

Invasive Alien Species in Nepal

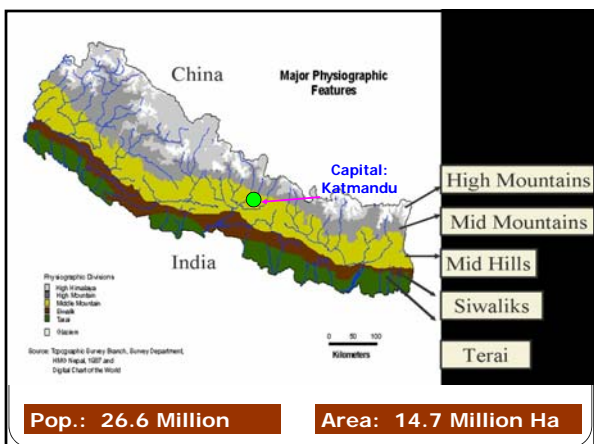
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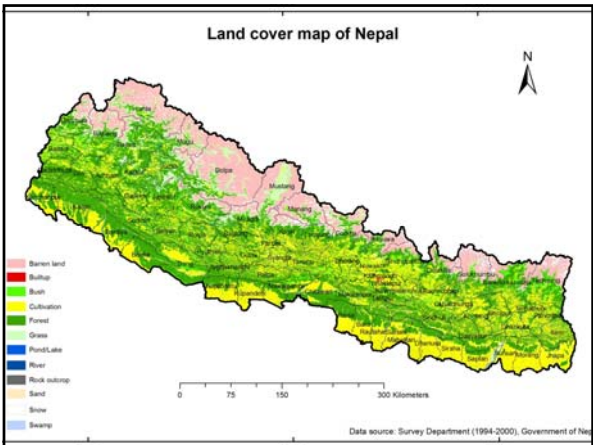
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Outline

- Biophysical setting of Nepal
- Background
- Present status
- Assessment of IAS
- Impacts of IAS introduction
- Progress in IAS management
- Legislative framework
- Policy framework
- Management status
- Problems in IAS management
- IAS related research/studies
- Three years action plan





IAS: Background

- Introduced by gardeners, traders and foresters
- Many alien species arrived from neighboring and other countries for agricultural purpose
- Mostly neo-tropical origin IAS have been introduced through India, (natural barrier (Himalaya) to the north)
- Many alien species have been noticed in warm climate of lower altitude than cold condition of higher altitudes
- Some native species disappeared over the past years
- Immigration of species become faster due to human interference

IAS: Present Status

- Over 100 non-native plant species in Nepal
- Some non native species have changed the species composition of fallow and cultivated lands
- *Chromolaena odorata* (Eupatorium), *Ageratina adenophora*, *Mikania macrantha*, *Eichornia* species have been the worst invasive species in Nepal
- *A. adenophora* and *C. odorata* are aggressively colonizing abandoned slopes in the tropical to lower temperate zones
- *A. adenophora* was introduced in India after 1498 and then to Nepal from India probably before 1950

IAS: An Assessment

- In 2002/03 year 21 invasive alien species were categorized as high, medium, low and insignificant risk bearing species
- Six IAS were in high risk, 3 IAS in medium risk, 7 IAS in low risk and 5 IAS in insignificant risk
- Altogether 47 IAS have been recorded in this study.
- Forests, fallow land, cropland and wetland had 22, 29, 34, and 10 IAS respectively.

IAS: Effects

- Effects on biological diversity, and agricultural production, natural ecosystems, economic systems and human health.
- It is due to their high dispersal ability, reproduction capacity, and adaptability to colonize in new habitats, capacity to out-compete native species and change habitats/ecosystems.
- The factors for promotion of invasiveness of alien species are habitat disturbances and degradation, frequent introduction with high magnitude of the alien species and lack of predators or natural competitors in the new habitat.

IAS: Examples of Impact

- Have caused habitat loss or destruction and change in species composition in some protected areas of Nepal
- One of the major threat in Chitwan National Park (World heritage site)
- The park is highly affected by *C. odorata* (*Eupatorium*) species, *Lantana camara*, and *Mikania micrantha*, *Eichhornia crassipes* (water hyacinth).
- One of the attractive and touristic lake in the country, Phewa lake, has been a serious problem by *Eichhornia spp.*

IAS: Progress

1. 2001: A consultative country workshop in Kathmandu by IUCN-Nepal to discuss the emerging need of inventory and assessment of invasive alien plant species in Nepal
2. A consensus was made for a common definition of Invasive Alien Species (IAS)
3. 2004: A workshop on '*Mikania macrantha* weed invasion in Nepal' was held in Kathmandu.
4. IUCN-Nepal has carried out inventory of IAS in 16 districts during 2002-2003 representing tropical, sub-tropical and temperate regions of the country.

Legislative framework

Directly related

1. The Plant Protection Act, 1972 (Amended in 2007 and its Regulation 2010)
2. The Seed Act, 1989 and its regulation 1998

Legislative framework

Indirectly related:

- Forest Act, 1993 and its Regulations, 1995
- Environment Protection Act, 1996 and its Regulations, 1997
- Water Resources Act, 1992 and its Regulations, 1993
- Soil Conservation and Watershed Management Act, 1982 and its Regulations, 1985
- National Parks and Wildlife Conservation Act, 1973 & its regulations
- Environmental Impact Assessment Guidelines for Forestry Sector, 1995
- Revised Community Forestry management Guidelines, 2002
- Leasehold Forestry Guidelines, 2002
- IUCN Guidelines for Preventing Biodiversity Loss due to Invasive Alien Species, 2000
- Buffer Zone Management Guidelines, 1999

Policy framework

- Wetland Policy, 2003
- Nepal Biodiversity Strategy, 2002
- Herbs and Non-timber Forest Products Development Policy, 2004
- Agriculture Policy, 2004
- Revised Forestry Sector Policy, 2000
- National Conservation Strategy, 1988

Management status

- No management strategy and plan for prevention, containment, eradication and control
- Uprooting, cleaning weeding, ploughing, control grazing, hoeing, digging, mowing, flooding and burning are some of the common traditional practices
- Alternative use of IAS such as bio-briquette, organic manure, ropes, baskets and handicraft are increasing

Management status cont.2

- Establishment of plant quarantine checkpost
- 12 numbers of quarantine office in border with India and 3 numbers in China border
- DFRS as a focal point to deal with Invasive Alien Species in forest land (APFISN)
- Study on Information system of IAS in forest land is going on in DFRS
- Research on *Parthenium hysterophorus* by Central Dept. of Botany, Tribhuvan University

Problems in IAS management

- Lack of specific strategy and planning
- Poor information on succession and control of such invasive exotic species
- Insufficient research, survey, investigation
- Weak level of awareness, education
- Weak level of coordinated effort in IAS mgt
- Inadequate financial support in IAS mgt
- Absence of dedicated institutional framework

IAS related research/study

Category	Number of studies
Academic study (10 studies) 1 Ph D 8 M. Sc thesis 1 B. Sc thesis	<ul style="list-style-type: none">•3 in general topics,• 4 in <i>Mikania macrantha</i>,• 1 in <i>Lantana camera</i>,•1 in <i>Parthenium hysterophorus</i>•1 in <i>Chromolaena odorata</i>
Published papers (13 papers)	<ul style="list-style-type: none">•4 in <i>Parthenium hysterophorus</i>,•3 in <i>Mikania macrantha</i>• 3 in <i>Eupatorium adenophorum</i>•3 in general topics
Unpublished papers (9 studies)	<ul style="list-style-type: none">•2 in <i>Mikania macrantha</i> ,•2 in <i>Eupatorium adenophorum</i>,•1 in <i>Chromolaena odorata</i>•4 in general topics

Three Years Action Plan for IAS Mgt.

1. Prepare IAS Strategy/Management Plan
2. Survey of distribution, intensity and impacts of IAS
3. Organize a regional level workshop in IAS
4. Establish network forum among the concerned stakeholders
5. Provide training and orientation programme
6. Develop IAS information system
7. Establishment of IAS Management Committee in the DFRS
8. Coordinate universities/colleges for curricula development
9. Organize awareness programme (information dissemination)

Mikania macrantha in Chitwan NP



Invaded habitat of Rhino in Chitwan NP



C. odorata in forest research plot



Thank You