

THE OCCURRENCE OF *PHARYNGODON MAMILLATUS* (LINSTOW, 1897) (OXYUROIDEA, PHARYNGODONIDAE) IN A TROPICAL WALL GECKO

AJALA, OLASUNMIBO OLUMUYIWA

Department of Pure and Applied Biology, Ladoko Akintola University of Technology, Ogbomoso, Nigeria

ABSTRACT

Pharyngodon mamillatus (oxyuroidea: Pharyngodonidae) was found to be an enteroparasite of *Hemidactylus brookii angulatus* (Sauria: Gekkonidae) in Western Nigeria. The spread of the parasite among the host population was relatively low. Sanitary condition of the environment was found to affect the prevalence of infestation in the host population, while the host was found to have a limited or carrying capacity of four (4) *P. mamillatus* in a host. Prevalence was higher in female geckos than male and was also higher in heavier and lengthier geckos. Infestation of host was limited to the caecum and rectum with the prevalence in rectum higher than caecum. Seasons has no effect on the intensity of the parasite in the host.

KEYWORDS: *Hemidactylus brookii angulatus*, Intensity *Pharyngodon mamillatus*, Prevalence

INTRODUCTION

Hemidactylus brookii angulatus belong to the family Gekkonidae in the class Reptilia. Members of the Gecko or house lizard family are nocturnal, over two hundred (200) forms are known from Africa, but many of these are found only in the drier zones (Ibrahim *et al.*, 2005). Consdale, (1955) identified three different species from West African coast; *Hemidactylus brookii angulatus* (Brook's gecko), *Hemidactylus fasciatus* (Banded gecko), *Hemithreconyx candicinetus* (African fat tailed gecko). In Africa, *H. b. angulatus* is most frequently seen at night; it comes into the house to catch insects attracted by light. Its original habitat was presumably in and on trees, especially hollow trees, but nowadays it is the typical lizards of dwelling houses in West Africa both in and outside the buildings. They are plenty in both high forest country and in the savanna woodlands, as well as in the dry coastal zones throughout Ghana, Nigeria and Sierra-Leone (Consdale 1955). It is a species found throughout the tropics and it is more than likely that it has been distributed by human agency, getting mixed up with goods and being carried about in the goods. Rao, (1989) reported the occurrence of *Pharyngodon schistopapillatus* Spnoy in the rectum of toads collected in Berhampur, West Bengal, India and he also recovered *Pharyngodon bursatus* Spnoy from the intestine of *Rana cyanophlyctis*. Devi *et al.*, (1989) also reported *P. megalocerca* as one of the helminth parasites which occur in concurrent infection in the population of *Calotes versicolor* in Khammam District, Andhra Pradesh, India. *P. mamillatus* was found in the rectum of the Lizard *Eumeces algerienses* where it exhibited a direct life cycle (Noble and Noble).

Literature on the occurrence of *P. mamillatus* as a parasite of *Hemidactylus brookii angulatus* is scanty; the closest to the Genus Hemidactyli is the report of Solera Puertas *et al.*, (1988) on skink; Sayed *et al.*, (2008) obtained it from the Skink, *Novoeumeces schneideri* (Lacertilia: Scincidae) from Egypt; while Incedogan *et al.*, (2014) also identified *P. mamillatus* in Ocellated Skink, *Chalcides ocellatus* (Forskal, 1775) (Scincidae) from Turkey. The close proximity of *H.*

b. angulatus to man (especially in developing countries) stimulated the interest in this research, so as to possibly expose the dangers of its close association to man and possibly as a source of an emerging zoonotic disease.

MATERIALS AND METHODS

Investigation was carried out in three sites – the University of Ibadan (U.I) student's hall, University of Ibadan College Hospital (U.C.H) residential quarters both in Oyo State and Oke-Ede Area in Ila-Orangun town, Osun State of Western Nigeria – between January and December 2014.

Method of Capture: a long broom was used to sweep the Geckos off the wall onto the ground, from where they were picked by glove worn hand into the cage. Majority of them lost their tails on landing on the ground. Collection was carried out at night (8 p.m. – 10 p.m.) on lighted walls of residential houses. The geckos were separated into male and female sexes. Those caught in the rainy months of February to September were grouped under rainy season while those caught in the dry months of October to January were grouped under dry season.

Recovery of Parasites: In the laboratory, dissection of the specimens was made from the ventral side; different parts of the alimentary canal were carefully cut out and opened up longitudinally to expose the contents. The different parts were then put into labeled specimen tubes containing 0.75% saline solution where the parasites separated out from the tissues. The parasites were fixed in 7% formaldehyde and cleared in lactophenol for observation under the light microscope.

Identification of parasites: *Pharyngodon mamillatus* (Linstow, 1897) was identified using the guides of Specian and Ubelaker (1974); Ashour *et al.*, (1992). The species has one pair of pre-anal papillae, no forked papillae present.

RESULTS

A total of 180 Gekkos (105 in rainy season; 75 in dry season) comprising 106 females and 74 males were examined from the three localities out of which only 60 was infected with *Pharyngodon mamillatus* giving a prevalence of 33.33%. In U.C.H., the prevalence was 5.55%, U.I. 6.66%, Ila-orangun 21.11%. The prevalence among the sexes was higher in female than in male from the three sites of investigation; the prevalence in the three site combined was 42.45 % (45) in females and 20.27 % (15) in males.

Table 1: The Intensity of Infestation in Rainy and Dry Seasons in the three Sites

Sites	Nos. of Parasites	Infested Hosts	Average	Intensity (Rainy)	Intensity (Dry)
U. C. H.	39	10	3.90	4	4
U. I.	43	12	3.58	4	4
Ila-Orangun	148	38	3.89	4	4

The percentage distribution of the parasites in caecum and rectum was calculated to be 42.16% in Caecum; 57.84% in Rectum.

Table 2: The Percentage Frequency of Occurrence in Relation to Body Length

Length	Percentage
40mm – 49mm	06.57%
50mm – 59mm	23.33%
60mm – 69mm	66.10%

Table 3: The Relationship between the Body Weight and Index of Abundance

Body weight	1.5-1.99	2.0-2.99	2.5-2.99	3.0-3.49	3.50-3.99	4.0-4.49
Index of abundance	0.10	0.14	0.20	0.18	0.21	0.20

DISCUSSION

More geckos were captured in the rainy season than in the dry season, the reason may be due to the increase in abundance of insects, during this period which attracted the geckos to come out and feed. The low percentage of host infested by *Pharyngodon mamillatus* as recorded in the three sites may be due to the mode of its lifecycle. The *P. mamillatus* being an oxyuroide parasite of vertebrate, its lifecycle does not involve an intermediate host. Environmental sanitary condition also contributed to the degree of infestation of the host. This is reflected in the sharp increase in prevalence in Oke-Ede, Ila-Orangun, which is a typical slum environment, while University College Hospital Staff quarters (U.C.H) and the University of Ibadan Student's Hostel (U.I) are neat environments.

The prevalence was higher in female geckos than males, maybe because more female geckos were captured during the investigation, an indication that female may probably be feeding more than males. The average intensity of parasite per host was calculated to be four parasites to a host in both seasons and in the three sites. This showed that there is a limit / carrying capacity to which the host can accommodate the parasite. The parasite's lifecycle being a direct one Noble and Noble, (1973), it is expected that the parasite's population will be increasing progressively, but this result showed that there was a peak of infestation, at which point, parasite's population within the host is maxima. This may be as a result of intra-specific competition or as a form of control of the parasite's maturation. However, Sayed *et al.*, (2008) reported an intensity of 5-15 for *P. mamillatus* obtained from the Skink, *Novoeumeces schneideri* (Lacertilia: Scincidae) from Egypt.

The result also showed that higher percentage of the large Geckos examined was infested, which means the infestation of the host increases as the Gecko increases in weight. The result of the index of abundance of parasite in relation to the host's body weight supported the peak point – of the intensity of infestation – result since the index showed significant increase with the body weight before it remains about constant between the weight groups spanning 2.50g – 4.49g. The result also showed that prevalence increases as the geckos develops / increases in size. The occurrence of the parasite in the Caecum and Rectum of the host is in agreement with the findings of Rabie *et al.*, (2014) who collected *P. mamillatus* from the large intestine of *Mabuya quinquetaeniata* in Egypt.

REFERENCES

1. Ashour, A. A., E. A. Koura, A. M. El-Alfy, and Z. Abdel-Aal. (1992). On the morphology of the oxyurid nematode *Pharyngodon mamillatus* (Linstow, 1897) from *Chalcides ocellatus* from Egypt. Journal of Egyptian Society of Parasitology 22:801–806.. PubMed
2. Consdale, G. (1955). Reptiles of West Africa, London: Penguin Books.
3. Devi, V; Rao, R; manohar, S. (1989). "on concurrent infection of helminth parasites in the population of *Calotes versicolor* (Daud)". Uttar Pradesh Journal of Zoology, 9:2, 276-278.

4. Ibrahim, H.M.S., Fadiel, M.M. Nair, G.A. (2005) Gastrointestinal helminths of the lizard *Chalcides ocellatus* from Benghazi, Libya. *Journal of Helminthology* 79 / Issue 01 , pp 35-39
5. Incedogan, S., Yildirimhan, H.S. and Bursey, C.R. (2014). Helminth Parasites of the Ocellated Skink, *Chalcides ocellatus* (Forskal, 1775) (Scincidae) from Turkey. *Comparative Parasitology* 81(2):260-269.
6. Noble, R.E. and Noble, A.G. (1973). "Oxyuroide parasites of *Chalcides ocellatus* and *Eumeces algerienses*". *Science* 214; 331-335.
7. Rabie, S.A.R., El-din Zing, M., Abd El- Latif, Mohammed N. I., Al Hussin O.F. (2014). Redescription of Nematodes *Pharyngodon mamillatus* and Thelandros species from some reptiles of Quena, Egypt. *International Journal of Science and Research*. 3(11); 1368-1380.
8. Rao, R. (1989). "Two new species of the genus *Pharyngodon* from amphibian hosts of Berhampur". *Indi Journal of Helminthology* 1989, 41:1; 69-73.
9. Sayed, O., Amer, O., and Bursey, C.R. (2008). On the Oxyurid Nematode, *Pharyngodon mamillatus* in the Skink, *Novoeumeces schneideri* (Lacertilia: Scincidae) from Egypt. *Comparative Parasitology* 75(2):333-338.
10. Solera-Puertas, M.A.; Gonzalez-Santiago, P.M.; Carvajal-Gallardo, M.M.; Zapatero-Ramos, L.M. (1988). *Revisteiberica de Parasitologia* 1988, 48:4, 387-392.
11. Specian, R.D. and Ubelaker, J.E. (1974). Two New Species of *Pharyngodon* Diesing, 1861 (Nematoda: Oxyuridae) from Lizards in West Texas. *The Helminthological Society of Washington* vol. 41.