



## INTERCEPTION OF LIVE *PHRATORA LATICOLLIS* (SUFFRIAN) (COLEOPTERA: CHRYSOMELIDAE) ON POPLAR LOGS IMPORTED FROM BELGIUM AND GERMANY

NAGARAJU D K\*, JAIN R K, IYYANAR D, MAHARAJ SINGH, KASTURI N,  
PREMA RANJITHAM T, OM PRAKASH VERMA AND RAVI PRAKASH

Directorate of Plant Protection, Quarantine and Storage, NH-IV, Faridabad 121001, Haryana, India

\*Email: dkn.raju@gov.in (corresponding author)

### ABSTRACT

Logs of *Populus nigra* L., frequently exported from Belgium and Germany are frequently being intercepted with a beetle *Phratora laticollis* (Suffrian) (Coleoptera, Chrysomelidae, Chrysomelinae), which is a pest of poplar trees in their native range. Such interceptions of exotic pests pose biosecurity risk to India, and hence these intercepted shipments require to be fumigated with methyl bromide @ 48 g/ m<sup>3</sup> for 24 hr at the normal atmospheric pressure. The treated shipments also need to be re-inspected prior to release to ensure that these are free of live infestation. Its non-compliances need to be notified to the trading partners on each interception as per the guidelines in the ISPM-13. Significance of such interception in plant biosecurity is discussed herein.

**Key words:** Biosecurity, DIP Act, fumigation, interceptions, invasive insects, IPPC, ISPM, methyl bromide, *Phratora laticollis*, poplar logs, *Populus nigra*, PQ Order, safety matches

Indigenous and cultivated exotic poplar is inadequate to meet the total demand of nearly 2000 match industries in India (Haritha, 2019). Logs of *Populus nigra* L. (Salicaceae) are imported for the manufacturing of splints, a raw material for the safety match industry. Poplar is preferred over other plant species for their colour and quality of splints, and demand for such safety matches is high in the international market. Safety matches made of imported poplar are mostly being exported and those made of indigenous wood such as white mutty *Ailanthus triphysa* (Dennst.) Alston (Simaroubaceae) are sold in the domestic market (Tandon, 1991). Most of the logs are imported through the Tuticorin port in Tamil Nadu, where 90% of match industries are located (Haritha, 2019). This study reports the observations from inspecting and identifying exotic insects associated with logs of *P. nigra* imported from Belgium and Germany.

### MATERIALS AND METHODS

The imported logs of poplar *P. nigra* were regularly inspected by the Plant Quarantine Station at Tuticorin as per the provisions of Plant Quarantine (Regulation of Import into India) Order 2003 issued under Destructive Insects and Pests Act, 1914 to ensure freedom from biosecurity risks. During this procedure, adults of a chrysomelid beetle were frequently intercepted from these logs. The beetles were observed feeding on the sprouts of the logs and resting on walls of containers,

which flew actively when disturbed. The specimens from the intercepted logs were collected and stored in 70% ethyl alcohol before dissection, and examination. Adult male habitus and genitalia were photographed using a Leica M205C stereozoom microscope. Multiple images taken at different depths were combined using Combine ZM software. The specimens are deposited in the collection of the Department of Entomology, Gandhi Krishi Vigyana Kendra (GKVK), University of Agricultural Sciences, Bangalore (UASB), India.

### RESULTS AND DISCUSSION

Intercepted beetles were identified as *Phratora laticollis* (Suffrian, 1851) (Coleoptera, Chrysomelidae, Chrysomelinae) (Fig. 1). It is a pest of poplar native to Europe and hither to unknown in India. In their native range, pest is known to occur round the year and adults overwinter under the bark of trees (Read, 1997). Belgium and Germany are the only exporters of poplar to India, the former being the major exporter. During 2018-2020, 75 of 500 and 3 of 40 consignments from Belgium and Germany respectively, were intercepted with live adults of *P. laticollis* (Table 1). Adults and larvae cause economic damage by feeding gregariously on the ventral side of the leaves (Read, 1997). Inadvertent introduction of *P. laticollis* is detrimental to native *Populus* spp. and other hosts. The association of live adults of any insect in a pathway is a biosecurity risk, as chances of establishments are ensured under suitable

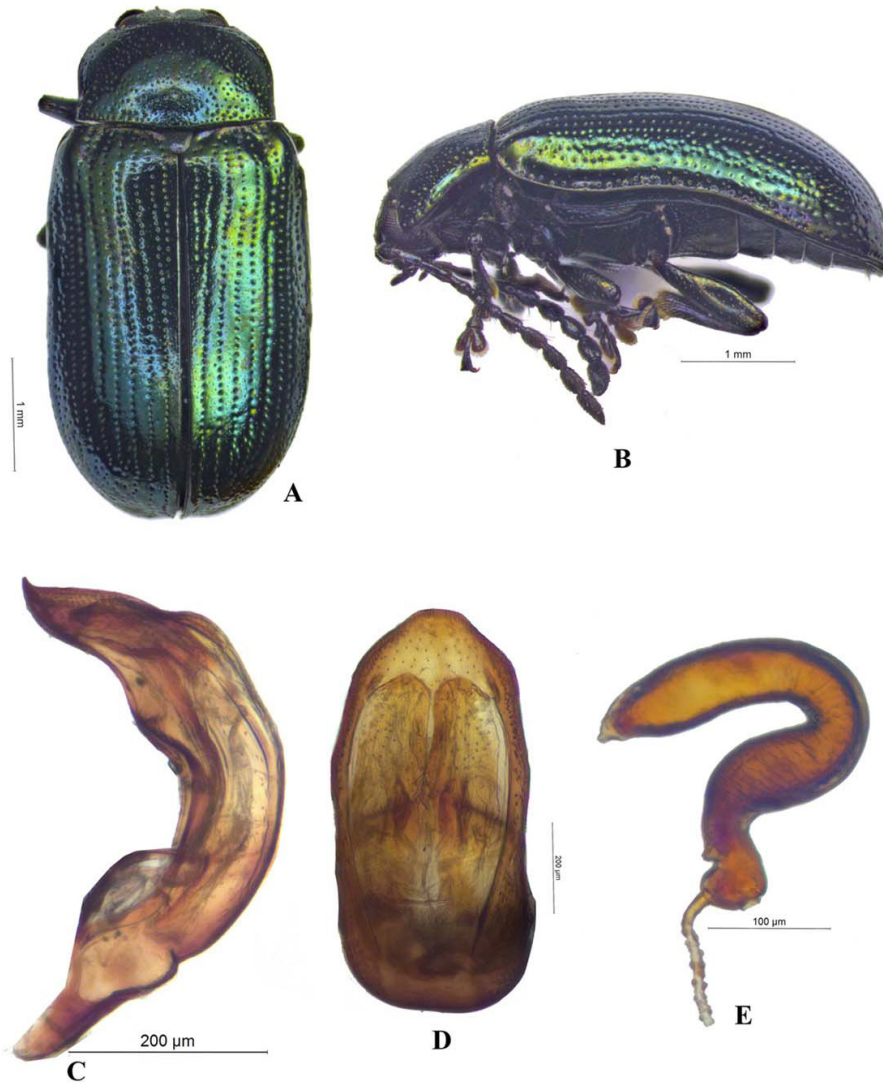


Fig. 1. *Phratora laticollis*. A. Male dorsal view, B. Lateral view, C. Aedeagus in lateral view, D. Apex of Aedeagus, E. Spermatheca

Table 1. Poplar consignments imported and intercepted with *P. laticollis*

Country	Period	Import		Interception (# consignments)
		Quantity (mt)	# Consignments	
Belgium	2018-19	61,608	260	60 (23.08)*
	2019-20	55,711	240	15 (6.25)
		117,319	500	75 (15.00)
Germany	2018-19	4,178	19	02 (10.53)
	2019-20	4,007	21	01 (4.76)
		8,185	40	03 (7.50)

\*Figures in parentheses % of interceptions

weather conditions if hosts are available. Adults which were supposed to overwinter under bark were observed active in the container. Factors triggering adults to break overwintering during the voyage is an added advantage for the species to extend its geographical range. This poses a biosecurity threat for the importing country. Interception of live adults warrants instant mitigation measure and risk assessment (Nagaraju et al., 2020).

Poplar is being imported in shipping containers at >40°C with humidity too increasing if logs are freshly cut, which favors condensation of moisture leading to “container rain” or “cargo sweat”. The micro-environment and a long voyage of nearly a month are congenial for logs to sprout. New flush and high temperature trigger the adults to break overwintering and become active during the voyage. Such adults may escape to the environment if proper and instant attention is not taken during the inspection. In India, eight species of indigenous poplars occur in high altitudes in the Himalaya and exotic species introduced for experimental purposes occur in Tamil Nadu and neighbouring states (Dhiman, 2016). Furthermore, their cultivation in farmlands and social forestry is a popular program in many states. Willows *Salix* spp. (Salicaceae), crab apple *Malus* spp. (Rosaceae) and elm *Ulmus* sp. (Ulmaceae) are the alternate hosts of *P. laticollis* seen in the north and north eastern states (Bor, 1958; Naithani and Nautiyal, 2012). Inland trading of imported logs facilitates the exotic pest’s access to the hosts. Therefore, *P. laticollis* is a potential threat to native poplar species and other economically and ecologically important hosts. All imported containers intercepted were hence fumigated with methyl bromide @ 48 g/ m<sup>3</sup> for 24 hr at normal atmospheric pressure. These logs were re-inspected to ensure pest free status, and its non-compliances notified to the trading partners on each interception as per the guidelines in the ISPM-13 and the consignments were released for use. Thus, *P. laticollis* remains to be a biosecurity threat to India. This is the first report of the species in imported poplar logs in India and elsewhere.

(Manuscript Received: November, 2021; Revised: March, 2022;

Accepted: March, 2022; Online Published: April, 2022)

Online First in [www.entosocindia.org](http://www.entosocindia.org) and [indianentomology.org](http://indianentomology.org) Ref. No. e21240

## ACKNOWLEDGEMENTS

The authors thank Dr N K Krishna Kumar, former Deputy Director General (Horticultural Sciences), ICAR, New Delhi and Dr Abraham Verghese, former Director, National Bureau of Agricultural Insect Resources, Bangalore for scientific scrutiny of the manuscript. Help from Dr K D Prathapan, Kerala Agriculture University, Kerala, India in identification of the beetles and Dr H M Yeshwanth, Department of Entomology, University of Agricultural Sciences, GKVK, Bangalore in preparing the images is acknowledged. The Plant Protection Advisor, Directorate of Plant Protection, Quarantine and Storage (DPPQ & S), Faridabad, India is acknowledged for facilities and encouragement.

## REFERENCES

- Bor N L. 1958. Manual of Indian forest botany. Oxford University Press, London, UK. 490 pp.
- Dhiman R C. 2016. Growing poplar at low altitudes: Zimbabwean experience. Newsletter of the International Poplar Commission No. 6: 4-7.
- Haritha M. 2019. Problems faced by match industry workers - a social perspective, Pen Acclaims 7: 1-11. <http://www.penacclaims.com/wp-content/uploads/2019/12/HARITHA-M.-.pdf> accessed 9 February 2022.
- ISPM 13. 2001. International Standards for Phytosanitary Measures 13. Guidelines for the notification of non-compliance and emergency action. Rome, IPPC, FAO. 14 pp.
- Nagaraju D K, Kalleshwaraswamy C M, Iyyanar D, Maharaj Singh, Jain R K, Kasturi N, Ranjith M, Mahadevaswamy H M, Asokan R. 2020. First interception of two wood feeding potential invasive *Coptotermes* termite species in India. International Journal of Tropical Insect Science. <https://doi.org/10.1007/s42690-020-00287-5>.
- Naithani H B, Nautiyal S. 2012. Indian Poplars with special reference to Indigenous species. Forestry Bulletin 12(1):1-8.
- Read R W J. 1997. Three beetles new to Cumberland (*Phratra laticollis*, *Rhynchites aequatus* and *Gronops lunatus*). The Coleopterist 6(3): 84.
- Tandon, J. C. 1991. Case Study Two: The safety match industry in India. Case studies in forest-based small-scale enterprises in India. J Y Campbell (ed.), Bangkok: Food and Agriculture Organisation of the United Nations. [www.fao.org](http://www.fao.org). accessed 18 June 2021.