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Study on Major Tick Species of Cattle in and Around Asella, Arsi Zone, Ethiopia

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Abstract **– Major tick species identification on cattle in and around Asella district was studied for a period of 7 months from November 2009 to May 2010. Adult ticks were collected from 7 main body parts of 315 local breeds and 69 cross breeds which were under extensive management system found at different localities of the town and its surroundings. A total of 4087 adult ticks were collected and identified to the genera and species level. Six tick species of four genera were identified. Among all the total ticks collected Amblyomma, Boophilus, Rhipicephalus and Hyalomma constitute 51.04%, 32.3%, 11.74% and 4.92% respectively. The tick species identified were: *A. varigatum* (48.25%), *B. decoloratus* (32.3%), *R. evertsi-evertsi* (11.74%), *H. mariginatum rufipes* (2.84%), *A. cohaerens* (2.79%) and *H. truncatum* (2.08%). The burden of tick on cattle had statistically significance difference ($p < 0.05$) between cattle of good body condition and poor body condition. This study, therefore, revealed that *A. varigatum, B. decoloratus* and *R. evertsi-evertsi* were the most abundant tick species in the study area. It also indicated that the favorable attachment sites of Amblyomma species were: anogenital, belly/brisket and dewlap/neck, while for *B. decoloratus*: dewlap/neck, belly/brisket, and anogenital, back/ramp, head/ear, tail and leg. *R. evertsi-evertsi* prefers anogenital; Hyalomma species had strong predilection for anogenital, tail and dewlap/neck. The sex ratio of all tick species identified during this study period was skewed towards male except for *B. decoloratus*. The present study revealed prevalence of ticks of economic importance that warrants appropriate and integrated control and prevention programs to mitigate impact of ticks through multidirectional approaches.**

Keywords **– Asella, Cattle, Genus, Species, Tick.**

I. INTRODUCTION

Ticks are the most important among the factors affecting cattle health in transmitting various diseases causing agents and causing blood loss, damage to hide and udder. It is the feeding of ticks that makes them important in the health of livestock [1]. Ticks cause diseases to their hosts by taking blood, injuring the skin, causing irritation and pain, udder damage and injection of toxins. Being ticks are voracious blood feeders heavy infestations can results in anaemia. With their powerful mouthparts ticks damage the hide and skin of animals and lead to reductions in the leather quality and consequently lead to considerable economic losses. They can transmit tick-borne cattle diseases such as East coast fever, babesiosis, cowderiosis, tropical theileriosis, anaplasmosis and dermatophilosis. They can also cause illness, toxicosis and paralysis [2].

Ticks are invertebrate without spine; belong to a group of phylum arthropod like spider and insects [1]. There are two families of ticks such as Ixodidae and Argasidae. The most important is Ixodidae often called hard ticks, because of the presence of a rigid chitinous scutum, which cover the entire dorsal surface of adult male, in adult female and in the larvae and nymph it extends for a small area which permits the abdomen to swell after feeding. The other family is argasidae or soft ticks, called so because they lack a scutum, this family encompasses bird ticks [1].

According to Walker et al. [41] ticks that are considered to be most important to the health of domestic animals in Africa comprise about forty species. Among these the most important tick species of cattle in Ethiopian are *Amblyomma varigatum, Amblyomma gemma, Amblyomma lepidium, Amblyomma cohaerens*, *Boophilus decoloratus Ripicephalus pulchellus*, *Ripicephalus parvus*, *Ripicephalus evertsi-evertsi*, *Hyalomma truncatum*, *Hyalomamarginatum rufipes*, *Hyalomma excavatum*, *Hyalomma impletatum* [1], [3] and [4]. The country's environmental condition and vegetation are highly conducive for ticks and tick born disease (TBD) perpetuation [5].

Tick besides being important vectors for diseases like the listeriosis, babesiosis, anaplasmosis and heart water in domestic ruminants. They also cause nonspecific disease symptoms like anemia, dermatitis, toxicosis [6]. Tick and tick born diseases are major constraints in the genetic environment and up grading of cattle breeds; especially European breeds are highly susceptible to the various tick born diseases. The problem is severe in developing countries where the resources for control and eradication are very limited [2]. Thus, ticks are big constraint for efficient livestock production in most of the tropical and subtropical areas of the world [7]. Ticks and tick born disease rank third to trypanasomosis and endoparasitism and are most serious in the Bale, Sidamo and Wollo lowlands, where dense tick populations are responsible for direct damage to skins and for transmitting disease agents. Ticks are the most notorious as transmitters of other organisms such as protozoa, rickettsia, etc. [8]. Results of studies in the Ogaden area of Harar provinces [9] show the serious effects of ticks and tick-borne disease such as Nairobi sheep disease and babesiosis [10].

Among the hide and skin disease affecting cattle, dematophilosis, dermatophytosis, cowpox, mange mite, tick, lice, fleas, etc are frequently reported in Ethiopia. Of these skin diseases, ectoparasites take more of the proportion of economic losses in Ethiopia [11]. The most common ectoparasites that cause major economic losses are mange mite, tick, lice, myasis, and fleas, etc. [11], [12]. These parasites cause significant infection in ruminants and cause number of ill effect: anemia, immune suppression, dermatitis, skin necrosis, lower weight gain and secondary

infection [13], [14]. Damage the skin and hide is one of the unwanted effects of ectoparasites. The production of good quality leather depends on the quality of skin. Defects in the leather implicate higher cost of production and greatly reduce selling value of leather [15]. Down grading of hide and skin, reduction of meat and milk yield and occasionally mortalities and cost of treatment and preventions and control are losses imposed by mange [16].

In Ethiopia, ticks are common in all agro ecological zones of the country [6], [17]. Therefore, relevant data on the population dynamics of ticks is essential for the development of effective control of tick born disease control strategies. Studying the ticks on livestock under their natural conditions without any control measure is also useful for understanding the host-parasite relations and the seasonal variations of tick population [18].

Asella district is among the known cattle rearing areas of Ethiopia and possess huge livestock resource. Cattle being an important component of livestock play a significant role in supporting the farmers' livelihood in the area. Despite the high population density of cattle in the region, little attention has been given to the health problems of cattle. The exact picture, dynamics and distribution of tick species in the areas is not well documented. Hence, there is scarcity of well documented information on the current status and distribution of the tick species in the area. Therefore, this study was conducted to identify major tick species of cattle that potentially affect cattle production system and to assess potential risk factors that played role for the existence of the ticks in cattle population in and around Asella district of Arsi zone, Oromia regional state, south eastern Ethiopia.

II. Materials and Methods

A. Study Area

The study was conducted from November 2009 to April 2010 in and around Asella district, Arsi zone of Oromia regional state, south eastern Ethiopia. It is located at 175 km south east of Addis Ababa at $6^0 59'$ to $8^0 49'$ N latitudes and $38^0 41'$ to $40^0 44'$ longitude south east of the country. Asella and its surrounding are within altitude ranging from 2500-3000 m.a.s.l. with peaks of about 4139m (Chilalo Mountain) and also characterized by mild subtropical weather with minimum and maximum temperature ranging from $8.4C^0$-$22.6C^0$ and the relative humidity range from 43% to 60%. The mean annual rain fall is over 2000mm [19]. Agriculture is the main occupation of the population of the area. The agriculture is mixed type with cattle rearing and crop production under taken side by side. The major livestock reared in the area are Cattles, Sheep, Goats and Equines. According to the information obtain from veterinary section of Asella district veterinary clinic report 2008/2009; the total livestock population of this woreda was estimated 98,966 cattle, 33,817 sheep, 16,121 goats, 16,380 equines and Poultry 24,439 [19].

B. Study Population and Animals

The study population was local cattle in the district managed under extensive production system. During the study period adult ticks were collected from cattle at selected site. The study animals consisted of 384 cattle sele--cted by simple random sampling method from small holders.

C. Study Design

Cross-sectional type of study was conducted to identify the types of tick species, favorable predilection site (attachment site) and the relative tick burden and to assess possible risk factors that affect tick infestation in cattle in and around Asella district.

D. Sampling Methodand Sample Size Determination

Eleven kebeles were selected purposively based on accessibility to road, feasibility to sample collection, number of cattle they possess and history of tick infestation. Prior to commencement of the study, list of cattle infested by ticks were identified. Since there is no reasonable research done in these areas so far; the sample size was calculated using a method recommended by Thrusfield [20], with 95% confidence interval, at 5% desired absolute precision and expected prevalence of 50%. Accordingly, simple random sampling method was applied to select 384 cattle.

E. Tick collection and identification

Adult ticks were collected from half-body regions of cattle into universal sample bottle containing 70% ethanol as a preservative [1], [21]. Each sample was labeled with animal identification, owner's name, date, place of collection and body sites with indelible pen. The half-body regions for collections were: head, dewlap, brisket, belly and back, udder/ scrotum, anogenital region (vulva, anus, udder and scrotum), leg and tail. Ticks were removed from the host skin whilst retaining their good condition for identification using good quality steel forceps. The collected adult ticks from each body regions were kept separately for identification in separate sample bottles. Then the collected ticks were taken to Asella regional veterinary parasitology laboratory and identified using stereomicroscope following the standard identification procedures described by [1], [21].

F. Tick Burden Counting

Half-body total tick burden of above mentioned body regions of the selected cattle were counted. All tick species and any developmental stages, total tick; present on right side of the study animal were counted by dividing the animal body into head, dewlap, brisket, belly and back, anogenital region, leg and tail [21-23]. To find any immature or unfed adult ticks the animals' hairs parted systematically using forceps as described by [21], [24-25].

G. Data Entry and Analysis

The collected data was entered into a Microsoft Excel spreadsheet and checked for accuracy. After validation, data were transferred to STATA version 11.0 for Windows (Stata Corp. College Station, TX, USA) for analysis. Categorical variables were summarized as frequency and percentages. The response variables considered in the analysis of our data were burden of tick infestation status of cattle and the independent factors considered were age, sex and body condition of cattle. The association between the independent factors and tick infestation status were evaluated using the Chi-square test ($\chi 2$). A P-value<0.05 was considered statistically significant.

III. RESULTS

A total of 4087 adult Ixodid ticks were collected from half body regions of 384 cattle that sampled from the study area. Of these collected ticks 2889 were males and 1198 were females. As a whole, four adult Ixodid ticks genera and six species were identified in the study area. The genera identified were Amblyomma, Boophilus, Rhipicephalus and Hyalomma. Among the four genera of ticks identified; the most abundant genera were Amblyomma (51.04%) followed by Boophilus (32.3%), Rhipicephalus (11.74%) and Hyalomma (4.92%) as depicted in fig 1.

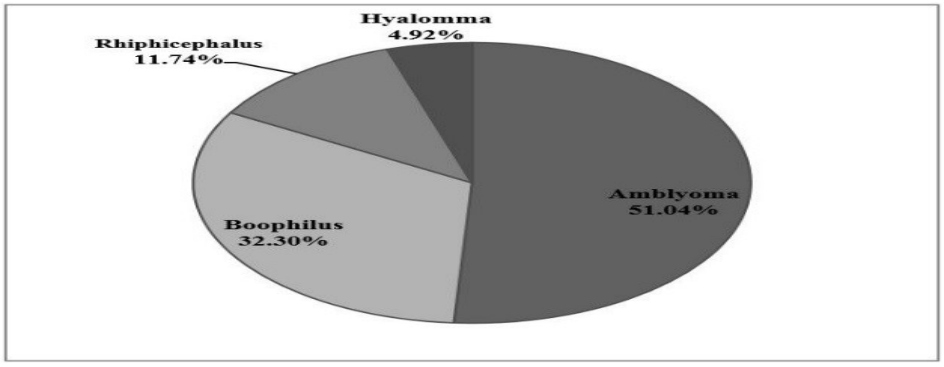

Fig. 1. Overall proportion of tick genera recovered from study area.

Prevalence of tick genera among investigated kebeles was illustrated in Table 1. Ambyloma was most prevalent in cattle from Ilalocheka while Boophilus was mainly recovered from animals of Wonjigora. Hyalomma and Rhipicephalus were predominantly identified from cattle originated from Ilalocheka.

Table1. Prevalence of tick genera identified within the sampled kebeles of study area.

Sr. No.	Kebeles	No. of animals examined	Tick genera				
			Amblyoma	Boophilus	Hyalomma	Rhipicephalus	Total
			No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
1	Bosota	31	164(7.86)	90(6.82)	14(6.97)	25(5.21)	293(7.17)
2	Burkitu	24	120(5.75)	57(4.32)	5(2.49)	30(6.25)	212(5.19)
3	Denkaka	10	67(3.21)	26(1.97)	8(3.98)	26(5.42)	127(3.11)
4	Dosha	40	214(10.26)	168(12.73)	31(15.42)	51(10.63)	464(11.3)
5	Ilalocheka	60	390(18.7)	138(10.45)	38(18.91)	83(17.29)	649(15.8)
6	Kombolcha	23	109(5.23)	82(6.21)	0(0)	29(6.04)	220(5.38)
7	Kula	25	135(6.47)	103(7.8)	12(5.97)	25(5.21)	275(6.73)
8	Kunicha	45	247(11.84)	156(11.82)	27(13.43)	51(10.63)	481(11.7)
9	Simbiro	41	254(12.18)	145(10.98)	17(8.46)	53(11.04)	469(11.4)
10	Tulukuche	55	269(12.9)	173(13.11)	31(15.42)	76(15.83)	549(13.4)
11	Wonjigora	30	117(5.61)	182(13.79)	12(5.97)	31(6.46)	342(8.37)
	Total	384	2086(51.04)	1320(32.3)	201(4.92)	480(11.74)	4087(100)

The relative infestation rate of tick species in the study area are given in Tables 2 and 3. The most predominant ticks species recovered from study district were: *A. varigatum* (48.25%) followed by *B. decoloratus (*32.3%*), R. evertsi-evertsi* (11.74%), *H. marginatum* (2.84%), *A. cohaerans* (2.79%) and *H. truncatum* (2.08%). Moreover, the male to female sex ratio of *A. varigatum*, *B. decoloratus*, *R. evertsi*-evertsi, *H. marginatum*, *A. cohaerans* and *H. truncatum* were 6.3:1, 1:1.56, 9.21:1, 1.58:1, 11.6:1 and 2.7:1, respectively.

Table2. Percentage of tick species identified within kebeles of the study area.

Sr. No.	Kebeles	No. of animals	Tick Species											
			A. varigatum				*A. cohaerens*				*B. decoloratus*			
			Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
1	Bosota	31	134	21	155	7.89	5	4	9	7.89	27	63	90	6.82
2	Burkitu	24	109	9	118	5.98	2	0	2	1.75	23	34	57	4.32
3	Denkaka	10	52	10	62	3.14	5	0	5	4.39	7	19	26	1.97
4	Dosha	40	173	28	201	10.19	12	1	13	11.4	70	98	168	12.73
5	Ilalocheka	60	323	50	373	18.91	16	1	17	14.91	53	85	138	10.45
6	Kombolcha	23	93	13	106	5.38	3	0	3	2.63	33	49	82	6.21
7	Kula	25	111	19	130	6.59	5	0	5	4.39	41	62	103	7.8
8	Kunicha	45	198	37	235	11.92	11	1	12	10.53	56	100	156	11.82
9	Simbiro	41	201	38	239	12.12	15	0	15	13.16	54	91	145	10.98
10	Tulukuche	55	218	30	248	12.58	20	1	21	18.42	77	96	173	13.11
11	Wonjigora	30	90	15	105	5.32	11	1	12	10.53	75	107	182	13.79
	Total	**384**	**1702**	**270**	**1972**	**48.25%**	**105**	**9**	**114**	**2.79%**	**516**	**804**	**1320**	**32.3%**

Table2 Continued

Sr. No.	Kebeles	No. of animals	Tick Species											
			H. marignatum rufipes				*H. truncatum*				*R. evertsi-evertsi*			
			Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
1	Bosota	31	3	0	3	2.59	10	1	11	12.94	22	3	25	5.21
2	Burkitu	24	1	4	5	4.31	0	0	0	0.00	29	1	30	6.25
3	Denkaka	10	5	0	5	4.31	2	1	3	3.53	22	4	26	5.42
4	Dosha	40	14	3	17	14.66	12	2	14	16.47	46	5	51	10.63
5	Ilalocheka	60	8	17	25	21.55	13	6	19	22.35	77	6	83	17.29
6	Kombolcha	23	0	0	0	0.00	0	0	0	0.00	26	3	29	6.04
7	Kula	25	5	2	7	6.03	0	5	5	5.88	23	2	25	5.21
8	Kunicha	45	13	4	17	14.66	9	1	10	11.76	45	6	51	10.63
9	Simbiro	41	11	3	14	12.07	2	1	3	3.53	47	6	53	11.04
10	Tulukuche	55	5	11	16	13.79	9	6	15	17.65	69	7	76	15.83
11	Wonjigora	30	6	1	7	6.03	5	0	5	5.88	27	4	31	6.46
	Total	**384**	**71**	**45**	**116**	**2.84%**	**62**	**23**	**85**	**2.08%**	**433**	**47**	**480**	**11.74%**

Table 3. Distribution and sex ratio of adult tick species in the study area

No.	Tick species	Male	Female	Total	Male to female ratio	Percentage (%)
1	*A.varigatum*	1702	270	1972	6.3:1	48.25
2	*A.cohaerens*	105	9	114	11.67:1	2.79
3	*B.decoloratus*	516	804	1320	1:1.56	32.3
4	*H.mariginatum rufipes*	71	45	116	1.58:1	2.84
5	*H.truncatum*	62	23	85	2.7:1	2.08
6	*R.evertsi-evertsi*	433	47	480	9.21:1	11.74
	Total	**2889**	**1198**	**4087**	**2.41:1**	**100**

Tick burden with in age, sex and body condition are presented in Table 4. All of the examined animals were found to be infested with ticks, where the infestation level of ticks had statistically significant differences ($P < 0.05$) with body conditions of the animals, however its association with sex and age was not statistically significant ($P > 0.05$).

Table 4. Tick burden with in age, sex and body condition

	Age		Sex		Body condition		
	Young (<3yrs)	Adult (>3yrs)	Male	Female	Good	Mode-rate	Poor
No. of animal examined	104	280	176	208	173	171	40
Total no. of ticks	1022	85	1938	2149	1546	2026	515
Mean tick burden	9.83	10.95	11.01	10.33	8.94	11.85	12.88
	Age		**Sex**		**Body condition**		
	Young (<3yrs)	**Adult (>3yrs)**	**Male**	**Female**	**Good**	**Mode-rate**	**Poor**
Percent (%)	27.08	72.92	45.83	54.17	45.05	44.53	10.42
Chi- square ($\chi 2$)	22.9144		20.5496		112.0502		
P value	0.241		0.362		0.000		

Each species of tick identified in the study area tend to prefer a site of attachment on the animal body (Table 5). Accordingly, the preferred sites of attachment for A. varigatum were: belly/brisket (16.69%) followed by anogenital (16.3%), dewlap/neck (14.24%), head/ear (0.42%), tail (0.39%) and leg (0.22%). Anogenital (9%), belly/brisket (9.59%), dewlap/neck (9.1%), back/ramp (2.94%), head/ear (0.69%), tail (0.59%) and leg (0.39%) were the preferred sites of attachment for *B. decoloratus*. *R. evertsi*-evertsi mostly recovered from anogenital (96.46%) followed by tail (1.88%) and belly (1.6%). *H. marginatum rufipes* was mainly found on the neck and tail while *H. truncatum* was restricted to the anogenital and udder/scrotum region. The sites of *A. cohaerence* were not much restricted to specific sites and it was found on anogenital, belly/brisket and dewlap/neck. Generally, the most preferred sites of attachment for ticks recovered from study area were: anogenital (40.64%) followed by belly/brisket (27.38%), dewlap/neck (25.89%), back/ramp (2.94%), tail (1.44%), head/ear (1.1%) and leg (0.61%)

Table 5. Attachment site of ticks in different body parts of animals in the study area.

No.	Attachment site of ticks	Tick species collected from different body parts						
		A.varigaritum	***A.cohaerence***	***B.decoloratus***	***H.marginatum rufipes***	***H.truncatum***	***R.evertsi***	**Total**
		No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
1	Anogenital	666(16.3)	42(1.03)	368(9)	67(1.64)	55(1.35)	463(11.33)	1661(40.64)
2	Back/ramp	0(0)	0(0)	120(2.94)	0(0)	0(0)	0(0)	120(2.94)
3	Belly/brisket	682(16.69)	34(0.83)	392(9.59)	3(0.73)	0(0)	8(0.2)	1119(27.38)
4	Dewlap/neck	582(14.24)	38(0.98)	372(9.1)	38(0.93)	28(0.69)	0(0)	1058(25.9)
5	Head/ear	17(0.42)	0(0)	28(0.69)	0(0)	0(0)	0(0)	45(1.1)
6	Leg	9(0.22)	0(0)	16(0.39)	0(0)	0(0)	0(0)	25(0.61)
7	Tail	16(0.39)	0(0)	24(0.59)	8(0.20)	2 (0.05)	9(0.22)	59(1.44)
		1972(48.25)	114(2.79)	1320(32.3)	116(2.840	85(2.08)	480(11.7)	4087(100)

IV. DISCUSSION

In the present investigation, 4087 total ticks were collected and four genera with six species of ticks were identified. The four genera of ticks (Boophilus, Amblyomma, Rhipicephalus and Hyalomma) were recovered from cattle of study area. *A. varigatum, A. cohaerence*, *B. decoloratus, R. evertsi-evertsi, H. marginatum rufipes* and *H. truncatum* were the species encountered in the study district. The current study was in agreement with the reports of [2-3] and [26]. The possible contributory factors for the prevalence of ticks in the study district might be the unrestricted cattle movement from area to area and country's conducive environmental condition and vegetation.

From the total 4087 ticks collected, *A. varigatum* was the most abundant tick species (48.25%) encountered in the study area. Likewise several researchers which have conducted a study in different parts of Ethiopia indicated that *A. varigatum* is the most abundant tick species identified; Tesfanesh [27] from North Omo; Daniel [28] from South Wello, Surafel [29] from Tigray and Bekele [30] from Alemaya. *A. variegatum* is relatively active throughout the year in most parts of Ethiopia. Moreover, *A. variegatum* has exophilic nature [31]. Pegram et al. [17] and Sollomon et al. [32] reported *A. varigatum* as the most widely distributed cattle ticks in Ethiopia.

B. decoloratus is the second most abundant tick species (32.3%) identified. The present finding is in line with the reports of Solomon and Kaya [33] from Rift valley districts. Distributional pattern of *B. decoloratus* is similar to *A. varigatum* and which is abundant in wetter highlands and sub highlands receiving more than 800mm rainfall annually [17]. The result of this study is disagreeing with the finding of Allekaw [18] from Metekel Ranch, Ethiopia showing a prevalence of 5.7%. This may be due to the geographical location and altitude factors which is 1500 to 1600m above sea level of Metekel Ranch. *B. decoloratus* is one of the most important ticks in Ethiopia for its parasitic importance [6]. *B. decoloratus* can transmit *Babesia begimina* and *Anaplasma mariginale* to cattle and severe tick infestation can lead in to tick worry and anemia [4], [34].

R. evertsi-evertsi was the third abundant (11.74%) tick species recovered from study site. This result is supported by other authors who disclosed similar finding such as from Bahir Dar [26]. Morel [6] mentioned that the native distribution of *R. evertsi-evertsi* in Ethiopia seems to be connected with middle high land, dry savannas and steppes in association with zebra and ruminants and it is widely distributed throughout Ethiopia. This tick species show no apparent preference for particular altitude, rainfall zones and seasons [17]. *R. evertsi-evertsi* is the possible vector of Babesia, and East Cost Fever (ECF), *Rickettsia coronary*, Thelaria [6], [35].

H. marginatum rufipes was the fourth most encountered tick with prevalence of 2.84%. The present investigation is concords with Hoogstral [36]. Hoogstral [36] stated that *H. marginatum rufipes* widely distributed in the most arid part of the tropical Africa, receiving 250 to 650mm annual rain fall and in Ethiopia it was most often collected between 1000 and 2000m and are rare in western highland area. This tick species was collected from restricted area of the warm, moderately dry mid lands between altitudes of 1800 to 1950m above sea level [6].

A. cohaerens wasthe fifth abundant tick species (2.79%) identified in the present study. The report of the current finding was in agreement with the result of Solomon et al. [32] from western Shoa. However, the result of this study was disagree with tick survey conducted in Mizan Teferi, south western Ethiopia [37] who reported prevalence rates of 50.5%. In western Ethiopia where the climate is humid much of the year, *A. cohaerens* is the most prevalent and abundant tick on cattle [17].

H. truncatum is the least abundant tick species collected (2.08%). This tick occurs throughout Ethiopia in relatively low numbers [32]. In this study the observation with regard to the occurrence of this species is in line with other reports conducted in western Shoa [32]. *H. truncatum* is commonly encountered in Sub-Saharan Africa in steppes from all available ungulates and carnivorous mammals, often of ostriches [6].

Anogenital region (40.64%) was the most preferred sites of attachment by ticks species identified from study area followed by belly/brisket (27.38%), dewlap/neck (25.89%), back/ramp (2.94%), tail (1.44%), head/ear (1.1%) and leg (0.61%). The predilection sites recorded in the present observation is agreed with those results reported by other Authors [26], [32]. A variety of factors such as density [38], time and season [39], inaccessibility for grooming [40] have also be reported to determine the attachment of sites of ticks. Information on predilection sites of tick is helpful in spraying individual animals since it gives clue as to which part of the body requires more attentions [5], [41].

The male to female sex ratio of *B. decoloratus*, *A. varigatum*, *R. evertsi-evertsi*, *H. marginatumrufipes* and *H. truncatum* were in line with previous reports [26], [32]. More number of males recorded in the current and previous studies might be attributed to the engorged females that are dropped off to lay eggs [42]. Fully engorged female tick drop off to the ground to lay eggs while male tends to remain on the host up to several months later to continue feeding and mating with other females on the host before dropping and hence males normally remains on the host longer than females [32]. The females of *B. decoloratus* outnumbered males in this study are probably due to small size of male which is not seen during collection.

The present study disclosed that the infestation level of ticks were statistically significant with body condition of animals ($p < 0.05$). Ticks were observed to affect poor body conditioned cattle than good condition scores. The current finding agrees with the previous report of Seid [33] from Mizan Teferi. Undernourished animals are known to be susceptible to many diseases including ectoparasites [42], [43] and [44]. The effect of age and sex on the burden of tick were not statistically significant ($p > 0.05$) which is in agreement with the observation done elsewhere by [32].

V. Conclusion

The present study revealed that six species of ticks from four genera is prevalent on cattle of the study area. The predominant tick species identified in the study area were *A. varigatum* followed by *B. decoloratus, R. evertsi-evertsi, H. marginatum, A. cohaerans* and *H. truncatum*. Infestation level of ticks was statistically significant with body condition of animals ($p < 0.05$). However, its association with age and sex was not statistically significant ($p > 0.05$). Identification of tick species and its distribution is useful in devising tick control strategies in the study district. Various tick species are prevalent in the study area and undoubtedly will have an adverse effect on productivity of cattle and hence warrants serious attention. Appropriate and integrated tick control program should be implemented to mitigate the disease impact through multidirectional approaches.

VI. Conflict of Interests

The authors have not declared any conflict of interests.

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