



THAILAND

National Profile Report on Invasive Alien Species

In Thailand there is no single or centralized competent national authority that is responsible for the prevention and management of invasive alien species (IAS). The responsibilities are scattered in different ministries such as the:

- Ministry of Agriculture and Cooperatives (MOAC) in the Department of Agriculture (DOA), for plants, insects, plant pathogens and biological control agents;
- Department of Livestock Development (DOLD), on microorganisms and animals of livestock and veterinary importance;
- Department of Fisheries (DOF), on fish and aquatic animals and plants (freshwater and marine);
- Royal Forest Department (RFD), on other plants, shrubs, trees, wildlife and endangered animals under the CITES' lists;
- Ministry of Public health (MOPH) such as the Department of Medical Science (DOMS) and Department of Communicable Diseases Control (DOCDC), on microorganisms and causal agents of epidemiological importance; and
- Ministry of Commerce (MOC), on the import and export of certain flora and fauna into and out of the country.

Plant quarantine is under the Department of Agriculture while animal quarantine is under the Department of Livestock Development; both agencies are under the Ministry of Agriculture and Cooperatives.

With no single or central authority responsible for all IAS, the National Environmental Board's Convention on Biological Diversity (CBD) Subcommittee created in 1997 a Working Group (WG) on Alien Species to oversee all issues dealing with alien species, invasive or beneficial, in the country. The Working Group is composed of representatives from the government agencies concerned and experts. The Office of Environmental Policy and Planning (OEPP), official CBD national focal point, under the Ministry of Science, Technology and Environment

serves as the secretariat. The WG has included IAS prevention and management as a priority programme in the National Biodiversity Strategies and Action Plans for 1996-2001 and 2002-2006. It was also under this WG that inventories of alien species, microorganisms, plants and animals have been undertaken, and the prevention and management measures prepared to cope with IAS in particular in addition to occasional recommendations have been provided to the competent authorities for appropriate action whenever any unprepared problem arises out of IAS in the country.

The WG has also accomplished a large amount of work in preparing inventories of alien species in the country, taking into account alien species that are both invasive and beneficial in nature.

However, the number of known alien species of microorganism, plant and animal origin is still far from being reasonably estimated and the inventories of alien species could at least reflect the extent at which alien species as well as IAS exist in the country.

Results of the inventories include:

- In their report on endemic and exotic microorganisms of livestock and veterinary importance, the National Institute of Animal Health, DOLD, MOAC, estimated that 19 out of 168 virus / virus strains are exotic while 135 of 274 bacterial strains or serotypes and one out of 31 protozoa are of exotic origin. These estimates were from the culture collections maintained at the institute. MIRCEN Bangkok is yet to carry out the inventory of its microbial collections.
- The National Biological Control Research Center (NBCRC) of Kasetsart University and the National Research Council of Thailand identified 24 serious insect pests of agricultural importance to be IAS. In addition there were introductions of four vertebrate species for the biological control of water weeds, 12 insects for the biological control of both terrestrial



and aquatic weeds, two predator snails for the control of giant African snails, and altogether 42 species of beneficial alien species for the biological control of insect pests and weeds of agricultural importance as well as insect vectors of medical and public health importance. They also has recorded two alien species for biological control of weeds from South America, which have found their way to Thailand and neighbouring Southeast Asian countries.

- DOF estimated at least 32 species of introduced aquatic animals including snails.
- Another authority estimated 94 mammal, 168-228 bird, 63-93 reptile, 23 amphibian, 218 fish, four invertebrate and 37 insect alien species.
- RFD reported 190 exotic plant species while the National Science and Technology Museum made an inventory of 921 exotic plant species. The Office of Cane and Sugar Board under the Ministry of Industry estimated 59 major alien weed species present in the sugarcane-growing areas of the country. The Institute of Horticultural Research, DOA also prepared an inventory of horticultural crops imported into the country on an annual basis.
- While RFD has an inventory of 116 bird species and 15 mammal species brought into the country in 1995 under the CITES' lists, the Zoological Parks Organization of Thailand has an inventory of some 371 exotic animals found in both the government- and privately-run zoos.

Status of Alien Species: Invasive and Beneficial

Of the 100 world's worst IAS listed by the Invasive Species Specialists Groups (ISSG), at least 38 species are present in Thailand: one microorganism, one aquatic plant, 13 land plants, nine land invertebrates (two snails, seven insects), five fish, one bird and eight mammals. Of this 38, the following are considered beneficial alien species in Thailand and probably elsewhere in the Southeast Asian region: at least 12 (one microorganism, five land plants, five insect species, and one fish) are supposed to be either endemic or are within the centre of origin; and few species such as rosy wolf snail (*Euglandina rosea*), which is native to Florida, U.S.A., was introduced for biological control of the giant African snail (*Achatina fulica*); four fish species consisting of carp (*Cyprinus carpio*), and tilapia (*Oreochromia mossambicus*) which were introduced as protein source, walking catfish (*Clarius batrachus*),



Mosquito fish

Bob McDowall



Striped snakehead fish

www.thetropicaltank.co.uk

a delicacy for the Thais and other Southeast Asians, and mosquito fish (*Gambusia affinis*), which was introduced for the biological control of mosquito larvae. The giant snakehead fish (*Channa micropeltis*) and other snakehead fish like the striped snakehead fish (*Channa striatus*) are very common fish dishes for the Thai despite the Chinese strain of the giant snakehead fish (*C. micropeltis*) being considered a new IAS in few states in the United States today.

Some of the more important IAS identified are water hyacinth (*Eichornia crassipes*) and giant water fern (*Salvinia molesta*) among the water weeds, and giant sensitive plant (*Mimosa pigra*), Siam weed (*Chromolaena odorata*), mile-a-minute (*Mikania micrantha*), and Maui pamakani (*Ageratina adenophora*) among the terrestrial weeds. The latter two, which are from India and China, are invading



Water hyacinth

www.waterscapes.ca



Ivy gourd

www.tripod.com



Siam weed

www.cpitt.uq.edu.au

the northern highland areas of Thailand, Myanmar and Laos. Weeds of endemic origin in SEA such as itch grass (*Rottboelia cochinchinensis*) and *Rubus alceifolius* also became IAS of economic importance outside of the region in South America and ReUnion and Mauritius respectively. The leafy purge (*Euphorbia geniculata*) and *Hyptis* sp. are newcomers in the region. However, the aquatic *Neptunia natans*, an alien native to Central America has become neutralized and cultivated as an economic crop like other cultivated alien plants species such as papaya, cassava, pineapple, and para rubber. A semi-cultivated ivy gourd (*Coccinia cordifolia* or *C. grandis*) has travelled with the SEA refugees to Hawaii to become one of the worst weeds in Hawaii during the mid 1980s.

Classic examples of IAS invading the Asia and Pacific region were the spiraling whitefly (*Aleurobus*

dispersus) in the early 1980s and the *Leucaena* psyllid (*Heteropsylla cubana*) during the late 1980s and the early 1990s. These were later followed by a complex of agromyzid leafminers. Recently, there was an invasion of the cycad scale (*Aulacaspis yasumatsui*), which was discovered on cycads shipped to Miami Botanic gardens from Pattaya, Thailand. The same scale was also discovered in California and in Hawaii as recent as 2002. Thus an insect parasite (*Coccobius fulvus*) and a predatory cybocephalid (*Cybocephalus binotatus*) from Thailand were immediately introduced and released in Miami to help lessen the problem.

Existing programmes and other government agencies involved

The only bold and obvious programme dealing with the management of IAS was the establishment of the National Biological Control Research Center (NBCRC) at Kasetsart University in collaboration with the National Research Council of Thailand (NRCT) and 17 collaborating universities and agencies under the MOAC, MOPH and few other government enterprises since 1978. NBCRC deals only with biological control programmes aimed at IAS amenable to biological control and in collaboration with other national, regional and international organisations and institutions within the context of biological control and the integrated pest management (IPM) systems. ■

*Excerpts from the paper entitled "Thailand National Profile Report" presented by Banpot Napompeth, Chairman, Working Group on Alien Species during the Workshop on the Prevention and Management of Invasive Alien Species: Forging Cooperation through South and Southeast Asia, held on 14-16 August 2002 in Bangkok, Thailand.