.01 %. In monsoon Coleoptera comprises 49.10 %, Hymenoptera 31.25 %, Orthoptera 22 %, Squamata 0.43 %, Arachnida 17.50 % and other 8 %. In post-monsoon period Coleoptera comprises 61.40 %, Hymenoptera comprises 43.80 %, Orthoptera comprises 17 %, Arachnida comprises 1 % and other 17.50 %.

Biochemical analysis of food spectrum showed that there has been protein composition of 234 µg/g, carbohydrate composition of 132 µg/g, fat composition of 134 µg/g. Amongst the minerals, Ca composition of 300 µg/g, Mg composition of 123 µg/g, Fe composition of 12 µg/g, Zn composition of 8 µg/g were estimated. Specific food analysis in reptiles and in particular *Mabuya* perhaps have not been attempted. Even specific mineral and vitamin requirement have merely been investigated in reptiles (Hoby et al., 2010). Yet the main food sources in captive Chameleons have low concentration and imbalanced Ca:P ratio, resulting decreases during captivity. However such analytical data in *Mabuya* is scarce.

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