Austin Journal of Veterinary Science & Animal Husbandry

Open Access

Austin Publishing Group

Research Article

Prevalence and Distribution of Bovine Ticks in Abuna Gindeberet District, West Shoa, Oromia, Ethiopia

Dimshasha T[1]* and Marzu I[2]

[1]Asalla Veterinary Regional Laboratory, Ethiopia

[2]Abuna Gindeberet Livestock Development and Resource Agency, Ethiopia

***Corresponding author:** Dimshasha T, Asalla Veterinary Regional Laboratory, Ethiopia

Received: May 21, 2019; **Accepted:** July 01, 2019; **Published:** July 08, 2019

Abstract

A cross-sectional study was conducted with the aim of identifying and estimating the prevalence of cattle ixodid tick infestation with respect to host related factors in Abuna Gindeberet district, Western Shoa, Ethiopia. Adult ixodid ticks were collected from 384 randomly selected cattle by using forceps and preserved in separate collecting bottle with 70% ethyl alcohol. The collected ticks were identification under stereomicroscope into generas and species based on their morphology. The present study revealed that there was high tick infestation with an overall prevalence of 274 (71.35%). In the study area four genera of ixodid ticks *(Amblyomma*, *Rhipecephalus (Boophilus)*, *Hyalomma* and *Rhipecephalus)* and four species *(Amblyomma variegatum*, *Rhipecephalus (Boophilus) decoloratus*, *Hyalomma dromedary*, *Rhipecephalus evertsi evertsi)* were identified with the prevalence rate of 28.39%, 65.77%, 2.42% and 3.39% respectively. All species of ticks had higher number of male, except Rhipicephalus *(Boophilus) decoloratus* (5:9) and they were distributed and attached with statistically significant (P<0.05) variation among different parts of the host body. Different risk factors (age, sex, body condition score, breed and managements) were considered but age and managemental systems are statistically significant (P<0.05). All of risk factors respective prevalence were; age (young 1.3%, adult 54.69% and old 15.36%); sex (male 32.29% and female 39.06%); body condition score (poor 22.14%, medium 46.61% and good 2.60%); breed (local 55.98% and cross breed 15.37%) and management system(extensive 68.75 % and semi-intensive 2.6%). The present study indicates there is high prevalence of ixodide tick infestation, especially in local cattle breed, adult, female and medium body condition. Therefore, effective control measures should be undertaken to bring the needed health and productive animals in Abuna Gindeberet district.

Keywords: Abuna Gindeberet; Identification; Ixodid Tick; Prevalence; Stereomicroscope

Introduction

Ethiopia is believed to have the largest livestock population in Africa. This livestock sector has been contributing considerable portion to the economy of the country, and still promising to rally round the economic development of the country [1]. In Ethiopia, livestock production remains crucial and represents a major asset among resource-poor small holder farmers by providing milk, meat, skin, and manure and traction force [2]. The contribution of livestock to the national economy particularly with regard to foreign currency earnings is through exploration of live animal, meat and skin and hides [3].

Poor health and productivity of animal due to disease has considerably become the major stumbling block to the potential of livestock industry [4]. Now a day parasitism represents a major obstacle to development and utilization of animal resource. In Ethiopia, ectoparasites in ruminant cause serious economic losses to small holder farmers, the tanning industry and country as a while through mortality of animals, decreased production, downgrading and rejection of skin and hide (Waktole et al., 2015). From the ectoparasites, ticks are ranked as the most economically important of livestock in tropics including sub-Saharan Africa [5].

Ticks are small, wingless ectoparasitic arachnid arthropods that are cosmopolitan and prevalent in warmer climates. Ticks cause substantial losses in cattle production, in terms of diseases, reduced productivity and fertility and often death, and are economically the most important ecto-parasites of cattle indicates that different ticks have different predilection sites on the host's body. Ticks suck blood; damage hides and skins introduce toxins and predispose cattle to myiasis and dermatophilosis [6]. Furthermore, they reduce body weight gains and milk yield, in addition to creating sites for secondary invasion by pathogenic organisms [7].

More significantly, ticks transmit diseases from infected cattle to healthy ones. Ticks transmit a greater variety of pathogenic micro-organisms than any other arthropod vector group, and are among the most important vectors of diseases affecting animals. Ticks which are considered to be most important to health of domestic animal in Africa comprise about seven genera. Among these genera, the main tick genera found in Ethiopia include *Ambylomma*, sub genus *Rhipicephalus (Boophilus)*, *Haemaphysalis*, *Hyalomma* and *Rhipicephalus*. The genus *Ambylomma* and *Rhipicephalus* are predominating in many parts of country, *Hyalomma* and sub genus *Rhipicephalus (Boophilus)* also have significant role [8]. Due to economic and veterinary importance of ticks, their control and

Citation: Dimshasha T and Marzu I. Prevalence and Distribution of Bovine Ticks in Abuna Gindeberet District, West Shoa, Oromia, Ethiopia. Austin J Vet Sci & Anim Husb. 2019; 6(2): 1058.

transmission of tick born diseases remain challenge for the cattle industry of the world and it is a priority for many countries in tropical and subtropical regions [9].

Statement of problem

In Ethiopia, tick occupy the first place amongst the external parasites by the economic loss it incurred when they infest livestock particularly cattle. They reduce cattle productivity, such as milk yield, and increase susceptibility to other diseases [10]. Approximately 80% of cattle population of the world are at risk of tick infestation and tick born diseases [11].

Regardless of losses due to tick infestation in Ethiopia, and a number of researchers reported the distribution and abundance of tick species in different parts of the country, there is still many problems faced by livestock owners due to the ixoded ticks infestation particularly in Abuna Gindeberet. In addition, there is no work done regarding the above ecto-parasites in Abuna Gindeberet district.

Objective: The study was conducted with the objectives of to estimate the prevalence of tick infestation in the study area and to identify tick species and major risk factors for the occurrence of tick infestation.

Material and Methods

Study area

This study was conducted between March, 2018 and November, 2018 in Abuna Gindeberet district of West Shoa, Ethiopia. Abuna Gindeberet district is located at 178km away from Ethiopian capital city, Addis Ababa, to the west and 134km away from Ambo to the North. This district is located at altitude of 1000m-2300m above sea level. From this, the lowland is 1000-1500masl and the mid-high land is 1500-2300masl which covers 76,578.58. Hektar land (68%) and 36,036.97 Hektare land (32%) respectively. Abuna Gindeberet Woreda is divided into 44 Kebele Administrations out of which 42 of them are rural Kebeles while 3 of them are town administrations. The study area is particularly in the three kebeles of the district, namely: Bake Kelate, Gitire Kichu and Degatina. The first kebele, Bake Kelate, found at the center of the district and also the town of Abuna Gindeberet whereas Gitire Kichu and Degatina are found at 3km and 15km respectively.

The district has 19,713 male and 2,913 female householders. The district is categorized into 2 agro climatic zones, where mid highland and lowland accounts to 32% and 68% consecutively. The district receives an average annual rainfall that ranges from 700mm in the lowland to 1400mm in the highland, with an average temperature that ranges from 10°c minimum to 30°c maximum. The land use system of the district shows that 87,784.25 hectare is cultivable land, about 36,726 hectare forest and bush, while 12,026 hectare land constitutes grazing land and finally, about 1,947 hectare covers the remaining area. The safe water coverage constitutes 36%.

Major soils of the area are vertisols consisting of 46% clay, 40% silt, 8% sand and 6% organic matter. The livestock population is estimated to be 145,974 heads of cattle, 34,660 heads of sheep and 40,688 heads of goats, 5,634 horse, 12,124 donkey, 969 mule, and 71,133 avians in Abuna Gindeberet district. In the study area, ruminants are managed by communal holding of all species such as cattle, sheep, goats and equines together [12].

Table 1: Prevalence and total number of ticks by species.

Tick species	Total Infested	Prevalence	x^2(P-Value)	Total ticks (%)
A.variegatum	47	12.24%	337.28(0.00)	117(28.39)
Rh(Booph) Dec	212	55.21%		271(65.79)
H. dromedary	9	2.34%		10(2.43)
Rh. evertsi evertsi	6	1.56%		14(3.39)
Total	**274**	**71.35%**		**412(100)**

A(amblyomma, Booph(boophilus), H(hyalomma), Rh(rhipecephalus),Dec(decoloratus).

Table 2: Tick species and their predilection attachment site on cattle in Abuna Gindeberet district.

Attachment site	Tick species			
	A. var	***Rh (B). dec***	***H. dr***	***Rh. e.ev***
Dewlap, neck, sternum no %	31(8.07)	37(9.64)	1(0.26)	-
Udder, teat, groin, scrotum, prepuce, belly no %	-	1(0.26)	-	4(1.04)
Flank, shoulder, thigh no %	26(6.77)	159(41.41)	-	4(1.04)
Under tail, perineum no %	13(3.39)	26(6.77)	2(0.52)	-
X^2(P-value)= 612.6387(0.000)				

A. var (Amblyomma variegatum), Rh (B). dec (Rhipecephalus (boophilus) decoloratus, H. dr (Hyalomma dromedari), Rh. e. ev (Rhipecephalus evertsi evertsi), x^2(chi square)

Study design and study animals

A cross-sectional study design was implemented from March, 2018 to November, 2018 to determine the species and prevalence of ixodid tick infestation and associated effect in bovines in Abuna Gindeberet district. The study population consists of cattle managed under extensive and semi intensive system.

Sample size determination: The sample size was determined by assuming the expected prevalence of 50% tick infestation. The desired sample for the study was calculated by setting 95% confidence interval at 5% absolute precision [13].

$N=1.96^2 P_{exp} (1\text{-}pexp) d^2$

Where, n= required sample

P_{exp}= expected prevalence

d^2= absolute precision

Therefore, 384 cattle were examined under the study.

Sampling method: Simple random sampling was applied for tick collection from 384 cattle found within 3 Peasant Associations (PAs) of the Abuna Gindeberet district. The PAs were selected based on their accessibility to transport and information from the Districts manager. The animals were selected and examined randomly from the household.

Study methods: The host related factors like age and body condition were classified into groups for the convenience of the study. The age of the cattle were grouped into young (< 3 year), adult (3 to 7 years) and old (> 8 years) according to (Gatenby, 1991). While body condition score were grouped into poor, medium and good according to (Nicholson and Butterworth, 1986).

Tick collection and preservation: The entire body surface of the animals was inspected for the presence or absence of ticks. Adult ticks were collected from different parts of body regions; dewlap, udder, groin, shoulders, belly, flank, perineum, under tail, scrotum, teat, prepuce, thigh and sternum of animals after being restrained using physical handling. Date of collections, address, sites of attachment, breed, age, sex, body condition score and management system of animals were registered.

Ticks were removed from the host skin whilst retaining their good condition for identification using hand manually (Wendewossen, 2000). The collected ticks from each body regions were preserved in separate pre-filled universal bottles with 70 % ethyl alcohol before transportation to parasitological laboratory for identification.

Laboratory techniques for tick identification: From the bottle containing sample, the ticks were transferred to the petri dish by using forceps. The petri dish containing tick sample was placed under stereomicroscope. The collected ticks were identified and classified to different species levels based on size of mouthparts, color of the body, leg color, presence and absence of the eye. Furthermore, different morphology tick such as shape of scutum, body, coxae one, festoon and ventral plates were considered for species level identification [7].

Data analysis

The data recorded was entered into Microsoft excel data base system for statistical analysis. Stata version 11 statistical software was used to analyse the data. The association between tick infestation rate and study factors (such as age, sex, management system, body condition etc) was determined by pearson's chi-square (x^2) test. A statically significant association between variables exists when $P<0.05$ and at 95% Confidence Level (CI). The prevalence of tick infestation was calculated as the number of positive animals for specific tick species sampled divided by the total number of animals examined and multiplied by hundred.

Results

The prevalence of ticks from the total examined cattle was found 71.35% (274/384). Among these 306 were local out of which 215 (55.98%) were infested and 78 were cross breeds out of which 59 (15.37%) were infested. A total of 412 adult Ixodidae ticks were collected from different body region of infested cattle. From which, four Ixodidae tick species were identified from the study area. Those identified species are; *Rhipecephalus (Boophilus) decoloratus* (65.77%) was the most abundant and widely distributed species followed by *Amblyomma variegatums* (28.30%) and *Rhipicephallus evertsi evertsi* (3.39%). However, *Hyalomma dromedari* (2.42%) was found to be the least abundant tick species (Table 1).

Each tick species tend to prefer a site of attachment on the animal body. The most favorable predilection site for *Rh (Booph). decoloratus* species and *A. variegatum* were mostly on body parts; flank, shoulder, thigh, dewlap, neck and sternum and *H. dromedari* was mostly collected from; udder tail, perinium, dewlap, neck and sternum. *Rhipicephalus evertsi* was collected mostly from; uder, teat, groin, scrotum, flank, shoulder and thigh. There was statistically significant difference between all tick species and attachment site of ticks to host ($P<0.05$) (Table 2).

Table 3: Total number of Male and Female ticks with their ratios.

Tick species	Sex of ticks (%)		Male to female ratio
	No of male	No of female	
Ambylomma Variegatum	34(8.85)	13(3.38)	3:01
Rhipecephalus(Boophilus) Dec	80(20.83)	142(36.98)	5:09
Hyalomma Dromedari	8(2.08)	1(0.26)	02:00.3
Rhipecephalus evertsi evertsi	2(0.52)	4(1.04)	0.5:1.04

No (number), Dec (decoloratus)

In the present study, male to female sex ratio for tick species indicated higher number of males than females for all species of tick except *Rhipicephalus (Boophilus) decoloratus*, which had (5:9) ratio of male to female tick (Table 3).

The highest prevalence (27.96%) of tick infestation was observed in Bakke kalate followed by Dega Tinna peasant association (25.52%), whereas the lowest prevalence was seen in Gitire Kichu with a specific prevalence of (17.96%). Statistical analysis of the infestation rate of ticks showed significant ($P<0.05$) among the different peasant association (Table 4).

The prevalence of ticks in young, adult and old years was found to be, 1.30%, 54.69% and 15.36% respectively. Based on the sex of the cattle infestation rate was 32.29% and 39.06% in males and female animals respectively. In farming system of extensive, semi-intensive and intensive, it was found that 68.75%, and 2.60% respectively. Medium body conditioned animals were found severely affected with ticks than poor and good body condition animals as seen in Table 5. Regarding the host related factors in the study, there was no statistically significant variation ($P > 0.05$) in prevalence of ticks between the breed, sex and body condition score of the cattle production (Table 5).

Discussion

Different tick species are widely distributed in Ethiopia and a number of researchers reported the distribution and abundance of ticks in different parts of the country [14]. In the present study the overall prevalence of ticks (71.35%) was registered (Table 1). Similarly, high prevalence of ixodid ticks was reported from different part of the country including 82% by, 81.25%, 74% and 65.5% [14-17]. This is probably due to similarities in agro ecological setting and animal health practice in these study areas. The present study is not in line with the finding reported by with a prevalence of 25.64%. The inconsistency among these studies could be attributed to a wide range of factors including agro ecological, animal health practice, or management difference within their respective study areas [7]. In this particular study, there is significant statistical similarity ($P<0.05$) of tick infestation within three peasant association of Abuna Gindeberet district (Table 4).

In present study four genera *(Amblyomma*, *Rhipecephalus (Boophilus)*, *Hyalomma* and *Rhipecephalus)* and species *(A. Variegatum*, *Rh (Boophilus). decoloratus*, *H. Dromedary* and *Rhipecephalus evertsi evertsi)* of ixodid ticks were identified among which *Rhipecephalus (Boophilus) decoloratus* was found to be the most abundant species accounting for 55.8% of the total infested cattle (Table 1). This finding is in line with the previous work by who reported *Rh (Booph). decoloratus* as the most abundant tick

Table 4: Prevalence of tick species in different PA.

PA	Total	Positive (%)	Tick species (%)				X²(P value)
			A. var	*Rh(B).de*	*H. dr*	*Rh.e.e*	
BK	148	107(27.96)	48(11.65)	78(18.93)	-	-	16.48(0.036)
GK	94	69(17.96)	15(3.64)	150(36.41)	8(1.94)	2(0.48)	
DT	142	98(25.52)	54(13.11)	43(10.43)	2(0.48)	12(2.91)	
Total	**384**	**274(71.35)**	**117(28.39)**	**271(65.77)**	**10(2.42)**	**14(3.39)**	

PA (Peasant association), A. var (Amblyomma variegatum), Rh (B).de (Rhipecephalus (boophilus) decoloratus, H. dr (Hyalomma dromedary), Rh. e. e (Rhipecephalus evertsi evertsi), BK (Bake Kelate), GK (Gitire Kichu), DT (Dega Tina).

Table 5: Prevalence of ticks with reletion to age, sex, and body condition score, and breed and management system.

Risk factors	Animal examined	Positive animal	Prevalence (%)	P- value	X²
Age	**384**	**274**	**71.35**	**0.002**	**12.794**
Young	8	5	1.30%		
Adult	310	210	54.69%		
Old	66	59	15.36%		
Sex	**384**	**274**	**71.35**	**0.899**	**0.016**
Male	173	124	32.29%		
Female	211	150	39.06%		
BCS	**384**	**274**	**71.35**	**0.236**	**2.888**
Poor	129	85	12.14%		
Medium	242	179	46.61%		
Good	13	10	26.32%		
Management	**384**	**274**	**71.35**	**0.042**	**4.1219**
Extensive	374	264	68.75%		
Semi-intensive	10	10	2.60%		
Breed	**384**	**274**	**71.35**	**0.348**	**0.88**
Local	306	215	55.98%		
Cross breed	78	59	15.37%		

BCS (Body Condition Score)

with respective prevalence of 47.93% respectively [18]. Similarly described *Rh (Booph). decoloratus* as the most common and wide spread tick species in Ethiopia [19]. In the contrary, reported lower prevalence of (24.83% and 15.4%) respectively. This might be due to the geographical location and altitude factors, which belongs to lower area of the country [20,21].

Amblyomma variegatum was second most prevalent tick species in the infested cattle with the prevalence of 12.24% (Table 1), which is in line with who reported as 6.5%, 4.7% and 4.2% respectively [22,23].

However, reports from different parts of Ethiopia such as in Asela, in Holeta, in Awassa report indicated that *A. variegatum* as the most abundant tick species in their respective study areas [7,21]. These variations in the prevalence could be due to the geographical location as *A. variegatum* was reported to be the highest in number in the highland and high rainfall areas [14].

Rhipecephalus evertsi evertsi was the least prevalent tick among the infested cattle with the prevalence of 1.56 % which is in line with who indicated lesser prevalence (6.6%) impling this tick species was less common in the present study district due to agro ecology, humidity and amount of rainfall. In contrast to this a higher prevalence was reported by study in Bahir Dar (48.1%) and (23.1%).

Hyalomma dromedari was found to be the third prevalent (2.34%) among the infested cattle in the present study, which is in line with who reported a prevalence of *H. dromedary* 2.5% and 1.86% respectively [18,24]. This implies it is less common in the study area [7,21]. This might be due to agro ecology, host preference and amount of rainfall. In contrast to this higher result of *Hyalomma* tick was recorded in Bahir Dar [18].

Regarding the attachment site of the ticks, there was statistically significant ($P < 0.05$) association in attachment site on host in present study (Table 2). The predilection sites found in this study in correlated with another report who indicated that hard tick infestation on groin and mammary glands was most prevalent in cattle (48.75%), whereas lowest in face and neck region (30.0%) which is almost disagreement with present finding [22]. In fact, stated that short hypostome ticks like *Rhipecephalus* usually prefer upper body parts including nape of neck and margin of anus and under tail while long hypostome ticks like Ambloyomma attaches to lower parts of the animal body, which is also in similar the case in the present study [25].

Different species of ticks found to prefer different predilection

sites. This is explained as Hayaloma deromadres found most predominately (0.07%) dewlap, neck, sternum, under tail and perineum whereas, *Rh. evertsi evertsi* found predominating (3.03%) on the udder, teat, groin, scrotum and belly. Similarly *Rh. (Booph) decoloratus* found abundantly (41.4%) in the flank, shoulder, thigh while *A. variegatum* predominantly (8.07%) on dewlap, neck, sternum, under tail, perineum (Table 2).

Regarding the attachment site of the ticks, there was statistically significant ($P < 0.05$) difference in attachment site on host in present study (Table 2). The predilection sites found in this study correlated with another report who indicated that hard tick infestation on groin and mammary glands was most prevalent in cattle (48.75 %), whereas lowest in face and neck region (30.0%) which is almost in line with present finding [22]. In fact, stated that short hypostome ticks like *Rhipecephalus* usually prefer upper body parts including nape of neck and margin of anus and under tail while long hypostome ticks like Ambloyomma attaches to lower parts of the animal body, which is also the case in the present study [25].

Different species of ticks found to prefer different predilection sites. This is explained as *Amblyomma variegatum* found most predominately (19.3%) on udder, teat, groin, scrotum, prepuce and belly, whereas, *Rh. evertsi evertsi* found predominating (3.03%) in the under tail and perineum. Similarly *Rh. (Booph) decoloratus* found abundantly (27.6%) in the flank, shoulder, thigh while *Hyalomma dromedari* predominantly (1.9%) on dewlap, neck, sternum, udder, scrotum, prepuce, teat, belly and groin (Table 2).

Tick infestation was insignificantly higher in local breed cattle (55.98%) as compared with cross breed cattle and this finding is in agreement with the findings of [26]. This might be attributed to the currently existing modified animal husbandry practice where crossbreed or high yielding animals are kept most of the time indoor with semi-intensive care, whereas local breed cattle are kept under extensive farming system. Therefore, the chance of occurrence in local breed cattle is greater than cross breeds. Furthermore, it can be assumed that it might be due to that farmer taking more care to cross breed than local cattle.

The current study indicates that the numbers of male ticks were higher than the number of females except in *Rh. (Boophilus) decolaratus* in which the number of females are higher than male ticks (Table 3). This finding was in agreement with the report of who reported the similar trend (Abdisa, 2012, Asrate and Yalew, 2012, Bedaso, 2014). This might be attributed to the fact that male ticks take less food than females but remain longer on the host and can mate with several females and fully engorged female tick's drop-off to the ground to lay eggs (Solomon and Kaaya, 1996, Thursfield, 2007). Furthermore, the observed female outnumbering of male ticks in *Rh. (Booph) decolaratus* in the current study might be due to the small size of male tick which may not be seen during collection according to [22].

The difference in prevalence between sex of cattle was found statistically insignificant ($P > 0.05$). Male animals were found less affected than females (in male 32.729% and in female it was 39.06%). This result is in line with the other author in Benchi Maji but it disagreed with the previous works in Assosa that the difference in prevalence was found statistically significant between sex groups [28]. This result is also concurred with the results of [29]. This might be due to equal opportunities of oxen and cows to tick infestation in their production as well as in their management condition.

The proportion of tick infestation was high in adult animals as compared to young and old animals. However, there was statistically significant difference ($P < 0.05$) and the high proportion may be due to outdoor management and of long distant movement of adult animals to search feed and water as compared to younger and older animals, so the chance of exposure is higher. This finding is also in agreement with the findings of, who reported high proportion in adult cattle. Male and female animals are found to be with equal chance of infestation [30-32].

Body condition was not statistically significant in relation to tick infestation ($p > 0.05$). Tick infestation was mostly abundant in medium conditioned animal with prevalence of 46.7% and lowest in good body condition (2.6%). Similarly, reported a higher tick infestation in medium conditioned animals as compared to those with poor and good body condition [23]. This might be because medium-scored animals have reduced resistance and exposed to ticks when grazing on the field.

Poor body conditioned animals might be kept at home due to their inability to walk to distance areas thus less exposed to ticks as compared to medium body scored animals. Well-fed animals could be very resistant to any kind of diseases including tick infestation, when they grazed in the field or kept at home [27].

Conclusion and Recommendations

The present study indicated a high prevalence rate of cattle ixodid ticks with four tick genera and species identified. Among the four species *Rh (boophilus) decoloratus* was the most prevalent, followed by *Amblyomma variegatum*, *Hyalomma dromedary* and *Rhipecephalus evertsi evertsi*. Currently the ixodid tick infestation seems to be associated with different risk factors and result in severe constraint for agricultural activities in the settlement areas of the Abuna Gindeberet district. Almost all, the parasite affects each cattle owner in the area having socioeconomic impacts in the area. Therefore, bearing in mind the above conclusion the following recommendations were forwarded:

- Integrated control and prevention method should be implemented in order to combat the high prevalence of bovine ixodid ticks from and around the study area.
- Awareness creation should be given for the stakeholders regarding socioeconomic effects due to ixoded ticks.
- There should be collaborative work between the government, non-government, veterinary professionals and communities to bring tick infestation to the very minimum burden.

References

1. CSA. Federal Democratic Republic of Ethiopia, Central Statistical Authority, Agricultural Sample Survey (2012/2013). Report on Livestock and Livestock Characteristics (Privet and Peasant Holdings), Addis Ababa. 2013; 9-20.
2. Mesfin T, Lemma M. The Role of Traditional Veterinary Herbal Medicine and Its Constraints in the Animal Health Care System in Ethiopia. In: Medhin, Z. and Abebe, D., Eds., Conservation and Sustainable Use of

Medicinal Plants in Ethiopia, Institute of Biodiversity Conservation and Research, Addis Ababa. 2001; 22-28.

3. MoARD. The Effect of Skin and Hide Quality on Domestic and Export Market and Evaluation of the Campaign against Ectoparasites of Sheep and Goat in Amhara, Tigray and afar Region. Official Report to Region and Other Sectors, Addis Ababa. 2008.

4. Onu S, Shiferaw T. Prevalence of ectoparasite infestations of cattle in Bench Maji zone. Southwest Ethiopia. Vet. World. 2013; 6: 291-294.

5. Lorusso V, Picozzi K, de Bronsvoort BM, Majekodunmi A, Dongkum C, Balak G, et al. Ixodid Ticks of Traditionally Managed Cattle in Central Nigeria: Where *Rhipicephalus (Boophilus)* microplus. Parasit Vectors. 2013; 6: 171.

6. Yiwombe K. An Investigation to dete Boophilus tick (BLUE TICK) T. Doctoral Dissertation. 2013.

7. Walker A, Bouattour A, Camicas J, Estrada-Pena A, Horak I, Latif A. Ticks of Domestic Animals in Africa: A Guide to Identification of Species. Bioscience Report, Edinburgh. 2003; 1-221.

8. Gebre S, Nigist M, Kassa B. Seasonal Variation of Ticks on Calves at Sebeta in Western Shewa Zone. Ethiopian Veterinary Journal. 2001; 7: 17-30.

9. Rajput ZI, Hu SH, Chen WJ, Arijo AG, Xiao CW. Importance of Ticks and Their Chemical and Immunological Control in Livestock. Journal of Zhejiang University Science B. 2006; 7: 912-921.

10. Bossena F, Abdu M. Survey on the Distribution of Tick Species in and around Assosa Town, Ethiopia. Research Journal of Veterinary Science. 2012; 5: 32-41.

11. Kahn C. The merck veterinary manual. 9th edition. Anniversary editionmerial. National publishing. Inc. phidadelphia. 2010.

12. Abuna Gindeberet District Livestock and Fish Office. 2015.

13. Thrusfield M. Veterinary Epidemiology. Government Department of Navy Bureau, 3rd Edition. UK Black Well Science Ltd. 2007; 18.

14. Nateneal E, Fikadu M, Yimer, Jelalu K. Identification and prevalence of ixodid tick bovine at Bedele district. Oromiyia Regional State. Western Ethiopia. Journal of Parasitology and Vector Biology. 2015; 7: 156-162.

15. Wolde A, Mohamed A. Prevalence of ixodid ticks on bovine in Soddozuria districts, Wolaita Zone. Ethiopia. Acta Parasitologica Globalis. 2014; 5: 188-197.

16. Meaza G, Abdu M, Yisehak K. Determination of the prevalence of ixodid ticks of cattle breeds, their predilection sites of variation and tick burden between different risk factors in Bahir Dar, Ethiopia. Global Veterinarian. 2014; 13: 520-529.

17. Getachew A, Mersha C, Dessalegne M, Basaznew B. Prevalence of ixodid ticks on cattle in Northwest Ethiopia. Acta Parasitologica Globalis. 2014; 5: 139-145.

18. Gedilu M, Mohamed A, Kechero Y. Determination of the Prevalence of Ixodid Ticks of Cattle Breeds, Their Predilection Sites of Variation and Tick Burden Between Different Risk Factors in Bahir Dar. Ethiopia. Jimma, University College of Agriculture and Veterinary Medicine. Jimma. Ethiopia. Global Veterinaria. 2014; 13: 520-529.

19. Mehari B. Distribution of livestock tick species in Awassa area. DVM Thesis Faculty of Veterinary Medicine Addis Ababa Univesity, Debrezeit, Ethiopia. 2004; 6-9.

20. Abebe R, Fantahun T, Abera M, Bekele J. Survey of ticks (Acari: Ixodidae) infesting cattle in two districts of somali regional state, Ethiopia. Veterinary World. 2010; 3: 539-543.

21. Tessema T, Gashaw A. Prevalence of ticks on local and crossbred cattle in and around Asella town. South East Ethiopia. Ethiop. Vet. J. 2010; 14: 79-89.

22. Huruma G, Abdurhaman M, Gabre S, Deresa B. Identification of bovine tick species and their prevalence in and around sebata, Ethiopia. Journal of Parasitology and vector Biology. 2015; 7: 1-8.

23. Pawlos W, Derese D. Study on prevalence and identification of ticks in humbo district, Southern Nations Nationalities and Peoples Region (SNNPR). Ethiopia. J. vet. med. anim. health. 2013; 5: 73-80.

24. Admassu B, Yeneneh H, Shite A, Haile B, Mohammed S. Prevalence and Identification of Major Ixodid Tisck Genera of Cattle in Dangila District Awi Zone, North West Ethiopia. Acta Parasitologica Globalis. 2015; 6: 129-135.

25. Stachurski F. Invasion of West African cattle by the tick *Amblyomma* variegatum. Med. Vet. Entomol. 2000; 14: 391-399.

26. Asrate S, Yalew A. Prevalence of cattle tick infestation in and around Haramaya district. Eastern Ethiopia. Journal of Veterinary Medicine and Animal Health. 2012; 4: 84-88.

27. Solomon G. Agriculture in Ethiopia: ICIPE tick modeling workshop held at Duduviell report on 9-19 October 1997 Nairobi, Kenya. 2005.

28. Tesfahewet Z, Simeon H. Prevalence of ectoparasite infestations of cattle in Bench Maji zone. South west Ethiopia, Veterinary World. 2013; 6: 291-294.

29. Kassa S, Yalew A. Identification of Ixodide ticks of cattle in and around Haramaya district, Eastern Ethiopia. Scientific Journal of Crop Science. 2012; 1: 32-38.

30. Feseha G. Notes on tick species and tick born disease of domestic animals in Ethiopia, DVM thesis AAU Debre zeit, Ethiopia. 1983.

31. Marufu MC. Prevalence of Ticks and Tick-Borne Diseases in Cattle on Communal Rangelands in the Highland Areas of the Eastern Cape Province. MSc Thesis, University of Fort Hare, Alice. 2008.

32. Torres DF. The Brown Dog Tick Rhipicephalus sanguinus (Acari: Ixodidae): From Taxonomy to Control. Veterinary Parasitology. 2008; 152: 173-185.

Austin J Vet Sci & Anim Husb - Volume 6 Issue 2 - 2019
ISSN: 2472-3371 | www.austinpublishinggroup.com

Citation: Dimshasha T and Marzu I. Prevalence and Distribution of Bovine Ticks in Abuna Gindeberet District, West Shoa, Oromia, Ethiopia. Austin J Vet Sci & Anim Husb. 2019; 6(2): 1058.