

Short note

Incidence of *Oestrus ovis* infestation in Borno-White Sahel goats in the semi-arid zone of Nigeria

Abdullahi A. Biu*, Chukwunyere O. Nwosu

Department of Veterinary Microbiology and Parasitology, Faculty of Veterinary Medicine,
University of Maiduguri, P.M.B. 1069, Maiduguri, Nigeria

(Received 10 February 1998; accepted 15 September 1998)

Abstract – Research conducted on the incidence of *Oestrus ovis* in Maiduguri showed that 53.8 % of the 4 000 Borno-White Sahel goats examined were parasitised. The mean year-round infestation per goat was 2.03 larvae. Adult goats had a higher infestation rate than younger ones (60 versus 47.5 %). Infestation rates for the females and males were 55.2 and 52.2 %, respectively. Nevertheless there was no statistical significance between values for the different age and sex groups studied. Different larval stages were encountered throughout the year with a 3rd instar peak between May and September and a first instar peak from June to October suggesting a fly period between June and October. © Inra/Elsevier, Paris.

***Oestrus ovis* / incidence / semi-arid / Borno-White Sahel goat**

Résumé – Incidence de l'infestation par *Oestrus ovis* chez les chèvres blanches du Sahel dans la zone semi-aride du Nigeria. Les recherches menées sur l'incidence de *Oestrus ovis* à Maiduguri ont montré que 53,8 % des 4 000 chèvres Borno-Blanches du Sahel examinées étaient parasitées. La moyenne des infestations par chèvre et par an était de 2,03 larves. Les chèvres adultes avaient un taux d'infestation plus élevé que les jeunes (60 % contre 47,5 %). Les taux d'infestation pour les femelles et les mâles examinés étaient respectivement de 55,2 et 52,2 %. Toutefois les différences observées entre les différents groupes (âge et sexe) n'étaient pas statistiquement significatives. Les différents états larvaires ont été rencontrés toute l'année, avec un pic de larves de 3^e stade entre mai et septembre, et un pic de larves de 1^{er} stade débutant en juin jusqu'au mois d'octobre, ce qui suggère une période adulte (mouche) entre le mois de juin et le mois d'octobre. © Inra/Elsevier, Paris.

***Oestrus ovis* / incidence / semi-aride / chèvre Borno-Blanche du Sahel**

* Correspondence and reprints
Tel.: (234) 231900 (ext.: 3099)

1. INTRODUCTION

The goat population in the arid zone of northern Nigeria, though unestimated, is large and is mainly kept by the traditional small scale rural farmers. Previously undocumented reports of infestation by the nasal botfly larvae have been made by farmers and field veterinarians from this part of the country.

The occurrence of the larvae of *Oestrus ovis* in the head sinuses and nasal passages of sheep and goats has attracted attention in practically every country in the world since earliest times. The parasite is generally regarded as benign and responsible for comparatively few ill-effects. However, many observers hold that the constant irritation produced by the cuticular spines and oral hooks of the larvae together with certain toxic substances excreted by them profoundly affect the well-being of infested animals. Therefore the infestation should be regarded in a serious light [2, 4].

The nasal botfly enjoys a very considerable degree of protection against all attempts to control it due to its rather peculiar life history. The result is a gradual but sustained increase in its incidence worldwide [3, 8, 11]. The present study was conducted to determine the prevalence of infestation, its seasonal incidence and possible methods of control.

2. MATERIALS AND METHODS

The incidence of *Oestrus ovis* infestation in Borno-White Sahel goats slaughtered in the Maiduguri abattoir was studied. Four thousand goat heads were split sagittally, and the mucosa of the nasal septum, nasal passages and the sinuses were thoroughly examined. The larvae recovered from each section were counted and recorded. The collected larvae were assigned to the first, second or third instar according to their colour, their body length and the extent of development [11, 12]. The age and sex of the goats were determined and recorded individually for each animal. The number and stage of larvae collected for each monthly examination were recorded.

The collected data were analysed statistically using the student paired *t*-test with significant *P* values with equal or less than 0.05 [1].

3. RESULTS

The study revealed that out of 4 000 Borno-White Sahel goat heads examined in the Maiduguri Metropolitan abattoir 53.8 % were parasitised by *Oestrus ovis* larvae (table I). The infestation rate was also higher among adult goats (60 %) than younger ones (47.5 %) which was not significantly different. The infestation rates were not significantly different between female (55.2 %) and male (52.2 %) goats.

Table I. Incidence of *Oestrus ovis* larvae infestation according to age and sex of Borno-White Sahel goats examined in Maiduguri.

	Total no. of animals examined	No. (%) of animals infested	Total no. of larvae recovered
All animals	4 000	2 150 (53.8)	3 880
Age:			
Young	2 000	950 (47.5)	1 980
Adult	2 000	1 200 (60.0)	1 900
Sex:			
Male	1 920	1 002 (52.2)	1 640
Female	2 080	1 148 (55.2)	2 240

The monthly incidence of infestation with *O. ovis* larvae as shown in *table II* indicates that the month of November has the highest incidence (76.9 %) followed by December and June with 69.7 and 69.2 %, respectively.

Lowest levels were recorded in April (36.2 %)

Table III indicates the stagewise larval distribution for *O. ovis* in goats. Incidences

Table II. Monthly incidence of infestation with *Oestrus ovis* larvae in Borno-White Sahel goats examined in the Maiduguri abattoir.

Month	Total no. of animals examined	Total no. (%) of animals infested	Mean no. of larvae recovered per animal
November	260	200 (76.9)	1.05
December	320	223 (69.7)	1.12
January	400	260 (65.0)	1.07
February	450	280 (62.2)	1.01
March	380	140 (36.8)	2.07
April	290	105 (36.2)	2.19
May	300	120 (40.0)	2.16
June	260	180 (69.2)	2.05
July	340	190 (55.9)	2.15
August	370	200 (54.1)	1.92
September	400	150 (37.5)	2.86
October	230	102 (44.4)	4.70

Table III. Monthly distribution of different larval stages in Borno-White Sahel goats.

Month	Total no. of larvae recovered	Total no. (%) of larvae recovered stagewise		
		1st	2nd	3rd
November	210	70 (33.3)	80 (38.1)	60 (28.6)
December	250	100 (40.0)	115 (46.0)	35 (14.0)
January	280	80 (28.6)	180 (64.3)	20 (7.1)
February	285	75 (26.3)	145 (50.9)	65 (22.8)
March	290	100 (34.5)	160 (55.2)	30 (10.3)
April	230	80 (34.8)	120 (52.2)	30 (13.0)
May	260	80 (30.8)	140 (53.8)	40 (15.4)
June	370	120 (32.4)	180 (48.6)	70 (18.9)
July	410	130 (31.7)	200 (48.8)	80 (19.5)
August	385	160 (41.5)	135 (35.1)	90 (23.4)
September	430	200 (46.5)	150 (38.9)	80 (18.6)
October	480	280 (58.3)	190 (39.6)	10 (2.1)
Total	3 880	1 475 (38.0)	1 795 (46.3)	610 (15.7)

of 38.0, 46.3 and 15.72 % for 1st, 2nd and 3rd stage instars were recorded with peak levels for the third stage between May and September and for the first stage between June and October.

4. DISCUSSION

The study area lies within the semi-arid zone of northern Nigeria with a rainy season of about 3 months and a long dry period from October to June [9]. There is an estimated sheep population of 3 033 014 in the area and an unestimated goat population largely reared under semi-intensive and extensive management systems.

The monthly incidences of *O. ovis* larval infestations and the number of larvae found in necropsied goats were high. Both results agree with the findings of Pandey [7] who reported an incidence of 52 % among sheep populations in Zimbabwe. Our present findings may be attributed both to climatic factors (temperature and humidity) encountered in the study area and to a lack of adequate and strategic drenching of animals with larvicides by farmers. Conversely, the higher infestation rate by first instar larvae during the months of June to October may reflect a seasonal increase in the fly population. This observation is correlated with an increase of the third instar between May and September suggesting a fly period between June and October which agrees partially with the report by Unsworth [10] that the months of June and September had the highest infestation rates with *O. ovis* in sheep and goats in the Kano district of Nigeria.

The finding of higher incidence of infestation among adult rather than young goats agrees with the observations by Meleney et al. [5] that young animals are probably agile enough to avoid deposits of larvae by the questing botfly.

From these studies it is concluded that in this region, the fly period is between June

and October. The adult flies lay larvae throughout the year since the amount of 3rd instars is always very low while that of 2nd instars is always higher than first instars. In order to have an effective control of the nasal botfly, animals should be protected from fly attack. This is often difficult and impracticable under field conditions. The more advisable alternative is to carry out strategic treatment against the larvae. Since the instars are easily killed by systemic insecticides [6] such treatment should be performed every 3 months.

REFERENCES

- [1] Compbell R.C., Statistics for Biologists, Cambridge Univ. Press, Cambridge, 1986.
- [2] Dutoit R., Fiedler O.G.H., A new method of treatment of sheep infested with the larvae of sheep nasal fly, *O. ovis* L. in the union of South Africa; Onderstepoort, J. Vet. Res. 27 (1956) 67-75.
- [3] Fallis A.M., Studies on *Oestrus ovis* L., Can. J. Res. Sect. D Zool. Sci. 18 (1940) 442-446.
- [4] Horak I.G., Snijders A.J., The effect of *Oestrus ovis* infestation on Merino lambs, Vet. Rec. 94 (1974) 12-16.
- [5] Meleney W.P., Cobbett N.G., Peterson H.O., The natural occurrence of *O. ovis* in sheep from the Southwestern United States, Am. J. Vet. Res. 23 (1962) 1246-1251.
- [6] Meleney W.P., Cobbett N.G., Peterson H.O., Control of *O. ovis* in sheep on an isolated range, J. Am. Vet. Med. Assoc. 143 (1963) 986-989.
- [7] Pandey V.S., Epidemiology of *Oestrus ovis* infestation in sheep in the Highveld of Zimbabwe, Vet. Parasitol. 31 (1989) 275-280.
- [8] Sapogov A.G., The advantages of controlling sheep bot-fly by the method of hand collection, Veterinariya 24 (1947) 41.
- [9] Udoh R.K., Geographical Regions of Nigeria, Heinemann Educational Books Ltd, Ibadan Nigeria, 1981.
- [10] Unsworth K., Observations on the seasonal incidence of *Oestrus ovis* infection among goats in Nigeria, Ann. Trop. Med. Parasitol. 43 (1949) 339-340.
- [11] Urquhart G.M., Armour J., Duncan J.R., Dunn A.M., Fenning F.W., Veterinary Parasitology, Longman Groups, U.K. Ltd, 1992.
- [12] Zumpt F., Myiasis in Man and Animals in the Old World, Butterworths, London, 1965.