



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.

Editorial

This issue of Invasives marks the beginning of the International Year of Forestry and is brought out in a new format and design. As an electronic news letter sent to nearly 500 researchers and managers across the Asia-Pacific region, Invasives fill an unique niche- of connecting people working with invasive species and keep them posted on the new happenings on the topic across the region. Fast and timely communication is the primary requisite for early detection of invasives and the newsletter strives towards this with its bimonthly issues.



Biological invasions in forests are far less recognised and responded to as compared to that in agricultural systems, but the biodiversity loss caused in forests far out-weigh that in the cropping systems. The rugged terrain, absence of expertise and regular monitoring exercises leads to unchecked invasions in forests. In most countries of the Asia-Pacific region, forest protection has not yet encompassed the management of alien invasive species. This, along with the non-existence of phytosanitary measures in forestry remains the twin challenges faced by APFISN.

In particular, the forest fringes and tree fall gaps need special attention in times of globalization wherein the amount of goods and people on the move are geometrically increasing. Forestry sector also calls for not just identification and eradication of invasion but also restoration of habitats invaded by alien species. This uphill task necessitates the knowledge of invasives as well as indigenous species which can be used for habitat restoration. In other words, successful management of alien species in forestry requires thorough understanding of local species and community ecology. APFISN is committed towards better sharing of knowledge in the Asia -Pacific region and also with similar networks across the globe so that management of alien invasive species becomes part of routine forest management with adequate input from ecological sciences

K. V. Sankaran
APFISN Coordinator



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



Cane toad (*Bufo marinus*)

Bufo marinus (syn. *Rhinella marina*), is a terrestrial and nocturnal voracious toad which was introduced to more than 30 countries as a biocontrol agent against insect pests of crop plants but later turned out an aggressive invader. It was introduced into Queensland, Australia in 1935 to control cane beetle, a significant pest of sugar cane, and spread from there to several parts of Australia.



Cane toad - Habit

The toad can feed on various terrestrial animals and cause extinction of native species. A toxic secretion from the toad affects animals that come into contact with them. Its eggs, if ingested, are poisonous to human beings. According to Global Invasive Species Database, Cane toad is one among 100 of the world's worst invaders. The native range of the toad is Central to South America and it is currently distributed in several countries including Australia, Fiji, Japan, Kiribati, Papua New Guinea, Philippines, Solomon Islands and China in the Asia - Pacific region. Its invasiveness is a significant problem in Australia.



Cane toad - Mating

Cane toads are heavily built with the adults usually 10-15 cm long, but sometimes up to 38 cm and 2.65 kg in weight. They are with dry, warty skin that can be grey, yellowish, olive-brown or reddish-brown.

The legs are short. The ventral surface is pale with dark mottling. The species is sexually dimorphic, with females significantly larger than the males and having smoother skin. Males develop dark lumps on their first two fingers during the mating season. A median vocal sac also opens on each side of the mouth. Well-developed cranial crests form ridges above the eyes and join above the snout. The eyes are prominent and have horizontal pupils and golden irises. Adults have parotoid glands (large, triangular swellings) on each shoulder behind the ear drum. Hind feet are webbed, whereas front feet are not. It adopts a more upright stance when sitting on flat ground, compared to native frogs. Juvenile cane toad has smooth, dark skin with darker blotches and bars, and they lack parotoid glands. Tadpoles are uniformly black and 22-27 mm long. The cane toad can lay around 8,000-35,000 eggs per clutch. The tadpoles emerge 48-72 hours after eggs are laid. They can develop into young toads in 10 days - 6 months depending on local conditions. The life span is at least five years and up to 15 years in captivity. Breeding occurs throughout the year. Fertilization is external and females lay eggs within long, gelatinous strings.



Cane toad -Eggs

The cane toad inhabits humid areas with adequate cover, like cane fields, savannah, agricultural areas, urban areas, gardens and natural forests. They will usually stay on dry land and reproduce in any shallow water near its surroundings. Toads and tadpoles can withstand very high levels of salinity. Larvae are tolerant of high temperatures. The toad can be found beneath fallen trees, loose boards, matted coconut leaves, and similar cover during day time.

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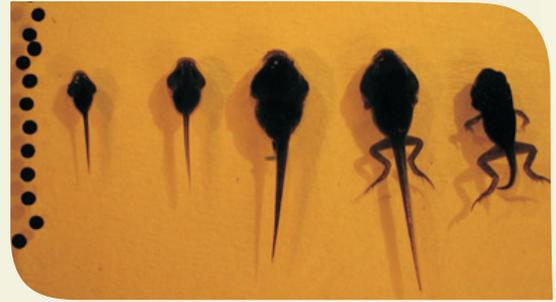
The toad is a voracious feeder and it can eat almost anything it can catch and swallow such as small rodents, reptiles, other amphibians, birds and a range of invertebrates. It also feed on plants, dog food and household refuse. The toad plays an important role in structuring native anuran communities and is a threat to survival of native Australian fauna.



Cane toad -Tadpole

Eggs and tadpoles of the toad are poisonous and displace native tadpoles.

South American nomadic people use the bufotoxin as an arrow poison for hunting. It is also used as a narcotic. In Japan, bufotenin, a chemical excreted by the cane toad, is used as an aphrodisiac and hair restorer. In China, this chemical is used to lower heart rate at the time of cardiac surgery. Cane toad is also used as a laboratory animal because the population is big and is easy and inexpensive to maintain and handle. Its skin is used to make leather and novelty items. Stuffed toads are valuable items in the tourist market.

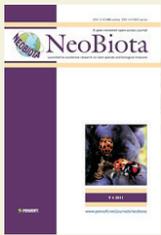


Stages of cane toad metamorphosis

Preventive measures like strict quarantine check and public awareness help to reduce the risk of spread of cane toad to non infested areas. Hedge barriers or wire mesh fence around 50 cm high is effective to exclude the toad. Australian scientists identified a parasitic worm that attacks lungs and stunting the growth and killing cane toads.

News

NeoBiota - An open access journal for invasion biology launched



This journal is a continuation of the former NEOBiota publication series founded in 2002 by the working group with the same name. This group meanwhile evolved into 'NEOBiota, the European Group on Biological Invasions', and decided in 2010 to transfer the publication series into the open-access, peer-reviewed journal NeoBiota. This journal publishes in depth information about biological invasion and its consequences to our pristine ecosystem. The journal has a highly renowned specialist editorial team. All papers in open access are free to read, download, print, and distribute.

New publications

Capinha, C. and P. Anastacio. 2011. Assessing the environmental requirements of invaders using ensembles of distribution models. *Diversity and Distributions*, 17: 13 - 24.

Davies, K. F., Bares, J. C. and N. Deacon. 2011. Native communities determine the identity of exotic invaders even at scales at which communities are unsaturated. *Diversity and Distributions*, 17: 35 - 42.

Gonzalez, S. G., Diaz, C. T., Valencia, G., Morales, P. T., Cavieres, L. A. and J. G. Pausas. 2011. Anthropogenic fires increase alien and native annual species in the Chilean coastal matorral. *Diversity and Distributions*, 17: 58 - 67.

Clark, G. F. and E. L. Johnston. 2011. Temporal change in the diversity-invasibility relationship in the presence of a disturbance regime. *Ecology Letters*, 14: 52 - 57.

Meyer, J. Y. and M. Fourdrigniez. 2011. Conservation benefits of biological control: The recovery of a threatened plant subsequent to the introduction of a pathogen to contain an invasive tree species. *Biological Conservation*, 144: 106 - 113.

Hou, Y. P., Peng, S. L., Chen, B. M. and G.Y. Ni. 2011. Inhibition of an invasive plant (*Mikania micrantha* H.B.K.) by soils of three different forests in lower subtropical China. *Biological Invasions*, 13: 381 - 391.

Ngweno, C. C., Mwasi, S. M. and J. K. Kairu. 2010. Distribution, density and impact of invasive plants in Lake Nakuru National Park, Kenya. *African Journal of Ecology*, 48: 905 - 913.

Richardson, D. M., Iponga, D. M., Pascual, N. R., Krug, R. M., Milton, S. J., Hughes, G. O. and W. Thuiller. 2010. Accommodating scenarios of climate change and management in modelling the distribution of the invasive tree *Schinus molle* in South Africa. *Ecography*, 33: 1049 - 1061.

Books

Biological Invaders in Inland Waters: Profiles, Distribution, and Threats. Ed. Francesca Gherardi, Springer, 2010. The book examines the identity, distribution, and impact of freshwater non-indigenous species and the dynamics of their invasion. It focuses on old and new invaders and provides a starting point for further research.



Impact of Invasive Plant Species. By Kuldip Singh Dogra, R. K. Kohli, and Batish SK Sood, Lap Lambert Academic publishing, 2010. Invasive plant species alter native community composition, deplete species diversity, affect ecosystem process and thus cause huge economic and ecological imbalance. These plants possess a set of remarkable traits that allow them to colonize huge areas upon invasion. Studies of invasive species introductions in the past revealed that the impacts of their invasion are complex and can permanently alter the structure and function of communities, cause local extinctions and changes in ecosystem processes. The increased incidence of invasion around the world poses a major threat to indigenous biological diversity. The book examines these aspects by citing examples from the NW Himalaya, India.



Future events

7 - 12 June 2011. 11th World Congress on Parasitic Plants, Martina Franca, Italy. The Congress will bring together scientists representing a wide spectrum of disciplines, research approaches, and geographical representation of parasitic plant research. Assembling specialists with different perspectives, this congress will focus around the common theme of plant parasitism and provide a stimulating environment for learning and exchanging of ideas. The Congress will include presentations at the cutting edge of parasitic plant research and management of parasitic weeds. Contact: ipps2011@area.ba.cnr.it



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