

ĐẠI HỌC THÁI NGUYÊN  
TRƯỜNG ĐẠI HỌC NÔNG LÂM

Rod Buckney, Dang Kim Vui, Hoang Van Hung, Lou De Filippis

# Evaluation of the conservation status and risks for some endangered plant species in Ba Be national park, Bac Kan province, Vietnam



NHÀ XUẤT BẢN NÔNG NGHIỆP

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## PREFACE

The work described in this book was the focus of a study for the degree of Doctor of Philosophy conducted by Hoang Van Hung in the Department of Environmental Sciences at the University of Technology, Sydney (Australia).

The study arose from a perceived threat to the existence of several plant species in Ba Be National Park, which is located in the Northern Mountainous Region of Vietnam. A number of the plants at risk of local extinction have been recognized both nationally and internationally as species at risk, but those are not the only ones facing pressure from unsustainable land use. The problem arises from the practice of swidden agriculture by a rapidly-growing population of indigenous people in the area.

Swidden agriculture, commonly called slash-and-burn agriculture, is a form of shifting cultivation that is practiced in many parts of the world. Today, it is most common in the tropics. The method typically involves the harvesting of trees and other materials for the construction of houses, slashing the remaining vegetation and later burning it. The ash left after the fire enriches the soil with nutrients. Crops, such as rice, vegetables and fruit are then grown in the cleared space. Eventually, the soil becomes depleted of nutrients and a new area is cleared for subsequent cropping; in some cases the new area might be a considerable distance from the original one, perhaps requiring relocation of the village.

The various forms of shifting cultivation are for subsistence; typically, very little of the produce goes to a market, though some small-scale local trading is not uncommon. The farm crop is supplemented by food gathered from the surrounding vegetation and through hunting. The farmers also spend time gathering from medicinal plants and collecting wood for fuel. A few domestic food animals are usually kept near the houses.

People settled in the Ba Be area in Bac Kan Province mainly in the 1945's to 1970's. Most had come from more northern areas. In addition to the majority Kinh (Vietnamese) people, the area is now home to people of the Tay, H'mong and Dao ethnic groups. The last three of these live in small villages and conduct swidden agriculture to different degrees, in different ways and in different locations: The Tay tend to farm in the lowlands, while Dao and H'mong people tend to live in the uplands. Many of the villages are quite remote and the provision of government services to them is difficult. The population growth rates in these villages is quite high, so the pressure these indigenous groups are placing on the forest ecosystems through local exploitation is increasing.

The area around Ba Be Lake was exploited for forest production under government supervision until the National Park was established in 1992. The indigenous (hill tribe) people continue to use the forest in their traditional ways. Their cultural attachment to their way of life means that they are reluctant to vacate the Park and to date they have had little involvement in the management decisions made about resource use in the area.

Moreover, until this study, they had received little education about the conservation significance of the local forest. As noted above (and explained in more detail in the body of the text), their methods of exploiting the forest are unsustainable and increasingly so. Opportunities for relocation of the indigenous people to locations where they can continue their traditional ways of living are limited and, as noted above, there is resistance to relocation. Consequently, there have arisen two conflicting issues: how to allow local people to continue to exploit the forest plants in their accustomed ways and how to conserve the forest that is nationally and internationally recognized as an important centre of biodiversity.

The study described here was designed as an attempt to find ways of resolving these two issues. It addresses a series of questions:

What is known about the threats to, and conservation of, plant species in the study area and broader region? What approaches to conservation have been effective elsewhere?

What plant species do the local people use and which ones do they think are most worthy of conservation efforts? How do the conservation priorities of the local people compare with national and international priorities?

What are the characteristics of the forests where these rare and endangered species occur?

Can molecular biological techniques assist in identifying plant populations that display highest genetic diversity. Which known populations of rare/threatened plant species are genetically most diverse?

The above groups of questions are addressed in separate chapters. There is a brief introductory chapter and a final one that attempts to synthesise the previous four and to formulate recommendations for future action in Ba Be National Park, and by implication in the broader region.

**Authors**

## ABOUT THE AUTHORS

Dr. Rod Buckney is now retired from full-time work. He was Associate Professor in the Department of Environmental Sciences (now the School of the Environment) at the University of Technology, Sydney. He served several years as Associate Dean (Teaching and Learning) in the Faculty of Science. His research and teaching interests include botany, limnology, conservation, environmental chemistry and ecotoxicology. He was principal supervisor to Hoang Van Hung for the research described in this publication. He has supervised many research students in the areas listed above.

Dr. Dang Kim Vui is a Associate Professor in the Faculty of Forestry and Rector of the Thai Nguyen University of Agriculture and Forestry. His research interests are in plant conservation and sustainable use of plant resources and ecology. He has been a prominent participant on many committees focused on these areas. For this work he provided continued support and mentoring of the participants. The study described here arose from his initial suggestion.

Dr. Hoang Van Hung conducted the work described in this book as a Ph.D student at the University of Technology, Sydney. He is currently a Lecturer and Associate Dean of the Faculty of Resources and Environment at the Thai Nguyen University of Agriculture and Forestry. His teaching and research interests are in plant conservation, agronomy, biodiversity and resources and environment planning.

Dr. Lou De Filippis is a Senior Lecturer in the School of the Environment, Faculty of Science at the University of Technology Sydney. His primary areas of research and teaching are in horticulture, plant genetics, salinity, forest trees, molecular biology, salt tolerance genes, nursery production, greenhouses, plant growth media and the effects of heavy metals on plants. He has supervised many research students in these areas. He was co-supervisor to Hoang Van Hung for the research described in this book.

## **CERTIFICATE OF AUTHORSHIP/ORIGINALITY**

Authors certify that the work in this book has not previously been submitted for a degree/publications nor has it been submitted as part of requirements for a degree/publications except as acknowledged within the text.

We also certify that the written preparation of the thesis, and all experimental work associated with it, has been carried out solely by authors, unless otherwise indicated. Any help that we have received in our research work and the preparation of the book itself has been acknowledged. Finally, we certify that all information sources and literature used are acknowledged in the text.

**Authors**  
**July, 2010**

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