



INSECT AND NON-INSECT FAUNA ASSOCIATED WITH TEAK, *TECTONA GRANDIS* AT RAIPUR, CHHATTISGARH

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ABSTRACT

In the studies conducted at the Agro-forestry plantations of Teak at IGKV, Raipur, Chhattisgarh, during 2011–12 revealed that a large number of invertebrate and vertebrate fauna associated with Teak, *Tectona grandis* at various parts causing considerable damage. Among the insect pest species, Teak skeletoniser, *Eutectona machaeralis*, was reported as the most serious pest followed by termites identified as, *Odentotermes horni* (Wasman) and *O. obesus* (Rambur). Among other insects, Aphid, *Aphis tectonae* v.d.G synonymous with *A. gossypii* Glov., sucking bug (unidentified), Gundhi bug (*Leptocorisa acuta*) white grub (*Holotrichia consanguinea*) and mealy bugs (unidentified) were reported as the most serious pests of Teak. White grubs, *Holotrichia* sp. were recorded from teak nursery. Apart from these few species of natural enemies viz., Hymenopteran wasps, *Polistes* sp. larval parasitoid, *Apanteles* sp., predatory bug, *Canthecona* sp. predatory spiders, *Oxyopes* sp., predatory grasshopper, *Crotogonus* sp., snails, *Achatina* sp. and predatory birds such as black drongo, *Dicrurus macrocercus*; common mynah, *Acridotheres tristis* and kingfisher, *Alcedo atthis* were also recorded.

Key words: Non-insect fauna, *Tectona grandis*, *Eutectona machaeralis*, *Odentotermes* spp., *Dicrurus macrocercus*, *Acridotheres tristis* and *Alcedo atthis*

INTRODUCTION

Teak (*Tectona grandis* L.f.) is the most promising tree species of international reputation in Madhya Pradesh, India for its high quality timber. Of the nearly 196 species of insects on standing teak were reported in India and its neighboring countries, approximately 51 species are associated with living teak in Madhya Pradesh. The major insect pests of teak in Madhya Pradesh are white grubs such as *Holotrichia* spp. which feed on the roots and rootlets of seedlings exclusively in nurseries; and defoliators such as *Hyblaea puera* and *Eutectona machaeralis* that feed on the leaves of plants in nurseries, as well as on the leaves, inflorescence, flowers and developing fruits in plantations and natural forests. Although the timber of teak is resistant to the borer attack, considerable degradation of teak wood takes place due to insect borers in freshly felled or stored logs. (Roychoudhury and Joshi, 2003)

Pandey *et al.* (2010) analysed arthropod succession on teak (*Tectona grandis* L.f.) during 2004 and 2005 at Faizabad, U.P, which revealed that a total of 12 arthropods were associated with this plant. Among these, three insects viz., *Tettigoniella ferruginea* F., *Hyblaea puera* Cramer and *Eutectona machaeralis* W. were major and five insects viz. Pentatomid bug, (*Aspongopus janus* F.), cow bug (*Phenacoccus insolitus* C.), grass hopper, (*Crotogonus* sp.), hadda beetle (*Henosepilachna vuginioctopunctata*

F.) and red cotton bug (*Dysdercus koenigii* F.) were recorded as minor arthropods. Two species of Coccinellids (*Coccinella septempunctata* L. and *Cheilomenes sexmaculata* Fab.) and predatory spider (*Oxyopes* sp.) were recorded as natural enemies associated with this plant. In addition to above black ants were also noticed.

Previously, a lot of studies have been conducted in Madhya Pradesh, but very little information regarding the insect pest scenario on teak at Chhattisgarh is available. Hence, the present studies were taken up to get a systematic information regarding the major and minor insect pest along with their natural enemies and other arthropods and species associated with teak at Chhattisgarh plains.

MATERIALS AND METHODS

The present study was conducted at the Agro-forestry research farm of IGKV, on the teak plantations during 2011–12 in twelve districts of Chhattisgarh Plains. Observations were recorded fortnightly on the various types and number of insect pests. The information thus collected is presented below in Table 1 and Plates 1–19.

RESULTS AND DISCUSSION

Fortnightly observations on Teak, from the Agro-forestry research farm of IGKV, Raipur revealed that nine species of insect pests, seven species of natural enemies



1. Gundhi bug, *Leptocorisa* sp.



2. Damage due to Skeletonizer *Eutectona macheralis*



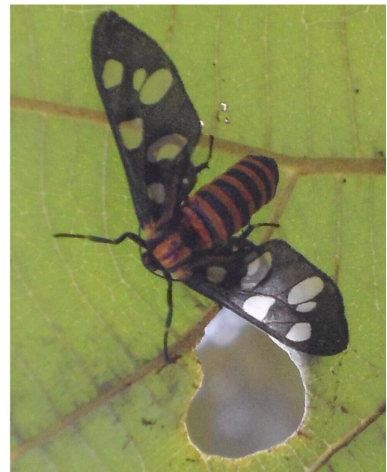
3. Damage due to termites on trunk



4. Metallic bug *Chrysocoris purpureus*



5. Mealy bugs with associated ants



6. Adult of *Euchromia polymena*



7. White grub, *Holotrichia* sp in teak nursery



8. Monarch butterfly *Danaus* sp.



9. Aphid, *Aphis tectonae* v.d.G synonymous with *A. gossypii* Glov. and black ants

Plate 1. Insect pest scenario on Teak at Chhattisgarh Plains (1 to 9)



10. Stick case moth, *Clania lewinii*



11. Conecaseworm, *Lepidoscia* sp.



12. Tettigonid



13. Snails, *Achatina* sp. in tree trunk



14. Preying mantid



15. Predatory spider, *Oxyopes* sp. feeding on gundhi bug



16. Pentatarmid bug



17. Adult & larva of *Chrysoperla* sp.



18. Predatory wasp, *Polistes* sp.



19. Larval parasitoids, *Apanteles* sp.

Plate 1. Insect pest scenario on Teak at Chhattisgarh Plains (10 to 19)

out of which five were insects and one arachnid along with a species of snail and three species of predatory birds were recorded. Table 1 depicts that among the insect pests, Teak skeletonizer, *Eutectona macheralis* was found to be the most serious pest on teak in the Agro-forestry plantations causing skeletonization of leaves followed by termites. Termites were found attacking on trunks and branches comprising of two species identified as *Odontotermes horni* (Wasman) and *O. obesus* (Rambur). Other insect pests recorded were, Gundhi bug, *Leptocorisa acuta*, hoppers (unidentified), two species of bagworms, viz., stick case moth, *Clania lewinii* and cone case worm, *Lepidoscia* sp. and green mealy bug, *Chrysocoris purpureus*. Bagworms and termites were not reported by Pandey *et al.*, 2010 on teak from Uttar Pradesh, whereas

damage due to termites were recorded from teak plantations at the Agro-forestry plantations on tree trunks and branches averaging about 3.2 m. in length. Whitegrubs, *Holotrichia* sp. were recorded only from teak nursery. Oka and Vaishampayan, 1981 have reported white grubs causing feeding on roots of teak seedlings causing them to wilt resulting in subsequent death. Few other insect visitors were lepidopteran, *Euchromia polymena* and monarch butterfly, *Danaus plexippus*. Natural enemies such as Mantids, Hymenopteran wasp, *Polistes* sp. larval parasitoids, *Apanteles* sp., *Chysoperla* sp. and tettigoniid, along with snail *Achatina* sp. have been recorded on Teak from Chhattisgarh which was not reported from Uttar Pradesh (Pandey *et al.*, 2010). Snail, *Achatina fulica* has been reported by Rappard, 1950 destroying 90 % of 1st-

Table 1. List of various insects recorded on Teak, *Tectona grandis* at Agro-forestry plantation, IGKV, Raipur

S.N	Insect species	Status of the pest	Order	Family
1.	Gundhi Bug, <i>Leptocorisa</i> sp.	Major	Hemiptera	Alydidae
2.	Teak Skeletoniser, <i>Eutectona machaeralis</i> Walker	Major	Lepidoptera	Pyralidae
3.	Aphid, <i>Aphis tectonae</i> v.d.G synonymous with <i>A. gossypii</i> Glov and (ii) associated black ants, <i>Camponotus</i> sp.	Minor	Homoptera Hymenoptera	Aphididae Formicidae
4.	Bagworms (i) stick case moth, <i>Clania lewinii</i> (ii) cone case worm, <i>Lepidoscia</i> sp.	Minor Minor	Lepidoptera Lepidoptera	Psychidae Psychidae
5.	Butterflies, (i) <i>Euchromia polymena</i> (ii) monarch butterfly, <i>Danaus plexippus</i>	Visitors	Lepidoptera Lepidoptera	Ctenuchidae Nymphalidae
6.	White grubs, <i>Holotrichia</i> sp.	Major in nursery	Coleoptera	Melolonthidae
7.	Sucking Bug (unidentified)	Minor	Hemiptera	Pyrrhocoridae
8.	Mealy bugs (unidentified)	Major	Hemiptera	Coccidae
8.	Termite infestation on tree trunk (up to 3.2 mtr.) (i) <i>Odentotermes horni</i> (Wasman) (ii) <i>O. obesus</i> (Rambur)	Major	Isoptera Isoptera	Termitidae Termitidae
9.	Scutellerid bug, <i>Chrysocoris purpureus</i>	Minor	Hemiptera	Scutelleridae
10.	<i>Placosternum</i> sp.	Minor	Hemiptera	Pentatonidae

Table 2. Natural Enemies of insect pests of Forest and Agro-forestry trees of Chhattisgarh plains

S.No.	Natural Enemies	Insect pest	Name of Tree
1	Mantid (predator)	Various species of insects	Teak
2.	Hymenopteran wasp, <i>Polistes</i> sp.	Larvae of various insect pest	Teak
3.	<i>Apanteles</i> sp.	Larval parasitoid	Teak
4.	Green lace wing, <i>Chysoperla</i> sp. (predator)	Mealy bugs, Hopper, Aphids	Teak

Non-insects and birds

1.	Spider, <i>Oxyopes</i> sp. (predator)	Larvae, gundhi bugs flying insects etc.	Teak, Karanj, Arjun etc.
2.	Snail, <i>Achatina</i> sp.	–	Teak
3.	Birds (predatory)		
	(i) Black drongo, <i>Dicrurus macrocercus</i>	Larvae of various insect pests	Teak and various other forest species
	(ii) Common Mynah, <i>Acridotheres tristis</i>		
	(iii) Kingfisher, <i>Alcedo atthis</i>		

year nursery seedlings of teak between December and April, infesting on leading shoots and side leaves in Java.

As far as predatory birds were concerned, black drongo, *Dicrurus macrocercus*, common mynah, *Acridotheres tristis* and kingfisher, *Alcedo atthis* were observed which was not reported by Pandey *et al.* (2010).

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