Asia-Pacific Forest Invasive Species Network

Invasive alien plants in the forests of Asia and the Pacific

KFRI

Asia-Pacific Forestry Commission

APFISN

FAO FIAT PANIS

RAP PUBLICATION 2013/06

ASIA-PACIFIC FOREST INVASIVE SPECIES NETWORK

ASIA-PACIFIC FORESTRY COMMISSION

Invasive alien plants in the forests of Asia and the Pacific

K. V. Sankaran
T. A. Suresh

Kerala Forest Research Institute
Kerala, India

Food and Agriculture Organization of the United Nations
Regional Office for Asia and the Pacific
Bangkok, 2013

Design : K. K. Subin

For copies, write to :

Patrick B. Durst
Senior Forestry Officer
FAO Regional Office for Asia and the Pacific
39 Phra Atit Road
Bangkok 10200
Thailand

Tel: (66-2) 697 4000
Fax: (66-2) 697 4445
E-mail: patrick.durst@fao.org

The cutoff date for the data and information used in this report was March 2012.
Printed in Kerala, India

Published by
Food and Agriculture Organization of the United Nations
Regional Office for Asia and the Pacific
Bangkok, Thailand

ISBN 978-92-5-107638-5 (print)
E-ISBN 978-92-5-107639-2 (PDF)

Cover photographs : Invasive alien plants in the forests of Asia and the Pacific. Right – *Hedychium gardnerianum;* left top - *Antigonon leptopus*, bottom - *Miconia calvescens*

Preface

The impacts of invasive species are mostly irreversible. This demands awareness of the threats they pose, preventive measures to thwart new invasions and control of those species that have already invaded our ecosystems. The impacts of invasive species can be social, economic and environmental. Indigenous species are highly vulnerable because their growth and survival are inhibited by invasives. This is especially true in the case of plants. The first step in managing invasive alien plants is to recognize them – those that have stealthily entered our ecosystems and those that have the potential to do so at an opportune time. This book serves to address these issues.

It is important to realize that invasions are a continuous process and not an isolated or single event. Such uninterrupted invasions help a species to expand its gene pool and build up viable populations. Hence, it is important to identify the pathways of invasions and develop strategies to contain them. The contents of this volume provide information on the current distribution of invasive alien plants in the Asia-Pacific region which can assist countries to investigate current and prospective pathways of invasions and plan ahead.

The Asia-Pacific region is characterized by countries with diverse climatic regimes, topography, forest types and governance structures. Awareness of biological invasions and preparedness to handle them vary greatly across these countries. While some countries have excellent quarantine regulations and tools for forest health surveillance, the ability to respond rapidly to a new invasion and techniques to manage established invasive species have yet to be developed properly in others. One of the main goals of the Asia-Pacific Forest Invasive Species Network (APFISN) is to open up communication channels across the Asia-Pacific region so that the problem of invasion, impending threats, impacts of invasions and options for management are shared to address these critical issues proactively.

This comprehensive compilation is not an end in itself but a significant step forward in the fight to protect vulnerable ecosystems from invasive alien plants. It will serve as a benchmark for researchers when new threats arise that must be documented and contained immediately.

Hiroyuki Konuma
Assistant Director-General and
Regional Representative for Asia and the Pacific
Food and Agriculture Organization of the United Nations

Acknowledgements

We are extremely grateful to Mr Patrick Durst, Senior Forestry Officer, Dr S. Appanah, Senior Programme Adviser, Mr Chris Brown, Consultant, FAO Regional Office for Asia and the Pacific, Bangkok, Dr Robert Mangold, USDA Forest Service and Dr Gillian Allard, Forestry Officer, FAO, Rome for advice and encouragement. The Director, Kerala Forest Research Institute, India is thanked for providing facilities for carrying out this work.

The help rendered by Mr K.K. Subin, Dr P. Sujanapal, Dr R. Suganthasakthivel, Dr T.V. Sajeev, Mr K.H. Hussain, Dr E.M. Muralidharan, Dr N. Sasidharan, Mrs M.A. Jency, Mr C.B. Saji and Mr M.M. Roy, colleagues at the Kerala Forest Research Institute, in producing this book is gratefully acknowledged. We are indebted to all colleagues within the KFRI and elsewhere for kind permission to reproduce some of their photographs in this volume.

Contents

Introduction

Biological invasions are dynamic and often fast enough to evade efforts at ongoing documentation. Species entry into databases on invasions depends on how fast an invasion is recognized, assessed and reported. This seldom occurs at the same pace across countries and continents. However, compilation of the available information, verification of its authenticity and publishing remain the first stage of documenting new invasions. This process needs to be strengthened and reiterated as frequently as possible to catch up with the plethora of invasions happening in this era of increased movement of people and goods across the globe.

This book drew its primary list of invasive alien plants in the forests of the Asia-Pacific region from the Global Invasive Species Database. Information on habit, habitat, threat and damage caused, uses and methods of management were either collected/generated by the authors or compiled from authentic web sites, research papers, books and proceedings of workshops. Geographic distribution was based on the GRIN taxonomy database and Web sites of the European and Mediterranean Plant Protection Organization and the Pacific Island Ecosystems at Risk (PIER). The accuracy of the nomenclature was checked with the web sites of the United States Department of Agriculture, the International Plant Name Index (IPNI) and the *Plant book* by D.J. Mabberley. Distribution maps were prepared at the Asia-Pacific Forest Invasive Species Network (APFISN) Secretariat at the Kerala Forest Research Institute (KFRI) using Arc GIS (9.0) software. The synonyms of the species names were adapted from www.plantlist.com. Author citations for insects and fungi follow www.ces.csiro.au and www.indexfungorum.org and/or www.mycobank.org, respectively. The synthesis of information on invasive plants from nearly 33 countries would not have been possible without the support of the APFISN. The National Coordinators of the Network in different countries were instrumental in preparing invasive species checklists which greatly helped this process.

In the complex procedure of ensuring authenticity of the information collected and limiting the literature search to early 2012, it is possible that a few of the new invasive plants in the forests of the region have not found a place in this book.

The contents of the book are arranged as follows: the botanical name of the invasive plant in question, its native range, most frequently used synonyms and common names, a general description of the plant, habitat, threat and damage, distribution in the Asia-Pacific region (also shown in a map in pink colour), uses as provided in the literature and options for management. Additional synonyms of each plant are provided in the index to synonyms. Although information on chemical control of individual plants is provided wherever available, it does not imply that the authors or the APFISN authenticate/support such practices. Hence, use of herbicides in any instance will be at the user's risk. The authors propose that the use of chemical methods of control should be avoided as far as possible. Likewise, invasive plants should not be used for medicinal or any other purpose unless authentic information on their non-toxicity is gathered.

This book has certain specific functions. The first is raising awareness among quarantine officials of potential invasions and strengthening vigilance to thwart new introductions. Secondly, it should help foresters to quickly detect invasive alien plants in forest habitats to facilitate eradication/management. Thirdly, it should assist researchers in identifying knowledge gaps on invasive plants in their countries and help to fill them. In these contexts, the primary goal is to kick-start the process of evolving invasive weed management protocols for the region and open communication channels across the Asia-Pacific region on the movement of invasive alien plants. It would be gratifying if the book meets all or at least some of these major objectives.