
# INVASIVES

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

Volume 19 Nov - Dec '08


## Threats

- Singapore daisy (*Sphagneticola trilobata*)

## News column

- 11,000 alien species invade Europe
- Invasive papaya pest discovered in Asia

## New publications

- The role of research for integrated management of invasive species, invaded landscapes and communities.
- Managing beyond the invader: manipulating disturbance of natives simplifies control efforts.
- General guidelines for invasive plant management based on comparative demography of invasive and native plant populations.
- Dynamics of the functional groups in the weed flora of dryland and irrigated agroecosystems in the Gangetic plains of India.
- Focus on ecological weed management: what is hindering adoption?
- Evaluation of glyphosate for managing giant reed (*Arundo donax*).
- Progress towards the eradication of mikania vine (*Mikania micrantha*) and limnocharis (*Limnocharis flava*) in Northern Australia.

## Recent books

- Use of Microbes for Control and Eradication of Invasive Arthropods (Progress in Biological Control)
- Handbook of Alien Species in Europe (Invading Nature - Springer Series in Invasion Ecology)

## Forthcoming Symposia/Workshops

- 10 - 12 August 2009. International Workshop on Biological Control of Invasive Species affecting Pacific Island Forests, Agriculture and the Environment, Fiji.

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.

Singapore daisy - Habit


INVASIVES, bimonthly 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). The newsletter is supported by the Food and Agriculture Organization of the United Nations (FAO) and USDA Forest Service.

# Singapore daisy (*Sphagneticola trilobata*)

*Sphagneticola trilobata* (Singapore daisy), previously known as *Wedalia trilobata*, is an ornamental weed native to the tropics of Central America. According to the Global Invasive Species Database, Singapore daisy is one among 100 of the "World's Worst" invaders. It is now widespread throughout Australia, India, Indonesia, Papua New Guinea, Samoa, Tonga, The United States of America and Vanuatu. Grown widely as an ornamental, the plant easily escapes from gardens and forms a dense ground cover that crowds out or prevents regeneration of other species, including natives. It also competes with crops for nutrients, light and water, thereby reducing yields.

Infestation

In northern Queensland, it is found along disturbed edges of rainforests. The plant grows well on almost all soil types, including bare limestone, nutrient-poor sandy beaches and swampy or waterlogged soils. It can tolerate inundation and high levels of salinity.

Singapore daisy is a creeping, mat-forming perennial herb which grows up to 70 cm in height. The stems are prostrate, rounded, rooting at the nodes, 1 - 3 (-4) m long. The flowering portions are ascending, coarsely strigose to spreading hirsute, and sometimes sub-glabrous. Leaves are dark green, fleshy, entire, usually 4 - 9 cm long, (1.5-) 2 - 5 cm wide, irregularly toothed or serrate, usually with a pair of lateral lobes. Peduncles are 3 - 10 cm long; the involucre is campanulate-hemispherical, ca. 1 cm high; chaffy bracts are lanceolate, rigid; often there are 8 - 13 ray florets per head, rays are 6 - 15 mm long; disk corollas are yellow, 4 - 5 mm long; the pappus is a crown of short fimbriate scales. Achenes are brown, tuberculate, 4 - 5mm long and topped with short scales. Stems form new plants where they touch the ground and pieces readily take root. The plant is commonly spread through the dumping of garden waste. Vegetative propagation is common and plants usually develop a few fertile seeds.

Singapore daisy - twig with flowers

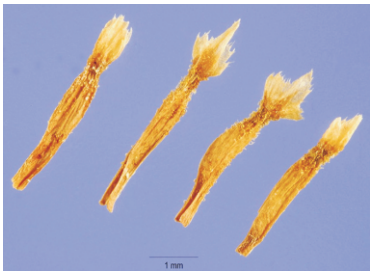
Flower

Singapore daisy is an excellent ground cover in warm climates. It is a good soil binder too. The plant is very attractive because of prolific blooming. It needs to be mowed to keep a low and manicured appearance. The plant is used in traditional medicine – the crushed leaves are used as a poultice and a tea prepared from the leaves is given to alleviate the symptoms of colds and flu. Also, it is used in combination with other herbs to clear the placenta after birth.

The plant has a very wide ecological tolerance. It can thrive well in open areas with well-drained, moist soil, but can also tolerate dry periods. The plant is found to grow up to 700 m or more in elevation (up to 1,300 m in French Polynesia). It is a noxious weed in agricultural areas, coastlands, natural forests, planted forests, ranges/grasslands, riparian zones, scrub/shrub lands, urban areas, waste places and garbage dumps and other disturbed sites. The weed is also found along streams, canals, at the borders of mangroves and in coastal strand vegetation.

Singapore daisy chocking waterways

Mechanical control of the weed includes 'scarifying' small patches of soil dominated by it; the top few centimeters of soil are removed using a suitable tool such as a fire hoe. The aim is to remove seeds which are stored in the soil. Leaving disturbed areas open promotes the reintroduction of weeds. Mowing or slashing of the weed infested areas should be avoided as this may cut the plants into smaller pieces that can develop into new plants, thus increasing the risk of it spreading to new areas. Chemical control is achieved through application of 2 - 5 % glyphosate. Biological control is unknown.



Seeds

# News column

## 11,000 alien species invade Europe

A comprehensive overview of Europe's alien species and their impacts and consequences for the environment and society is now available. DAISIE (Delivering Alien Invasive Species Inventory for Europe), has documented over 11,000 alien species present in Europe, based on the work of more than 100 European scientists. The majority of these alien species are, however, not harmful. About 15 percent of the species cause economic damages and another 15 percent are harmful to the environment, habitats, native plants, animals and micro-organisms. The information is available from the freely accessible web portal (http://www.europe-aliens.org/) and the DAISIE "Handbook of alien species in Europe" was recently launched. Previous to this publication, the number and impacts of harmful alien species in Europe has been underestimated, especially for species that do not cause harm to agriculture, forestry or human health. The lack of knowledge contributed to inaction in many European countries while the damages due to invasive species continued unabated.

## Invasive papaya pest discovered in Asia

Scientists at Virginia Tech's Office of International Research, Education, and Development (USA) recently identified a polyphagous bug called the papaya mealybug, which is an emerging threat to papaya in India and Indonesia. This is the first report of the occurrence of papaya mealybug in Indonesia and Southeast Asia. Attacks by the papaya mealybug are a serious threat to countries in the Caribbean, South America, the Hawaiian Islands, and Florida, where papaya brings millions of dollars for farmers, middlemen, and processors. The host range of the mealy bug includes 60 species of plants including beans, eggplants, tomato, sweet potato, citrus and mango. These discoveries are crucial; the sooner authorities can arrest the spread of the papaya mealybug, the better their chances of saving the crop. The papaya mealybug has its origin in Mexico, where it developed alongside natural enemies and was first identified in 1992. In 1995, it was discovered on the Caribbean island of St. Martin. By the year 2000, it had spread to 13 countries in the Caribbean, to Florida in the United States, and to three countries each in Central and South America. On papaya plants, the mealybug infests all parts of the young leaves and fruits, mostly along the veins and midrib of the older leaves. Young leaves become crinkly and older leaves turn yellow and dry up. Terminal shoots become bunchy and distorted. Affected trees drop flowers and fruits. To add insult to injury, the mealybug secretes a honeydew-like substance that turns into a thick sooty mold growth, making the fruit inedible and unusable for the production of papain. The good news is that the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) has developed a biological control program to tackle the pest. APHIS has identified three parasitoids, including parasitic wasps, which are highly effective at containing the mealybug. These natural enemies are being cultured in a laboratory in Puerto Rico and are offered free to countries that request them.

Papaya fruit infected with mealy bug

# New publications


Buckley, Y.M. 2008. The role of research for integrated management of invasive species, invaded landscapes and communities. Journal of Applied Ecology, 45: 397 - 402.

Firn, J., Rout, T.M., Possingham, H.P. and Y.M. Buckley. 2008. Managing beyond the invader: manipulating disturbance of natives simplifies control efforts. Journal of Applied Ecology, 45: 1142 - 1151.

Ramula, S., Knight, T.M., Burns, J.H. and Y.M. Buckley. 2008. General guidelines for invasive plant management based on comparative demography of invasive and native plant populations. Journal of Applied Ecology, 45: 1124 - 1133.

Anamika, S., Sharma, G.P. and S.R. Akhilesh. 2008. Dynamics of the functional groups in the weed flora of dryland and irrigated agroecosystems in the Gangetic plains of India. Weed Biology and Management, 8: 250 - 259.

Bastiaans, L., Paolini, R. and D.T. Baumann. 2008. Focus on ecological weed management: what is hindering adoption? Weed Research, 48: 481 - 491.

David, F.S., Tan, W., Liow, P.S., Ksander, G.G., Linda, C., Whitehand, Weaver, S., Olson, J., and M. Newhouser. 2008. Evaluation of glyphosate for managing giant reed (*Arundo donax*). Invasive Plant Science and Management, 1: 248-254.

Simon, J.B., Panetta, F.D. and E.G. Kylie. 2008. Progress towards the eradication of mikania vine *(Mikania micrantha)* and limnocharis *(Limnocharis flava)* in Northern Australia. Invasive Plant Science and Management, 1: 296-303.

## Recent Books

**Use of Microbes for Control and Eradication of Invasive Arthropods (Progress in Biological Control): Eds. Ann E. Hajek, Travis R. Glare and Maureen O'Callaghan, Springer, 2008.** This book discusses the use of arthropod-specific pathogens for the control and eradication of invasive arthropod species. The major functional issues involved in utilizing pathogens for control of invasive arthropods are discussed through case studies. The major portion of the book is composed of chapters describing different invasive species that have been targeted with entomopathogens – in many cases with excellent results. These examples cover urban, agricultural and forestry situations.

**Handbook of Alien Species in Europe (Invading Nature - Springer Series in Invasion Ecology): By DAISIE, Springer, 2008.** This handbook summarizes the major findings of a research program and addresses the invasion trends, pathways, and economic and ecological impacts for eight major taxonomic groups. Approximately 11,000 alien species recorded in Europe are listed, and fact sheets for 100 of the most invasive alien species are included, each with a distribution map and color illustration.

## Forthcoming Symposia / Workshops

**10 - 12 August 2009. International Workshop on Biological Control of Invasive Species affecting Pacific Island Forests, Agriculture and the Environment, Fiji.** Workshop objectives: 1) Review biological control activity in the Pacific to date; 2) Develop a plan for increasing the use of biological control as a means to manage widespread invasive species in the Pacific Islands and identify potential funding sources for regional approaches; 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 exploration and evaluation of potential biocontrol agents; 5) Increase communication about ongoing work and set up a mechanism for future communication; 6) Determine the extent of existing capacity and the need for additional staff and infrastructure; 7) Explore other barriers to the increased use of biocontrol and possible solutions. Contact: Marie LaRosa; alarosa@fs.fed.us

Compiled and edited by Dr. K. V. Sankaran, APFISN Co-ordinator on behalf of the Asia-Pacific Forest Invasive Species Network. For more information on the APFISN, please contact your national focal point or the APFISN Co-ordinator or Mr. Patrick Durst, Senior Forestry Officer, FAO Regional Office for Asia and the Pacific, 39 Phra Atit Road, Bangkok. Email: patrick.durst@fao.org