



INVASIVES

Newsletter of the Asia-Pacific Forest Invasive Species Network (APFISN)

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Forthcoming Symposia/Workshops

- 18 - 25 October 2009. XIII World Forestry Congress, Buenos Aires, Argentina.
- 2 - 6 November 2009. International Congress on Biological Invasions, Fuzhou, China.
- 16-18 November 2009. Pacific Regional Workshop on Biological Control, Auckland, New Zealand



INVASIVES, bimonthly newsletter of the Asia-Pacific Forest Invasive Species Network (APFISN) is intended to share information among countries in the Asia-Pacific region on Forest Invasive Species (FIS) and the threats they pose in the region. If you have any items of news value on FIS to share between national focal points of APFISN and more widely among foresters, agriculturists, quarantine personnel and policy makers, please pass them on to the editor - Dr. K. V. Sankaran, APFISN Coordinator, Kerala Forest Research Institute, Peechi-680 653, Kerala , India (sankaran@kfri.org). The newsletter is supported by the Food and Agriculture Organization of the United Nations (FAO) and USDA Forest Service.



Threats

Black twig borer (*Xylosandrus compactus*)

The black twig borer is one of the few ambrosia beetles with a wide host range. It is a serious pest of forest trees, shade and fruit trees and agricultural crops. The beetle is usually found in natural forests, planted forests and agricultural areas. Over 224 plant species belonging to 62 families are susceptible to the pest worldwide. The beetle, a member of

the family Scolytidae, is native to Asia and currently distributed widely in China, Cambodia, Fiji, Hawaii, India, Indonesia, Japan, Laos, Malaysia, New Zealand, Papua New Guinea, Samoa, Singapore, Sri Lanka, USA and Vietnam. It breeds underneath or inside the bark of trees, and hence, easily spreads far and wide through international trade. The common ways of introduction to new areas are through packing materials and import of seeds and fruits.



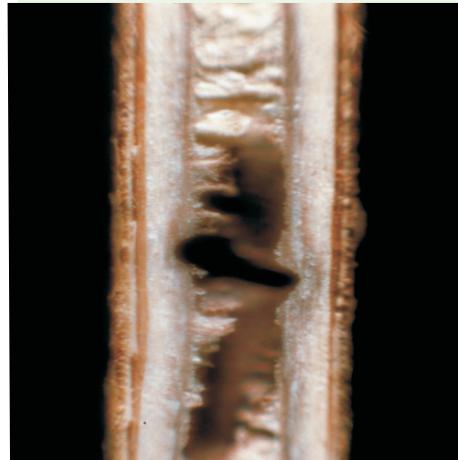
Black twig borer attack on christmas tree

1.9 mm long and 0.7 - 0.8 mm wide; color is brown to black and with a transversely-oriented hair tuft at the base of the pronotum. Male beetles, which do not fly, are 0.8 – 1.1 mm long and 0.4 - 0.5 mm wide; the body is rounded, dwarfed, reddish-brown in color and all beetle characters are poorly formed. Eggs are small (0.3 mm wide, 0.5 mm long), white and ovoid. Mature larvae have a pale brown head and a creamy white body; are ca. 2 mm long; remain solely in brood galleries; and arise from parthenogenesis. In a host twig or branch, the female constructs an entrance tunnel into the pith or wood to a depth of 1 - 3 cm, where a small cavity is formed and a loose cluster of eggs is deposited. One or two females may occupy a twig or branch. Generally, there is only a single female if the twig diameter is less than 7 mm, but up to 20 females will be seen in bigger branches.

The larvae feed on a mixture of ambrosia fungi which grows on the chamber walls and the host plant tissues. Pupation and mating of brood adults occurs in the infested material. The brood adults emerge through the entrance holes made by the parent beetles, which are located on the bottom side of the



Black twig borer entrance hole on twig



Brood adult in the twig chamber

branches. Approximately 28 days (at 25°C) are required for the development from egg to adult beetle.

One of the fungi associated with the ambrosia beetles is *Fusarium solani*. Twigs infested by the beetle usually exhibit dieback below the brood chamber. Although minor infestations by the ambrosia beetle usually do not kill the whole plant, the dieback of twigs can have considerable impact on the appearance of infested trees and shrubs. Severe infestations can kill even large trees. The excavation of twigs and branches by the ambrosia beetle and the introduction of pathogenic bacteria and fungi like *Fusarium solani* are the causes of damage to the host trees. Fungi introduced by the beetle grow inside the tissues of the trees, cause infection and block the water and sugar conducting tissues, leading to symptoms like dieback and wilting, and ultimately the death of the trees. The excavation of tunnels alone may not cause much damage to the infested trees. Most ambrosia beetles primarily attack weak or unhealthy plants. However, the black twig borer is known to attack healthy plants as well, which makes it a potentially serious pest to native trees as well as other plants.

Preventive measures against the beetle's attack include maintaining the health of the trees and pruning beetle infested branches and twigs. Physical methods of control include the mass trapping of adult beetles using various types of traps and attractants. Chemical control includes the use of the insecticide Chlorpyrifos. Biological control methods are unknown.

News column

Better efforts for caring environment

Considering the emerging issue of the spread of forest pests around the world, the Government of the Democratic People's Republic of Korea has initiated a project to study pest damage in the country, especially caused by *Dendrolimus spectabilis* on *Pinus densiflora*. The main aim of this FAO-assisted project is to apply different pest control methods within the context of integrated pest management, build the forest pest control capacity of forest management stations, and establish a nationwide strategic frame work for pest management. FAO experts visited the pest-infested areas, conducted field surveys to assess the damage and provided insecticide-impregnated tree banding material for the control of *D. spectabilis*. The FAO experts also provided the knowhow for propagating the wasp *Trichogramma endrolimi*, used in the biocontrol of the pest. The Ministry of Land and Environmental Conservation in the DPRK is arranging training programs on integrated pest management and the safe use of insecticides, and also for upgrading efforts for reproduction of the wasp.

New publications

Nunez, M.A., Horton, T.R. and D. Simberloff. 2009. Lack of belowground mutualisms hinders Pinaceae invasions. *Ecology*, 90: 2352 - 2359.

Kelly, D.W., Paterson, R.A., Townsend, C.R., Poulin, R. and D.M. Tompkins. 2009. Parasite spillback: A neglected concept in invasion ecology? *Ecology*, 90: 2047 - 2056.

Fox, J.C., Buckley, Y.M., Panetta, F.D., Bourgoin, J. and D. Pullar. 2009. Surveillance protocols for management of invasive plants: Modelling Chilean needle grass (*Nassella neesiana*) in Australia. *Diversity and Distributions*, 15: 577 - 589.

Luigi, D.A., Broennimann, O., Kozlowski, G., Guisan, A., Morin, X., Keller-Senften, J. and F. Felber. 2009. Climate change, anthropogenic disturbance and the northward range expansion of *Lactuca serriola* (Asteraceae). *Journal of Biogeography*, 36: 1573 - 1587.

Rossiter-Rachor, N.A., Setterfield, S.A., Douglas, M.M., Hutley, L.B., Cook, G.D. and S. Schmidt. 2009. Invasive *Andropogon gayanus* (gamba grass) is an ecosystem transformer of nitrogen relations in Australian savanna. *Ecological Applications*, 19: 1546 - 1560.

Harner, M.J., Crenshaw, C.L., Abelho, M., Stursova, M., Follstad Shah, J.J. and R.L. Sinsabaugh. 2009. Decomposition of leaf litter from a native tree and an actinorhizal invasive across riparian habitats. *Ecological Applications*, 19: 1135 - 1146.

Lesica, P. and D. Hanna 2009. Effect of biological control on leafy spurge (*Euphorbia esula*) and diversity of associated grasslands over 14 Years. *Invasive Plant Science and Management*, 2: 151 - 157.

Recent Books

Invaded: The Biological Invasion of South Africa: By Leonie Joubert, Witwatersrand University Press Publications, 2009.
'Invaded' is about biological pollution, the plants and animals that have spread around the globe on the back of human movement – those that have traversed the borders and boundaries of natural habitats and have begun to erode their new adopted environment. South Africa has been invaded by many alien invasive species over the past 300 years and more. Unhindered by the predators and diseases which once kept their populations in check, many have come to outnumber and out-compete with the species they encounter in their adopted homes. This book provides an overview of the different species that have arrived in South Africa during the past three centuries, and the threats they pose (or have the potential to become). The book attempts to quantify how these species have changed systems, disrupted the natural environment and threatened the future of South Africa's many unique plants, animals and habitats.

Management of invasive weeds: Ed. Inderjit, Springer Verlag, 2009. The objectives of this book are to discuss the ecological approaches needed to design effective management strategies, the recent progress in management methods and tools, the success and failure of management efforts for some of the worst invaders, and the restoration and conservation of invaded land. The book provides up-to-date information on the management of non-native invasives and readers will get a unique perspective on the ecological aspects of the management of invasives. The book will be useful to graduate students, researchers, managers and policy makers involved in the management of exotic invasives.

Forthcoming Symposia / Workshops

18 - 25 October 2009. XIII World Forestry Congress, Buenos Aires, Argentina. The theme of the WFC, "Forests in development: a vital balance," will be tackled from social, environmental and economic perspectives, thus providing an opportunity to analyse the various functions of this natural resource in local, regional and global contexts. Internationally renowned speakers will be called on, representing academic and scientific organizations, the private sector, civil society, indigenous and rural communities, and public institutions connected with the forest sector, with the aim of offering a comprehensive, global view of forests. There will be side events on different aspects of forestry, including invasive species, pests and diseases. Contact: info@cfm2009.org

2 - 6 November 2009. International Congress on Biological Invasions, Fuzhou, China. The theme of the International Congress on Biological Invasions is: "Managing biological invasions under global change." This congress will be a forum to respond to increasing invasive alien species (IAS) issues worldwide, targeting the needs of IAS management at national, regional and international levels. ICBI also aims to provide a platform for the exchange of research developments and tracking of technical progress in multidisciplinary topics dealing with IAS. Additionally, it will address gaps between research and field application related to biosecurity, quarantine and international trade, as well as the linkages and impact of climate change on biological invasions. Contact: icbi2009@faas.cn

16-18 November 2009. Pacific Regional Workshop on Biological Control, Auckland, New Zealand. The workshop will bring together biological control practitioners and regulatory people from throughout the Austral - Pacific region with an interest in biological control of pests on Pacific Islands. The workshop includes a symposium, where selected presentations will be made. The main objectives of the workshop are: 1) Review biological control activity in the Pacific to date; 2) Develop a plan for increasing the use of biological control to manage widespread invasive species in the Pacific Islands; 3) Develop a prioritized list of invasive species on which to focus biocontrol efforts in the next decade; 4) Mobilize capacity for international cooperation in the exploration and evaluation of potential biocontrol agents; and 5) Explore other barriers to the increased use of biocontrol and possible solutions. Contact: Carolyn Lewis, cl.sb@xtra.co.nz

