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Some new records and full checklist of hemipteran insects on shisham (*Dalbergia sissoo* Roxb.) from Jharkhand, India

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Abstract

Four hemipteran bug species viz. *Spilostethus hospes* (Fabricius), *Halyomorpha picus* (Fabricius), *Dysdercus koenigii* (Fabricius), *Chrysocoris stollii* (Wolff) were observed to cause damage by sucking sap of tender shoots, pods and leaves of shisham (*Dalbergia sissoo*) in the nursery and plantation at Ranchi, Jharkhand. These insects were recorded for the first time associated with shisham. An updated checklist of eighteen bug species including these new records is documented.

Keywords: Sap sucking bugs, hemiptera, *Dalbergia sissoo*, Checklist, Jharkhand

Introduction

Shisham (*Dalbergia sissoo* Roxb.) is a hardy, perennial, timber producing, silviculturally important quick growing tree species belonging to the family Fabaceae. It provides numerous ecological services to the landscape and environment and deserves greater consideration for reforestation, tree farming and agroforestry application throughout India [26, 6]. In addition to commercial and ecological importance, ethno-medicinal studies have also directed attention towards *Dalbergia sissoo* to investigate the medicinal potentiality of the tree [3]. In both nursery and plantation condition, shisham trees are constantly challenged by diverse array of insect attackers [2, 16, 14, 5, 18] and among them, sap sucking bugs belonging to the order hemiptera also cause serious damage to the shisham seedlings, saplings and young plantation. In the present findings, an endeavour has been made to document a checklist of eighteen hemipteran insect species on shisham from Jharkhand state of India including new record of four bug species viz. *Spilostethus hospes* (Fabricius), *Halyomorpha picus* (Fabricius), *Dysdercus koenigii* (Fabricius), *Chrysocoris stollii* (Wolff).

Materials and Methods

In order to draw the faunal profile, a survey of insect pest complex was carried out for recording diversity of insect pests in the nursery and plantation in Forestry Faculty, Birsa Agricultural University, Ranchi (23.18° N, 65.19° E, Alt. 625m MSL) and a large number of plant bugs were noticed to suck sap from apical shoots and leaves of shisham since the last few years. Bug samples were collected using an insect catching net and the specimens were killed in an insect killing jar containing a cotton plug soaked with ethyl acetate. Specimens were then pinned properly and kept in a fumigation box containing naphthalene balls for identification. Later, the bugs were identified referring to the available authentic literature.

Results and Discussion

During study of insect pests associated with *Dalbergia sissoo*, occurrence of infestation of eighteen hemipteran plant bugs belonging to eleven families was noticed (Table 1) and out of these, four insect pests viz. *Spilostethus hospes* (Fabricius), *Halyomorpha picus* (Fabricius), *Dysdercus koenigii* (Fabricius) and *Chrysocoris stollii* (Wolff) were found to be new records of insect pests to *D. sissoo*.

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Table 1: Hemipteran sap sucking insects infesting *Dalbergia sissoo* in Jharkhand

Sl. No.	Species	Common name	Family	Nature of damage	Activity Period	Records
1.	<i>Ceroplastes rusci</i> (Linnaeus)	Fig wax scale	Coccidae	Sap feeder	February-December	Kumar ^[17]
2.	<i>Drosicha dalbergiae</i> (Stebbing)	Mealy bug	Margarodidae	Sap feeder	December-April	Kumar ^[18]
3.	<i>Icerya seychellarum</i> (Westwood)	Mealy bug	Margarodidae	Sap feeder	December-March	Kumar ^[18]
4.	<i>Graptostethus nigriceps</i> Stal	Seed bug	Lygaeidae	Sap feeder	February-April	Chattopadhyay ^[11]
5.	<i>Graptostethus quadrisignatus</i> Distant	Seed bug	Lygaeidae	Sap feeder	February-April	Chattopadhyay ^[11]
6.	<i>Spilostethus hospes</i> (Fabricius)	Darth Maul bug	Lygaeidae	Sap feeder	July-September	New record
7.	<i>Halyomorpha picus</i> (Fabricius)	Stink bug	Pentatomidae	Sap feeder	November-December	New record
8.	<i>Nezara viridula</i> (Linnaeus)	Southern green stink bug	Pentatomidae	Sap feeder	November to February	Chattopadhyay ^[10]
9.	<i>Dysdercus koenigii</i> (Fabricius)	Red cotton stainer	Pyrrhocoridae	Sap feeder	February-April	New record
10.	<i>Chrysocoris purpureus</i> (Westwood)	Shield-back jewel bug	Scutelleridae	Sap feeder	April-July	Chattopadhyay ^[7]
11.	<i>Chrysocoris stollii</i> (Wolff)	Lychee Jewel bug	Scutelleridae	Sap feeder	July-August	New record
12.	<i>Homoeocerus angulatus</i> Westwood	Leaf footed bug	Coreidae	Sap feeder	March-August	Chattopadhyay ^[8]
13.	<i>Homoeocerus macula</i> Dallas	Leaf footed bug	Coreidae	Sap feeder	March-August	Chattopadhyay ^[8]
14.	<i>Lawana conspersa</i> (Walker)	Flatid bug	Flatidae	Sap feeder	March-September	Kumar ^[18]
15.	<i>Leptocoris acuta</i> (Thunberg)	Broad headed bug	Alydidae	Sap feeder	March-June	Chattopadhyay ^[9]
16.	<i>Riptortus linearis</i> (Fabricius)	Broad headed bug	Alydidae	Sap feeder Sap feeder	March-June March-June	Chattopadhyay ^[9]
17.	<i>Leptocentrus taurus</i> Fabricius	Cow bug	Membracidae	Sap feeder	March-July	Kumar ^[18]
18.	<i>Myzus persicae</i> Sulzer	Aphid	Aphididae	Sap feeder	November-March	Kumar ^[18]

An account of newly recorded hemipteran sap sucking insects including their diagnosing characters, period of occurrence and infestation type on shisham is furnished below:

***Spilostethus hospes* (Fabricius); Family-Lygaeidae (Fig 1)**

Both adult and nymphs were found to suck juice from the leaves from the month of July to September which withered and dried up. Adults are 10-12 mm long and with finely pilose reddish bodies, pronotum constricted in middle, rostrum passing the posterior coxae, unarmed hind femora and membranous suture, no ant spot and having two black patches on the coastal region of the wings^[22]. Host plants of this polyphagous species have been recorded as *Sorghum vulgare* and *Gossypium* spp.^[21], *Calotropis* spp, *Sesbania* sp., *Solanum* spp., *Vernonia cinerea*^[27], *Antirrhinum* sp., *Solanum khasianum*^[20], *Morus indica*^[12]. Report of this species on shisham is the first record from Jharkhand.

***Halyomorpha picus* (Fabricius); Family-Pentatomidae (Fig 2)**

The incidence of adult and nymphal stages of pentatomid bugs was noticed to suck the sap from tender parts viz. shoot leaves and tender leaves in the month of November-December and damaged leaves became crinkled and malformed. Adults were active flier, 14-16 mm long and characterized by alternative bands of black and white elongated rings in legs, apical margin of caudal lobe slightly concave, paramere with spatulate crown and ventral rim of genital capsule with deep concavity^[23]. *H. picus* is a polyphagous insect and infestation of this species has been recorded on *Vannila planifolia*^[28], *Pyrus* sp., cowpea, *Indigofera arrectacitrus* plants and on mango^[25]. The present finding is the new record of this bug on Shisham in Jharkhand.

***Dysdercus koenigii* (Fabricius); Family-Pyrrhocoridae (Fig 3)**

Adults and nymphs were noticed to suck cell sap gregariously from tender and medium leaves and pods of shisham from February to April. Adult insects are 12-14 mm long and characterized by ochraceous body, red femora, corium punctuate and a black discal spot and robust flattened claspers with deeply bifid apex^[24, 12]. Kamble^[15] reported red cotton bug as a serious pest of cotton and many vegetables. It also

attacks trees including *Bombyx ceiba*, Portia tree (*Thespesia populnea*)^[12] and teak and small tree like castor (*Ricinus communis*)^[13]. However, the report of this insect infesting *Dalbergia sissoo* is the first time from Jharkhand state.

***Chrysocoris stollii* (Wolff); Family-Scutelleridae (Fig.4)**

These insects were found to feed gregariously on the sap of leaves of shisham during July-August. They were very common and abundant and easily seen on the upper surface of the leaves and tender branches. Adults were active fliers, 12-14 mm long and diagnosed by pronotum having eight spots, three near anterior margin, three larger on posterior disk and one on each lateral angle, scutellum with seven spots, six arranged in pairs and one central^[4]. This bug species causes considerable loss to many agricultural crops and horticultural trees of economic value, such as *Cassia occidentalis*, *Pennisetum typhoides*, *Croton* spp, *Brassica campestris*, Indian *Jujuba*, *Lichi chinensis*, *Magnifera indica*^[12,19], *Jatropha*^[1]. However, the presence of this sap sucker on shisham is reported for the first time from Jharkhand state of India. A complete updated species checklist of hemipteran bugs infesting shisham in Jharkhand has been established (Table 2.) using a combination of available literature and new collections carried out in the last couple of years.

Table 2: Systematic checklist of hemipteran insect species on *Dalbergia sissoo* in Jharkhand

Suborder-Heteroptera

▪ Superfamily-Pentatomoidea

Family-Pentatomidae

Nezara viridula (Linnaeus)

Halyomorpha picus (Fabricius)

Family-Scutelleridae

➤ *Chrysocoris stollii* (Wolff)

➤ *Chrysocoris purpureus* (Westwood)

▪ Superfamily-Pyrrhocoroidea

Family-Pyrrhocoridae

➤ *Dysdercus koenigii*(Fabricius)

▪ Superfamily-Lygaeoidea

Family-Lygaeidae

➤ *Spilostethus hospes* (Fabricius)

- *Graptostethus nigriceps* Stal
- *Graptostethus quadrisignatus* Distant

- **Superfamily-Coreoidea**

Family-Coreidae

- *Homoeocerus angulatus* Westwood
- *Homoeocerus macula* Dallas

Family-Alydidae

- *Riptortus linearis* (Fabricius)
- *Leptocentrus taurus* Fabricius

Suborder-Homoptera

- **Superfamily-Fulgoroidea**

Family-Flatidae

- *Lawana conspersa* (walker)
- **Superfamily-Cicadelloidea**

Family-Membracidae

- *Leptocentrus taurus* Fabricius
- **Superfamily-Aphidoidea**

Family-Aphididae

- *Myzus persicae* Sulzer
- **Superfamily-Coccoidea**

Family-Margarodidae

- *Drosicha dalbergiae* (Stebbing)
- *Icerya seychellarum* (Westwood)

Family-Coccidae

- *Ceroplastes rusci* (Linnaeus)



Fig 1: *Spilostethus hospes* (Fabricius)



Fig 2: *Halyomorpha picus* (Fabricius)



Fig 3: *Dysdercus koenigii* (Fabricius)



Fig 4: *Chrysocoris stollii* (Wolff)

Conclusion

The study revealed the infestation of eighteen species of hemipteran sap sucking insects on shisham (*Dalbergia sissoo*) from Jharkhand State and among them, four insect pests viz. *Spilostethus hospes* (Fabricius), *Halyomorpha picus* (Fabricius), *Dysdercus koenigii* (Fabricius), *Chrysocoris stollii* (Wolff) were recorded for the first time. It may be concluded that such record of new host plant may be due to changing environmental conditions affecting the food preference and habitat of this insect. Record of occurrence of feeding by the bug species on shisham is a significant finding and this information can be used for further study to know the degree of infestation and interaction of insect-food plant of such hemipteran insect pests.

References

1. Arif M, Ahmed Z. Abundance of *Chrysocoris* spp. on *Jatropha curcas* in Secunderabad. *J Exp Zool India*. 2009;12(1):201-202.
2. Beeson CFC. The ecology and control of forest insects in India and the neighboring countries. New Delhi: Govt. of India Publication; 1941. 767 p.
3. Bharath M, Tulasi ELR, Sudhakar K, Eswaraiah MC. *Dalbergia sissoo* DC-An Important Medicinal plant. *Int J Res Pharm Chem*. 2013;3(2):384-388.
4. Biswas B, Hassan ME, Chandra K, Kushwaha S, Mukherjee P. On an account of Pentatomoidea

- (Heteroptera: Hemiptera) from Chhattisgarh, India. Rec Zool Surv India. 2014;114(Part-2):211-231.
5. Chattopadhyay S. Leaf damaging insect pests in forest nursery. Environ Ecol. 2001;19(3):735-736.
 6. Chattopadhyay S. Record of Apoderus sissu Marshall (Coleoptera; Curculionidae) on foliage of shisham (*Dalbergia sissoo* Roxb.) in Ranchi, Jharkhand. J Exp Zool India. 2017;20(2):1213-1214.
 7. Chattopadhyay S. Incidence of Chrysocoris purpureus Westwood (Hemiptera: Scutelleridae) on *Dalbergia sissoo* in Jharkhand. Environ Ecol. 2019;37(1b):427-428.
 8. Chattopadhyay S. New record of leaf footed bugs of genus Homoeocerus (Hemiptera: Coreidae) on *Dalbergia sissoo* from Jharkhand, India. J Exp Zool India. 2020;23(1):165-167.
 9. Chattopadhyay S. First record of broad headed bugs (Hemiptera: Heteroptera: Alydidae) on shisham (*Dalbergia sissoo*) from Jharkhand, India. J Exp Zool India. 2021;24(1):203-205.
 10. Chattopadhyay S. A new record of Nezara viridula (Linnaeus) on shisham (*Dalbergia sissoo* Roxb.) in Jharkhand. J Entomol Zool Stud. 2021;9(2):1388-1399.
 11. Chattopadhyay S. New record of Lygaeid bugs of genus Graptostetus (Hemiptera: Heteroptera: Lygaeidae) on *Dalbergia sissoo* from Jharkhand, India. J Entomol Zool Stud. 2022;10(6):146-147.
 12. Ghosh LK. Handbook of Hemipteran pests of India. Kolkata: Director, Zoological Survey of India; c2008. p. 453.
 13. Jamal K. Effect of host plant on survivability, development and reproductive potential of cotton stainer bug, *Dysdercus koenigii* (Hemiptera: Pyrrhocoridae). J Funct Environ Biol. 2014;4(2):100-105.
 14. Kalia S, Lal RR. Insect pest of *Dalbergia sissoo* Roxb. at and around Jabalpur. Adv for Res India. 1999;20:190-202.
 15. Kamble ST. Bionomics of *Dysdercus koenigii* Fab. (Hemiptera: Pyrrhocoridae). J Netw Entomol Soc. 1971;79:154-157.
 16. Khan HR. Insect pest of *Dalbergia* and their management. Dehradun: Indian Council of Forestry Research and Education Publication; c1995. p. 141.
 17. Kumar A. Fig wax scale, *Ceroplastes rusci* an emerging pest of *Dalbergia sissoo* and its parasitisation in India. Int J Curr Sci. 2013;8:106-114.
 18. Kumar A. The study of insect pests of *Dalbergia sissoo* Roxb. and their seasonal incidence in Jharkhand, India. Am J Agric For. 2017;5(5):137-144.
 19. Kumar P, Dhiman SC. Some ethological aspects of *Chrysocoris stollii* Wolf. (Heteroptera-Pentatomidae-Scutellerinae). J Zool Sci. 2013;1(1):8-12.
 20. Mukhopadhyay A, Das S, Roy P. Some bioecological observation of *Spilostethus hospes* (Fabricius) (Lygaeidae: Heteroptera: Insecta) on a new host plant *Solanum khasainum* Clarke. Rec Zool Surv India. 1991;88(1):115-121.
 21. Nayar KK, Ananthakrishnan TN, David BV. General and applied Entomology. New Delhi: Tata McGraw-Hill Publishing Company Ltd.; c1976. p. 485.
 22. Saha PC, Chandra K, Kushwaha S, Hassan ME, Biswas B, Chakrabarty A, et al. A preliminary study of Family Lygaeidae from Andhra Pradesh, India. Rec Zool Surv India. 2020;120(2):175-188.
 23. Salini S, David KJ, Pratheepa M. Does India have the invasive brown marmorated stink bug, *Halyomorpha halys* (Stal). Curr Sci. 2021;120(2):268-269.
 24. Schaefer CW, Panizzi AR. Heteroptera of economic importance. Boca Raton: CRC Press; c2000. p. 852.
 25. Tara JS, Gupta M, Shrikhandia P, Bala A, Zaffar N, Sharma S. Record of some hemipteran insect pests of mango (*Mangifera indica*) from Jammu region of Jammu and Kashmir state. Int J Interdiscip Multidiscip Stud. 2014;1(8):18-29.
 26. Tewari DN. A monograph on *Dalbergia sissoo* Roxb. Dehra Dun: Indian Council of Forestry Research and Education; 1994. 202 p.
 27. Thangavelu K. Some notes on the ecology of three milkweed bugs in India (Heteroptera: Lygaeidae). J Nat Hist. 1978;12:641-643.
 28. Vinitha K, Karuppuchamy P, Sivasubramanian P. Vanilla insect pests and their natural enemies. Indian J Entomol. 2012;74(4):319-322.