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Selection from offered Food Items by *Varanus salvator* at rural areas of West Bengal: A Case Study

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Abstract:

The Water Monitor Lizard, or *Varanus salvator*, is one of the largest monitor lizards found in the Old World. *V. salvator* is a generalist predator and facultative scavenger. The lizard consumes an extensive range of prey, and the consummation of anthropogenic leftover food items by lizards is also reported in human-dominated and modified ecosystems. In captivity, the lizard feeds on raw, uncooked meat alongside its natural food items. The selection of food choices can diverge on the basis of their body size, age, and season. The selection of offered food items by *V. Salvator* is tested in a cafeteria experiment in rural areas of West Bengal, India.

Keyword: Food, Cafeteria, Monitor Lizard, Scavenger.

1. Introduction

The Asian Water Monitor Lizard, or *Varanus salvator,* is a large-bodied monitor lizard widely found in vast geographical regions, ranging all over the old world of Southeast Asia. External factors influencing foraging behaviour by a herpetofauna depend on prey availability, predation risk, social interaction, habitat structure, and opportunities for thermoregulation (Perry and Pianka, 1997). These factors determine the food preferences and choices of the lizard.

V. salvator are generalized carnivores and consume a wide range of prey (Sprackland, 1992). In natural conditions, *V. salvator* feeds on frogs, lizards, small birds, rodents, and insects, and in captivity, it is fed raw, uncooked meat besides natural food. The lizard is also a facultative scavenger, foraging as both a predator and a scavenger. The present study was mostly designed around the selection of some offered food items, which are mostly consumed by *V. salvator* in rural areas. It was also studied to see if any kind of anthropogenic influence was present.

2. Methods and Material

2.1 Study Area:

This study was carried out at a village in Banharishpur Gram panchyat in Panchla sub-division of Howrah district, West Bengal, with an area of 53.42 sq km. 22.5579˚N and 88.0862˚E The area, mainly a swamp, is covered with segregated waterbodies that form connections during the rainy season. The study is carried out on the embankment of the Kana Damodar River, which is a tributary of Damodar and flows in the middle of the district to meet the Ganges on the west near Uluberia. The lizards were mostly found in the bushy areas on the embankment covered with semi-submerged plants and large trees and within mudholes.

2.2 **Study Design:**

To understand food choices in their natural environment, the study is conducted on the basis of a questionnaire survey. At first, 11 villagers were questioned at regular intervals for 1 week throughout the study period (from August 2020 to October 2021), and it was also done with almost 500 other villagers for a year in adjoining rural areas, followed by a cafeteria experiment where an animal is given chances to freely select from different feeding components separately and freely provided (Meier et al. 2012). The questionnaire survey was carried out on a weekly basis with a set of questions targeting their food choices to run the cafeteria experiment. A cafeteria experiment was also conducted in their natural habitat on a weekly basis to study their food preferences. The food preferences were selected for four categories: uncooked meat items, rotten meat items, live prey items, and other left-over food items thrown away by villagers.

For this experiment, a total of five plates are placed in an open and shady place for 30 minutes, then withdrawn. Each plate contained 25 grams of food items from each of the four categories.

Table 1: Description of food categories for offering preferences for food items designed in the cafeteria experiment (duration from November 2021 to July 2022)

Sl. No.	CATEGORIES	DESCRIPTION
1	Uncooked Meat Items	Raw meat-chopped whole chicken into pieces
2	Rotten Meat Items	1 week or 7 days rotten meat of chicken
3	Live Prey Items	Alive Fish-often air-breathing or Jeol
4	Left-over food item thrown away by the villagers	Human leftover-cooked rice, puffed rice, leftover eaten fish and meat, biscuits, vegetables peels

3. Observation:

In the present study, the cafeteria experiment (N. Pérez-Harguindeguy, S. Daz, F. Vendramini et al., 2003) was carried out on a group of *V. salvator* residing on the bank of the Kana Damodar River continuously for 9 months (November 2021–July 2022) in weekly intervals. Three plates were placed, offering four food choices to observe. A total of 125 trials were run with five repetitions. Observations were recorded in both the summer and winter seasons. The food preferences were categorized by ranks (like 1st, 2nd, 3rd, and 4th types of choice).

4. RESULT:

Figure.1: Food preferences of Adult *Varanus salvator,* choices given from total choice provided

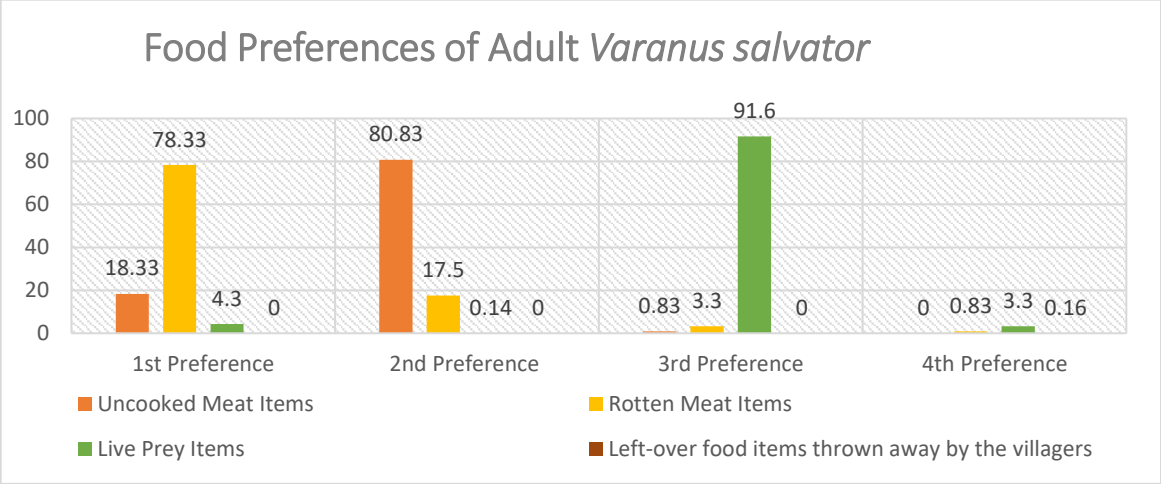
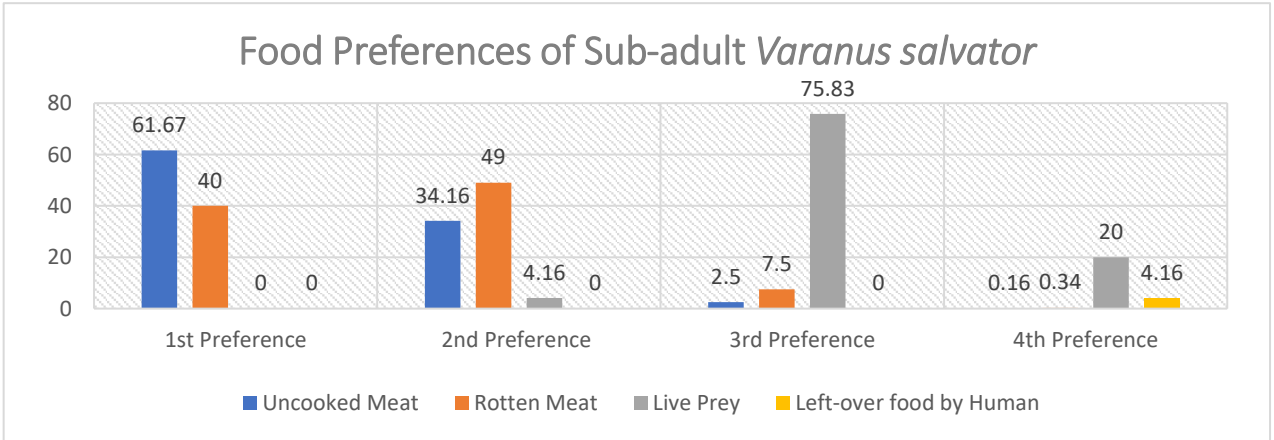


Figure. 2: Food preferences of sub-adult *Varanus salvator*



As the data depicted here shows, *V. salvator* adult's preferred rotten meat more than uncooked meat. In sub adult form, uncooked raw meat is said to be most preferred, but rotten food materials are the second preference by a close margin. In the cafeteria experiment, the four choices are placed equally by weight (25 grams). But in large cases, both adult and subadult forms of lizards choose the meat, whether it is rotten or uncooked, and fall under the first two preferences.

5. Discussion:

Water Monitor Lizards are investigated for feeding on human leftovers (Uyeda 2009), apart from natural prey items (Losos and Greene 1988; Traeholt 1993, 1994). Adults rarely eat human left-overs; only 0.16 % at the fourth reference, whereas for sub adults, there are 4.16% at the fourth reference calculated among all. Rotten meat is profoundly preferred among both adults and subadults. However, to make a firm statement about the annual diet, the seasonal selection of food types, or any special preferences in food selection due to anthropogenic interventions, further detailed study would be required.

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