		47.	*Colotis danae*	49	SN
		48.	*Catopsilia pyranthe*	35	SN
		49.	*Eurema blanda*	30	SN
		50.	*Colotis eucharis*	19	SN
		51.	*Ixias marianne*	11	SN
ORTHOPTERA	Acrididae	52.	*Cyrtocanthacris tatarica*	7	HC
		53.	*Chrotogonus sp*	54	SN
	Tettigonidae	54.	*Conocephalus sp*	46	SN
TOTAL				11,318	

Where: PT-Pitfall trap, SN- Sweep net, HC- Hand Collection.

The diversity of insect is calculated by Shannon-Wiener index and Simpson's reciprocal index. The abundance, richness, evenness and diversity indices of insects are calculated during the month from June 2013 to September 2013 (Table 2).

Table 2: Diversity indices for insect orders collected from the agriculture fields of Hadagil Haruti village, Gulbarga.

S.No	Order	Total number of families	Total number of species	Total number of individuals	Dominanace %	Margalef index	Simpson reciprocal index	Shannon-Wiener index	Pielou's index
1.	Coleoptera	11	26	1,749	15.45	3.069	8.048	2.226	0.928
2.	Hemiptera	5	5	167	1.47	2.485	5.000	1.609	1.000
3.	Hymenoptera	3	6	8,925	78.86	1.116	3.000	1.099	1.000
4.	Diptera	1	1	6	0.05	-	1.000	1.000	-
5.	Lepidoptera	4	13	364	3.22	1.170	2.965	1.205	0.0869
6.	Orthoptera	2	3	107	0.95	0.910	1.800	0.637	0.918
	Total	26	54	11,318	100				

5. Discussion

This study highlights the richness of the insect fauna comprising 11,318 insects specimens belonging to 54 species. The result of this study shows that the agriculture fields are dominated by insect diversity. It is obvious that agroecosystem, though it was a man made modified farmland, reported to have a rich variety of entomofauna. The rich number of species available in the agroecosystem was mainly because of the availability of varieties of crop plants and microhabitats. Janzen (1973) [13], Nair and Mathew (1993), Edwin (1997) and Mathew (1986) [16] attributed diversity of plants to insect diversity.

The results shows that Hymenoptera were most dominant order (78.86%) representing 8, 925 insects samples of which 8,813 belongs to family Formicidae with 2 species i.e *Camponotus compressus* and *Monomorium scabriceps*, family Crabonidae is represented by 2 species i.e *Cerceris sp* and *Liris sp* and family Halictidae is repsented by *Halictus sp* and *Nomia sp*. Pioneer work on the Hymenoptera of Indian region was made by Bingham (1897, 1903) [5],[6] which found reference to species found in Kerala. Subsequent to this, some studies have been made specifically on species found in different regions of Kerala.

Coleopterans commonly known as beetles constitutes the largest order of all animals. The major ecological impact of beetles results from their effects on green plants, their contribution to breakdown of plant and animal debris and their predatory activities. India is well known for richness of coleopterans fauna and against an estimated total of 179 families of Coleopterans, about 103 families are known from India, of the 3,50,000 described species from all over the world, 15,000 species under 2,000 genera are known from India (Biswas, 1995). The present study revealed the presence of 26 species belonging to 11 families from the study area. According to total number of individuals it is second dominated order (15.45%). It has been analysed that order Coleoptera recorded highest Simpson's reciprocal index diversity (8.048), highest richness (3.069), Shannon-Wiener index(2.226) and evenness (0.928).

Lepidoptera are commonly known as 'butterflies' and 'moths'. Two pairs of well-developed wings with colored scales on them. Wings are brilliantly coloured in many species. The various publications on Butterflies of India have been published by Marshall and De Niceville (1882) [18], De Niceville (1886, 1890) [10],[11], Betham (1890, 1891a, 1891b, 1892) [1],[2],[3],[4], Evans (1932) [12], Talbot (1939, 1947) [23],[24] and Wynter-Blyth (1957) [30]. During the course of study order Lepidoptera is third dominated order by 3.22% which belong to 4 families and 13 species. The most dominated butterfly recorded were *Colotis danae* and *Danus chrysippu* where as *Ixias marianne* was least found.

Hemiptera insects that are usually called as 'true bugs' are of great economic importance as most of them are pests of various commercial crops. According to recent estimate about 80,000 Hemipteran species are present worldwide. In India 77 families having 6,500 species are found. Out of these, 2,421 species are endemic to India (Alfred, 2003). In the present study Hemiptera is fourth dominated order with 1.47% includes 5 species i.e *Bathycocelia indica, Oxycarenus hyalinipennis, Cletus sp, Perkinsiella sp, Creontoides sp* has been recorded. The Simpson's reciprocal

index diversity is 5.000 and Shannon-Wiener index 1.609 has been calculated.

The order Orthoptera includes common insects like grasshoppers, locusts, crickets, mole crickets and grouse locusts. Kirby (1914) [15] and Chopard (1969) [8] wrote the Fauna on Acrididae and Grylloidea of India, and several species were included from Sikkim. Uvarov (1927) [25] published the distributional record of family Acrididae of India. Most of the grasshoppers found in agriculture fields belongs to family Acrididae. These grasshoppers feed on plant foliage, with a particular fondness for grasses and spurges. When grasshoppers population increase to the point of crowding, swarms of locusts can compeletely defoliate grassland and agricultural crops over large areas. In the present study family Acrididae includes 2 species i.e *Cyrtocanthacris tatarica* and *Chrotogonus sp*. In family Tettigonidae one species has been recorded i.e *Conocephalus sp*.

The order Diptera comprises mosquitoes, midges and flies, which are generally two-winged, with two halteres, but there are some that have partially or entirely lost their wings, usually leaving their halteres intact behind. Through the works of Brunetti (1912, 1920, 1923), Christophers (1933), Baraud (1934), SeniorWhite et al (1940), Emden (1965), Delfinado and Hardy (1973,1975,1977), Joseph and Pauri (1980,1983,1990,1998), Datta (1983),Nandi (2002) and Cherian (2002) in their faunal and monographical work included number of species from Sikkim. Till 1998, 624 species belonging to 230 genera and 45 families were known from Sikkim and subsequently 10 more species and a family Sciomyzidae are added to the Diptera fauna of Sikkim through the work of Datta and Parui (2003) and Parui (2003) [22], which raised the number to 634 species under 46 families. In the present study Diptera is lowest dominated order with 0.05% includes one specises from family Muscidae i.e *Musca sp*. The Simpson's reciprocal index diversity is 1.000 and Zero diversity is shown in Shannon-Wiener index.

6. Conclusion

This work concludes that agriculture fields are dominated by insects. From these records it is obvious that the agroecosystem, even though it is a man-made one, it had diverse entomofauna with high level of distribution of the insects. It is an obvious fact that insects contribute much to the ecological welfare and insect conservation has been recognized as vital for sustainable world in view of their critical role in conservation of ecosystem. From this study, the agroecosystem is still considered to have a diverse and numerous insect fauna in Gulbarga city area. However, the results which were being presented in this paper might be the first comprehensive list of insects in the Hadgil Harutti village of Gulbarga . Hopefully, there will be a further research study on the insect biodiversity and taxonomy in this area, in order to get better and comprehensive information on those aspects to be documented for future reference.

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