UNIVERSITY OF SINDH JOURNAL OF ANIMAL SCIENCES
Vol. 5, Issue 3, Pp: (16-20), September, 2021
Email: editor.usjas@usindh.edu.pk
Website: http://usindh.edu.pk/index.php/USJAS
ISSN (P): 2521-8328
ISSN (E): 2523-6067
Published by University of Sindh, Jamshoro
(USJAS)

INVESTIGATION ON WOOD BORERS IN THE TREE HOLES OF ARALAM WILDLIFE SANCTUARY, KERALA, INDIA

GANA KARIKKAN, SHEIK MOHAMMED SHAMSUDEEN

Department of Zoology, Mananthavady Campus, Kannur University, Kerala-670645, India

ARTICLE INFORMATION

Article History:
Received: 18th July 2021
Accepted: 28th August 2021
Published online: 29th September 2021

Author's contribution
All authors contribute equally.

Key words:
Wildlife, Sanctuary Cerambycidae wood borers, major, damages, trees

ABSTRACT

The present study of wood boring insect was carried out during the period from February 2019 to April 2021. A Field survey was conducted in different areas of Aralam Wildlife Sanctuary. The collected borers were under 9 Families named Cerambycidae, Curculionidae, Brentidae, Bostrichidae, Buprestidae, Anthribidae, Elateridae, Passalidae and Tenebrionidae. Among the wood borers, primary borers cause serious damages to both live and dead trees compared to secondary borers. In dead trees, members of the family Curculionidae cause major damages to host trees followed by Cerambycidae.

1. INTRODUCTION

Wood and bark boring organisms were under the orders Dictyoptera, Isoptera, Coleoptera, Lepidoptera, and Hymenoptera which bore into the wood in search of food and shelter (Basu *et al.*,) [1]. Among them order Coleoptera contains important wood borers. Wood borers were mainly under two categories, primary borers, which attack weak and damaged trees and secondary borers, which attack dead wood that have already been infested by primary borers (Mathew) [2]. Study of forest insect diversity was initiated in 1900. E.P. Stebbing made an initial study on forest insects (Stebbing) [3]. Most of the early works were on the biology and ecology of important forest pests and all works up to 1941 have been summarized by (Beeson) [4].

2. MATERIALS AND METHODS

The study area is comprised of Aralam Range, the only range in Aralam wildlife division. The extent of the sanctuary is 55 km^2.

*Corresponding Author: rsmshamsudeen@gmail.com

Sampling was done in the natural forest by walking along diagonal transects and collection of the insects from infested trees by using a chisel. The insects collected were preserved in methylated spirit and data on their habits and habitats recorded. The intensity of damage was calculated based on qualitative estimation of damage into low (up to 30% damage), moderate (up to 50% damage) and high (above 50% damage).Vegetation was studied with a view to produce base line data on the floral elements to facilitate comparison of the relationship between the vegetation and insect community (Mathew *et al.*,) [5]. The collected specimens were pinned, dried and stored in insect cabinets and kept in Forest Entomology and GIS Research Laboratory.

3. RESULTS AND DISCUSSION

The field visit was carried out during the period from November 2019 to April 2021. Total 9 families of wood borers were collected from 37 species of trees. Higher number of dead wood observed in the study site showed signs of varying intensity of borer attack. Data shows higher incidents of wood borers in dead trees compared to live trees. From the 9 families of wood borers, primary borer infestation is high in both live and dead trees than secondary borers. Only

Cerambycidae, Curculionidae, Anthribidae and Buprestidae cause damages to live trees. In dead trees, Curculionidae causes significant damages followed by Cerambycidae. There is complete absence of secondary bores in live trees. Elateridae, Passalidae and Tenebrionidae were the only secondary wood borers observed in dead trees (Table 1). 19 trees among 37 species shows medium or moderate intensity of infestation (Figure 2), in which 7 trees species namely *Calophyllum inophyllum*, Debregeasia longifolia, *Holigarna sp., Hopea racophloea, Sterculia guttata, Strychnos nux-vomica* and *Terminalia paniculatashows* 40% damage and the remaining tree species namely *Cinnamomum sp. Hopea sp., Knema attenuata, Litsea coriacea, Macaranga sp., Melicope lunu-ankenda, Olea dioica, Schleichera sp., Scolopia crenata, Terminalia catappa, Tetrameles nudiflora* and *Vateria sp.* shows 50% damage. Only 10 trees species show high intensity of infestation (Figure 1). *Albizia sp., Elaeocarpus variabilis, Gmelina arborea, Terminalia alata, Xylia xylocarpa* and *Zizyphus xylopyrus* shows 60% damage. Grewia tiliifolia shows 70% damage. The remaining 3 tree species namely *Anacardium occidentale, Artocarpus hirsutus* and *Bamboo* shows 80% damage. 8 tree species show low intensity of infestation out of 37. Among them, least infested tree was *Terminalia bellirica*, it shows 10% damage. *Trewia nudiflora* and *Xanthophyllum arnottianum* shows 20% damage, remaining trees such as *Acrocarpus fraxinifolius, Gliricidia sepium, Kingiodendron pinnatum, Mitrephora sp.* and *Terminalia sp.* shows 30% damage (Figure 3).

4. CONCLUSION

Primary wood borers were the abundant wood borer in the study area when compared to the secondary wood borers. Among the 37 tree species, 10 tree species shows high intensity of infestation, 19 tree species shows moderate intensity of infestation and 8 tree species shows low intensity of infestation.

5. ACKNOWLEDGEMENT

We are thankful to CSIR, India, for funding this project work. We are also thankful to Principal Chief Wildlife warden, Kerala, wildlife warden, AWLS, for permission to work in the Sanctuary. Acknowledgement for college management and principal, Sir Syed College for providing laboratory facilities.

6. CONFLICT OF INTEREST

All authors have declared that there is no conflict of interests regarding the publication of this article.

REFRENCES

[1] Basu, P., Sanyal, A.K. and Bhattacharya, D. (2010). Studies on Insect pests of timber yielding tree species in a Tropical Moist Deciduous Forest (Bethuadahari: West Bengal). *Rec. Zool. Surv. India*: 110 (Part-1), pp. 1-13.

[2] Mathew, G. (2004). A study of wood boring beetles in the Kerala part of Nilgiri Biosphere Reserve. *KFRI Research Report* No. 260. 2004, pp. 6-8.

[3] Stebbing, E.P. (1914). Indian Forest Insects of Economic Importance-Coleoptera. *Govt. of India*, pp. 648.

[4] Beeson, C.F.C. (1941). The Ecology and Control of the Forest Insects of India and the Neighboring Countries. *Govt. of India*, pp. 767.

[5] Mathew, G., Rugmini, P. and Sudheendrakumar, V.V. (1998). Insect Biodiversity in disturbed and undisturbed forests in the Kerala parts of Western Ghats". *KFRI Research Report*, 1998, pp. 135.

Table 1. Data on the incidence pattern of wood boring beetles in live and dead trees

Group of wood borers	Wood borers recorded		
	In live trees	In dead trees	Total
PRIMARY BORERS			
CERAMBYCIDAE	5	23	28
CURCULIONIDAE	3	49	52
BRENTHIDAE	0	1	1
ANTHRIBIDAE	1	1	2
BOSTRICHIDAE	0	15	15
BUPRESTIDAE	1	2	3
SECONDARY BORERS			
ELATERIDAE	0	9	9
PASSALIDAE	0	1	1
TENEBRIONIDAE	0	5	5

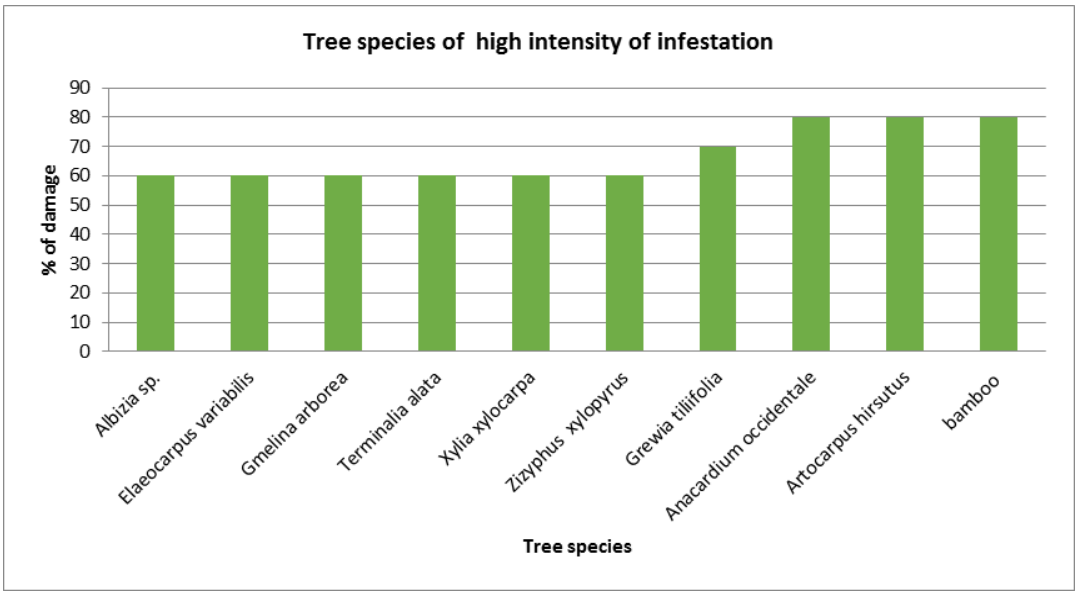


Figure 1. Tree species of high intensity of infestation

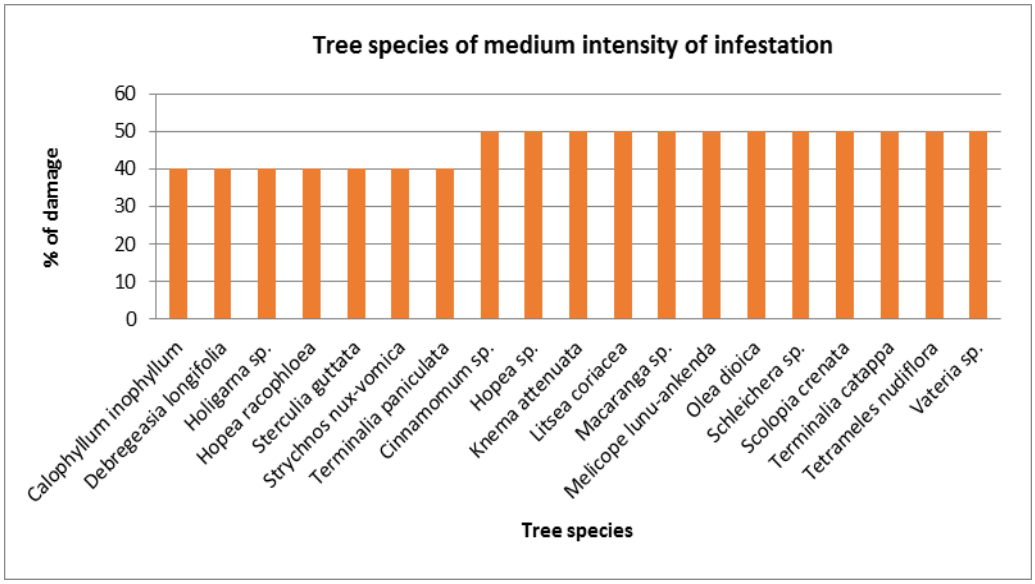


Figure 2. Tree species of medium intensity of infection

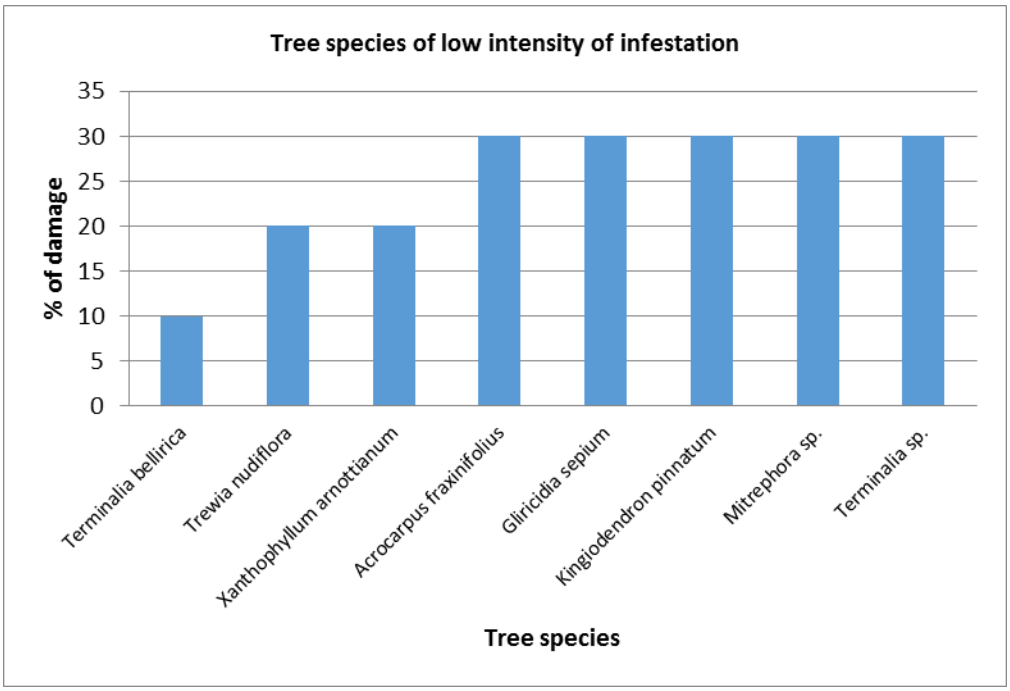
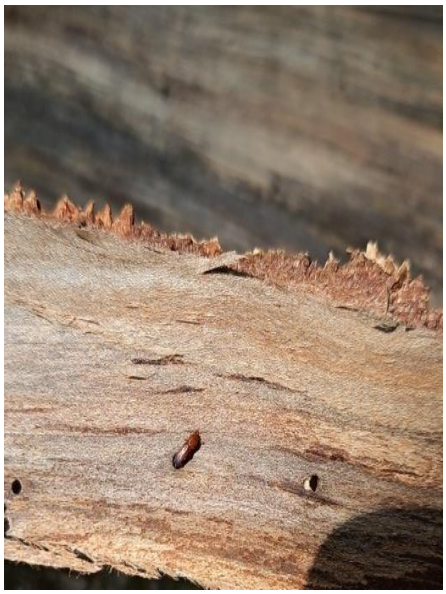


Figure 3. Tree species of low intensity of infection

1



2

3

4

Figure 4. *Leptaulax* sp. infesting on its host tree *Tetrameles nudiflora* 1; *Euplatypus parallelus* infesting on *Kingiodendron pinnatum* 2; Buprestid grub on *Kingiodendron pinnatum* 3; Cerambycid grub on its host tree *Grewia tiliifolia* 4.