

## SURVEY OF JUNIPER DWARF MISTLETOE IN THE ADJACENT AREAS OF SASNAMANA STATE FOREST OF BALUCHISTAN

by

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**Summary.** *The studies carried out in the adjoining areas of Sasnamana forest revealed that mistletoe has crossed into Chasnak forest, through the northern ridge, at a point about 6.8 kilometres from the Mana village. The parasite was extending east-ward. The incidence of infection was 24% for all the study trees within 1.6 km of the ridge. The highest incidence of infection was in trees growing on the ridge. The incidence decreased as the distance from the ridge increased.*

**Objective.** Following Zakaullah and Badshah's (1977) work on mistletoe in Sasnamana forest, this study was undertaken to find out if the mistletoe had crossed over to adjacent forests.

**Method.** 3 equidistant lines each were drawn running North-South and East-West on the map of Sasnamana forest (1:50,000). The lines were extended upto 1.6 km in the contiguous areas on the northern, eastern and southern sides. On each extended line, 4 plots were marked at equal intervals of .54 km. The plots were located in the forest by pacing and hand compass. At each plot station, a circular plot of .05 ha was established (Fig. 1). All the trees in a plot were numbered. The data on the incidence of infection were recorded for each study tree.

The 6-class infection rating system described by Hawksworth and Lusher (1956) was used to record the incidence of infection. The live crown of the tree was divided into three parts from top to bottom and each third rated as: (0) no visible infection; (1) light infection ( $\frac{1}{2}$  or less of total number of branches in the third infected); (2) heavy infection (more than  $1\frac{1}{2}$  of total number of branches in the third infected). The ratings for each third were added to obtain a total for the tree. Mistletoe ratings for all the infected trees in a plot were averaged. The infection centres were located on the map (x Fig. 1). The areas on the ridge were examined critically to record the infection points.

**Results.** In all, 36 plots were studied. The mistletoe infection was only observed in plots established on the northern ridge of Sasnamana and the contiguous Chasnak forest. The spread of the parasite was found east-ward along the ridge. 7 out of 12 plots were infected (58%). The total number of trees was 71. Out of these, 17 were infected (24%). The infected trees were studied and average infection rating was determined as 3.4. The highest incidence of 35.2% was recorded in trees growing on the ridge followed by 31.8

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and 26.6. per cent infection at .54 and 1.07 km distances from the ridge, respectively. No infection was, however, recorded at 1.61 km from the ridge. The incidence of infection decreased as distance from the ridge increased, as would be indicated by the following data:-

Distance from northern ridge km	Number of trees observed	Infected trees		Infection* rating
		No.	%	
0.00	17	6	32.2	4.5
0.54	22	7	31.8	3.2
1.07	15	4	26.6	2.2
1.61	17	—	—	—

\* Based on 6-class rating system of Hawksworth and Lusher (1956).

**Discussion and conclusions.** The results indicate that mistletoe has entered the Chasnak forest, through the northern ridge, at a point about 6.8 km from Mana village. The parasite was found advancing east-ward. The incidence of infection varied from 27 to 35% and the infection rating for the infected trees from 2.2 to 4.5, depending on the distance from the ridge. This indicates that the mistletoe has considerable potential for further spread in the area.

The incidence of infection was found to be the highest in trees growing on the ridge, as already reported by other workers (Gill, 1935; Hawksworth, 1958a). The incidence decreases as the distance from the ridge increases.

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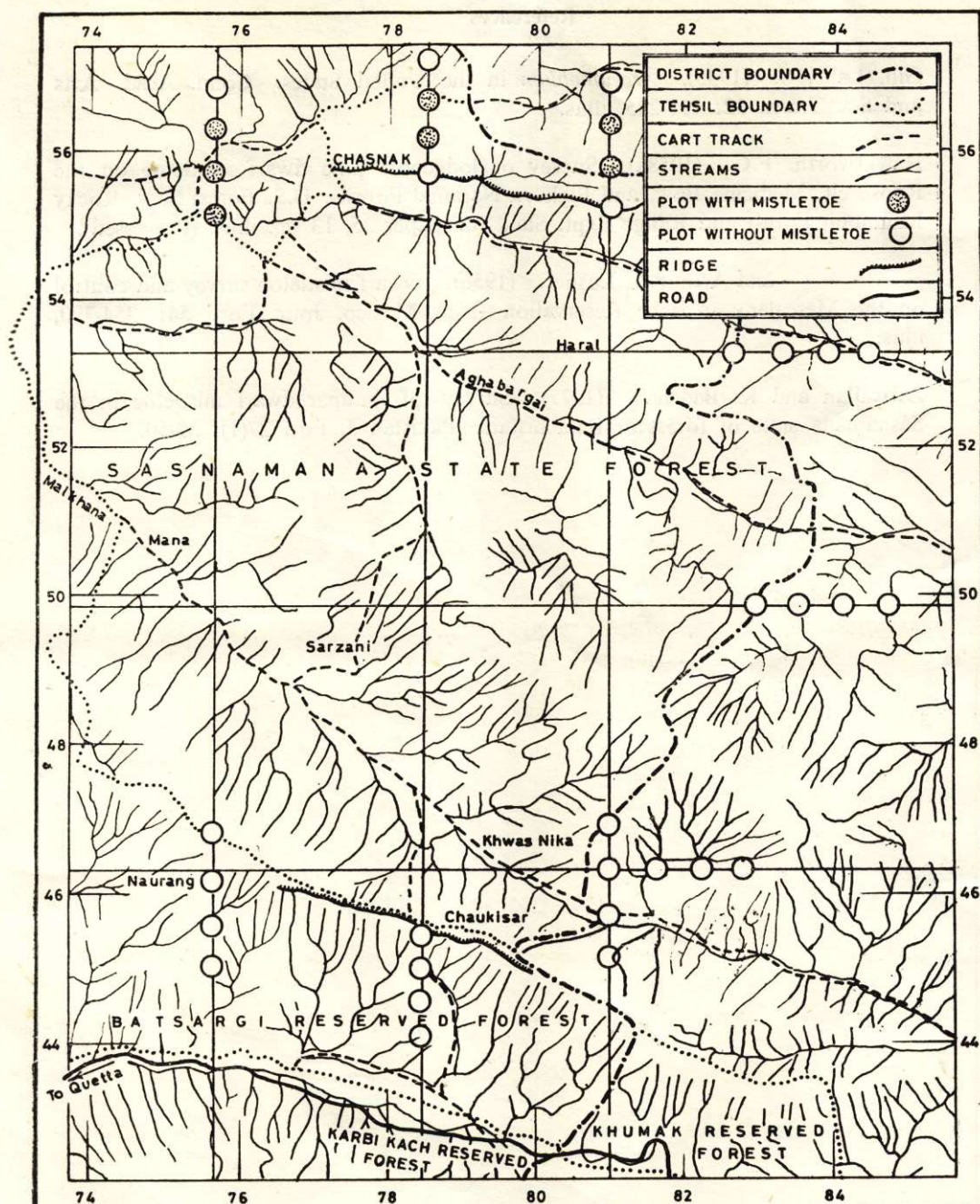


Fig. 1 DISTRIBUTION OF SAMPLE PLOTS & MISTLETOE INFECTION IN THE ADJACENT AREAS OF SASNAMANA STATE FOREST

# References

1. Gill, Lake, S. (1935). *Arceuthobium* in the United States. Conn. Acad. Arts and Sci. Trans. 32: 111-245, illus.
2. Hawksworth, F.G. (1958a). Survey of lodgepole pine dwarf mistletoe on the Roosevelt, Medicine Bow, and Bighorn National Forests. U.S. Forest Serv. Rocky Mountain Forest and Range Expt. Sta., Sta. paper 35, 13 pp. illus. (Processed).
3. ————— and Arthur A. Lusher. (1956). Dwarf mistletoe survey and control on the Mescalero—Apache Reservation—New Mexico. Jour. For. 54: 354-390, illus.
4. Zakaullah and K. Badshah. (1977). Survey of juniper dwarf mistletoe in the Sasnamana state of forest of Baluchistan. Pakistan J. For. 27(1): 39-50.