

Damage Diversity of *Shorea robusta* plant against major pest *Hoplocerambyx spinicornis* in Pachmarhi Protected forest areas of Madhya Pradesh, India.

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ABSTRACT

The present investigation regarding “Damage Diversity of *Shorea robusta* plant against major pest *Hoplocerambyx spinicornis* in Pachmarhi protected forest areas of Madya Pradesh, India”. The study was conducted in Pachmarhi Protected forest areas. *Hoplocerambyx spinicornis* (Coleoptera: Cerambycidae), commonly known as Sal borer is the only known Indian representative of its genus and one of the most pernicious pest of sal that commits very serious depredations in the forest. Sal forests (Protected) in Pachmarhi areas occupy about 524.37km² area. Sal forests are well known to harbour maximum biodiversity and being semi-evergreen, they constitute an important ecosystem, which provides cool and calm environment. A wide range of Non-Timber Forest Products found in these forests which apart from timber, are source of livelihood for millions of people living in and around forests.

Keywords: Diversity, Damage of Sal, Sal borer, Nature Conservation.

INTRODUCTION

Sal is a fairly large tree with majestic shining foliage. It is widely distributed from Sri-Lanka and India through Myanmar and other countries of South East Asia up to Philippines. It is considered to be native of North East India (Kulkarni, 1956)[1]. Sal forests in India occupy about 105,790 km² area in two distinct regions, viz. northern and central region.

Sal forests are well known to harbour maximum biodiversity and being semi-evergreen, they constitute an important ecosystem, which provides cool and calm environment. During 1950-55, about 100,000 adult insects were killed and 56,500 trees were felled. In 1959-62, the epidemic surfaced in Mandla and Dindori forests in which 2 million beetles were killed and 350,000 affected trees were felled. Studies by Chatterjee and Thapa, (1964)[2] had confirmed this pest to be endemic to Dindori-Mandla sal forests. During 1979-1982, borer attack was observed in sal forests of Hoshangabad in which about 50,000 trees were felled. Due to the repeated attacks, sal borer operations have been included in the Working Plan (Bajpayee, 1983)[3]. Till date, over 20 epidemics have been recorded in the country throughout the range of sal distribution. The latest epidemic during 1996-2001 was one of the worst in the series of outbreaks. The affected trees ha⁻¹ in Dindori Forest Divisions were as high as 50 and the larvae in some trees were counted upto 1500/tree (Dwivedi, 1998)[4]. Sal forests of Dindori, Mandla, Shahdol, Balaghat, Bilaspur, Rajnandgaon and Surguja districts were affected by the borer in about 5,000 km² area. In the worst affected Dindori and Mandla forest of Central Circle, Jabalpur, borer attack was first noticed in December, 1995. Trap-tree operation was carried out in 1996 rains in which 2.16 million beetles were killed and 14,478 trees were felled as trap. Besides this, 40,343 affected trees of all categories were also felled removed from coupes due for working. In 1997 rains, trap-tree operation was again carried out in which 15.17 million beetles were trapped which indicates favourable climatic conditions for multiplication of insect beyond proportion. During October, 1917 to January, 1998,

783,720 affected trees of category I to VI have been removed. Widespread reports on the epidemic have drawn the attention of public at large. Opinions against the large-scale felling were expressed from different quarters.

METHODOLOGY

The present sal borer field surveys were conducted during January to April 2019 with the help of forest department Pachmarhi. It is located between latitude 22°27'14.5"N and 78°23'26.02"E. The total area covered by Pachmarhi is 4981.72 km². Out of which the core zone covers 1555.23 km². It comprises three protected areas viz. Satpura National Park (524.37 km²), Bori (485.72 km²) and Pachmarhi (439.15 km²) Sanctuary and area of RF & PFs (105.99 km²). The buffer zone is extended in an area of 1785.58 km² and transition zone comprises of 1640.91 km² area; Moist Peninsular Sal Forest (3C / C2e); South Indian Sub-Tropical Moist Deciduous Forest (3B); Southern Dry Mixed Deciduous Forest (3C / C3) and Southern Tropical Dry Deciduous Forest (5A). Practically, all the well-watered valleys of the south and especially in the Banjar and Motinala forests, *Shorea robusta* grows in rich profusion, unmixed with any other species, in the reserve forest. For authentication and proper verification of the plant they selected and marked, the study was undertaken in the areas where felling carried out of sal-borer infestation. The site selection was carried out to represent the compartments which previously studied by Mishra *et al.* (2000)[5] in Dindori forest region. The compartments were sampled by laying out nested quadrates (10x10m) for Trees.

Table: *Shorea robusta* infestation against *Hoplocerabyx spinicornis*

Areas	Species Name	Density	Basal Cover	IVI	Dominance	Diversity
Range- W. Pachmarhi Beat- Dhupgarh Comp.No.- P-306	<i>Shorea robusta</i>	1400	258.51	245.67	0.562	0.024
Range- W. Pachmarhi Beat-Richgarh Comp No. P-309	<i>Shorea robusta</i>	800	238.90	225.49	0.326	0.093
Range- West Pachmarhi Beat-Shailangali Comp No. P-303	<i>Shorea robusta</i>	1033.33	317.42	40.26	0.474	0.076

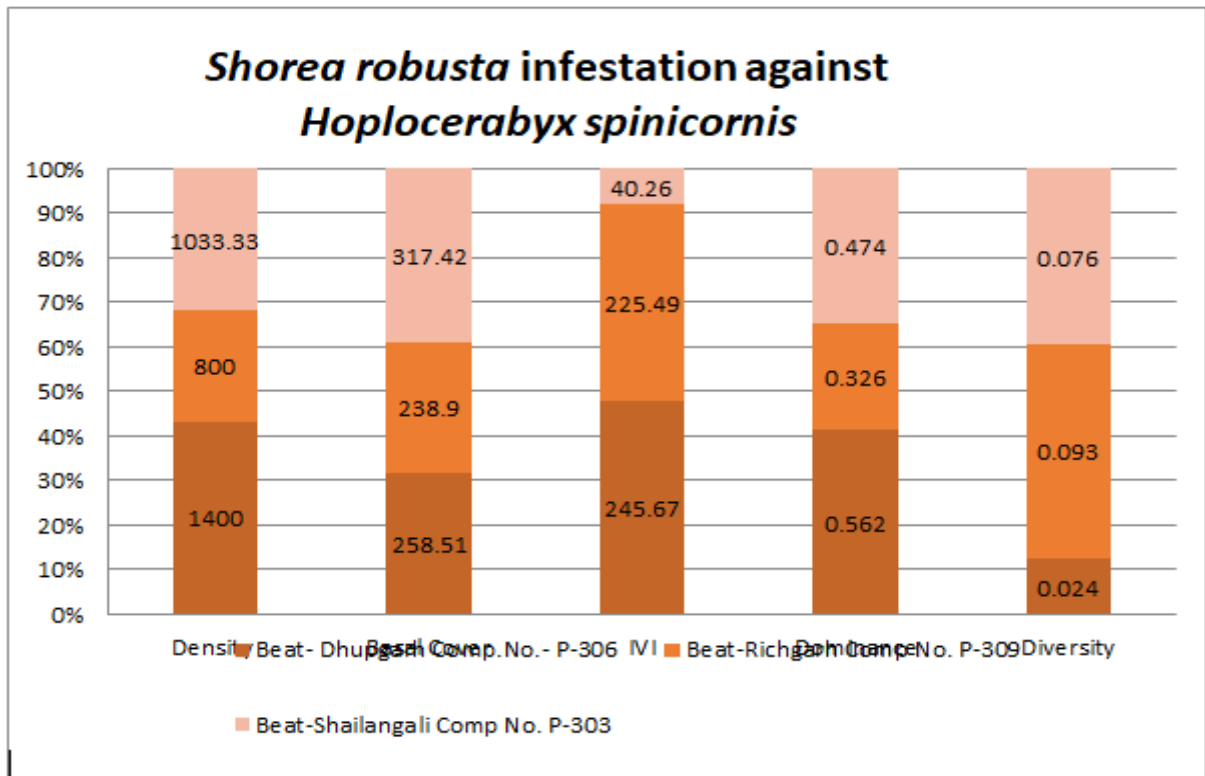


Fig. Damage of *Shorea robusta* plant by *Hoplocerambyx spinicornis* in Pachmarhi forest areas

RESULTS AND DISCUSSION

Pachmarhi biosphere reserve includes protected forest zone known as Wild Life Sanctuary. It is located between forest in the district is classified as 3C/2e (i) Moist Peninsular High-Level Sal Forests. The present study was conducted in heartwood borer affected

Shorea robusta forest of Pachmarhi, Dhupgarh, Richgarh and Shailangali beat in West Pachmarhi ranges. Borer-affected compartments were selected from the sites previously studied by Mishra et al. (2000)[5] at Dindori Forest Division for the study. Accordingly, three compartments were selected under three stratified group.

CONCLUSION

The present study describes the status of Damage diversity of *Shorea robusta*, Remedial felling was carried out in the compartments to remove the infested trees. Compartments for the present study were selected on the intensity of felling, moderate, heavy. It was found that density of plant was medium in all compartments, indicating sufficient number of adult trees in the community. Establishment of the seedlings is depending on locality factors and canopy opening. The sal borer infestation has long lasting impact on sal forest, moderate infestation may alter the growth rate of the population but heavy infestation may lead to change community structure and composition.

Conflicts of interest: The authors stated that no conflicts of interest.

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