

BIOLOGICAL SCIENCES

I. AUTUMNAL HERB SOCIETIES OF AN OKLAHOMA PRAIRIE IN
1927, 1928, AND 1930

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In two previous papers the autumnal invertebrate population of an area of grassland near Chickasha, Oklahoma, has been analyzed.¹ Collections fell within the period, September 19 to November 9. In the autumn of 1930, a total of 1250 sweeps was made with a sweep net of thirty to forty centimeters in diameter, as compared with 350 in 1927 and 500 in 1928.

The twelve months preceding the collections offered contrasts in weather. In 1927 the spring was wetter than average. In 1928 the summer had more precipitation, and the fall was dryer; while 1930 was phenomenal in many respects, having a cold winter, a dry spring with the exception of a wet May, and a hot, dry summer. Only during the year before the 1928 collections was grazing entirely prohibited in the area. The west side of the pasture contrasted with the east in being more sloping, more sandy, and more grassy.

TABLE I.—Autumnal Herb Invertebrates of a Prairie Near Chickasha. Number per Catch of Fifty weeps With an Insect Net.

	Autumn	Mean	Error of Mean	Coef. of Variability
East pasture	1927	192	16.3	25.4
	1928	76	6.6	50.8
	1930	104	8.2	40.2
West pasture	1927	127	10.7	21.7
	1928	44	13.6	102.3
	1930	80	6.3	42.3

In order to determine what differences were significant in Table I, the error of the difference was computed according to the formula, $\frac{M-M_1}{\sqrt{m^2+m_1^2}}$

where M and M_1 are two means to be compared and m and m_1 are their respective errors. If the error of the differences is over four, the difference between the means compared is probably significant and not attributable to random sampling.

The difference in population between 1927 and the other two years was great enough to warrant consideration as a real difference. In contrast, the difference in the population of 1928 and 1930 was so slight as not to deserve consideration. Although totals for the west side of the field were always smaller than for the east side, the difference was not great enough to be significant.

Nineteen twenty-eight (Table I) was the year both of smallest totals and greatest variability. Variability is produced usually by late hatching or emergence.

¹Smith, Vera G., and Shackelford, M. W., 1928. Autumnal Animal Communities of a Prairie. *Proc. Okla. Acad. Sci.* 8:80-83.

Shackelford, M. W., and Brown, M. J., 1929. A Comparison of the Autumnal Society of Prairie Invertebrates and of Coincident Weather Conditions in 1927 and 1928. *Proc. Okla. Acad. Sci.* 9:20-23.

TABLE II.—Percentage Herb Population.

	COMPOSITION OF THE PRAIRIE AUTUMNAL		
	1927	1928	1930
Hemiptera	52	51	29
Cicadellidae	22	17	31
Lepidopterous larvae	1	3	6
Orthoptera	1	4	3
Hymenoptera less ants	2	3	5
Diptera	5	3	10
Spiders	10	11	5
Miscellaneous	7	8	11
Total number of specimens.....	1156	600	2492

The Autumnal Herb Society (Table II) is predominantly made up of Hemiptera and Cicadellidae. Autumn, 1930, differed in lower percent of Hemiptera and in a higher percent of Diptera and of Cicadellidae (a number of recently hatched nymphs appeared in collections of October 18, 1930).

TABLE III.—Hemiptera Population of Autumnal Prairie Herbs, Chickasha. Average Number per Catch of Fifty Sweeps.

	1927	1928	1930
<i>Polymerus basalis</i> Reut. and Lygus			
<i>praetensis oblineatus</i> Say	58	6	8
<i>Harmostes reflexulus</i> Say	3	2	3
<i>Sinea diadema</i> Fab.....	0	1	5
Pentatomid nymphs	2	4	5
<i>Thyanta custator</i> Fab.	1	4	3
Hemiptera nymphs	11	10	3
Other Hemiptera	2	3	7

It is evident that variations in Hemiptera totals are largely influenced by abundance of *Polymerus basalis* Reut. and *Lygus praetensis oblineatus* Say. These two forms were not separated in 1927 counts.

In summary, it appears that autumnal herb invertebrate societies, 1927, 1928 and 1930, did not differ as greatly in total numbers as in specific make-up of the population. The fall of 1930, a year of phenomenal weather, presents a picture, as depicted by percentage composition, greatly at variance with other years in relative numbers of Hemiptera, Cicadellidae, and Diptera. Fluctuations in Hemiptera totals are largely attributable to *Polymerus basalis* Reut. and *Lygus praetensis oblineatus* Say.