DISTRIBUTION OF ANT-MOUDS IN HAZARIBAG SANCTUARY,JHARKHAND

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Distribution of ant-mounds in Hazaribag Sanctuary, Jharkhand

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ABSTRACT

Ants and ant-mounds have significant role in the soil fertility of sanctuary. In the sanctuary special pattern analysis of the ant-mounds distribution was made by using two term local quadrat variance (TTLQV) and paired quadrat variance (PQV) methods to see seasonal variations.

Ants occur almost in all parts of tropics, deserts, temperate and cool zones, contribute a single large family Formicidae with about 4600 species of giant and dwarf types which also include red, brown and black types. A typical ant nest or colony is usually in a log or cavity or in the ground and often has a mound of earth above it. These ants collectively play an important role in water conservation. Being decomposers, they affect the fertility of the soil thereby affecting plant growth. Ant-mounds found in different regions and their characteristics have also been studied by a number of workers (Shrikhande and Pathak, 1948; Majeed, 1996). Present paper deals with ant-mound distribution and dispersion pattern in the Hazaribag sanctuary which is located in Jharkhand state covering an area of about 194 sq. Kms. Sanctuary is dry deciduous type of forest having Sal (*Shorea robusta*) as common tree species. The average height of the sanctuary is 1700 above sea level and situated at latitude 24°6'N, longitude 85°23'E.

MATERIAL AND METHODS

In the sanctuary a belt transect 10 m wide by 520 m long was sampled and the number of ant-mounds were counted within each 10 m section of the belt, giving a total of 52 sampling units. Study was made in the same transect area once in June 1998 and other in December 1998, to see seasonal variations of mound dispersion.

RESULTS AND DISCUSSION

Most of ant-mounds were either at the foot or in the vicinity of trees. The reason was probably due to the fact that ants need some degree of shelter for maximum body activities unlike being located directly under sun. Two different genera *Pogonomyrmex* and *Pheidole* were observed inhibiting the area, but the population in term of the number of mounds, of the former genera were very high.

Special pattern analysis (SPA) was made by applying Hill's (1973) two-term local quadrat variance (TTLQV) method and paired quadrat variance (PQV) methods of Goodall (1974) and Ludwig and Goodall (1978). Results were determined by using software package.

Vectors of observations of the number of mounds in each sampling unit (SU), along the transect

In June 1998

x = 1 2 0 2 1 3 0 0 4 1 2 3 1 4 2
0 2 1 1 1 5 2 1 0 2 4 3 6 3 2
2 1 1 2 1 3 6 0 7 2 3 0 0 1 2
1 2 0 0 2 2 2

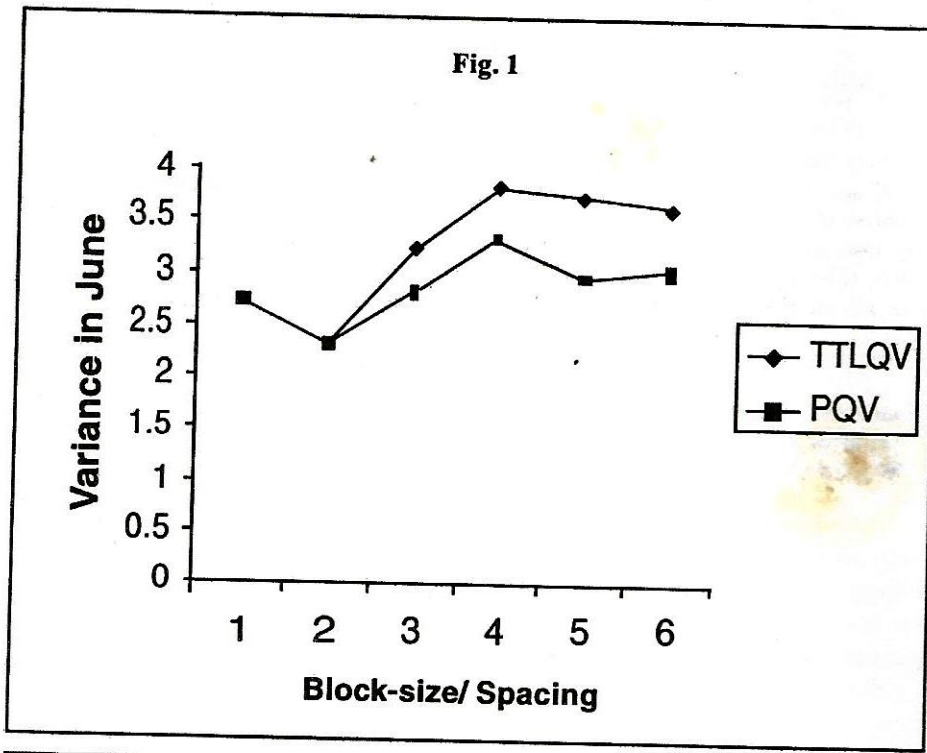
In December 1998

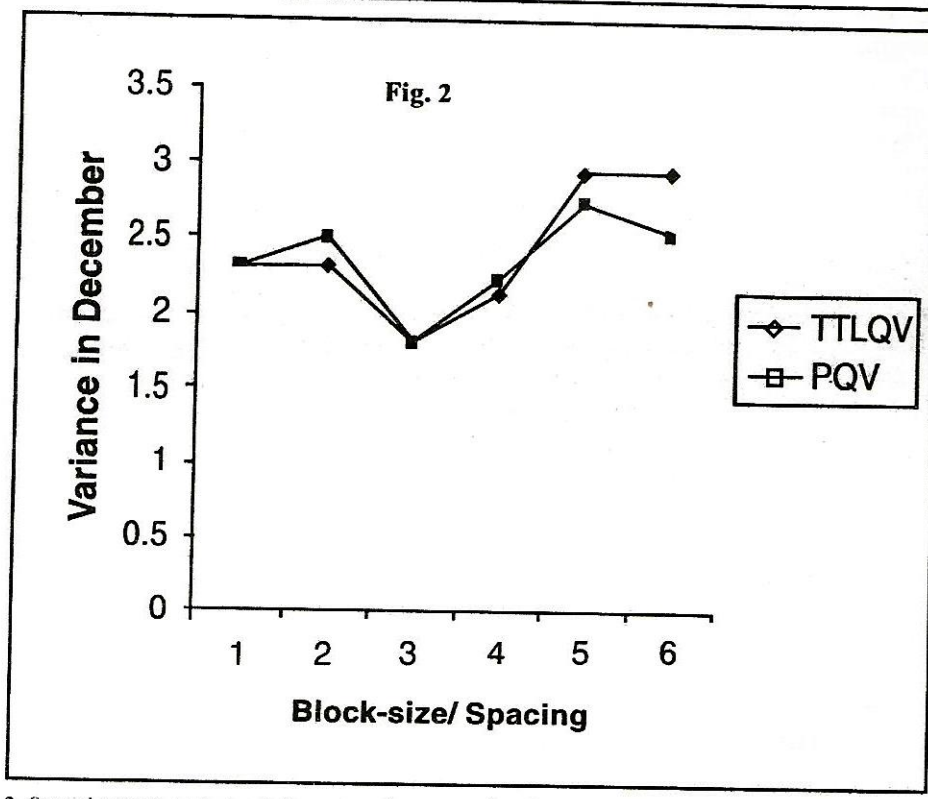
x = 0 1 0 3 0 2 3 0 1 0 2 3 0 1 5
2 1 6 1 0 2 1 1 1 2 0 0 5 2 3
0 2 1 2 1 1 0 0 5 2 1 3 4 2 1
1 0 1 1 1 0 1

	Block size	D.F.	June Variance	December Variance
	1	51	2.7	2.3
	2	49	2.3	2.3
TTLQV	3	47	3.2	1.8
	4	45	3.8	2.1
	5	43	3.7	2.9
	6	41	3.6	2.9
	Spacing	D.F.	June Variance	December Variance
	1	51	2.7	2.3
	2	50	2.3	2.5
PQV	3	49	2.8	1.8
	4	48	3.3	2.2
	5	47	2.9	2.7
	6	46	3.0	2.5

These variances have been plotted against block size/spacing (up to 6, that is 10% of 52, the number of SU) are given in figure 1 and 2.

In the month of June 1998, a variance peak at a block size/spacing of 4 (40 m) occurs where there are large difference between the density of mounds in the space between clumps to within clumps, i.e. maximum variance occurs when contrasting low density or empty quadrats between clumps with high density quadrats falling within a clump. Thus there are strong indication of clumping of mounds, with clumps spaced about 80 m apart (twice 40 m). But in December 1998 peak (PQV) at spacing of 5 (50 m). There is a distance or gap between the clumps of mounds of about 100 m (twice 5 times 10 m). From the above observations it may be concluded that in the month of June mounds are more clumped than that of December. Thus, June is more favourable for mound formation than December and various ecological factors are influencing mound formation simultaneously and to determine these further study in needed.





Figs. 1,2. Special pattern analysis of dispersion of ant-mounds using TTL QV and PQV

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