

The first reported leech infestation by *Limnatis nilotica* (Savigny 1822) of farm animals in Libya

Premières données sur l'infestation des animaux de ferme en Libye par la sangsue Limnatis nilotica (Savigny 1822)

Mohammed Mohsen NEGM-ELDIN^{1*}, Abdulsalam Mosa ABDRAHA²
& Hesham Elsanusy BENAMER¹

1. Department of Parasitology, Faculty of Veterinary Medicine, Omer El-Mukhtar University, Libya *(negreldin2002@yahoo.com)

2. Department of Zoology, Faculty of Sciences, Omer El-Mukhtar University, Libya.

Abstract. Examination of 4408 farm animals in the Green Mountain (Libya) revealed a high rate of infestation by the leech *Limnatis nilotica* (Savigny 1822) during the year 2011. The prevalence and mean leech burden is maximum in cattle followed by goats and sheep. The highest rates are recorded in July (cattle, 98.6%; donkeys 27.8%), August (goats, 72.29%; dogs, 62.5%) and June (sheep, 4.55%). Maximum incidence is reported for cattle in Shahat and for goats, donkeys, dogs and sheep in Alquba. Maximum intensity of infestation is recorded in Messa (cattle and donkeys, 6.5 and 4 leech/animal), Shahat (goats, 3.5), Labraq (dogs, 2.5), Faydiyah (sheep, 2.3). No infestation is recorded in Labraq (cattle and donkeys) and in Shahat (donkeys). Symptoms associated with animal infestations are described.

Keywords. Infestation, leech *Limnatis nilotica*, farm animals, Libya.

Résumé. L'examen de 4408 animaux de ferme en 2011 dans la Montagne verte (Libye) a révélé un taux élevé d'infestation par la sangsue *Limnatis nilotica* (Savigny 1822). La prévalence et l'intensité d'infestation moyenne de la sangsue sont maximales chez les bovins, suivi par les chèvres et les ovins. Les taux les plus élevés d'infestations sont enregistrés en juillet (bovins 98,6% ; ânes 27,8%), en août (chèvres 72,29% ; chiens 62,5%) et en juin (ovins 4,55%). L'incidence maximale est notée pour les bovins à Shahat et pour les chèvres, ânes, chiens et moutons à Alquba. Le maximum d'infestation est noté à Messa (bovins et ânes : 6,5 et 4 sangsues/animal), Shahat (moutons : 3,5), Labraq (chiens : 2,5) et Faydiyah (ovins : 2,3). Aucune infestation n'a été enregistrée à Labraq (bétail et ânes) et à Shahat (ânes). Les symptômes associés aux infestations animales sont décrits.

Mots-clés. Infestation, sangsue *Limnatis nilotica*, animaux de ferme, Libye.

INTRODUCTION

Leeches from the class Hirudinea are mostly carnivorous, blood sucking aquatic parasites causing hirudinosis in humans and animals. The sanguivorous hermaphrodite circum-Mediterranean specie *Limnatis nilotica*, commonly called the horse leech, occurs in lakes and streams in southern Europe, Middle East and adjoining countries and North Africa (Sawyer 1986, Al-Ani and Al-Shareefi 1995, Mohammad *et al.* 2002, Mehrzad *et al.* 2007, 2009, Moghaddar 2010 and Bahmani *et al.* 2012). These leeches can cause hemoptysis and anemia and may also act as vectors of animal and human pathogens (Nehilli *et al.* 1994). The aim of this study is to report the prevalence and intensity of the infestation and to evaluate the effect of seasonal dynamics and geographical distribution on the prevalence and leech burden. Symptoms associated with such infestation are also among the objectives.

MATERIAL AND METHODS

Farm animals (cattle, sheep, goat, dog, and donkey) were examined carefully every month in five localities (Fig. 1) in the Green Mountain (Alquba, Shahat, Messa, Labraq and Faydiyah) during the period from January to December 2011, searching for the attached leeches in buccal and/or nasal mucosa. Mouth gage, tongue depressor and/or laryngoscope were used with small animals for deep oral

examination. In case of stray dogs, injectable general anesthesia (atropine sulphate 0.04 mg/kg/im "Atropine; Spain") followed by Xylazine hydrochloride (Xyloject; Egypt/i.v.) were used. Leeches were collected using long alligator forceps (Bani-Ismael *et al.* 2007) and/or dry clean towel.

The number of leeches per each of the infected animals was counted. The collected leeches were transported in glass jars with spring water and weeds to Parasitology laboratory, Faculty of Veterinary and Medicine, Omer El-Mukhtar University, for identification. Symptoms associated with infestation were recorded.

RESULTS

Examination of 4408 animals in the Green Mountain area revealed the infestation of 503 (11.41%) with 1654 *Limnatis nilotica* (Fig. 2). These Leeches were seen attached to the gum (Fig. 3), under the tongue or near its root, inner side of the cheek, and in the lateral wall of the larynx, laryngopharyngeal area and nostrils.

Figures 4 and 5 show that the prevalence and mean leech burden is maximum in cattle (27.6%, 4.01 leech/animal) followed by goats (19.35%, 2.9) and sheep 1.2%, 1.46). In figures 6 and 7 a highest rate is recorded: in July for cattle (98.6%) and donkeys (27.8%); in August for goats (72.29%) and dogs (62.5%), and in June for sheep (4.55%).

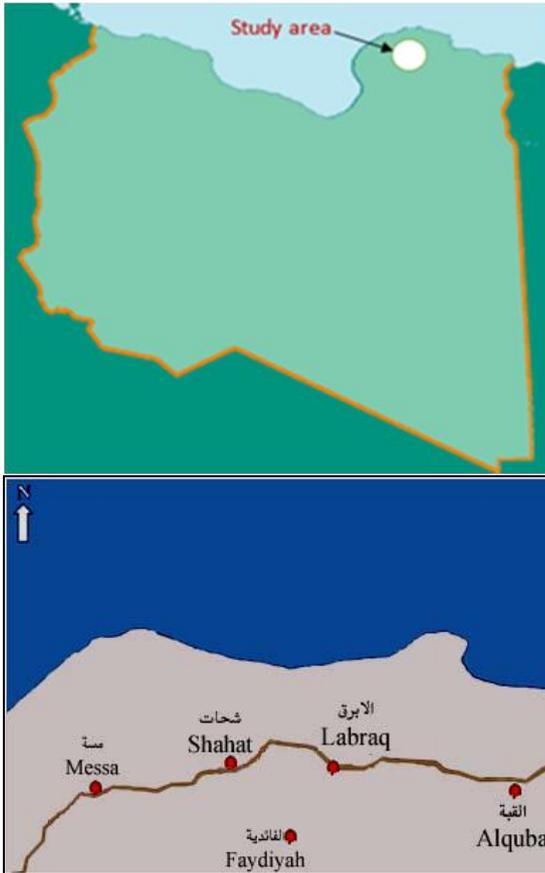


Figure 1. Study area in the Green Mountain, Libya (ca: Messa, 32° 53' N, 21° 57' E; Shahat, 32° 47' N, 32° 47' N; Faydiyah, 32° 45' N, 21° 37' E; Labraq, 32° 46' N, 22° 15' E; Alquba, 32° 48' N, 21° 51' E).

October to December periods. Maximum incidence is recorded in Shahat for cattle (29.3%) and in Alquba for goats, donkeys, dogs and sheep (24.1, 19.6, 18.06 and 1.52%, respectively). Maximum intensity is reported in Messa for cattle (6.5% leech/animal) and donkeys (4%), Shahat for goats (3.5%), Labraq for dogs (2.5%) and Faydiyah for sheep (2.3%). No infestation was recorded in Labraq (cattle and donkeys) and Shahat (donkeys).



Figure 3. *L. nilotica* attacking some of the infested animals and the associated symptoms. A: Symptoms in cattle at the beginning of infestation; B-F: Leeches attacking mouths of cattle (B), goats (C,D), Donkey (E) and nostril of dog (F) and the associated bleeding. (Arrows=leeches, interrupted arrows: froth blood associated with infestation).

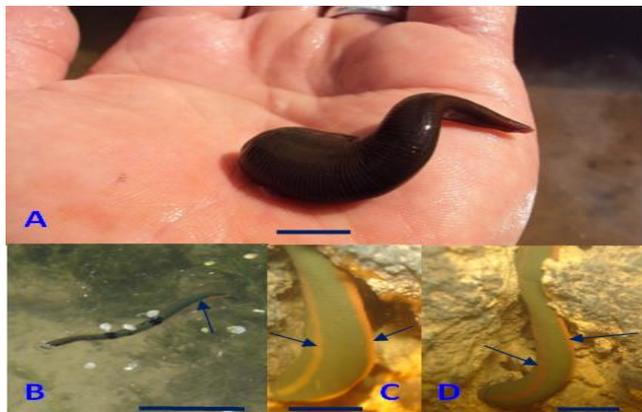


Figure 2. *Limnatis nilotica* from infested animals and springs. A: Engorged *L. nilotica* freshly expelled from mouth of one of the infested cattle in Alquba in August, 2011; B-D: Leeches in water source (B: one of the young leeches swimming towards animals during drinking, C,D: adult leeches at the bottom of the lake Zenaidy (note the olive green color and the marginal orange strips “arrows” Scale bar=9mm).

The intensity of infestation is maximum in July for cattle, goats, and dogs (7.9, 4.17, 2 leech/ animal, respectively) and in August for donkey and sheep (3.5 and 2.7). No infestation is detected during January to April or

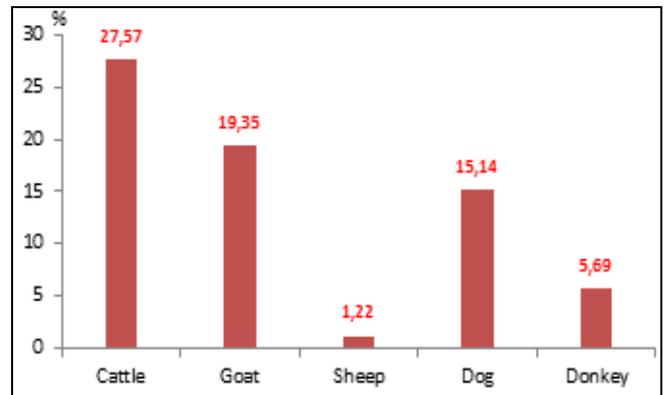


Figure 4. Incidence of *L. nilotica* infestation among farm animals.

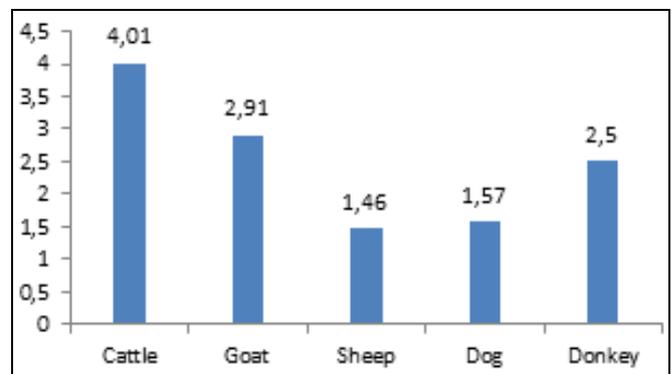


Figure 5. Intensity of *L. nilotica* infestation among farm animals.

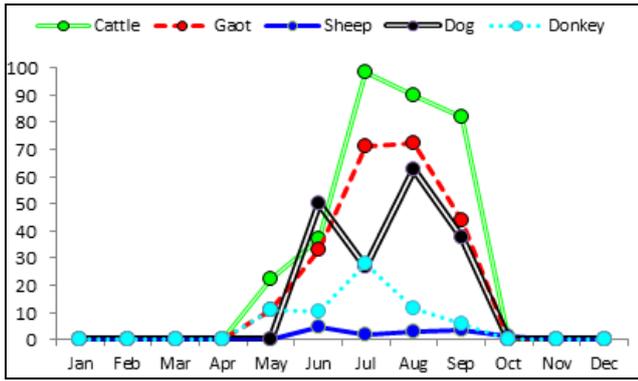


Figure 6. Monthly percentages of *L. nilotica* in farm animals.

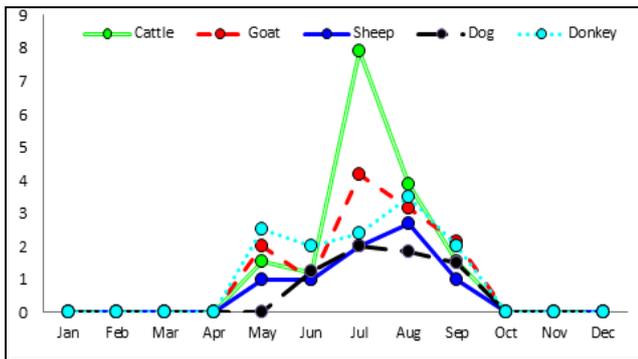


Figure 7. Monthly intensities of *L. nilotica* in farm animals.

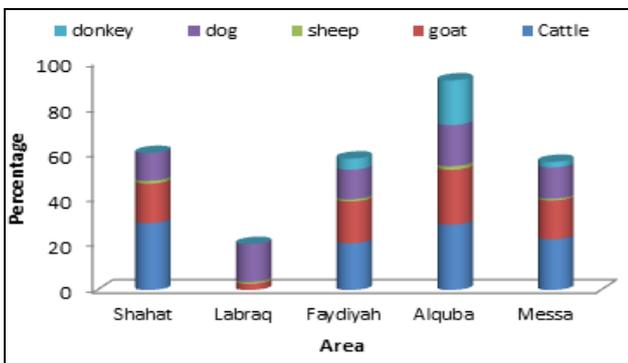


Figure 8. Incidence of animal infestation in five localities.

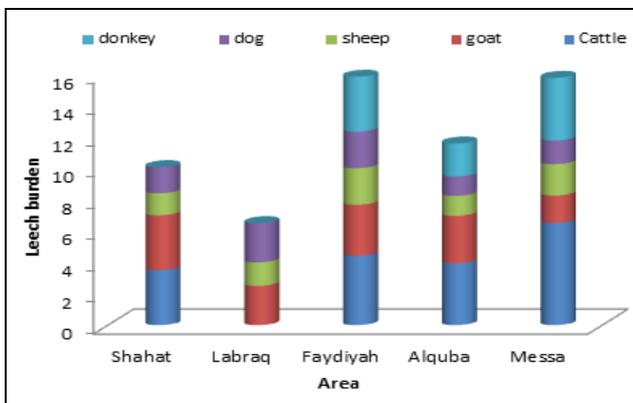


Figure 9. Intensity of animal infestations in five localities.

DISCUSSION

In the present task, the reported larger leech burden in cattle (4.01 leech/animal) if compared to other studied animals (2.9 in goats; 1.6 in dog; 1.5 in sheep) may be attributed to the larger quantity of consumed water and thus the greater probabilities of infestation. The number of the counted leeches/each animal may be less than the real number as additional uncountable leeches may be hidden in the trachea, larynx and/or oesophagus.

In this regard, Al-Ani & Al-Shareefi (1995) found eight *L. nilotica* attached to nasal cavity of one camel in Iraq; Moghaddar (2010) reported 19 leeches (4 leeches removed from the nostrils, 15 at necropsy) as a cause of fatal hirudiniasis for cattle in Iran. Bahmani *et al.* (2006) isolated 6-7 leeches from sheep oesophagus. Satyawati *et al.* (2002) reported the presence of three of blood sucking leeches from nose in a single patient as a cause of epistaxis. The variations in leech burden among the infested animals may reflect the variation in the severity of symptoms.

The increased prevalence and intensity of infestation of farm animals during hot months may be due to the increased proportion of the total population (particularly the immature) with the increase of water temperature during summer months (Negm-Eldin *et al.* unpublished data). In this regard, Bani-Ismail *et al.* (2007) also reported the infestation of hunting dogs during the leech season (from May to September). The variation in prevalence and leech burden in the studied areas of the Green Mountain could be attributed to the variation in leech density and quantity of water in infested springs where animals drink.

REFERENCES

Al-Ani, F. K. and Al-Shareefi, M. R. 1995. Observation on medical leech (*Limnatis nilotica*) in a camel in Iraq. *J. camel prac. Res.*, 2, 145 p.

Bahmani M., Zamani P., Meshgi B. & Abdi-Zadeh R. 2006. The first reported infestation in sheep at *Limnatis nilotica*. In *Iran, Sixth Nat. Conf. and the first Reg. Cong. Parasitol. and Parasit. Dis.* 7-9 June, Karaj, 384 p.

Bahmani M., Eftekhari Z., Mohsezaadeghan A., Ghotbian F. and Alighazi N. 2012. Leech (*Limnatis nilotica*) causing respiratory distress in a pregnant cow in Ilam province. *In Iran. Comp. Clin. Pathol.* Doi: 10.1007/s 00580-011-1236-1.

Bani-Ismail Z. Al-Majali A., Ababeneh H. & Al-Omari B. S. 2007. Laryngeal leeches causing exercise intolerance, respiratory distress and hemoptysis in a hunting dog. *The Int. J. veterinary medicine*, 3, 1-7.

Mehrzaad S., Razi-Jalali M. H., Bahmani M. & Rahbar A. 2007. Report infestation of *Limnatis nilotica* (leech) in sheep, cattle, dogs and donkeys in the city of Dehloran., *Six. Nat. Conf. Vet. Clin. Sci. Isl. Azad Univ. Tab.Tabriz-Iran* 6-8 Aug.;P 648

Moghaddar N. 2010. Fatal hirudiniasis in cow. *Com. Clin. Pathol.* doi:10.1007/s00580010-0969-6

Mohammad Y., Rostum M. & Dubaybo B. A. 2002. Laryngeal hirudiniasis as unusual cause of airway obstruction and hemoptysis. *Ped. Pul.*, 33, 224-226.

Nehilli M., Lik C., Mehlhom H., Ruhnau K., Dick W. & Njayou M. 1994. Experiments on the possible role of leeches as vectors of animal and human pathogens: A light and electron microscopy study. *Parasitol. Res.*, 80, 277-290.

Satyawati, Singhal S. and Dass A. (2002). Multiple live leeches

from nose in a single patient- a rare entity. *Ind. J. Otolaryngol. and Head and Neck surgery*, 54, 154-155

Sawyer R. T. 1986. *Leech Biology and Behavior ,II, Feeding Biology, Ecology and Systematic* Oxford Univ. Press, New York, 792p.

Manuscrit reçu le 09.02.2013

Version révisée acceptée le 16.07.2013

Version finale recue le 11.10.2014

Mise en ligne le 15.10.2014