APFISN

Invasives

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

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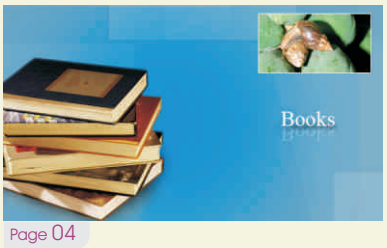


About APFISN

The Asia-Pacific Forest Invasive Species Network (APFISN) has been established as a response to the immense costs and dangers posed by invasive species to the sustainable management of forests in the Asia-Pacific region. APFISN is a cooperative alliance of the 33 member countries in the Asia-Pacific Forestry Commission (APFC) - a statutory body of the Food and Agriculture Organization of the United Nations (FAO). The network focuses on inter-country cooperation that helps to detect, prevent, monitor, eradicate and/or control forest invasive species in the Asia-Pacific region. Specific objectives of the network are: 1) raise awareness of invasive species throughout the Asia-Pacific region; 2) define and develop organizational structures; 3) build capacity within member countries and 4) develop and share databases and information.

INVASIVES, monthly newsletter of the Asia-Pacific Forest Invasive Species Network (AFPISN) 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). This newsletter is supported by the Food and Agriculture Organization of the United Nations (FAO) and USDA Forest Service.

Koster's curse (*Clidemia hirta*)

Clidemia hirta, commonly called Koster's curse (Melastomataceae), is a noxious weedy shrub native to tropical, Central and South America. It was Koster who

Koster's curse - infestation

introduced the seeds of *Clidemia* to Fiji prior to 1890, along with coffee plants imported from British Guiana, and the plants became invasive, hence the name "Koster's curse". According to the Global Invasive Species Database, it is one among 100 of the world's worst invaders. Outside its native range, the plant is distributed in Fiji, Malaysia, Samoa, Sri Lanka, the USA, Indonesia, Thailand and Vietnam in the Asia-Pacific region. Its spread has been linked to soil disturbances, particularly ones caused by wild pigs.

Koster's curse is a coarse, perennial shrub that can attain 2 m in height. The stems are covered with red bristles that lighten in colour with age. The leaves are opposite, simple and petiolate. The inflorescence is a panicle that can be terminal or axillary. The calyx has five hairy linear lobes atop a long urceolate hypanthium. The corolla consists of five small white petals. Flowering and fruiting occur throughout the year with prolific production of seeds. The fruit is a hairy, ovoid, many-seeded bluish-black berry. A single plant can produce more than 500 berries per year and each fruit contains over 100 seeds. The seeds can remain dormant for up to four years in the soil.

Koster's curse -leaf

C. hirta is a vigorous invader in its introduced range. It colonizes anthropogenically disturbed open areas such as pastures, riversides, roadsides and tree plantations. It is more shade-tolerant in its introduced range than in its native area. The plant can rapidly colonize burned areas. It can tolerate a wide range of climatic conditions, including rainfall of more than 2,500 mm per year. In Brazil, the plant will flower throughout the year.

The plant grows and spreads very quickly, smothering and displacing native plants growing in shaded habitats. It rapidly invades disturbed habitats, often caused by feral pigs, altering natural forest regeneration by forming impenetrable thickets and developing monotypic stands. The plant also has the ability to invade undisturbed habitats, although population levels usually remain low in this case. It disrupts grazing land and the speedy growth of thickets creates physical barriers to humans. The leaves contain hydrolysable tannins, which are toxic to the liver and kidneys of goats and cause gastroenteritis.

The fruit is edible, but insipid. It is used to make a syrup which is reported to remove the bitterness of tea. In Brazil, the plant is used to treat skin infections caused by *Leishmania braziliensis*.

Koster's curse -flower & fruits

Hand pulling of seedlings and digging up mature plants are effective in controlling the weed. Controlling feral pigs is helpful in reducing its spread. Cutting at the base and treating the cut-ends using water-based Triclopyr soon after cutting has been found effective. Several expeditions for potential biological control agents have been made and a number of insects are currently being screened. A thrips, viz., *Liothrips urichi*, works well in open areas, but not in the shade of forests. A beetle, viz., *Lius poseidon* and moths, viz., *Antiblemma acclinalis*, *Carposina bullata* and *Mompha trithalama* are being tested for efficacy. An isolate of *Colletotrichum gloeosporioides* recovered from diseased leaves of *C. hirta* collected in Panama was shown to be a highly aggressive pathogen.

News

Invasive plant and the "assumption of abundance"

We all know that invasive species are one of the major threats to our rich and pristine biodiversity and ecosystem services. However, it has not possible so far to discover a reason for the "invasion paradox" – why and how alien plant species dominate in new regions where they lack adaptability compared to native plants. A widely held hypothesis is that a special trait enables the alien plants to become more abundant in their new homes than in their native habitats.

A group of scientists (a global collaboration called Nutrient Network), including Prof. Andrew MacDougall of the University of Guelph, Canada, have recently given proof that the "abundance assumption" does not hold true for the majority of invasive plants. They collected information on 26 plant species at 39 locations on four continents and found that 20 of the 26 species were equally or less abundant at both the new and native sites. Dr. Jennifer Firn of the Queensland University of Technology, who is the lead author of the article on this subject published in the journal Ecology Letters, said that "abundance at native sites can predict abundance at introduced sites, which is a criterion not currently included in biosecurity screening programmes." It is hoped that the results of the current study could lead to better predictions on the success of invading species.

New publications

Nuñez, M.A. and K.A. Medley. 2011. Pine invasions: climate predicts invasion success; something else predicts failure. Diversity and Distributions, 17: 703-713.

Martin, L.J. and B.R. Murray. 2011. A predictive framework and review of the ecological impacts of exotic plant invasions on reptiles and amphibians. Biological Reviews, 86: 407-419.

Pyšek, P., Jarošík, V., Chytrý, M., Danihelka, J., Kühn, I., Pergl, J., Tichý, L., Biesmeijer, J.C., Ellis, W.N., Kunin, W.E. and J. Settele. 2011. Successful invaders co-opt pollinators of native flora and accumulate insect pollinators with increasing residence time. Ecological Monographs, 81: 277 - 293.

Richardson, D. M., Carruthers, J., Hui, C., Impson, F. A. C., Miller, J. T., Robertson, M. P., Rouget, M., Roux, J. J. L. and J. R. U. Wilson. 2011. Human-mediated introductions of Australian acacias – a global experiment in biogeography. Diversity and Distributions, 17: 771 - 787.

Richardson, D. M. and M. Rejmánek. 2011. Trees and shrubs as invasive alien species – a global review. Diversity and Distributions, 17: 788 - 809.

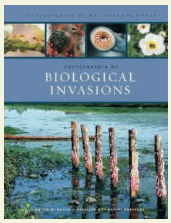
Papeş, M., Sallstrom, M., Asplund, T. R. and M. J. V. Zanden. 2011. Invasive species research to meet the needs of resource management and planning. Conservation Biology, 25: 867 - 872.

Kellner, J. R., Asner, G. P., Kinney, K. M., Loarie, S. R., Knapp, D. E., Bowdoin, T. K., Questad, E. J., Cordell, S. and J. M. Thaxton. 2011. Remote analysis of biological invasion and the impact of enemy release. Ecological Applications, 21: 2094 - 2104.

Miller , J. T., Murphy, D. J., Brown, G. K., Richardson, D. M. and C. E. Gonzalez-Orozco. 2011. The evolution and phylogenetic placement of invasive Australian *Acacia* species. Diversity and Distributions, 848 - 860.

Dukes, J. S., Chiariello, N. R., Loarie, S. R. and C. B. Field. 2011. Strong response of an invasive plant species (*Centaurea solstitialis* L.) to global environmental changes. Ecological Applications 21: 1887 - 1894.

Books

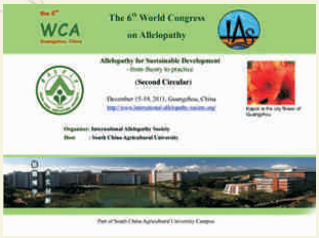


Encyclopedia of Biological Invasions: Eds. Daniel Simberloff and Marcel Rejmanek, University of California Press, 2011. This encyclopedia sheds light on a topic at the forefront of global ecology – biological invasions, or organisms that come to live in the wrong place. The book addresses all aspects of the science of invasion at a global level – invasions by animals, plants, fungi, and bacteria. It also encompasses different fields of study, which include biology, demography, geography, ecology, evolution, sociology, and natural history. The book also includes illustrations, an appendix of the world's worst 100 invasive species and a glossary.

Biological Invasions: Economic and environmental costs of alien plant, animal, and microbe species. Ed. David Pimentel, CRC Press, 2011. The second edition of this book is the most current single source reference on scientific and economic information on invasive species. It deals with the diverse and unpredictable roles that invasive alien species play as they invade new ecosystems, damage crops and forests and harm ecosystems leading to loss of biodiversity. Information on how to prevent the spread of invasive species and methods of control are also provided.

Future events

6, 8, 10 and 11 November 2011. APFISN Workshop on Forest Health Technology and Phytosanitary Standards, Beijing, China. The workshop, organized in conjunction with the 24th meeting of the Asia-Pacific Forestry Commission, is aimed at bridging the gap in knowledge on forest health technologies and phytosaniatry standards in forestry in the Asia-Pacific region. It will facilitate dialogue and sharing of expertise on the above topics among participants from 20 countries in the region. Major topics which will be discussed include forest health situation in the region, tools used in invasive species survey, risk assessment, long term monitoring, phytosanitatry measures in forestry and management options for invasive species. Resource persons in the workshop include Gillian Allard, FAO, Eric Allen, Canada, Shiroma Sathyapala, New Zealand, Yan Jun, China, Chris Baddeley, New Zealand, Lee Su See, Malaysia, Zhao Wenxia, China, Sitansu Pattnaik and T.V. Sajeev, India, Sun Jianghua, China and Pham Quang Thu, Vietnam.



15-19 December 2011. The 6th World Congress on Allelopathy, Guangzhou, China. The World Congress of Allelopathy is a formal academic conference organized by the International Allelopathy Society every three years. The theme of the workshop is "Allelopathy for Sustainable Development –from theory to practice". The major areas to be covered are: 1) Allelopathy in agriculture; 2) Allelopathy in horticulture and forestry; 3) Allelopathy in natural ecosystems; 4) Allelopathy in aquatic system; 5) Allelopathy and rhizosphere ecology; 6) Allelopathy and invasive plants; 7) Chemistry of allelochemicals; 8) Allelochemical interactions; 9) Environmental fate of allelochemicals; 10) Allelopathy: methodology and modeling; 11) Molecular biology and genetics of allelopathy; 12) Physiology and biochemistry of allelopahthy; 13) Allelopathy mechanisms; 14) Plant-insect interactions; 15) Plant-microbial interactions. For more information visit: www.international-allelopathy-society.org

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