LAO PDR

Prevention and Management of Invasive Alien Species

The protection of the environment in Lao Pople's Democratic Republic (Lao PDR) is anchored in the Constitution: *"All organizations and citizens must protect the environment and natural resources: land, underground, forest, fauna, water resources and atmosphere."*

Since then, many pieces of legislation were promulgated such as the Decree on the Prohibition of Wildlife Trade (1986), Decree on the Management and Protection of Wild Animals, and on Hunting and Fishing (1989), Decree on the Establishment of National Protected Areas (1993), Quarantine Legislation (1994), Forest Law (1996), Water Resources Management Law (1996), Plant Application Legislation (1996), Land Law (1997), Mining and Mineral Resources Law (1997), Transportation Law (1997), Electricity law (1997), Environment Protection Law (1999), and the Pesticide Legislation (2000). The bio access legislation draft, which contains measures related to legal and illegal exportation of indigenous species and introduction (legal and illegal) of alien species, is still being discussed among concerned institutions at the central level, and will be promulgated in the near future.

The implementation however of these laws has been facing some constraints such as lack of qualified human resources, limited budget, and the population's not being used to legislation procedures yet. The effective implementation of these laws requires institutional strengthening, appropriate budget allocation, and public awareness on the importance of these laws.

Lao PDR is Party to the Convention on Biological Diversity, which it ratified in 1996, and is in the process of ratifying the RAMSAR and the CITES Conventions, among others. The Science, Technology and Environment Agency (STEA), together with the Ministry of Agriculture and Forestry, is formulating the National Strategy and Action Plan on Biological Resources that would be promulgated by the end of 2003.

Lao PDR became a member of the ASEAN in 1997. The principal legal instrument of ASEAN that has potential nature conservation obligations for Laos is the Agreement on the Conservation of Nature and Natural Resources.

Institutionally, the STEA, created in 1993 under the Prime Minister's Office, is in charge of the overall management and control of the environment activities at the national level. It is therefore the main manager and coordinator of activities related to the conservation and sustainable use of national biological resources. On the other hand, the Ministry of Agriculture and Forestry is responsible for solving environment issues related to agricultural and forestry development, notably on the conservation and sustainable use of agricultural and forestry biological resources. The Ministry of Public Health is mainly involved in the use of biological resources, in particular traditional medicine.

Quarantine inspectors at the central, provincial and district levels including checkpoints, are in charge of issuing import permits, particularly phytosanitary certificates.

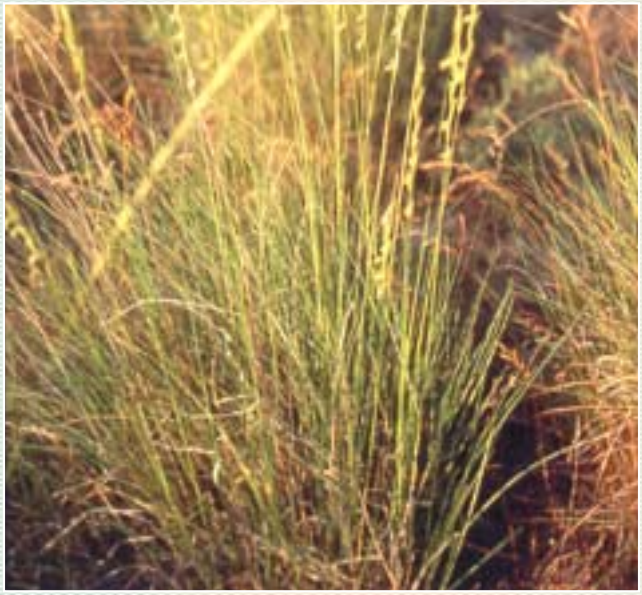
Case Studies on Major Invasive Alien Species

For many centuries, alien species notably coffee have been introduced in Laos. Since then, coffee has become a major export product of Laos. These introductions are mainly due to economic reasons. However, some alien species have been observed to have destructive impacts on rural household's income. Among these species are: golden apple snail (*Pomacea* sp.), bakanea (*Fusarium fujikoroi*), and some weeds: *Echinochloa colonum* (Graminae), *Echinochloa crus-galli* (Graminae), *Minisa invisa* Mart (Leguminosae), *Mimosa pigra* (Leguminosae). Although there has been no in depth study or research undertaken relative to the positive and negative impacts of the alien species in the country, there were a number of case studies done on some weeds and on the Golden Apple Snail.

Weeds. According to farmers, the weed problem has increased severely over the last 20 years due to

Vic Ranney

Mimosa pigra



courses.washington.edu

Graminae

the spread of many new species introduced from abroad. In the upland agricultural production systems in the northern provinces of Laos, it is mainly the Leguminosae *Minisa invisa* Mart and *Mimosa pigra* that have become increasingly problematic, whereas in the lowland rice production system, it is the Graminae *Echinochloa colonum* and *Echinochloa crus-galli*.

Farmers usually hand weed their fields, but this has become very inefficient and labour is limited. Thus they gradually started using commercial herbicides, which in the long-term could lead to water pollution.

Studies related to finding appropriate solutions for these issues have been undertaken but due to budget and qualified staff constraints, these activities have not been continued.

Golden apple snail (Pomacea sp. from Thailand). The snail was first introduced at Sikhotabong District of Vientiane Municipality in 1991 and spread out in three villages: Viengsavanh, Nahai and Phosi. Damages to lowland ricefields were first reported in 1992. Two years later (1994), snails from Vietnam were brought to the Northern provinces of Laos mainly as a source of food.

Since then, the snail has spread to 10 of 17 provinces of the country mainly thru connecting waterways such as irrigation canals and rivers as well as by people. The golden apple snail attacks mostly young rice seedlings (seedbed up to 20 days after transplanting), and consequently fields infested with the snails have to be re-planted several times in order to replace the missing hills.

In several infested areas, collecting the golden apple snail in the field to contain its increasing population has not succeeded due to labour constraints. Thus farmers resorted to using chemicals (e.g. Niclosamide or Baylucide, and copper sulfate) to control its spread. Although the chemicals may have helped in controlling the spread of the snails, these products have also polluted the water and seriously threatened other aquatic organism living as well as the health of people working in the paddy fields.

Many different control techniques were developed by the Agricultural Extension Center and have been already transferred to farmers. The core of technologies was focused on integrated apple snail management using different techniques applied simultaneously such as preventing the entrance of snails to the rice field, hand picking, transplanting with old seedlings, and reduction of water level in the rice field using a variety of local experiences. Still many people in the country are still unaware of the threat. As they are attracted by the snails' colorful egg masses, they bring them home for consumption.

Existing programmes

The following research programmes are still seeking appropriate and effective alternatives (notably the use of ecological products) to conventional pesticides for the control of pests:

- The National Agricultural Research Center in cooperation with the Lao-IRRI project, has initiated research experiments testing the efficiency of several biological controls against the golden apple snail.
- The Northern Agricultural and Forestry Research Center in Luang Prabang, together with

the Lao-IRRI project has started several method controls against weeds.

- The Australian Cooperation for International Agricultural Research (ACIAR) is supporting a four-year project (1999-2002) focusing on techniques for rodent control in the upland agricultural production systems.

The prevention and the management of invasive alien species in Laos are still at the infancy stage due to financial constraint and the lack of qualified staff, of appropriate information, and of a legal framework, notably in its implementation as well as the low level of awareness of the Lao society on the negative impacts of the species to the health of the population, to the economy, and to the environment as a whole.

Considering the urgent need to take serious actions to effectively prevent and manage IAS, Nhoybouakong and Khamphoukeo (2002) in their paper entitled "Prevention and Management of Invasive Alien Species in Lao PDR," recommended a number of actions, among which are to:

- Promote and develop economic incentives on the sustainable use and conservation of national biological resources specifically on the indigenous species;
- Promulgate appropriate legislation, particularly related to the introduction of invasive alien species, emphasizing on the cooperation and support of local communities;
- Strengthen the capacity of local staff, notably taxonomists, tropical botanists and zoologists;
- Establish a National Network or Working Group related to the prevention and management of invasive alien species;
- Promote researches on the positive and destructive impacts of invasive alien species;
- Create a National Biodiversity Conservation Fund in order to effectively address the IAS issues; and
- Cooperate with relevant institutions at the sub-regional, regional and international levels related to this issue such as information sharing, capacity strengthening and collaboration of research.■

Excerpts from the paper entitled "prevention and management of Alien Invasive Species in Lao PDR" presented by* ***Monemany Nhoyboukong* *of the Environmental Research Institute, and* ***Khamouane Khamphoukeo*** *of the National Agricultural Research Center during the workshop on "The Prevention and Management of Invasive Alien Species: Forging Cooperation through South and Southeast Asia" held from 14-16 August 2002 in Bangkok, Thailand.*