

# **CITES Identification Guide - Tropical Woods**

Guide to the Identification of Tropical Woods Controlled under the Convention on International Trade in Endangered Species of Wild Fauna and Flora



# **Guide d'identification CITES - Bois tropicaux**

Guide d'identification des bois tropicaux protégés par la Convention sur le commerce international des espèces de faune et de flore sauvages menacées d'extinction



# **Guía de identificación de CITES - Maderas tropicales**

Guía de identificación de las maderas tropicales protegidas por la Convención sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres



An initiative of Environment Canada

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**Le Forest Products Laboratory (FPL)** vise à conserver et à élargir les ressources forestières du pays grâce aux sciences et à la technologie. C'est le seul laboratoire national qui poursuit cet objectif. Ses travaux se concentrent en un seul endroit, ce qui lui permet de regrouper les chercheurs et d'adopter une approche interdisciplinaire pour régler les divers problèmes liés à l'utilisation du bois auxquels fait face la population américaine.

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El FPL está reconocido tanto a nivel nacional como internacional como una autoridad técnica objetiva en ciencia de la madera y uso de los productos madereros. El FPL trabaja regularmente en colaboración con universidades, la industria y organismos federales y estatales para desarrollar e implementar tecnologías que garanticen tanto la sostenibilidad forestal como las economías forestales a largo plazo.

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# Preface

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Over 30,000 species of plants and animals are listed in the appendices to the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). The wide variety of species poses a formidable challenge to the application of the Convention since it requires identification of the specimens subject to international trade.

With its keen understanding of the problem, Environment Canada has produced a series of identification guides, several of which have already been published (Birds, Crocodilians, Turtles and Tortoises, Butterflies, Sturgeons and Paddlefish).

The identification of plant species is particularly complex because trade is seldom in whole specimens, complete with the anatomical features that can be used to identify the species (leaves, flowers, fruits, etc.). Trees pose a particular challenge since, in the best case scenario, all that is available for identification is a log or piece of timber devoid of leaves or other general morphological features that aid in the identification.

This guide is designed to assist in the identification of shipments of wood at border points. While other tools have been developed for identifying wood species, they often require extensive scientific knowledge or complex technologies that are often unavailable to the personnel involved. In contrast, this guide is a simple, precise field tool that can be used by anyone.

Against the backdrop of growing questions, particularly among the members of the CITES Plants Committee, about the need to control more tree species, both tropical and other, and about how to improve the control of trade in wood, the publication of this guide is very timely.

I hope that the topical nature of the subject matter and the intuitive and attractive format of the guide, combined with the positive response to previous guides, will encourage our valiant watchdogs at CITES to consult this guide to ensure more effective implementation of the Convention.

**Bertrand von Arx**

Vice-Chairman, CITES Plants Committee  
CITES Scientific Authority for Canada  
Canadian Wildlife Service  
Environment Canada

# Acknowledgements

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My heartfelt thanks to Yvan Lafleur, Chief, Wildlife Enforcement and Intelligence Division, Enforcement Branch, Environment Canada, who first developed the concept for Environment Canada's CITES Identification Guides. His determination and perseverance have made possible the addition of this guide to the series of guides used around the world by wildlife inspectors and customs officers. I am profoundly grateful to Richard Charette for his confidence, his willing assistance, his ever thoughtful advice and the unfailing support he has given me.

I am deeply indebted as well to Dr. Regis Miller and to Alex Wiedenhoef, Forest Products Laboratory, Forest Service, USDA who collaborated closely in the production of this guide. They designed the identification key for the CITES species, produced the 14X photos of woods used to illustrate this guide and performed the scientific editing. For their invaluable contribution and their generosity in sharing their expertise with me throughout the preparation of this guide, I am extremely grateful.

My thanks too to Bertrand von Arx, Vice-Chairman of the CITES Plants Committee, for his priceless assistance in the area of plant taxonomy; to Allan Ball for his illustrations; to Doug Millar for the photographs of the identification process; to Elizabeth Sanborn and Aline Barnoti for the translation into English and Spanish; particular thanks to Tamara Maliepaard for the commitment, talent and professionalism she has brought to the graphic design of the guide and to Céline Langlois for her enthusiasm, patience and attention to detail in preparing the Index and compiling the geographic ranges of the species. Finally, I am deeply grateful to James PetitdeMange of the Animal and Plant Health Inspection Service, USDA and to Robert L. Hendricks of the Forest Service, USDA, for their confidence in the project and the financial support provided.

**Marie-José Ribeyron, M.Ed., M.Sc.**  
Assistant National Coordinator, Inspections  
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## How to use this guide

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### Message to customs officers and other inspectors responsible for enforcing CITES

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A number of species of tropical woods are now rare or threatened as a result of deforestation and heavy international trade. You can help change this situation by playing an active role in controlling trade in tropical woods in your country.

The *CITES Identification Guide – Tropical Woods* was specifically designed to enable you to identify tropical woods protected by CITES (see **?-2**). The use of the guide requires no prior knowledge of wood identification. By following the steps described in the guide and using your powers of observation, you will learn simple identification techniques that will help you to identify CITES-protected tropical woods.

As you will see, you will not be able to identify all woods to the same degree of precision. While you will often be able to identify the genus, you will sometimes require the help of an expert to identify the species. In most cases, the guide will enable you to confirm the identification of woods accompanied by CITES permits and to ensure that woods that are not accompanied by CITES permits are not protected by CITES.

You should also be aware that the identification technique can be used to identify logs and lumber but not veneer, plywood and most products (e.g., guitars) or derivatives.

The basic structure of this guide is similar to the CITES Identification Guides previously produced by Environment Canada (*CITES Identification Guide – Birds*, *CITES Identification Guide – Crocodylians*, *CITES Identification Guide – Turtles and Tortoises*, *CITES Identification Guide – Butterflies*, *CITES Identification Guide – Sturgeons and Paddlefish*).

The **pages in the green section** of this guide offer two identification keys based on the examination of the anatomical features of the wood using a hand lens. The simplified key uses an identification process that requires the examination of a minimal number of anatomical features. The detailed key uses a process that requires more detailed observations. For each key, you will find:

- a description of the features used in the identification key;
- a description of the steps in the identification process;
- and finally the identification key itself, that guides you to the descriptive pages of CITES species.

Once familiar with the explanation pages, you will be ready to follow each step in the identification process.

The final pages in the green section contain a third identification key. This simplified key is for woods that are similar to one or more CITES species. This key will be useful in the identification of woods that are not accompanied by a CITES permit.

**The yellow section describes the species protected by CITES as well as woods that are similar in appearance.** This section provides a photo of each CITES species along with additional information that will enable you to confirm your identification. Similar woods are presented following the woods they resemble. A photo of each similar wood species is provided as well as information required to distinguish it from the CITES wood species.

**Read the presentation pages in the purple section carefully before attempting any identification.** Your final challenge will be identification, and we are confident that you will be successful.

# How to use this guide

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## What is CITES?

**The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)** is an international agreement signed by more than 150 countries controlling trade in a number of species of plants and animals, their parts and derivatives. The names of these species appear in a **Control List** that is updated every two years, following the meeting of the Parties to the Convention. The list provides the names of CITES species and indicates whether they are Appendix I, II or III species.

**Appendix I** species are rare or endangered. Trade in these species for primarily commercial purposes is prohibited. As a result, Appendix I species must be accompanied by a CITES export permit issued by the exporting country and a CITES import permit issued by the importing country.

**Appendix II** species are neither rare nor endangered at present, but could become so if trade is not controlled. The species in Appendix II must be accompanied by an appropriate CITES export permit issued by the exporting country before entry to the importing country will be allowed.

**Appendix III** species are not endangered but are subject to special management within the listing country (as indicated in parentheses beside the Appendix number). Species in Appendix III must be accompanied by an appropriate CITES export permit issued by the exporting country if the trade is with the listing country, or by a certificate of origin or a re-export certificate if the trade is with a country other than the listing country, as required by the Convention.

### Note these symbols, used throughout the guide:



**Appendix I, II or III species.**  
Trade in this species is controlled by CITES and must be verified by the necessary CITES permit(s)



**Trade in this species is not controlled by CITES and requires no monitoring under CITES**



**Detain and consult an expert for identification**

## What species appear in the guide?

The 23 species or genus of tropical woods protected by CITES appear in this guide. Colour photos of the species transverse section observed under a hand lens at 14X magnification are provided. The photographs are accompanied by a list of the countries within the geographic range of the various species, together with the scientific names of traded wood species that are similar in appearance.

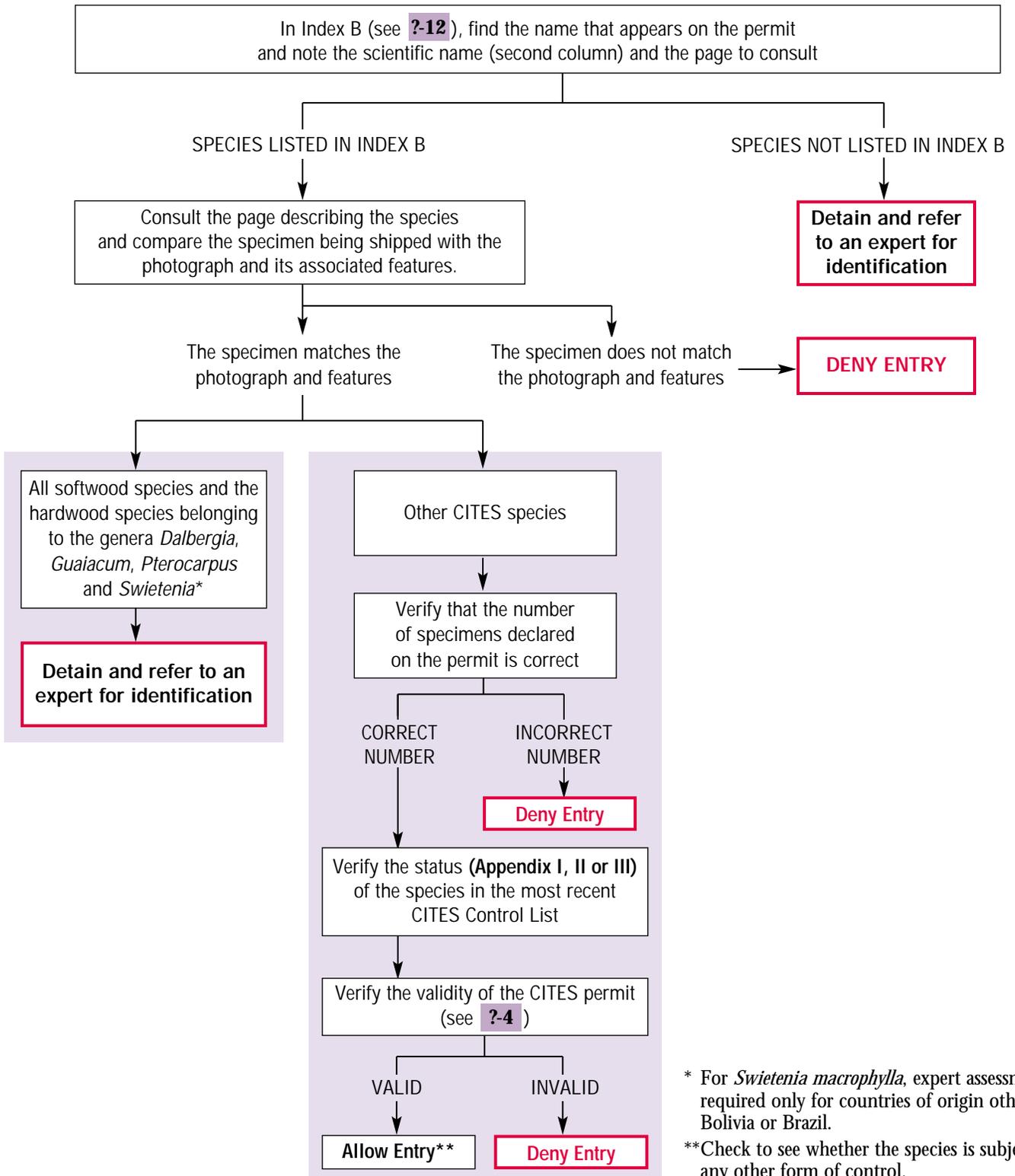
In the case of similar woods, the guide includes only those species, which can be distinguished from CITES species by a non-expert. Photographs of the transverse section of these species are also provided in 14X magnification. The photos are accompanied by a list of the countries within the geographic ranges of the different species. When the wood of all species of a given genus resembles that of a CITES species and is distinguished by the same features, a photograph of a single species appears. This photo is accompanied by a list of the most widely traded species in this genus and a list of the countries within their geographic ranges.

Similar wood species that require expert assessment to be distinguished from CITES species are not provided in the guide. Index B provides the names of those most often traded.

# How to use this guide

## How to verify the identification of a tropical wood declared on a CITES permit

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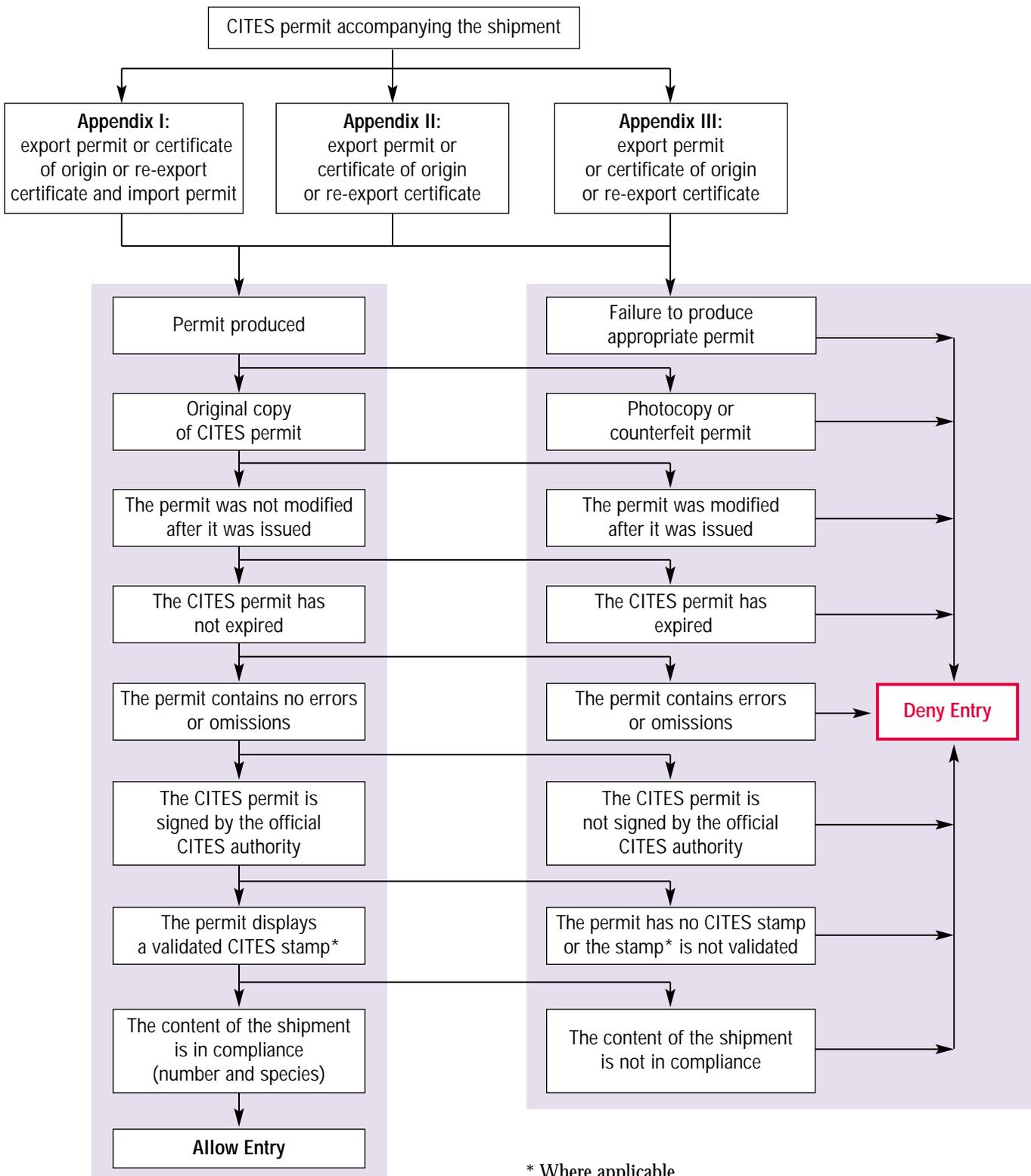


\* For *Swietenia macrophylla*, expert assessment is required only for countries of origin other than Bolivia or Brazil.  
 \*\*Check to see whether the species is subject to any other form of control.

# How to use this guide

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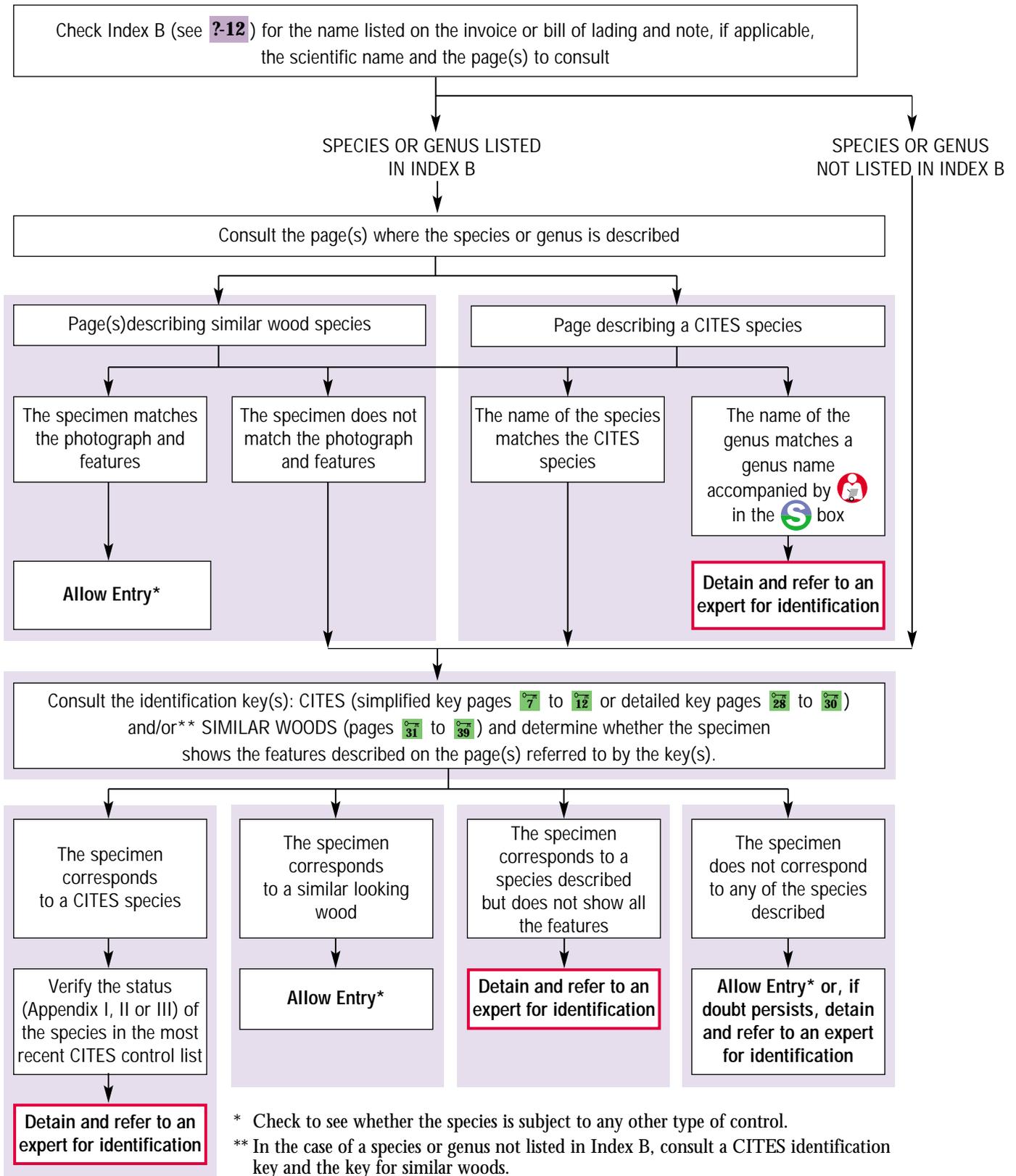
## How to determine the validity of a CITES permit



# How to use this guide

## How to identify a tropical wood that is not accompanied by a CITES permit

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# How to use this guide

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## What is the purpose of the coloured tabs?

The section  explains **how to use this guide**.

The section  includes two **identification keys for CITES species**, each preceded by a number of pages explaining the features used in the key and the steps in the identification process. It also includes a third identification key, the **key for similar, non-CITES, woods**.

The section  contains the descriptive pages for the **species of tropical woods controlled by CITES and the pages describing similar woods**.

The section  contains **Index A**, which provides the **scientific names** of all CITES species. The scientific names are in alphabetical order and are accompanied by their **common names** in English, French and Spanish.

The section  contains **Index B**, which provides an **alphabetical list of the scientific, common and trade names of all species covered in the guide (CITES species and similar wood species)**. It also includes the pages where they are found in the guide.

# How to use this guide

## What is the purpose of the key pages?



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Identifying wood species cannot be done by simple observation with the naked eye. A hand lens must be used to accurately observe the anatomical features of the wood. The key pages describe these anatomical features, explain the method used to observe them and provide the identification keys.

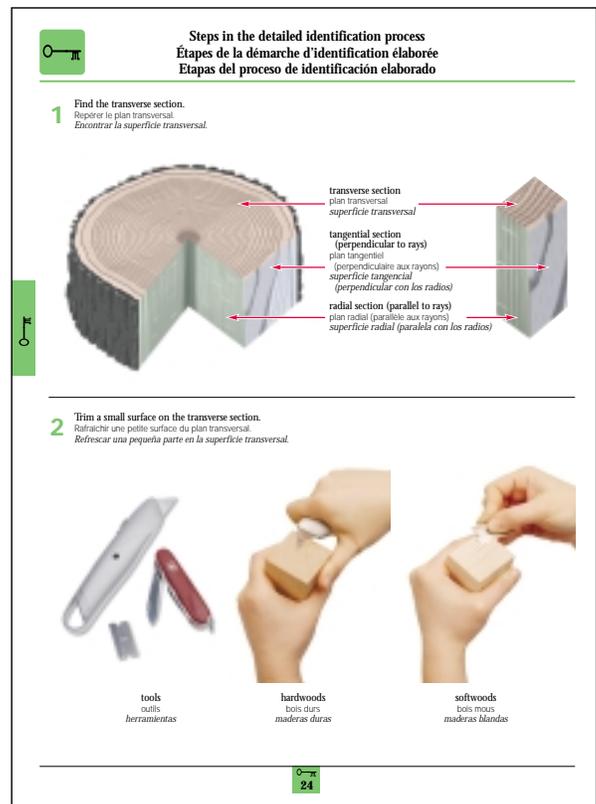
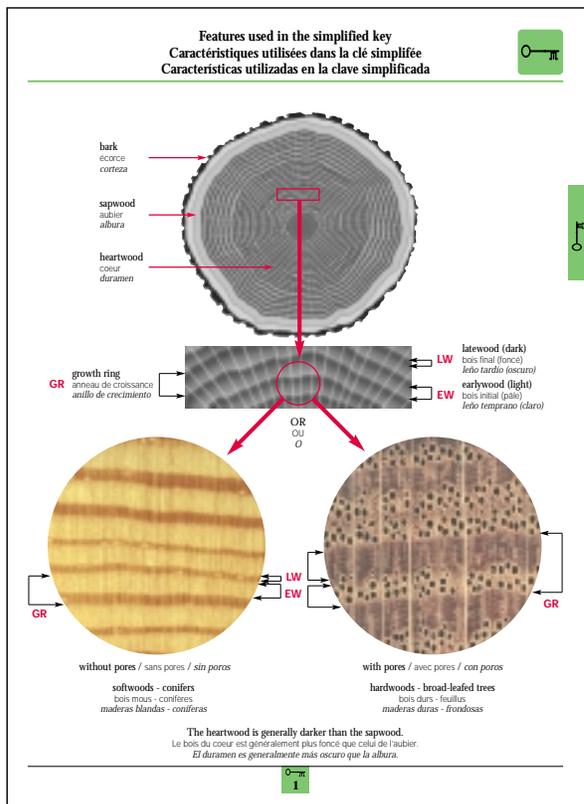
To meet the needs of different users, the key pages offer two different keys to identify CITES species:

- the simplified identification key, ( 1 to 12 ) is designed for users unfamiliar with wood anatomy; it uses a simplified identification process based on a minimum number of anatomical features;
- the detailed identification key, ( 13 to 30 ) is designed for users more familiar with wood anatomy or for those prepared to take the time to familiarize themselves with all the anatomical features used. This key involves observation of a larger number of anatomical features and permits more reliable identification.

Simplified key users will move on to the detailed key as they become familiar with its anatomical features.

The two identification keys are presented as follows:

- the first few pages explain the anatomical features used in the key;
- the following pages cover the steps in the identification process; you will find one page summarizing these steps while the subsequent pages explain them individually using photographs;
- the identification key for the CITES species is found in the final pages.



# How to use this guide

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## What is the purpose of the key pages? (cont'd)

The identification keys require you to observe a transverse section of the specimen under a hand lens. This task is described at the beginning of each key.

If you use the simplified identification key, you must first determine whether or not the wood of your specimen contains pores (vessels) (see [11](#)). Next, compare the specimen with the photographs on pages [7](#) to [12](#). If you find one that matches your specimen, consult the page noted in the key and verify the features listed in the general description (colour, hardness and weight). For most key features (rays, vessels, etc.), you must first familiarize yourself with them in the pages describing the detailed identification key ([13](#) to [22](#)).

The detailed identification key is a dichotomous key. A dichotomous key identifies organisms based on a series of choices between alternative characteristics. First, you are asked whether or not the specimen has pores (vessels). The key then offers two more statements, from which you choose the one corresponding most closely to your own observations. You will continue choosing between two statements of the key, based on your own observations, until you reach a species. Then consult the page noted in the key and verify the features of the species (general description and key features).

**Simplified identification key**  
Clé d'identification simplifiée  
Clave de identificación simplificada

without pores  
sans pores  
sin poros

[7](#)

**Detailed identification key**  
Clé d'identification élaborée  
Clave de identificación elaborada

**Vessels (pores) absent - conifers (softwoods)**  
Vaisseaux (pores) absents - conifères (bois mous)  
Vasos (poros) ausentes - coníferas (maderas blandas)

- Wood with resin canals  
Bois avec canaux résineux  
Leño con canales resiníferos → [7](#)
- Wood without resin canals  
Bois sans canaux résineux  
Leño sin canales resiníferos
  - Wood dark reddish, orangey or dark brown  
Bois rougeâtre foncé, orangé ou brun foncé  
Leño rojizo oscuro, anaranjado o pardo oscuro
    - Fitzroya cupressoides* → [6](#)
    - Taxus wallichiana* → [8](#)
    - Araucaria araucana* → [9](#)
  - Wood whitish, pale yellow, tan  
Bois blanchâtre, jaune pâle, brun roux  
Leño blanquecino, amarillito claro, pardo rojizo
    - Abies guatemalensis* → [10](#)
    - Pilgerodendron uviferum* → [11](#)
    - Podocarpus neriifolius* → [12](#)
    - Podocarpus parlatoresi* → [13](#)

**Vessels (pores) present - broad-leaved trees (hardwoods)**  
Vaisseaux (pores) présents - feuillus (bois durs)  
Vasos (poros) presentes - frondosas (maderas duras)

- Wood with storied rays  
Bois avec rayons étagés  
Leño con radios estratificados → [28](#)
- Wood without storied rays  
Bois sans rayons étagés  
Leño sin radios estratificados → [30](#)

[28](#)

The identification key for similar woods works in the same way as the simplified key for CITES species. You must determine whether or not the wood of your specimen has pores (vessels) and then compare it to photographs shown in the key.

# How to use this guide

E ?

## What is the purpose of the descriptive pages for CITES species?

The descriptive pages present every tropical woods species protected by CITES. Species are presented in the same order as they occur in the CITES identification keys.

The diagram illustrates the layout of a CITES species descriptive page for *Swietenia* spp. Annotations include:

- Symbol indicating a hardwood:** A yellow square icon with a tree.
- Scientific species name:** *Swietenia* is the genus, *macrophylla* is the species.
- Common species name:** Bigleaf mahogany, Mahogani grandes feuilles, Caoba.
- Indicates that three species of the genus *Swietenia* are protected by CITES (Appendix II or III) and that none are unprotected:** A red circle with a plus sign and the text "3 spp. II or/ou/o III".
- Symbol indicating that the species is CITES-protected:** A green circle with a plus sign.
- Information on the colour, hardness and weight of the wood:** The "General description" section.
- Wood species similar to *Swietenia macrophylla*. Consult the indicated page to distinguish them from *S. macrophylla*.** A blue box with a green 'S' symbol and a reference to pages 18-19.
- Abbreviations for important identifying features (see 5):** MP (Marginal Parenchyma) and MV (Medullary Vessels).
- Important identifying features:** Key features section including Wood, Vessels, Parenchyma, and Other.
- ISO codes for countries within the species' geographic range (see 2):** BO, BR, BZ, CO, CR, DM, EC, GF, GT, GY, HN, MX, NI, PA, PE, SV, VE.
- Symbol indicating similar wood species that require expert identification:** A red circle with a plus sign.
- Current descriptive page:** A yellow box with the number 16.

Use the ISO country codes within the species' geographic range to verify or refine your identification. For instance, for the three species of the genus *Swietenia*, the geographic range can be a criterion for distinguishing *Swietenia macrophylla* from *S. humilis* and *S. mahagoni*. Comparison of the ISO codes for the three shows, that *S. macrophylla* is the sole *Swietenia* species found in the forests of Bolivia (BO) and Brazil (BR).

When you believe you have identified the species, **compare your specimen to similar woods** by consulting the page(s) indicated in the blue box marked with the symbol .

Pages **14**, **50** and **51** provide space for personal notes which will help you with the identification process as you gain experience.

# How to use this guide

E ?

## What is the purpose of the pages describing similar woods?

These pages show traded species that may be confused with CITES species because they are similar in appearance. Only species that a non-expert can distinguish have been included.

Similar wood species appear immediately after the CITES species with which they can be confused. Photographs of transverse section (14X magnification) for each species are provided. Each photograph is accompanied by anatomical features that facilitate the distinction between similar species and the CITES species. A list of the countries within the geographic range of the species is also included.

When all species within a genus can be distinguished from a CITES species by the same features, a single species is illustrated (see *Azelia* spp. in the example below). A list of the most widely traded species is included as well as the countries within their respective geographic ranges.

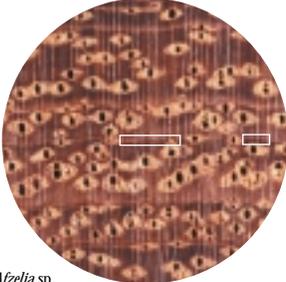
<p>Symbol indicating similar wood species</p>	<p>Name of the CITES species concerned</p>	<p>Symbol indicating that this species is not CITES-protected</p>	<p>Symbol indicating a hardwood</p>
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*Platymiscium pleiostachyum*





*Azelia* sp.



*Azelia* spp. - Fabaceae (Leguminosae)

in water, no fluorescence under blacklight  
dans l'eau, aucune fluorescence sous la lumière noire  
en agua, ninguna fluorescencia bajo luz negra

MP 

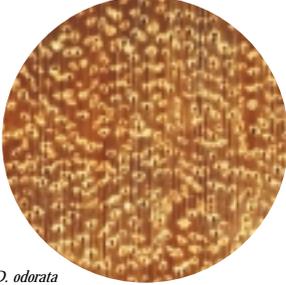
*A. africana*: BF, BI, CD, CF, CI, CM, GH, GN, GW, ML, NE, NG, SD, SL, SN, TD, TG, UG

*A. bipindensis*: AO, CD, CF, CG, CM, GA, NG, UG

*A. pachyloba*: AO, CD, CG, CM, GA, NG

*A. quanzensis*: AO, BW, CD, KE, MW, MZ, NA, SO, SZ, TZ, ZA, ZM, ZW

*A. rhomboidea*: ID, MY, PH



*D. odorata*



*Dipteryx odorata* - Fabaceae (Leguminosae)

in water, no fluorescence under blacklight  
dans l'eau, aucune fluorescence sous la lumière noire  
en agua, ninguna fluorescencia bajo luz negra

BR, CO, GF, GY, PE, SR, VE

Name of the species illustrated. Here, only the genus is identified. All species of the genus *Azelia* resemble *P. pleiostachyum*.

The genus *Azelia* is distinguished from *P. pleiostachyum* by the absence of storied rays and the presence of marginal parenchyma.

Feature used to distinguish *D. odorata* from *P. pleiostachyum*.

ISO codes for countries within the geographic range of *D. odorata*.

**NOTE:** The abbreviation “spp.” indicates more than one species, the abbreviation “sp.” a single species, the abbreviation “spp.” more than one subspecies and the abbreviation “ssp.” a single subspecies. The abbreviation “var.” designates a variety. A variety has features that differ from the nominal species but are not important enough to constitute a subspecies.

# How to use this guide

E  
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## What is in Index A?

**Index A** lists the **scientific names** and, wherever possible, the common **English, French and Spanish names** of the species protected by CITES. They are presented in alphabetical order by the scientific name of the species. A different font is used for each language.

## INDEX A / INDEX A / ÍNDICE A

Scientific Names Noms scientifiques Nombres científicos	English Anglais Inglés	French Français Francés	Spanish Español Español	
<i>Abies guatemalensis</i>	<b>Guatemalan fir</b>	Sapin du Guatemala	<i>Pinabete</i>	<b>10</b>
<i>Aquilaria malaccensis</i>	<b>Agarwood</b>	Agar	<i>Madera de Agar</i>	<b>39</b>
<i>Araucaria araucana</i>	<b>Monkey puzzle tree</b>	Pin du Chili	<i>Pehuén</i>	<b>9</b>
<i>Caryocar costaricense</i>		Cariocar du Costa Rica	<i>Ajillo</i>	<b>42</b>
<i>Cedrela odorata</i>	<b>Spanish cedar</b>	Acajou rouge	<i>Cedro</i>	<b>35</b>
<i>Dalbergia nigra</i>	<b>Brazilian rosewood</b>	Palissandre du Brésil	<i>Jacarandá de Brasil</i>	<b>20</b>
<i>Fitzroya cupressoides</i>	<b>Alerce</b>	Alerce	<i>Alerce</i>	<b>6</b>
<i>Gonystylus</i>	<b>Ramin</b>	Ramin	<i>Ramin</i>	<b>44</b>

The species names are taken from:

Vales, M.A., M. Clemente-Muñoz, L. Garcia Esteban. 1999. *Fichas de identificación de especies maderables CITES*. CD-ROM. Edición del Servicio de Publicaciones de la Universidad de Córdoba. España.

World Conservation Monitoring Center. 1996. *Checklist of CITES Species. Lista de las especies CITES. Liste des espèces CITES*. First Edition. Cambridge. UK.

World Conservation Monitoring Center. 1998. *Checklist of CITES Species. Lista de las especies CITES. Liste des espèces CITES*. First Edition. Cambridge. UK

# How to use this guide

E  
?

## What is in Index B?

**Index B** gives an alphabetical list of the **scientific, common and trade names** of all the species covered in the guide, together with their status, family and the pages to be consulted.

The alphabetical list includes:

- the names of species protected by CITES;
- the names of similar, non-CITES, wood species **illustrated** in the guide as their wood can be easily distinguished from CITES species;
- the names of a number of similar, non-CITES, wood species **not illustrated** in the guide as their wood can be distinguished from CITES species only by expert assessment.

## INDEX B/INDEX B/ÍNDICE B

Names Noms Nombres	Scientific Names Noms scientifiques Nombres científicos	Status, family Situation, famille Status, familia	Yellow Jaune Amarilla
<i>Abies guatemalensis</i>	<i>Abies guatemalensis</i>	C, PIN	10
<i>Abies guatemalensis</i> var. <i>jaliscans</i>	<i>Abies guatemalensis</i>	C, PIN	10
<i>Abies</i> spp.	<i>Abies</i> spp.	C, NC, PIN	10
Açacu	<i>Hura crepitans</i>	NC, EUP	43
Acajou	<i>Cedrela odorata</i>	C, MEL	35, 18
Acajou	<i>Khaya grandifoliola</i>	NC, MEL	19, 37
Acajou	<i>Simaruba amara</i>	NC, SMR	46
Acajou	<i>Swietenia humilis</i>	C, MEL	15, 37
Acajou	<i>Swietenia macrophylla</i>	C, MEL	16, 37
Acajou	<i>Swietenia mahagoni</i>	C, MEL	17, 37
Acajou à meubles	<i>Cedrela odorata</i>	C, MEL	35, 18
Acajou à meubles	<i>Swietenia mahagoni</i>	C, MEL	17, 37
Acajou à planches	<i>Cedrela odorata</i>	C, MEL	35, 18
Acajou amer	<i>Cedrela odorata</i>	C, MEL	35, 18
Acajou blanc	<i>Cedrela odorata</i>	C, MEL	35, 18
Acajou blanc	<i>Khaya anthothea</i>	NC, MEL	19, 37
Acajou blanc	<i>Simaruba amara</i>	NC, SMR	46
Acajou cedrel	<i>Cedrela odorata</i>	C, MEL	35, 18

**NC** = Species not protected by CITES 

**C** = Species protected by CITES  
(CITES List of February 2002) 

**MEL** Abbreviation of family name (Meliaceae)

Consult pages **35** and **18**

### Note:

*Taxus baccata wallichiana*  
genus species subspecies

*Abies guatemalensis* var. *jaliscans*  
genus species variety

# How to use this guide

## Symbols



Trade controlled by CITES



Indicates the absence of an anatomical feature



Trade not controlled by CITES



“How to use this guide” section



Conifers (Softwoods)



Key pages



Broad-leaved trees (Hardwoods)



Descriptive pages for CITES species and similar wood species



Traded for medicinal purposes (wood and/or bark chips, extracts, etc.)



Index A – Scientific and common names of CITES species



Distribution area of the species



Index B – Scientific, common and trade names of the species presented (CITES species and non-CITES species) and their page in the yellow section



Species of wood similar to a CITES species



Species requiring expert identification