Thymus species in Ethiopia: Distribution, medicinal value, economic benefit, current status and threatening factors

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ABSTRACT

The genus *Thymus* is one of the genera in the family *Lamiaceae*. In Ethiopia, it is represented by two endemic species namely *Thymus serrulatus* and *Thymus schimperi*. The aims of this study were to identify the types of species from six geographically distant localities in Ethiopia, assess the ethnobotanical and socioeconomic information of these species in these localities and gather information about the current status and threatening factors of these species in the six localities. The plant specimens from these localities were authenticated by experts in the National Herbarium of Addis Ababa University as *Thymus serrulatus* and *Thymus schimperi*. The plants were rated by local informants as treatments for ailments like blood pressure (30.7%), general pain syndrome (10%), influenza (10%), abdominal pain (10%), ascariasis (2.9%), and intestinal parasites (2.9%). The informants rated the economic value of these plants as animal forage (71.5%), bee forage (71.5%), condiments (68%), and washing and fumigation (46%). According to the informants, the status of *Thymus* species is declining from time to time due to overgrazing (80.7%), agricultural expansion (64.2%), overharvesting (48.57%), uprooting during harvesting (14.2%), and lack of recognition (13.6%)

Keywords: Ethiopia, *Thymus schimperi*, *Thymus serrulatus*, threatening factors
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INTRODUCTION

The *Lamiaceae*/*Labiatae* (WHO, 1999) is a large plant family represented by about 236 genera and above 7200 species (Hedberg *et al.,* 2006). This family is much diverse in terms of ethnomedicine owing to its diverse chemical composition (Niculae *et al.,* 2009) such as flavonoids, phenolic acids, terpenes, saponins, polyphenols, tannins, iridoids, and quinones (Özgen *et al.,* 2011).

The genus *Thymus* under *Lamiaceae* is noteworthy for its numerous species and varieties (Boz *et al.,* 2009). In Ethiopia, this genus is represented by two indigenous species namely *T. serrulatus* and *T. schimperi* (Jaafari *et al.,* 2007) both of which are locally named as *Tosign* (Amharic) and *Tesni/Thasne* (Tigrigna). These species are endemic to Ethiopian highlands (2200-4000 m. a.s.l.) (Sebsebe Demissew and Nigist Asfaw, 1994) and are restricted to the afromontane and afroalpine zones of the country (IBC, 2008).

Thymus schimperi is widely distributed in central, eastern, and northern Ethiopia and *T. serrulatus* is restricted to northern parts of the country (Sebsebe Demissew and Nigist Asfaw, 1994). However, there are conflicting reports regarding the distributions of these species in Ethiopia. For example, *T. serrulatus* is reported to be found from Jimma (South West Ethiopia) (Parvez and Yadav, 2008; Mahbere Silassie, Alamata, and Ofla (Tigray, North Ethiopia) (Atey G/Medhin, 2008) and Yilmana Densa (Amhara Region, Norther West Ethiopia) (Collected and identified during this research).

On the other hand, *T.schimperi* is widely distributed in Amhara, Oromia, and Southern Nations Nationalities and Peoples Regions. It is found in Denkoro For-

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est (Abate Ayalew, 2013), Chancho (Dibaba Chewaka, 2009), Ankober (Doni *et al.,* 2012), Menz Gera Midir (Guassa) (GAGMP , 2007), Tarma Ber wereda of North Shewa and Gondar areas (Nigist Asfaw *et al.,* 2000).

In Oromia Region, *T.schimperi* is found in Adaba Dodola area (Kunert, 2000), Dinsho (Ermias Dagne *et al.*, 1998; Ermias Lulekal *et al.,* 2011); Sanetti Mountains (Tariku Mekonnen *et al.,* 2011); Goma (Behailu Etana, 2010), Asendabo (Parvez and Yadav, 2008); areas around Jimma (Jemal Hussien *et al.,* 2011); Debre Zeyit (Mohammed Nasir, 2010), Awash National Park (Tinsae Bahru *et al.,* 2010), and Menagesha Suba State Forest (Abate Zewdie, 2007).

In the different parts of the world, *Thymus* extracts are traditionally used orally to treat dyspepsia and other gastrointestinal disturbances, bronchitis, pertussis, laryngitis and tonsillitis, and coughs due to colds (Belaqziz *et al.,* 2010; Özgen *et al.,* 2011). Topical applications of thyme extracts have been used in the treatment of minor wounds, the common cold, and disorders of the oral cavity, and as an antibacterial agent in oral hygiene (Özgen *et al.,* 2011).

Traditionally, *Thymus* species in Ethiopia are used in a variety of forms (Malcolm and Zelalem Tefera, 2007). The fresh or dried leaves of these species are used locally as condiments and tea (Sebsebe Demissew and Nigist Asfaw, 1994); in the preparation of *berbere and "shirro"* (pepper and bean/pea powder) (Amare Getahun, 1976); for the preparation of Metata ayb (a traditional Ethiopian fermented cottage cheese) (Eyassu Seifu, 2013).

In traditional medicine, *Thymus* species in Ethiopia are used to treat different illnesses like gonorrhea, cough and liver disease (Kunert, 2000); renal diseases (Andemariam, 2010); Gara Bokoyso (Oromifa) (stomach pain) (Haile Yineger *et al.,* 2008); hypertension (Nigist Asfaw *et al.,* 2000); kidney problem (Behailu Etana, 2010) and dermal fungi (Doni *et al.,* 2012). They are checked to have antihelimenthic (Jemal Hussien *et al.,* 2011); antibacterial and fungicidal activities (Dibaba Chewaka, 2009; Mohammed Nasir, 2010; Pagiotti *et al.,* 2010; Shewaye Lakew, 2011).

The major constituents of *T. schimperi* and *T. serrulatus* in Ethiopia are thymol and carvacrol (Nigist Asfaw *et al.,* 2000). All the pharmacological actions of thyme thus may be due mainly to the phenolic component thymol, which is a major component in their essential oils (Sebsebe Demissew and Nigist Asfaw, 1994). In addition to their medicinal values, *Thymus* species in Ethiopia have economic uses like animal feed and bee forage (Likawent Yeheyis *et al.,* 2008).

The present study thus was designed (1) to identify the types of *Thymus* species from six distant localities in Ethiopia (2) to collect information about their medicinal values, their economic benefits, their current status and pressures or threatening factors on these species.

METHODS

Study area

Samples of *Thymus* species, ethnobotanical information, socioeconomic data, and threatening factors were collected from six localities of Ethiopia (Figure 1). These localities were Ofla and Alamata woredas (districts) of South Tigray (Tigray Region); Yilmana Densa woreda of West Gojjam (Amhara Region); Mojana woreda of North Shewa (Amhara Region); Meskena Mareko woreda of Gurage (Southern Nations, Nationalities and Peoples Region); and Sinana Dinsho woreda (Oromia region).

The specific areas for plant collection were: (1) Menkere (Ofla, South Tigray) 625 Kms North of Addis Ababa (Capital city of Ethiopia); Akojira (Alamata, Southern Tigray) 605 Kms North of Addis Ababa; Bir Adama mountain (Yilmana Densa, West Gojjam) 443 Kms North west of Addis Ababa; Tarma Ber (Mojana woreda, North Shewa) 190 Kms North east of Addis Ababa; Zebidar Mountain (Meskena

Mareko woreda, Southern Nations Nationalities and Peoples Region) 135 Kms South west of Addis Ababa; and Dinsho (Bale Mountains National park, Oromia Region) which is 370 Kms away from Addis Ababa through Assela (Figure 1).

Ofla woreda has an altitudinal range of 1800–2440 m. Its mean annual rainfall is between 700–800 mm with mean daily temperatures ranging from 10–22 ºC. Rainfall is bimodal; a short rainy season "belg" between February and May, and a long rainy season "meher" between June and September. Mixed crop-livestock production is the major activity of the farming system. Wheat, maize, barley, faba bean and sorghum are the major crops grown. The major livestock types reared in the district are cattle, sheep and chicken. Donkeys, goats and honeybees are also reared having lower shares (Girmay Tesfay *et al.,* 2014).

Alamata woreda has an altitudinal range of 1178 to 3148 m a.s.l of which and 75% is low land (1500 m a.s.l or below) and 25% intermediate highlands (between 1500 and 3148 m a.s.l). Eutric Vertisols, Lithic Leptosols (Cambic) and Lithic Leptosols (Orthic) are the soil types covering nearly 100% of the land in the woreda (IPMS, 2005). The annual temperature ranges between 14.6 °c and 29.7 °c (Dawit Gebregziabher, 2010). Alamata has bimodal rainfall patterns; the belg (short rains) (from January to February) and the Meher (long rains) (from July to August). The mean annual rainfall of the area is around 963.5 mm. Teff and sorghum are the dominant crops covering 75% of the woreda caltivated area. Currently field pea, faba bean, lentils (in high land) teff and pepper (in low land) are the most important marketable commodities in the woreda. Livestock production in the woreda involves cattle, sheep, goats, camel, poultry and bee production (IPMS, 2005; Dawit Gebregziabher, 2010).

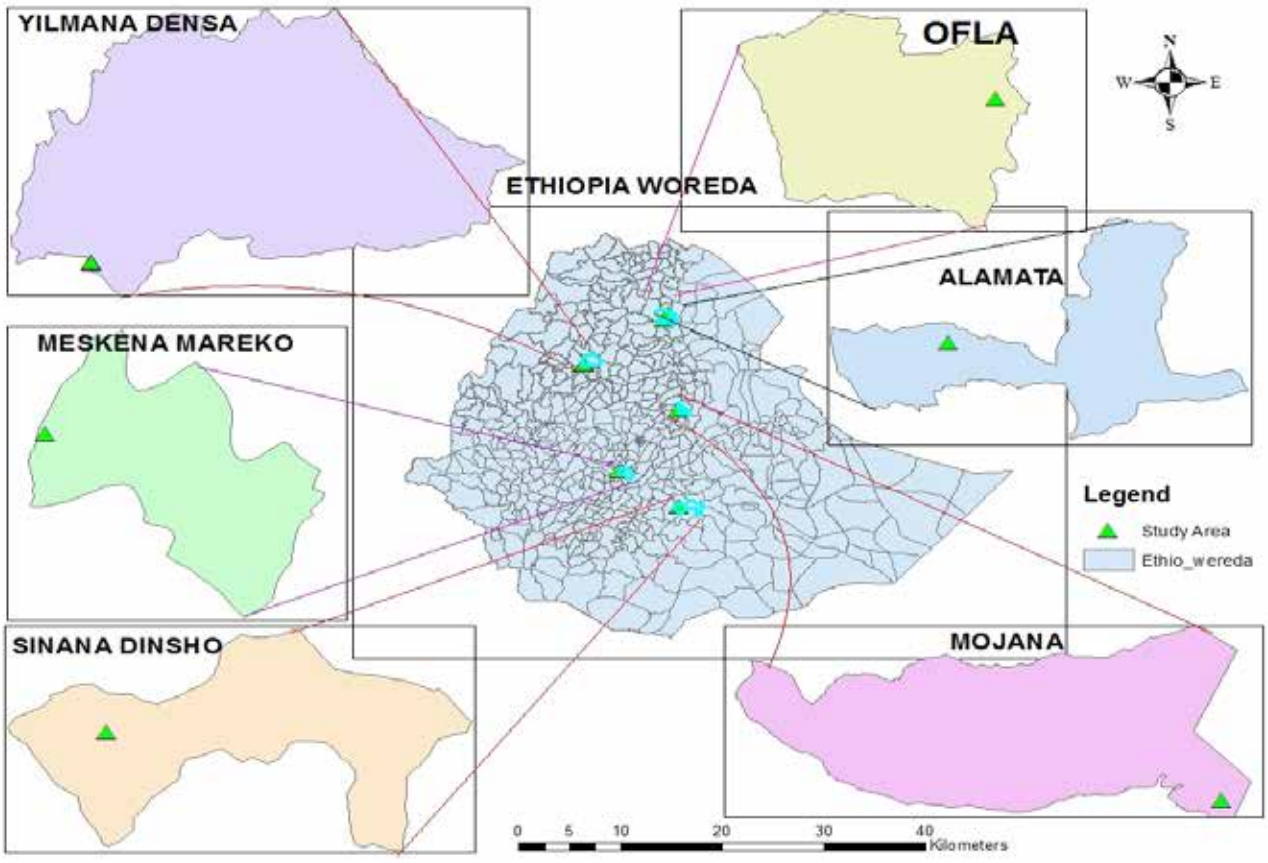

Figure 1: Data/Sample Collection Sites of *Thymus* species for the present study (constructed from GPS data)

Yilmana Densa woreda is one of the fifteen woredas of West Gojjam Administrative zone. Its capital town, Adet is found 42 km. from Bahir Dar on the south and 443 km from Addis Ababa through Mota. The average annual temperature ranges between 8.8°c-25.2°c, and the average annual rainfall ranges between 1100-1270 mms. The woreda has three types of soil: red (65%), brown (15%) and black (20%). Favorable climatic condition and fertile soil makes the woreda suitable for crop production and livestock husbandry. In the woreda, the rural people depend on crop production and livestock husbandry for their Livelihood. Cropping is predominantly rain fed. As part of mixed farming, the woreda possesses cattle, sheep, goats, equine poultry and bee hives. This woreda is one of the major maize producers followed by Teff, Barley and Wheat (Solomon Abie, 2011).

Tarmaber is located 190 km away from Addis and covers about 54,000 ha of lands. Agro climatologically 17% of the land is lowland, 28 % semi-arid (Woinadega) and 54.7 % is highland (Dega). Its altitude is ranging from 1500 to 3100 meter above sea level. The average annual temperature and the mean monthly rain fall are about 15.5 °C and 1200 mm respectively. The topography is dominated by chain of hills and rouged mountains; thereby 15.28 % of the woreda is mountainous, 32.78 % is plain lands, 6.29 % valleys and 45.65 % are rugged types (http://edaethiopia.org/index.php/where-we-work/amhara/tarma-ber).

Meskana Mareko is a district located in the Gurage zone, Southern Nations, Nationalities, and People's Regional state (SNNPR) 135 km south of Addis Ababa. The dominant ethnic group is Gurage of meskan dialects. Farming is the main economic activity and the main cash crops are pepper, coffee and khat. The woreda lies at an average altitude of 1900 m above sea level, ranging from 1750 m a.s.l in the lowlands to 3400 m a.s.l in the mountains. Annual rainfall in Meskana Mareko area ranges between 700-1870 mm. Although the main rainy season is from June to September, light rains are common around March and April. The warmest months are between January and June with a maximum temperature of 30.4 °C in March during the last ten years. During the last decade the annual mean maximum temperature was 26.3 °C and minimum mean temperature was 11.1 °C (Solomon Tesfaye et al.,2012).

Dinsho Woreda is one of the districts in Oromia Region. Dinsho is located at the northern edge of the Bale Mountains National Park (BMNP) 370 Kms South East from Addis Ababa. It has altitudinal ranges from 2441-3600 m a.s.l. (Haile Yineger *et al.,* 2008). Its mean annual temperature and rainfall are 10.26°C and 1218.64 mm respectively (Haile Yineger *et al.,* 2008). The trend of the rainfall distribution is bimodal namely "belg" (small rains occurring from February to May) and "kiremt" (big rains occurring from August to October) (Luizza *et al.,* 2013). Dinsho's loamy, fairly fertile, and low-density Mollic Andosol soils are results of extended weathering of lava outflows stemming from the Oligocene Epoch (33.9 - 23 million years B.P.) (Luizza *et al.,* 2013). It has a typical vegetation type of undifferentiated Afromontane forests. The predominant inhabitants are the Oromo people who use economic activities primarily based upon mixed farming that involves pastoralism and cultivation of crops such as wheat and barley (Haile Yineger *et al.,* 2008).

Data collection

This information about *T. serrulatus* and *T. schimperi* species were collected from informants using semi-structured questionnaires. The development

agents (DAs) in each study site were involved in the informant selection and data collection processes. The informants in each study site were farmers who had meetings with the DAs. A total of 140 male informants were randomly selected and asked about the medicinal value, economic advantage, current status, and threatening factors of *Thymus* species in their localities. Data collection took place from 28th July through 28th September 2013.

Plant material identification

Samples of the aerial parts of *Thymus* species were collected from 28th July through 28th September 2013 from the above mentioned districts and regions. The collected specimens were pressed and taken to National Herbarium of Addis Ababa University for authentication. They were identified by Mr. Melaku Wondafrash in the National Herbarium of Addis Ababa University. After identification, voucher specimens were deposited in the Natural Herbarium of Addis Ababa University with voucher numbers Ala-2013 (*Thymus* from Alamata district), But-2013 (*Thymus* from Butajira, Meskana Mareko woreda), Bal-2013 (*Thymus* from Dinsho, Bale Mountains National Park), Ofl-2013 (*Thymus* from Ofla district), Tar-2013 (*Thymus* from Tarma Ber, Mojana district) and Yil-2013 (*Thymus* from Yilmana Densa district).

RESULTS

Identified *Thymes* species collected from six localities in Ethiopia

Out of the *Thymus* species collected from six localities, three of them (Ofl-2013, Ala-2013, and Yil-2013) were identified as *T. serrulatus* and the rest three (Tar-2013, But-2013, and Bal-2013) as *T. schimperi* (Table 1).

Medicinal value of *T. schimperi* and *T. serrulatus* from Ethiopia

The majority of the respondents 43 (30.7%) have at least heard about the use of *Thymus* species as a treatment for blood pressure although a lot of them 33 (23.5%) have no information about the health significances of these species. On the other hand, 52 (30%) of the respondents have mentioned that these plants have applications to treat general pain syndrome, influenza and abdominal pain (Table 2). Some respondents from Tgray Region mentioned the ascaricidal 4 (2.9%) and intestinal paraciticidal 4 (2.9%) effects of *T. serrulatus* grown in Tigray. In almost all the localities, the respondents mentioned that it is the aerial parts of *T. schimperi* and *T. serrulatus* which are dried, crushed, made into tea and taken orally to treat the ailments mentioned.

Table 1. Thyme species identified from six localities

S.No.	Voucher No. [λ]	Identified as the species
1	Ofl-2013	*Thymus serrulatus*
2	Ala-2013	*Thymus serrulatus*
3	Yil-2013	*Thymus serrulatus*
4	Tar-2013	*Thymus schimperi*
5	But-2013	*Thymus schimperi*
6	Bal-2013	*Thymus schimperi*

[λ] Ofl- *T.serrulatus* from Ofla, Ala- *T.serrulatus* from Alamata, Yil- *T.serrulatus* from Yilmana Densa, Tar- *T. schimperi* from Tarmaber, But- *T.schimperi* from Butajira, Bal- *T.schimperi* from Bale.

Table 2. Human ailments reported to be treated by *T. schimperi* and *T. serrulatus*

Human Disease	Scientific name	Family	Local name*	Voucher λ No.	Part used	Form used	Methods of preparation	Route of admin-istration	Respon-dents
	T. schipmeri + *T. serrulatus*	Lamiaceae	Tosign (Amh), Toshigne (Gur), Tosigni (Oro) Teshne (Tig)	Ofl-2013, Ala-2013, Yil-2013, Tar-2013, But-2013, Bal-2013					
Blood pressure		,,	,,	,,	Leaves and flowers	Dried	Crushed and drunk as tea	Oral	43 (30.7%)
General pain syndrome	,,	,,	,,	,,	Leaves and flowers	Dried	Crushed and drunk as tea	Oral	14 (10%)
Influenza	,,	,,	,,	,,	Leaves and flowers	Dried	Crushed and drunk as tea	Oral	14 (10%)
Abdominal pain	,,	,,	,,	,,	Aerial parts	Dried	Crushed and drunk as tea	Oral	14 (10%)
Ascariasis	,,	,,	,,	,,	Leaves	Dried	Drunk as tea	Oral	4 (2.9%)
Intestinal parasites	,,	,,	,,	,,	Leaves	Dried	Drunk as tea	Oral	4 (2.9%)
I don't know	,,	>>	>>	>>	-	-	-	-	33 (23.5%)

*Amh- Amharic; Gur- Guragigna, Tig- Tigrigna, Oro- Oromipha

λ Ofl- *T.serrulatus* from Ofla, Ala- *T.serrulatus* from Alamata, Yil- *T.serrulatus* from Yilmana Densa, Tar- *T.schimperi* from Tarmaber, But- *T.schimperi* from Butajira, Bal- *T.schimperi* from Bale.

Economic benefits of *T. schimperi* and *T. serrulatus* from Ethiopia

The respondents mentioned the economic uses of *Thymus* species in Ethiopia as honey bee forage, animal forage, food additives (condiments), and washing and fumigating household utensils such as buckets for milking and dough preparation (Table 3). The respondents further mentioned that such fumigation of milking jars and buckets for putting milk and dough of injera is important to maintain milk and injera with best flavors and without rancidity. According to the respondents, the honey from *Thymus* species has medicinal value and with special taste. Milk, yogurt, butter, and meat from animals fed with *Thymus* species have special taste and flavor. In addition, application of *Thymus* species as food additives increases the flavor and shelf-life of foods and sauces such as shiro, berbere, butter, Besso etc. Furthermore, the respondents have mentioned that *Thymus* as an animal forage is useful for fattening. Furthermore fumigating the honey beehives attracts honey bees and eliminates honey bee diseases as was raised by the respondents from Southern Tigray. During interview with the respondents, it was clear that more people from other areas of the country use *Thymus* species as food additives than people in Southern Tigray. The people in Tigray know that it can be used as tea but most of them do not use it.

Table 3. Report on other economic uses of *T. schimperi* and *T. serrulatus*

Scientific name	Family	Local * name	Voucher λ No.	Economic Use	Respondents
T. schimperi + *T. serrulatus*	Lamiaceae	Tosign (Amh), Toshigne (Gur), Tosigni (Oro) Teshne (Tig)	Ofl-2013, Ala-2013, Yil-2013, Tar-2013, But-2013, Bal-2013		
T. schimperi + *T. serrulatus*	Lamiaceae	‘’	‘’	Bee forage	100 (71.5 %)
T. schimperi + *T. serrulatus*	Lamiaceae	‘’	‘’	Animal forage	100 (71.5%)
T. schimperi + *T. serrulatus*	Lamiaceae	‘’	‘’	Condiment (additive to shiro, berbere, butter, Besso)	95 (68%)
T. schimperi + *T. serrulatus*	Lamiaceae	‘’	‘’	Drink (tea)	95 (68%)
T. schimperi + *T. serrulatus*	Lamiaceae	‘’	‘’	Washing and fumigating jars for milking and buckets for putting paste of injera	65 (46%)

*Amh- Amharic; Gur- Guragigna, Tig- Tigrigna, Oro- Oromipha

λ Ofl- *T.serrulatus* from Ofla, Ala- *T.serrulatus* from Alamata, Yil- *T.serrulatus* from Yilmana Densa, Tar- *T.schimperi* from Tarmaber, But- *T.schimperi* from Butajira, Bal- *T.schimperi* from Bale.

Current status and threatening factors of *Thymus* species from Ethiopia

According to the respondents’ responses, *Thymus* species endemic to Ethiopia (*T. schimperi* and *T. serrulatus*) exist as wild species and their current status is decreasing from year to year (Table 4). The major threatening factors for these species were identified to be overgrazing followed by agricultural expansion, overharvesting, harvesting the whole plant including the roots, and lack of recognition. This reduction in *Thymus* species is high in North Shewa and Gurage zone due to the mentioned threatening factors. However, the situation is better in Tigray (Alamata and Ofla), Yilmana Densa (West Gojjam) and Dinsho (Bale) since the collection sites are closed from human and animal encroachment. Harvesting the whole plant including the roots is the biggest problem in North Shewa due that the plant is served as an income source for inhabitants there. It is usual to see the youth and women selling the dried plant parts to travelers on the highway from Addis Ababa to North Ethiopia (Wello and Tigray).

Table 4. Summary table about the occurrence and current status of *T. schimperi* and *T.serrulatus* in Ethiopia

Scientific name	Family	Local* Name	Occurrence	Current status	Threatening factors	Respondents
T. schimperi + *T. serrulatus*	Lamiaceae	Tosign (Amh), Toshigne (Gur), Tosigni (Oro) Teshne (Tig)	wild			
‘’	‘’	‘’	‘’	Decreasing	Overharvesting	68 (48.57 %)
‘’	‘’	‘’	‘’	Decreasing	Overgrazing	113 (80.7 %)
‘’	‘’	‘’	‘’	Decreasing	Lack of Recognition	19 (13.6 %)
‘’	‘’	‘’	‘’	Increasing	Due to its high seed production	2 (1.4 %)
‘’	‘’	‘’	‘’	Decreasing	Agricultural expansion	90 (64.2 %)
‘’	‘’	‘’	‘’	Decreasing	Harvesting the whole plant including the roots	20 (14.2 %)

*Amh- Amharic; Gur- Guragigna, Tig- Tigrigna, Oro- Oromipha

DISCUSSION

While *Thymus* specimens collected from the Northern parts of Ethiopia (Tigray and Gojjam) were found to be *T. serrulatus,* those collected from central (Shewa) and Southern (Bale and Butajira) were *T. schimperi*. This agrees with the reports of (Sebsebe Demissew and Nigist Asfaw, 1994; Nigist Asfaw *et al.,* 2000).

The medicinal value of *Thymus serrulatus* and *Thymus schimperi* were identified by the respondents as; to treat blood pressure, to treat general pain syndrome, influenza, abdominal pain, and to treat intestinal parasites like ascaris. Literature supports these bioactivities of *Thymus* species. For example the work by Miloradovic *et al.* (2010) showed that thyme extract (TE- *T. serpyllum* L.) resulted in a significantly reduced level of Systolic Atrial Pressure (SAP) and Diastolic Atrial Pressure (DAP) in hypertensive rats. In addition, *T. vulgaris* was found to reduce pain in mice while applying to plate, tail flick and formalin tests (Taherian *et al.,* 2009). So it is not surprising if *T. serrulatus* and *T. schimperi* act as treatments for general pain syndrome. Essential oils of thyme are also known for their antivirus, antibacterial, antifungal and antiworm activities owing to their active component thymol (Lezak, 2000). This may be the reason why *T. serrulatus* and *T. schimperi* are used for treating intestinal parasites and abdominal pain. Furthermore, thymol is the major component of *Thymus* species from Ethiopia. For example the works of Ermias Dagne *et al*. (1998) and Nigist Asfaw *et al*. (2000) revealed that the components of *T. schimperi* were by large thymol 50% and more than 30%, respectively. In addition, the abdominal pain reliving capacity of these plants may be due to their abilities to kill *Helicobacter pylori* (Esmaeili *et al.,* 2012) and their anti-acidic nature.

The respondents mentioned the economic value of *T. serrulatus* and *T. schimperi* as honey bee forage, animal forage, food additives, drinks as tea and washing and fumigation of jars for milking and baking. This agrees with the work by Tewodros Eshete *et al.* (2013), showing that food supplements with thyme mix improve intake, digestibility, daily weight

gain, final body weight, empty body weight, hot carcass weight, and dressing percentage compared to non-supplemented group and improves the sensory quality of sheep meat. Furthermore, thyme honey has medicinal values. For example, the work by Tsiapara *et al.* (2009) showed that thyme honey reduces the viability of prostate cancer cell line (MCF-7). Thus, the information from the informants is valuable.

According to the informants, the status of *T. serrulatus* and *T. schimperi* is declining mainly due to overgrazing followed by agricultural expansion, overharvesting, harvesting the whole plant including the roots, and lack of recognition. The threatening factors for these plants are similar to those identified by Kalayu Mesfin *et al.* (2013). Harvesting the whole plant including the root continuously is a dangerous practice which interferes with the life cycle of the species and results in eradication of the whole plant (Wangchuk *et al.,* 2008). These plants are restricted to limited geographical regions (Alpine and Afroalpine) so that degradation of these areas may result in degradation of the whole species. Overgrazing of *T. serrulatus* and *T. schimperi* is a big challenge owing to their suitability as forages for cattle, sheep and goats as well as the beliefs of inhabitants that animals which fed these plants give tasty meat, mutton, and milk. The other problem is commercialization of these wild species without conserving them (Zuzarte *et al.,* 2011). This may be due to the reason that wild species are communal and no one cares about them as private (cultivated) species. Their multiple use as condiments, forage, medicinal value, and tea increased the harvesting pressure on these plants and they are continuously declining. In the same way all these pressures may be indirectly caused by human population expansion and increased level of unemployment rate (Wangchuk *et al.,* 2008). In addition, there is continuous and bulk requirement of these herbs. To supply such large quantity of the herbs, large scale cultivation would be required, which in turn will generate good business opportunities and human resource development (Tripathi *et al.,* 2009).

CONCLUSIONS

The specimens of *Thymus* collected from Southern Tigray (Alamata and Ofla) as well as from West Gojjam (Yilmana Densa) were found to be *T. serrulatus* while those collected from Tarma Ber, Buta Jira, and Bale were *T. schimperi*. Many of the informants agreed about the importance of these species to treat blood pressure followed by general pain syndrome, influenza, abdominal pain, and intestinal parasites like Ascaris in descending order. However great majority of them especially those from Tigray do not know about the medicinal uses of these plants. Economically, these plants are important sources of animal and honey bee forage, serve as condiments, tea, and fumigants. Despite their medicinal and economic uses, these plants are highly diminishing due to overharvesting, overgrazing, agricultural expansion, whole plant harvesting including the roots, and lack of recognition.

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