Increasing public awareness about Colombia's threatened magnolia species is a key to their survival

by
Cesar Velasquez-Rua
and
Marcela Serna-Gonzalez

Botanical Gardens of Medellin
Colombia

THE MAGNOLIACEAE family is a group of woody trees and shrubs found in several parts of the world, including temperate and tropical areas of Southeast and East Asia, North America, the Antilles and Central and South America. These trees are of great biological interest and a key to understanding the evolution of flowering plants because they are one of the oldest groups of plants known to mankind; they also have considerable ornamental and pharmaceutical potential.

Colombia's 31 native species of magnolia are seriously threatened and have therefore been selected as the pilot family of plants for the implementation of the National Plant Conservation Strategy. Perhaps the greatest difficulty in developing conservation projects for these species is the lack of public awareness, information and knowledge. Unfortunately these magnificent tree species are known only to a small group of individuals and there is a general lack of knowledge about the high degree of endangerment they face.

In an attempt to redress this we recently published a handbook on the 14 Magnoliaceae species recorded in Antioquia, one of the country's administrative regions *(see below)*. The handbook, which was published with the support of an ITTO fellowship, CORANTIOQUIA (a regional government corporation responsible for the management of renewable resources) and the Medellin Botanical Gardens Foundation, contains the following information: scientific and common names, description, distribution and habitat, phenology, reproduction, conservation status, and risk category in accordance with IUCN criteria.

General characteristics of Colombia's magnolias

Colombia previously recognised two Magnoliaceae genera, *Dugandiodendron* and *Talauma*, with the distinguishing difference between them being the absence of stipular scars in the petioles of the *Dugandiodendron* species and the presence of petioles with stipular scars in the *Talauma* species. However, the species of these two genera are so similar that recent worldwide studies suggest that they should be grouped within the *Magnolia* genus, which is the largest genus in the family.

Morphology

Colombian magnolia species have three sepals, six or more petals, and many free spiral stamens. The gynoecium has a few or several carpels. The fruits are aggregate or, in other words, come from a single flower with many carpels; they are dry and open up along a central axis or receptacle sometimes known as *molinillo* ('whisk' in English), and they have one or two seeds in each carpel, with a cover that is generally oily and red in colour. The illustrations *next page* highlight the morphological characteristics most useful in the identification of species.

Phytochemical studies

Antioxidant compounds such as magnolol and honokiol with potential for pharmaceutical or nutritional use have been found in the Magnoliaceae family, as have other chemical structures with anti-malarial, anti-platelet, anti-inflammatory and cytotoxic properties. Studies of the antioxidants of Colombian Magnoliaceae are currently being carried out at the National University, Medellin campus.

Distribution

Colombia's magnolia species are distributed throughout moist and very moist forests from sea-level up to 2800 metres in the region of the Andes, the Choco biogeographic region and the Amazon. They are found in 14 departments: 14 species have been reported in Antioquia (including two species only recently discovered), seven in Boyaca, five in Santander, Risaralda and the Cauca Valley, three species in the Choco, Cundinamarca and Nariño regions, two in North Santander, Huila and Quindio, and one in Amazonas, Arauca and Caldas.

Antioquia

The Department of Antioquia is situated in northwestern Colombia between the biogeographical regions of the Andes and Choco and covers an area of approximately 62 000 km². The topography of the region is characterised by mountains and inter-Andean valleys that are part of the central and western ranges in the northern Andean region, and water flows from these mountains into the watershed areas of the Magdalena, Cauca and Atrato rivers. Most of the native Magnoliaceae in Antioquia are found in cloud forests, with only three species found at altitudes of under 1000 metres.

Conservation

The main threats to magnolias in Colombia are the high rates of destruction and fragmentation of native forests and the unsustainable harvesting of some timber species. The timber from these species is highly valued in some regions and has been used for many years by settlers and sawmills in the furniture-manufacturing industry, while in other cases it has been used as roundwood (rods, poles, props) and sawnwood (boards, quartered logs).

A study of genetic structure and variability carried out on some species in Antioquia has revealed that the populations have a high genetic variability. In other words, they are adapted to possible stressors such as pests and climate change, among others. However, the genetic flow among these populations is quite limited, probably due to the isolation of individual populations caused by forest fragmentation. The populations in the south of the department—in the municipalities of Andes and Jardin—have higher genetic diversity indexes than those of the populations found in larger forest areas. It is therefore recommended that conservation efforts be directed at the conservation of these sites and at promoting the interchange of seedlings between populations so as to maintain a genetic flow among them.

The aim of the handbook is to extend the knowledge base of these endangered tree species and to help consolidate the National Plant Conservation Strategy. For information on how to obtain a copy of the handbook contact Cesar Velasquez-Rua at ca_rua@hotmail.com

ITTO fellowships offered

ITTO offers fellowships through the Freezailah Fellowship Fund to promote human resource development and to strengthen professional expertise in member countries in tropical forestry and related disciplines. The goal is to promote the sustainable management of tropical forests, the efficient use and processing of tropical timber, and better economic information about the international trade in tropical timber.

Eligible activities include:

- participation in short-term training courses, training internships, study tours, lecture/demonstration tours and international/regional conferences;
- technical document preparation, publication and dissemination, such as manuals and mongraphs; and
- post-graduate studies.

Priority areas: eligible activities aim to develop human resources and professional expertise in one or more of the following areas:

- improving transparency of the international tropical timber market;
- promoting tropical timber from sustainably managed sources;
- supporting activities to secure tropical timber resources;
- promoting sustainable management of tropical forest resources;
- promoting increased and further processing of tropical timber from sustainable sources; and
- improving industry's efficiency in the processing and utilisation of tropical timber from sustainable sources.

In any of the above, the following are relevant:

- enhancing public relations, awareness and education;
- sharing information, knowledge and technology; and
- research and development.

Selection criteria: Fellowship applications will be assessed against the following selection criteria (in no priority order):

- consistency of the proposed activity with the Program's objective and priority areas;
- qualifications of the applicant to undertake the proposed fellowship activity;
- the potential of the skills and knowledge acquired or advanced under the fellowship activity to lead to wider applications and benefits nationally and internationally; and
- reasonable ness of costs in relation to the proposed fellowship activity.

The maximum amount for a fellowship grant is US$10 000. Only nationals of ITTO member countries are eligible to apply. The next deadline for applications is **29 March 2006** for activities that will begin no sooner than 1 August 2006. Applications will be appraised in May 2006.

Further details and application forms (in English, French or Spanish) are available from Dr Chisato Aoki, Fellowship Program, ITTO; Fax 81–45–223 1111; fellowship@itto.or.jp (see page 2 for ITTO's postal address) or go to www.itto.or.jp