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Honduras Rosewood: Its Endangerment and Subsequent Impact on the Percussion Industry

Omar Carmenates
HONDURAS ROSEWOOD: ITS ENDANGERMENT AND SUBSEQUENT IMPACT ON THE PERCUSSION INDUSTRY

By

OMAR CARMENATES

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The members of the committee approve the treatise of Omar Carmenates defended on December 7, 2009.

__________________________________  
John W. Parks IV  
Professor Directing Treatise

__________________________________  
Michael Bakan  
University Representative

__________________________________  
Patrick Dunnigan  
Committee Member

__________________________________  
Denise Von Glahn  
Committee Member

The Graduate School has verified and approved the above-named committee members.
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ABSTRACT

Honduras Rosewood (*Dalbergia Stevensonii*) is a wood of high value for today’s percussionist and for the percussion industry. It is used as the primary timber for the production of marimba and xylophone bars, and it is also used to build other instruments such as woodblocks, drumsticks, guitar fingerboards, violins, and violin bows. Additionally, the wood is sought for furniture and cabinet making.

In 2008, the Convention on International Trade in Endangered Species (CITES) placed Honduras Rosewood in its third Appendix. As part of an international treaty with 175 member countries, the purpose of CITES is to monitor and regulate international trade on approximately 30,000 protected species. This action, requested by the government of Guatemala, placed the species under the watch and protection of CITES to prevent further endangerment.

This treatise seeks to examine the relationships between the international supply of Honduras Rosewood, the demand by the percussion industry, and the need to protect it through international organizations such as CITES. Initially, a history of the development of the xylophone and marimba will be presented, with extra focus given to the constructional methods and materials used. Using the CITES listing as a starting point, further examination will be given to the factors that have led to Honduras Rosewood’s endangerment and the efforts to counteract it. Also, the views of the percussion industry will be presented through interviews with prominent marimba and xylophone manufacturers. Due to the limited chronological scope of Honduras Rosewood’s endangerment at the time of writing (less than two years), the treatise will conclude by positing recommendations for further conservation and research efforts based upon the data presented within this treatise.
CHAPTER 1

INTRODUCTION

In 2008, the Convention on International Trade in Endangered Species (CITES) placed Honduras Rosewood (*Dalbergia Stevensonii*) on its third Appendix. As an international treaty with 175 member countries, CITES' purpose is to monitor and regulate international trade on its approximately 30,000 protected species.\(^1\) This action, requested by the government of Guatemala, placed the species under the watch and protection of CITES.

Honduras Rosewood is a wood of high value for today’s percussionist and for the percussion industry. It is used as the primary timber for the production of marimba and xylophone bars, and it is also used to build other instruments such as woodblocks, drumsticks, guitar fingerboards, violins, and violin bows. Additionally, the wood is sought for furniture and cabinet making.\(^2\) However, the advent of the xylophone and marimba as musical instruments predates the use of Honduras Rosewood in their manufacturing by many hundreds of years. The selection of rosewood as the prime wood for wooden-bar percussion instruments is widely credited to the renowned instrument manufacturer John Calhoun Deagan. In 1888, he began researching how to apply the scientific tuning methods he used on glockenspiels to the xylophone, an instrument that was burgeoning in popularity in the United States at the time. After extensive research, including expeditions to Central and South America, Deagan found Honduras Rosewood to have the appropriate density, durability, and tonal qualities for use in making xylophones. Unbeknownst to him, his selection of the

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wood set a standard for commercial marimba and xylophone manufacturing that still exists today.\textsuperscript{3}

With the placement of Honduras Rosewood on the CITES III list in 2008, its increasing endangerment and subsequent need for protection was made evident. Additionally, its placement on this list has created a more difficult process for instrument manufacturers and timber suppliers to obtain the wood. As the international popularity of the marimba continues its upward trend, and as the supply of Honduras Rosewood dwindles, greater trade restrictions will likely result. This will, in turn, create more economic difficulty for manufacturers, suppliers, and ultimately consumers. Thus, the relationships between the supply of Honduras Rosewood, the demand by the percussion industry, and the need to protect it through international organizations such as CITES will be examined in this treatise. Upon analyzing this relationship and presenting of relevant data, it will then be possible to propose potential and feasible measures that could be taken in order to ensure the future existence of Honduras Rosewood and thus the livelihood of the modern marimba and xylophone.

In order to fully understand the effect that Honduras Rosewood’s endangerment has on the percussion industry, some context is needed. First, a descriptive biological overview of Honduras Rosewood will examine the biological and morphological characteristics, habitat, current and past population sizes, and other relevant data in regards to Honduras Rosewood. Second, a history of the development of the xylophone and marimba will be given. This historical overview will explore the development of these instruments from their origins, through their diasporic migrations, and ultimately to their present-day status as concert instruments. The importance of John Calhoun Deagan’s research and his ultimate selection of Honduras Rosewood for the commercial manufacturing of the instruments will also be explored.

The next chapter will analyze the multi-faceted and constantly-evolving issue of Honduras Rosewood’s endangerment. By utilizing data from

\textsuperscript{3} Rebecca Kite, \textit{Keiko Abe: A Virtuosic Life} (Leesburg, Virginia: GP Percussion, 2007), 132.
conservation groups, government organizations, and recent scientific research, the most salient threats to Honduras Rosewood populations will be defined. Furthermore, an analysis of the efforts to combat these threats will be provided. This analysis will include an overview of CITES and its Appendices, the results of recent Honduras Rosewood population assessments, current and pending governmental legislation, and an overview of the developing forest certification movement.

After this analysis, the percussion industry itself will be examined through the views of its own constituents. Email and telephone interviews were conducted with prominent percussion instrument manufacturers and timber suppliers, which yielded points of view on a variety of topics related to the endangerment of Honduras Rosewood. These interviews explore the effects of reduced supply of Honduras Rosewood in instrument manufacturing, the potential impact that future restrictions could have on the industry, and what steps the industry is taking to aid in the protection of the wood.

Due to the limited chronological scope of Honduras Rosewood’s endangerment at the time of writing (less than two years), the treatise will conclude by positing recommendations for further conservation and research efforts based upon the data presented within this treatise.
CHAPTER 2
HISTORICAL PERSPECTIVES

2.1 Honduras Rosewood: A Biological Overview

Honduras Rosewood, *Dalbergia stevensonii*, is a species of Rosewood with other common names such as Rosewood, Nogaed, and Nagaed. The *Dalbergia* genus consists of small to medium-size plant species in the pea family. Some of its most well-known species include *Dalbergia stevensonii* and other rosewoods. The specific epithet, *stevensonii*, is named after Neil Stevenson, the founder of the species. The common name of Honduras Rosewood is actually an anachronism as it does not exist in modern day Honduras. Rather, it is found primarily in Belize, which, until 1973, was known as British Honduras, hence the name. Additionally, *Dalbergia stevensonii* is reported to occur in small patches in neighboring areas of Guatemala and Mexico.\(^4\)

Honduras Rosewood is found primarily in lowland swamp forests, along rivers, and also along inter-riverine areas. In Belize, it is reported to reside primarily in the Toledo district, between the Sarstoon and Monkey Rivers.\(^5\) In Guatemala, the Missouri Botanical Garden (MOBOT) lists occurrences of *Dalbergia stevensonii* in the department of Petén, especially in the southern municipalities of St. Louis, Poptún, Dolores, Melchor de Mencos, and Sayxche. Additional occurrences in Guatemala have been reported in the departments of El Quiché, Alta Verapaz, and Izabal.\(^6\) In Mexico, MOBOT reports sparse occurrences of the species in Chiapas, the southernmost state

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of the country.

![Distribution map of Honduras Rosewood populations.](image)

The average tree size for *Dalbergia Stevensonii* is fifty to one hundred feet tall with a three-foot diameter. The bark of the tree is papery with a scaly outer portion varying in color from pale brownish-grey to a dingy yellow-brownish grey. The wood itself is heavy and durable; its average dried weight is 59 lbs/ft$^3$ and its hardness is rated at 2,200 lb$^f$ as measured by the Janka hardness test. The sapwood, or the youngest and outermost wood of a tree, is grayish in color while the heartwood’s color can range from pinkish-brown to a dark purple-brown. Like many of its relatives bearing the same genus name (*Dalbergia*), the sweet, “rose”-like scent is a distinctive trait of Honduras Rosewood. Neil Stevenson describes it as such, “It is very hard and heavy… The heartwood is highly durable, but the sapwood soon decays when in contact with the ground.”

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7 CITES, “Proposition 32,” 8.
2.2 A History of the Marimba and Xylophone

The modern marimba and the xylophone, while distinctly different instruments today, have similar histories that predate written record. This common history is seen around the world, ranging from Southeast Asia to Africa, Europe, South America, and ultimately to the United States. The goal of this chapter is not to provide an exhaustive

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Photograph reproduced with permission from Laura Robertson of Tropical Hardwoods Inc.
discussion of this heritage, as many scholarly studies have been conducted on the subject, such as John Blacking’s extensive research on the Venda people and their music, and Vida Chenoweth’s research into Guatemalan marimba music. Rather, the goal is to explore the important developments of the instruments and to provide the reader with a deeper contextual view of the instruments and the materials used to construct them.

**Common Roots: Antiquity**

The ancient ancestor of the marimba and xylophone is what Curt Sachs termed a *leg xylophone*. This primitive instrument consisted of two or three slabs of wood that were laid across a seated player’s legs and struck with clubs. Often, a hole is dug into the ground beneath the player’s legs to act as a resonating chamber. The first innovation in the construction of the instrument was what Sachs termed the *log xylophone*. In this construction the wooden bars are laid across two parallel logs, but not secured to them. Other later developments include a *table xylophone*, which fastens the bars to a pre-made frame, and a *bail xylophone* in which the bars are fastened to a frame and suspended from the player’s body.

The earliest known descendents of these primitive instruments can be found across the globe. In 1949, ethnologist Georges Condominas discovered eleven tuned keys of schistic rock in the Vietnamese village of Ndut Lieng Krak. This prehistoric lithophone is considered to be the oldest pitched instrument in existence. Another stone lithophone was found in Greece and dated from 2300 B.C. This instrument has jewel-encrusted slab-type keys and resonators. Another Greek xylophone-like instrument, termed the Lydian Ranat by Frank MacCallum, has been dated at about 1000 B.C.

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13 Ibid; 54.
These early instruments reached their next stage of development in Indonesia. The *gambang* is a wooden-keyed instrument in which the keys are suspended over a single wooden trough-resonator and often included in Javanese and Balinese *gamelan* ensembles. Its bars are made of teak or ironwood and are suspended over a single wooden case-like trough-resonator.

Other Indonesian xylophone-like instruments include the bronze-keyed relatives of the *gambang*, the *saron*, and the *gender*. The *saron*, like the *gambang*, has its keys suspended over a single wooden trough-resonator. The *gender*, however, has a tuned bamboo resonator under each key. This is an important step in the evolution of the instrument in that this is quite possibly the first struck xylophone-like instrument to have single resonators corresponding with the pitch of each key.\(^\text{16}\)

While the exact chronological origin of these instruments is unknown, bronze instrument artifacts in the area have been dated as early as 300 B.C.\(^\text{17}\) Curt Sachs posits that the *saron* and *gender* cannot have been constructed much earlier than 900 A.D and 1157 A.D. respectively.\(^\text{18}\) While ubiquitous in modern day Indonesia, these instruments are considered essential components in the lineage and development of bar-percussion instruments around the world, particularly of the early African marimbas. Sachs explains that “many implements, tools, weapons and instruments in a well-defined area of African Bantu districts are so closely connected with the corresponding objects of southeastern Asia than an early communication across the Indian Ocean and through the Zambezi valley can be assumed.”\(^\text{19}\)

**The Development of the Xylophone**

Current research suggests that the arrival of bar-percussion instruments in Africa is the chronological junction where the xylophone and marimba part ways. While the


\(^\text{18}\) Sachs, *The History of Music Instruments*, 239.

\(^\text{19}\) *Ibid.*
xylophone has ancestral relatives in Africa and Indonesia, it came to the United States through Europe. The word xylophone is of Greek origin with xylon meaning “wood” and phone meaning “sound.” The earliest European versions of the instrument were known as the ranat in Northern Europe, Scandinavia, and Germany, and the strohfiedel (“straw fiddle”) in Eastern Europe. The ranat was a trough xylophone descended from the Thai instrument of the same name. The strohfiedel was simple, a collection of wooden bars laid on any convenient surface, such as a table. While the exact origins of the strohfiedel are unknown, it is quite possibly descended from similar eastern European instruments, such as the Polish Jerova i Salame, and thus a product of European, as opposed to Asian, culture.

Numerous sixteenth- and seventeenth-century texts mention the strohfiedel. In 1511, a hultze gletcher (“wooden stick”) is mentioned in Arnold Schlick’s Spiegel der orgelmacher und organisten. In 1528, music theorist Martin Agricola refers to the strohfiedel in his Musica instrumentalis deudsch. Additionally, prominent German composer Michael Praetorius described a similar instrument in his 1618 Syntagma musicum.

The early European xylophones were simple, consisting of one row of as few as eight bars that were loosely strung together and could be laid anywhere for performance, but were commonly placed on a cloth or on bundles of straw. This portability made the instrument popular among wandering musicians, especially those from eastern European countries and southern Germany.

The first known strohfiedel virtuoso, and thus the first known western bar-percussion virtuoso, was the Polish musician Michal Józef Guzikow. Born in 1806 in Szklow, Poland, Guzikow was a flutist until a bout with lung disease forced him to give up wind-blown instruments. This illness forced Guzikow to turn his full musical attention to a primitive xylophone-like instrument known in his Polish community as Jerova i

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20 Kite, Keiko Abe, 128.
Salame, an instrument with which he had a casual familiarity. After working to master the instrument, Guzikow found that his musical aspirations went beyond the capabilities of the instrument. Hence, he set forth to improve the instrument.

In order to increase the its musical potential, Guzikow had to modify both the construction of the instrument and the tone of its bars. Initially, he increased the number of bars to from eight to fifteen, and then subsequently to twenty-eight. Later modifications included tapering the ends of the bars to help focus the pitch, rearranging the placement of the bars to better facilitate performing, and improving the base of the instrument in order to improve its resonance. The latter entailed covering five thin pieces of wood with bundles of straw to form supports on which the bars would be placed. These bundles, ornamented with gold tassels and tied together with cord, were evenly distributed across a table perpendicular to the performer. The bundles served as the base upon which to rest the bars, and the empty space between the bundles served as a resonating trough. The bars of the instrument were made of red or white cedar and were in the shape of half-cylinders which facilitated stability by having the flat side of the bars rest on the straw bundles. Additionally, they were graduated in length from four to twelve inches according to pitch.

This strohfiedel had its four rows of bars arranged perpendicular to the player (as opposed to the modern parallel arrangement that mirrors the keys of a piano). A bar of each row was interlocked with a corresponding bar in the adjacent row, thus facilitating the joining of the rows with single cord. The lowest pitched bar of each row was at the bottom and the highest at the opposing end. Additionally, each bar was graduated at a higher pitch than the bar to its right. In this fashion, the lowest pitched bar of the entire instrument was in the lower right-hand corner and the highest in the upper left-hand corner.\(^{24}\) This was reminiscent of the configuration of the strings of a cimbalom, an instrument also native to Eastern Europe and Western Asia.\(^{25}\) Another resemblance to the cimbalom was the playing technique. The player would hold two spoon-shaped

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\(^{24}\) *Ibid.*

mallets in between his index and middle finger with the thumb possibly being placed in a hole on each mallet.\textsuperscript{26}

![Image](image.png)

Figure 2.3: A photograph of a strohfiedel similar to the one Guzikow would have played.\textsuperscript{27}

This version of the strohfiedel served Guzikow well. In 1834, he embarked on a three-year tour of Europe that took him from the Ukraine to France performing his own compositions as well as arrangements of works by Mendelssohn and Paganini. Royalty, as well as prominent musicians like Mendelssohn, Liszt, and Chopin, enthusiastically received these performances and it has been said that Mendelssohn accompanied Guzikow at a recital in Berlin.\textsuperscript{28}

Guzikow’s popularity as a performer also increased the popularity of the instrument, making it a regular feature of public entertainment ranging from the variety show to the concert hall.\textsuperscript{29} However, the xylophone was also known by other names in the nineteenth century including the xylosistron, the xyloharmonicon, the triphon, and the tryphone. The tryphone, introduced around 1870 and credited to French xylophonist Charles de Try, is believed to be an early example of a xylophone constructed in the image of a piano with two rows of keys instead of the usual four.

\textsuperscript{26} Ibid.
\textsuperscript{27} Photograph reproduced with permission from the Percussive Arts Society.
\textsuperscript{28} MacCallum, The Book of Marimba, 30.
Ultimately, the notoriety of the instrument earned it a spot in the symphony orchestra, most notably in Camille Saint-Saëns’ *Danse Macabre* in 1874. For many years, this was considered to be the first use of the xylophone in an orchestral work, but recent research by percussionist David Eyler uncovered an 1845 composition named “Champagne Gallop” by Danish composer Hans Christian Lumbye that includes a solo part for xylophone, or *traespil*.30

Brought to the United States by European immigrants, the *strohfiedel* had gained widespread acceptance in the country by the 1880s.31 The instrument would be used in many forms of entertainment, as it had in Europe, including vaudeville, Chautauqua performances, and traveling circuses. It would also be a key component in the development of ragtime music. This popularity pre-dates, but might possibly have facilitated, the arrival of the marimba in the United States.

The Development of the Marimba

While sharing a common ancestry with the xylophone, the marimba arrived in the United States via a much different path than the European-influenced xylophone. The commonly accepted route is through Central America, via the slave trade from Africa. However, many Central American musicians insist that the indigenous Indian population there developed their own version of the marimba.32

The name “marimba” itself has African roots and, depending on the geographical location one researches, has many different variants. The term *malimba* is a Bantu term (“Bantu” referring to the over 400 Sub-Saharan ethnic groups in Africa) for an instrument played by the *Shangana-Ndu* people located on the coast of Mozambique.33 In the Republic of Congo, the terms *madimba* (with variants *midimba*, *kidimba*, *dimba*, and *madjimba*) and *manza* (with variants *kanrangba*, *kalangwa*, and *kalangba*) are used to describe a similar instrument in the southern and northern

30 Eyler, “Early Development of the Xylophone,” 43.
31 Kite, *Keiko Abe*, 130.
32 Chenoweth, Marimbas of Guatemala, 52
regions of the republic respectively. Also, the Vendas people of Zimbabwe and the Chopi of southern Mozambique use the term *mbila* or *timbila*, with both words describing the same instrument. While the terminology and the specific details of the instrument change from region to region (and even within a single region), the basic premise of the African marimba is consistent: An idiophone with wooden bars and tuned resonators often made from gourds, cow horns, or other similar receptacles.\(^{34}\) Oftentimes, these resonators will have a resonating aperture, usually an open tube or ring inserted into the resonator that is covered with a thin membrane from a spider’s eggs or a bat’s wing.\(^{35}\) The effect of this aperture is a distinct buzzing sound that accompanies the basic tone from the wooden bars.

As previously stated, many variations on this construction exist. The Venda *mbila* is a large instrument consisting of a strong, though light frame constructed with handles allowing the instrument to be carried.\(^{36}\) The twenty-one or twenty-two bars of the instrument, made from the *mutondo* tree, are placed on this frame and collectively called *mbila*. All of the bars, except the three highest pitched, have a cucumber-shaped calabash gourd placed underneath to act as a resonator, with the stalk of each of these gourds cut off to create a cylindrical opening. In order to properly function, each calabash is carefully chosen so that the length of its air column matches the wavelength of the frequency of its corresponding bar. Additionally, each resonator has the aforementioned resonating aperture contributing to the characteristic buzzing sound of the instrument. The instrument lacks legs and so is placed on the ground and played by two squatting performers that are usually male, though females have been taught to play as well.\(^{37}\)

The Chopi *mbila* is much smaller than the Venda version. However, the Chopi have four variations of the instrument, 1.) *tshilandzana*, which has twelve to fourteen notes; 2.) *dibinde*, which has ten; 3.) *didole*; and 4.) *tshikhulu*, which have four low notes that have no definite pitch. The bars are made from *mwendze* wood and are secured to

\(^{34}\) Blades, *Percussion Instruments*, 76.

\(^{35}\) Ibid., 77.


\(^{37}\) Ibid., 73.
the frame by a vertical hole with a cord passing through on one end, and a cord that passes under and over the bar at the other end. This is unlike the Venda method, which utilizes holes on both ends of the bar. The Chopi mbila also has its frame secured by two short legs which attach to a curved wooden bar. This bar holds and stretches the string on which the bars are strung, and keeps the instrument away from the body when worn by the player. This distinct feature has earned it the term “arc marimba.” The lower-pitched mbila have bars and resonators much larger than their smaller counterparts and thus require a wider frame that is higher off of the ground, at about waist height for a standing player. Contrastingly, the smaller tshilandzana and dibinde have shorter legs that keep the instrument only a few inches off of the ground, thus requiring the player to sit and play.

The Chopi mbila has many structural similarities to its Guatemalan relative, the marimba con tecomates. Before these similarities are considered, however it is important to examine the marimba’s journey to the Americas. The first appearance of the marimba in the Western Hemisphere is a subject of much speculation. Many in Central America believe that their version of the marimba originated there with little or no influence from its African counterpart. Conversely, another popular belief is that the marimba traveled to the New World through the slave trade of the sixteenth and seventeenth centuries.

Despite the disagreement, the popular belief is that African slaves brought the marimba to the New World. This is supported by many striking similarities between the Central American and African instruments. Most obviously, the term marimba, or a small variant thereof, is used on both continents. Additionally, the gourd resonators, the resonating aperture, the diatonic tuning of the keys, and a wooden arc used to suspend the marimba are all common features shared by the African and early Central American marimbas.

Within Central America, the marimba was developed primarily in Guatemala but also in the neighboring state of Chiapas, Mexico. In her seminal book, The

39 Chenoweth, The Marimbas of Guatemala, 64.
*Marimbas of Guatemala*, renowned marimbist Vida Chenoweth describes the importance of the instrument in Guatemala:

The marimba is the national instrument of Guatemala and the average Guatemalan has always known the marimba as part of the culture. He has read of it in schoolbooks and was honored on his birthday with marimba music. He heard it in the public parks on weekends and on holidays of all kinds. He heard it in the city and heard it in the country as well, on the coffee plantations, on the village plaza and in the cantinas. The marimba also symbolizes the country’s sovereignty, as it was the sound that accompanied the celebrating of Guatemalan independence from Spain in 1821.41

The *marimba con tecomates*, or gourd marimba, was an instrument widely used by the native Central American Indians since approximately 173742 and is the prototypical instrument upon which the chromatic marimba, or *marimba doble* would be created. The *marimba con tecomates* comes in two varieties, one being the *marimba de arco*, a term taken from its African counterpart, and the second is identical to the first except that it rests on the ground when played. Both varieties are rarely played today and are almost exclusively confined to the area around the town of Chichicastenango in the department of El Quiché.

Like all Guatemalan marimbas, the *marimba con tecomates* is constructed entirely of wood. By virtue of tradition, the use of metal, even a single nail, is strictly taboo. Also, once the marimba is built, it is never disassembled, even for transport. The frame, including the distinctive arc feature, is usually made of cherry wood and the keys are made of hormigo. Like the Chopi *mbila*, the marimba is diatonic and hollowed-out gourds are used as resonators. Also like its African counterpart, each resonator has a resonating aperture covered with a thin membrane to create the characteristic buzzing sound, known as *charleo*.

The *marimba sencilla*, or “simple marimba”, serves as a chronological transitional figure between the African-based *marimba con tecomates* and the chromatic *marimba doble*, Guatemala’s most advanced version of the instrument. The *marimba sencilla* is believed to have been in existence since around 1840\(^{43}\) and is constructed very similarly to its predecessor. The most salient difference between the two is that the *marimba sencilla*’s range is expanded to five diatonic octaves and sometimes even to six. Additionally, the attached legs allow the player to stand and play the instrument without carrying it. Its resonators, or *cajonés*, are made out of wood fashioned into the shape of a box.

![Figure 2.4: A photograph of a marimba con tecomates.](image1)

Figure 2.4: A photograph of a *marimba con tecomates*.\(^{44}\)

![Figure 2.5: A photograph of the gourd resonators of the marimba con tecomates showing the buzzing resonating apertures.](image2)

Figure 2.5: A photograph of the gourd resonators of the *marimba con tecomates* showing the buzzing resonating apertures.\(^{45}\)

The most advanced version of the Guatemalan marimba is the *marimba doble*, said to have been perfected by Sebastián Hurtado in 1894.\(^{46}\) In his desire to make a

\(^{43}\) *Ibid.*

\(^{44}\) Photograph reproduced with permission from the Percussive Arts Society.

\(^{45}\) Photograph reproduced with permission from the Percussive Arts Society.
marimba that was capable of playing European music, Hurtado discarded the gourd resonators and replaced them with flaring boxes. Perhaps his most important innovation was that he increased the range of the instrument to five and one-half chromatic octaves, with the keys arranged in the fashion of the black and white keys of a piano. As the name suggests, the *marimba doble* is actually two separate instruments, one slightly larger than the other, the larger being called *marimba grande*, the smaller known as the *marimba cuache, requinto, piccolo, or tenor*.

The construction of the instrument is a slow and painstaking process, as all work is done by hand and instruments are always made to order. This is evidenced by the long production times. A large *fábrica*, or marimba workshop, may only complete fifteen *marimba dobles* in a year while a smaller one may produce as few as one to four.\(^{47}\)

The most demanding task is crafting the keys of the marimba. In Guatemala, the primary wood choices are hormigo or *granadillo rojo* with hormigo being the wood of choice. Since it grows in the coastal areas of Guatemala and marimbas are made in the interior highlands, hormigo has to be imported typically via horseback. Only the heartwood of the tree is used and once selected, it is shaped into elongated rectangles and tuned by shaving the middle of the underside or the ends.

The wooden resonators, or *cajonés harmomicos*, of the *marimba doble* function in the same manner as the gourds of the *marimba con tecomates*. Each resonator is specifically tuned to each key so as to provide the maximum amount of amplification and resonance. However, unlike its predecessor, the resonator of the *marimba doble* is formed with soft pine or cedar in the shape of a hollow box that flares at one end. The lower end is shaped in an inverted pyramid, which acts to close the resonating chamber. Like the keys it amplifies, each resonator is graduated in size with the largest being in the lowest register and the smallest in the highest.

This method of building resonators is significantly easier than using gourds. With the latter, the ability of a gourd to match the pitch of a given note is unknown until it is painstakingly scraped of its innards. Conversely, the dimensions of a wooden


resonator can be predetermined. Rosendo Barrios, who aided Hurtados in developing the *marimba doble*, standardized the dimensions of the resonators he made in his *fábrica*. Ever since then, other marimba makers have followed suit, copying the dimensions of previous instruments and making use of them when manufacturing their instruments.\(^{48}\)

Once the construction of the instrument is complete, the *marimba grande* measures seven and one-half feet horizontally and two and one-half feet high. In contrast, the smaller *marimba cuache* only measures five and one-half feet horizontally with the same height as the *marimba grande*.\(^{49}\) When played together, the two instruments are placed end-to-end, in a “V” shape, or at right angles with four players at the *marimba grande* and three playing the *marimba cuache*. Each player has an assigned register on the instrument. On the *marimba grande*, the registers, from lowest to highest, are *bajo, centro, tiple*, and *piccolo*. On the *marimba cuache*, the corresponding registers are *centro, tiple*, and *piccolo*. The *bajo* and *centro* parts are harmonic parts and the players hold three mallets in their hands. The *piccolo* and *tiple* positions play the melody in octaves to each other and are often the most technically demanding parts.\(^{50}\)

![Figure 2.6: A marimba grande, this is the larger of the two instruments that comprise the marimba doble.](image)

\(^{48}\) Jacobs, “The Constructional Development of the Marimba”, 123.


\(^{50}\) Chenoweth, *The Marimbas of Guatemala*, 22-23.
As the *marimba doble* was being refined, it also started to gain popularity in Guatemala and beyond. On November 21, 1899 the Hurtado family performed in Guatemala City for the birthday of President Cabrera. In 1901, a group comprised of members of the Hurtado family brought a *marimba sencilla* to an exposition in Buffalo, New York, but the performance was cancelled because of the death of President William McKinley. Another group, lead by their teacher Mariano Valverde, performed on a three-year tour of the United States and Europe in 1908. Perhaps most notably, the Hurtado Brothers Royal Marimba Band performed twice daily for nine months at the World’s Fair in 1915. These performances were key to introducing the marimba to the American public. For the next thirty years, the group went on to tour and record extensively throughout the United States.

### The Marimba and the Xylophone in the United States

As previously mentioned, the xylophone had gained popularity in the United States by 1880. In this very year, a professional clarinetist named John Calhoun Deagan had manufactured his first instrument, a scientifically-designed glockenspiel.\(^5\) Prior to this, Deagan was enlisted in the United States Navy and the ship upon which he was stationed, the USS Brooklyn, was home ported in England. This allowed Deagan to study music at the University of London where he attended several lectures by German physicist and acoustician Hermann von Helmholtz. It was his *On the Sensations of Tone as a Physiological Basis for the Theory of Music* that inspired Deagan to pursue a career as an instrument manufacturer. In 1880, Deagan formed the J.C. Deagan Company.

With the development of his scientifically-tuned glockenspiel, Deagan had taken what was a crude, usually out-of-tune instrument and remade it into a legitimate concert instrument. In 1888, eight years after developing his glockenspiel, Deagan turned his attention to another “crude” instrument (according to Deagan’s acoustical standards), the popular *strohfiedel*. In his efforts to apply Helmholtz’s principles to the

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instrument, Deagan devoted extensive study to determine the appropriate wood to use. He eventually replaced the popular hormigo wood with Honduras Rosewood (*Dalbergia stevensonii*) for its brilliance, crisp response, and durability. He also designed a floor rack to accommodate standing players, mounted the tone bars in standard piano-key arrangement with accidentals overlapping the naturals and added brass resonator tubes underneath the tone bars for greater projection.\textsuperscript{52}

Deagan had a large operation in place for securing his supply of Honduras Rosewood. Native huts housed the tree specialists who were engaged in the selection of wood for Deagan in Central America. Belizean Creoles marked the logs for shipment to Chicago and shipment was made from Belize via steamship to U.S. ports. Upon arrival at the Deagan factory via train, the logs were graded, dated, stored, and cured in special humidifying rooms. Skilled men cut the logs into slabs according to Deagan’s standards for the drying kilns. The curing process took the bars through a total of three drying kiln under thermostatic control. This six-to-eight year process would see the bars ready for tuning and instrument fabrication.\textsuperscript{53}

The earliest batches of this wood, used until the late 1920s, came from approximately 1,000 year-old trees. It is believed that the age and density of the heartwood of these trees made it a premium wood, which Deagan named “Nagaed”, simply Deagan spelled backwards. The use of this wood continued until the older trees were logged out and the harvesting of younger trees became necessary. Although still of a high-quality, Deagan discontinued the Nagaed marking on this younger rosewood in the 1930s since he believed that it did not meet the extremely high standards of the older wood. Other companies that utilized this older, high-grade rosewood include Leedy, Jenco, Musser, C.C. Street, and Walberg.

By 1910, Deagan had introduced the *Marimba-Xylophone*. The duality of the name was a representation of the range of each instrument. If a wooden-bar instrument extended no lower than middle C, then it was termed a xylophone. Conversely, a marimba extended below middle C. Two other marimba-like novelty instruments were introduced around 1910 as well, the Marimbaphone and the Nabimba. The latter was

\textsuperscript{52} Ibid., 8.

either a steel- or wooden-barred instrument in which the position of the bars could be 
changed from the standard horizontal orientation to a vertical one to facilitate bowing 
the edges of the bars. The Nabimba was modeled after the Guatemalan marimba in that 
the resonators were covered with a membrane that captured the distinct buzzing sound 
typical to the instrument.

![Image of a Deagan rosewood bar with the Nagaed marking](image1)

Figure 2.7: A photograph of a Deagan rosewood bar with the Nagaed marking.\(^{54}\)

![Image of the model 4728 Marimba-Xylophone](image2)

Figure 2.8: A catalog picture of the model 4728 Marimba-Xylophone, one of the best selling 
versions of the instrument.\(^{55}\)

In 1918, the Deagan Company had begun marketing its first instrument with 
the name marimba, the model 350. The range was comparable to that of many of the 
marimba-xylophones already in production; the marimba model 350 was three octaves 
F\(_3\)-F\(_6\)\(^{56}\) and the 354 was four octaves C\(_3\)-C\(_7\). Given commonalities in range and bar 
material (both instruments utilized Nagaed rosewood), the exact distinction between the 


\(^{56}\) The scientific pitch notation system will be employed throughout this treatise.
xylophones, marimba-xylophones, and marimbas manufactured at the time are unclear. In 1920, all manufacturers stopped making wooden-bar percussion instruments with ranges lower than one octave below middle C. This standardization of the lowest note was maintained until almost 1960. Additionally, any novelty instruments, including the *Nabimba*, were discontinued due to lack of sales.

In 1927, a new system of tuning was devised for bar percussion instruments. Credited to Hermann E. Winterhoff, of the Leedy Drum Company, and Henry J. Schluter, of the J.C. Deagan Company, this new method involved tuning not just the fundamental tone of the bar, but also the overtones, or harmonics, of each note. This tuning system had two variations, “quint tuning” and “octave tuning”. “Quint tuning”, reserved for xylophones, involved tuning the third harmonic, one octave and a fifth above the fundamental, to the fundamental note. “Octave tuning” was reserved for marimbas or marimba-xylophones and involved bringing the fourth harmonic, two octaves above the fundamental, in tune with the fundamental pitch. The resulting difference in sound is noticeable; bars that are “quint tuned” have a brighter and shriller sound than the mellowness of “octave tuned” marimba bars.

In his 1955 Master’s thesis, marimba virtuoso Burton Lynn Jackson would posit four principles upon which a xylophone and a marimba could be differentiated. Prior to this time, the prevailing opinion, though not always true, was that a marimba had resonators and a xylophone did not. Jackson’s four principles were as follows:

1. The partials, or overtones, are emphasized in different ways in each instrument. The xylophone bars are tuned to bring out the twelfth overtone prominently. In contrast, the marimba is tuned in octaves.
2. The range of the xylophone is higher than that of the marimba. If one can compare a four-octave xylophone with a standard four-octave marimba, he will find the former instrument an octave higher.

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57 Kite, *Keiko Abe*, 133.
3. There is more wood mass per bar in the xylophone than in the marimba. Comparing the same size instruments, one would find the xylophone bar thicker than the marimba's.

4. The bars for the marimba are cut from the outer and softer portions of the log; the xylophone bars are taken from the harder core.  

By 1941, the J.C. Deagan Company had reached a peak in marimba making with twelve different models in production. In 1942, with the arrival of World War II, production of many marimba and xylophone models ceased due to a scarcity of materials. While some marimba models survived and were produced after the war (mostly student models), xylophone production ceased in 1942 and would not resume again until 1961. The marimba soon followed suit in 1954, not to be produced again until the same year.

Between 1955 and 1960, renowned marimbist Clair Omar Musser had created a new marimba model that had extended the lower range of the marimba by a minor third to A₂ below the usual C₃. While certain bass marimbas were also produced, another change to the range of a concert marimba would not come until quite some time later.

In 1969, renowned Japanese marimbist Keiko Abe had a post-concert discussion with composers Minoru Miki and Akira Miyoshi on the limitations of her personal marimba, a four-octave Musser. This conversation prompted Abe to approach the Yamaha Corporation to begin a joint project aimed at developing a new marimba in accordance with her aspirations for the instrument. The first fruit of this project was a four-octave concert quality instrument in 1971. Shortly thereafter in 1973, upon Abe's request, Yamaha developed a four-and-a-half octave marimba (F₂-C₇) with individually adjustable resonators to adjust to different concert halls. This marimba became Abe's standard performance marimba until 1981. Eventually, it became apparent to Abe, also

61 At this time, bass marimbas were instruments with only a one-and-one-half octave range beginning two octaves below middle-C or C₂.
a composer, that she would need additional notes in the low range of the instrument to play her music. Again, Yamaha's engineers went to work and first developed a prototype roll-up extension to her current marimba thus making it a five-octave instrument ($C_2 - C_7$). Abe toured the United States with this instrument in 1981 and performed with it at the Percussive Arts Society International Convention in Indianapolis, Indiana. The success of this tour led Yamaha to develop the first five-octave concert marimba, the YMA-6000 in 1984. This instrument is Abe’s standard performing marimba to this day.\(^{62}\) While larger marimbas have since been produced that extend into the higher register, this five-octave configuration remains the standard size for a contemporary concert marimba.

![Yamaha YM-6100 five-octave marimba, an updated version of the YM-6000 developed in conjunction with Keiko Abe.](image)

Figure 2.9: A photograph of the Yamaha YM-6100 five-octave marimba, an updated version of the YM-6000 developed in conjunction with Keiko Abe.\(^{63}\)

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\(^{62}\) Kite, *Keiko Abe*, 208-209.

\(^{63}\) Photograph used with permission from the Yamaha Corporation.
CHAPTER 3
ANALYSIS OF THE ENDANGERMENT OF HONDURAS ROSEWOOD

The inclusion of Honduras Rosewood in the CITES Appendices internationally recognizes its endangerment. In order to investigate and define this endangerment, this chapter will provide an overview of the threats to Dalbergia stevensonii populations and the measures being taken to protect them. In order to provide as broad a perspective as possible, the data provided in this chapter will come from multiple sources including various government organizations, conservation groups, and recent scientific research including, but not exclusive to, CITES. As the endangerment and conservation of the species is ongoing, as much effort as possible has been made to use the most recent data publicly available. In the interest of consistency with research sources, the scientific name of Honduras Rosewood, Dalbergia stevensonii, will be used throughout this chapter.

3.1 Threats to Honduras Rosewood Populations

The Biodiversity and Environmental Resource Data System of Belize (BERDS) lists Dalbergia stevensonii’s primary threats as habitat loss and degradation, harvesting methods, and its restricted growth area. Additionally, and despite its significance as a high-value timber species, relatively little is known about its population status. In the area of trade, comprehensive and accurate reports on the levels of local and international trade in the species, especially pre-CITES, are almost nonexistent. These gaps in data, combined with the pervasive issues of global habitat loss and illegal logging make gaining an accurate perspective on the industrial use of Dalbergia stevensonii a difficult charge. Rather, the goal of this section is to examine the most significant factors that threaten populations of Dalbergia stevensonii.
Habitat Loss and Degradation

According to the BERDS, habitat loss and degradation due to human causes is the single greatest threat to *Dalbergia stevensonii* populations. Furthermore, the reduction in the quantity, quality, and connectivity of natural habitat is the greatest direct cause for tropical forest loss in the range states of *Dalbergia stevensonii* and also throughout the world.\(^6^4\) Based on this, and since the species is primarily sourced from these same tropical forests, it can be inferred that a high rate of deforestation correlates with the deterioration of the species. To compound the matter, the effectiveness of national legislation to protect the species from over-harvesting has yet to be fully assessed.\(^6^5\)

In Belize, *Dalbergia stevensonii* primarily grows in its southernmost district of Toledo. Historically, this area has escaped from major deforestation due to its inaccessibility and distance from population centers. In modern times however, the Toledo District has developed one of the most extensive human footprints on its ecosystem in all of Belize. As a relatively under-developed region, Southern Belize is now experiencing rampant road construction for logging and extensive slash-and-burn agriculture, thus threatening the core population of the wood in Belize.\(^6^6\)

Between 1990 and 2000, the whole of Belize saw a 21 percent decrease in forest area or a loss of 1,348,000 hectares\(^6^7\) of forest.\(^6^8\) In 1927, 87 percent of Belize was covered with forest. By 2000, forest was reported to cover only 59.1 percent of the land area of the country.\(^6^9\) Exacerbating the issue, the Government of Belize lacks the fiscal resources to manage its protected areas or to enforce environmental regulations. One important example is a frequently ignored rule mandating that new farms and orchards


\(^{6^5}\) CITES, “Proposition 32,” 5.

\(^{6^6}\) *Ibid.*

\(^{6^7}\) 1 hectare = 10,000 square meters = 107,639 square feet.


\(^{6^9}\) CITES, “Proposition 32,” 5.
carved out of forests should leave a 20 meter standing belt of forest along all waterways. Given that *Dalbergia stevensonii* is mainly found alongside rivers, this is a particularly threatening activity. Southern Belize is also seeing an extremely high rate of annual human population growth, at 2.33 percent, with increased accessibility to *Dalbergia stevensonii* habitats.  

Figure 3.1: An analysis of the Human Footprint, or the alteration of natural lands due to human activity, throughout Belize. The darker shaded areas denote a larger and more severe footprint while light areas denote a smaller, less destructive footprint. This analysis takes into account various factors including population density, poverty, roads, agriculture, and aquaculture. The southwestern-most section is the Toledo District, home to the most concentrated populations of *Dalbergia stevensonii* in Belize.  

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The secondary range states of *Dalbergia stevensonii*, Mexico and Guatemala, fare much the same as Belize. In Chiapas, Mexico, the primary area for *Dalbergia stevensonii* occurrences in the country is experiencing 70,000 hectares of disappearing forest annually. Between the years 1990 and 2000, Mexico lost 10 percent of its forests with an annual rate of change of -1.1 percent.\(^\text{72}\) Since 1960, the rate of deforestation in Chiapas has been higher than the rest of Mexico and is amongst the highest in the world.\(^\text{73}\) Of particular concern is the Monte Azules Biosphere in Chiapas. Created in 1978, this nationally protected reserve of 331,200 hectares, and home to populations of *Dalbergia stevensonii*, is critically threatened by problems including forest fires and deforestation.\(^\text{74}\)

As the highest ranked nation in Central America for biodiversity, Guatemala has been particularly hard hit by deforestation. Between the years 1990 and 2000, Guatemala saw a 20 percent decrease in natural forest cover.\(^\text{75}\) While this is a slightly lower number than in Belize, Guatemala has over one million more hectares of natural forest area than Belize, resulting in a much higher total area loss. Between 1992 and 1998, Guatemala’s broadleaf forests were the most affected of all forest types with an estimated loss of 359,200 hectares.\(^\text{76}\) This is of particular importance as *Dalbergia stevensonii* occurs primarily in broadleaf forests. The tropical forests of Petén, Izabal, and Alta Verapaz, areas of large populations of the species, have suffered heavy deforestation due to a variety of factors mostly related to shifting agriculture.\(^\text{77}\)

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\(^{73}\) Ibid. 5-6.

\(^{74}\) Ibid. 9.


\(^{76}\) USAID, “Guatemala Biodiversity Assessment”, 16.

\(^{77}\) Ibid. 16-17.
trends observed between 1986 and 1995, research has estimated that only 2 percent of the forests of Petén would survive by 2010.\textsuperscript{78}

In all of \textit{Dalbergia stevensoni}ii's range states, poor agricultural practices play an important role in the loss of habitat. Of particular interest is \textit{milpa} agriculture, an ancient form of agriculture practiced throughout Mesoamerica. \textit{Milpa} agriculture is a form of shifting agriculture in which a \textit{milpa} plot is planted with corn, beans, and squash (dubbed the \textit{Three Sisters}). This plot is then harvested for two years and then left fallow for six years in order to allow the land to replenish itself. After two years of harvesting a plot of land, a farmer will then cut down and burn a new area. The remaining ashes will then be mixed in with the soil as fertilizer.

In and of itself, \textit{milpa} agriculture is among the most sustainable forms of agriculture. The three primary \textit{milpa} crops (corn, beans, and squash) are ecologically beneficial to each other both during and after a harvest. Whereas monocrop agriculture can rapidly deplete the soil in which it is planted, \textit{milpa} agriculture helps to sustain the life of the soil throughout many years in addition to providing a large amount of crop output. However, in modern times, overpopulation, changes in landownership patterns, and the availability of cheaper crops exported from the United States have forced farmers to allow less time for fallow fields to regenerate, and to burn forest area at a higher rate. The corresponding deforestation due to \textit{milpa} agriculture and other factors has promoted the development of approximately 7,560 square kilometers of anthropogenic, or human-caused, bush land and grassland ecosystems.\textsuperscript{79}

Fire has become an increasing cause of habitat loss throughout the range of \textit{Dalbergia stevensonii}. Forest fires have a multitude of different causes, ranging from logging, slash-and-burn agriculture, intentional fires, hunting, and timber and non-timber harvesting activities. While fire damage in Belizean broadleaf forests has not been well documented, the sheer area affected by forest fires implies a major destruction of flora and fauna.\textsuperscript{80} Fires in broadleaf forests often draw less attention than the massive blazes

\textsuperscript{78} CITES, “Proposition 32,” 5-6.
\textsuperscript{79} USAID, “Guatemala Biodiversity Assessment”, 17.
\textsuperscript{80} Jan C. Meerman, Peter Herrera, and Augustin Howe, “Rapid Ecological Assessment: Sarstoon Temash National Park Toledo District, Belize, Volume I”, 63, available from
seen in pine-needled forests. The fires are usually low and slowly creep through the leaf litter on the floor. These fires often are small enough to walk up to, or even through them, without much danger. Yet, these small persistent fires can cause profound damage for several years after the actual fire.\textsuperscript{81} Slash-and-burn agricultural practices are the most pervasive causes of fires in these broadleaf forests. In general, subsistence farmers in Belize have little consideration for the well-being of the forest and most farmers do not take \textit{milpa} fires seriously.\textsuperscript{82} In Guatemala, 918 fires were recorded in 2001. These fires affected an area of 22,150 hectares.\textsuperscript{83}

\begin{figure}[h]
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\includegraphics[width=\textwidth]{figure3_2.png}
\caption{A photograph of a field of Guatemalan forest that has been subject to slash-and-burn agriculture. Young corn crops are visible amongst the tree stumps.\textsuperscript{84}}
\end{figure}

\begin{flushright}
\textsuperscript{81} Ibid. 64.
\textsuperscript{82} Ibid.
\textsuperscript{83} USAID, “Guatemala Biodiversity Assessment”, 17.
\textsuperscript{84} Photograph reproduced with permission from Laura Robertson of Tropical Hardwoods Inc.
\end{flushright}
Illegal Logging

The production of lumber is a major economic contributor to the range states of *Dalbergia stevensonii*. In 1994, the lumber trade in Belize was estimated to be valued at $7,630,407.00.\(^8\) The timber industry creates jobs for many communities in Belize, particularly underdeveloped ones, and is a vital part of the socioeconomic structure of many of these communities.

However, illegal logging is a major issue for the logging industry in Belize and beyond. It comes in many different forms including logging in nationally protected areas, over-allowing logging quotas, processing logs without proper licenses, and subverting import or export duties. In many ways, the illegal logging trade is very similar to the illegal drug trade in that it causes billions of dollars of lost revenues, and funds armed conflict worldwide. In Belize, illegal logging is reported to be a significant problem, even within nationally protected areas. In Guatemala, population pressures around protected areas result in illegal timber harvesting. In Mexico, the International Tropical Timber Organization (ITTO) estimated that the country sees five to seven million cubic meters of roundwood illegally harvested per year, which is equivalent to 80 percent of legally harvested timber there.\(^8\) Armed conflict is also prevalent. Rico Franklyn of Tropical Hardwoods Inc. notes that “…the lumber industry can be very dangerous. In Guatemala, guns are legal and everybody has one. I have spent a good deal of my life working there and, in the lumber industry there, you don’t ask too many questions, or you will wake up dead. Every Coca-Cola truck has an armed guard, every BP delivery truck has two armed guards, and even a delivery truck for a potato chip company has an armed guard. It is a tricky business dealing down there.”\(^8\) To further illustrate this, an employee of the Guatemala’s National Forest Institution (INAB) was shot and killed.

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\(^8\) CITES, “Proposition 32,” 7.

\(^8\) Rico Franklyn and Laura Robertson, telephone interview, October 2009.
in retaliation for efforts to control illegal logging and contraband trade in precious woods.  

Inadequate Record Keeping

Since CITES’ primary conservation mechanism is the controlling of international trade, accurate trade records are vital to gauging the success of the implementation of the Convention. However, prior to the CITES regulations in 2008, and even to some extent after it, trade records for both the exporting and importing of *Dalbergia stevensoni* were, at best, patchy. With the formation of the forest department in Belize in 1925, some records were kept, showing 248 and 76 tons of the wood shipped to the United States in 1925 and 1926 respectively. Another record from 2004 shows that 254.65 cubic meters of the wood was shipped from Guatemala to Japan, El Salvador, United States, Germany, Belize and the Netherlands. Up through 2007, the International Tropical Timber Organization (ITTO) does not list any trade in *Dalbergia stevensoni*.

The CITES trade database, which shows a yearly graph of exported and imported materials, only records trade in *Dalbergia stevensoni* since the year 2008, the year of its listing in Appendix III. Even taking this into account, an examination of the CITES trade database shows significant gaps in trade data. For example, while data is recorded, it shows that the United States only imported 63 kilograms of the wood on one occasion and .053 cubic meters on another from Germany. However, Tropical Hardwoods Inc., an importer of *Dalbergia stevensoni* to the United States that primarily serves the percussion industry, imported 48.3 cubic meters of the wood in 2008, all of which had the appropriate CITES permits. Additionally, it stands to reason that a large industrial nation like the United States, home to many prominent marimba and xylophone manufacturers, would import quantities of *Dalbergia stevensoni* much larger

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88 Ibid.
89 Ibid.
91 Laura Robertson, e-mail message to author, 8 Oct 2009.
than 63 kilograms (138.6 lbs) and .053 cubic meters (22.46 board feet). Based upon these discrepancies, it can be inferred that the records in the UNEP-WCMC CITES trade database are incomplete.

Table 3.1: A comparative tabulation report from the UNEP-WCMC CITES trade database on trade in *Dalbergia stevensonii* during the year 2008.  

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<th>Exporter</th>
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<th>Imp Unit</th>
<th>Imp Term</th>
<th>Imp Purpose</th>
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<td></td>
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<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>DE</td>
<td>BZ</td>
<td></td>
<td>20.787</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>JP</td>
<td>DE</td>
<td>GT</td>
<td>37.27</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>JP</td>
<td>DE</td>
<td>GT</td>
<td>37.27</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>KR</td>
<td>DE</td>
<td>GT</td>
<td>0.12</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>KR</td>
<td>DE</td>
<td>GT</td>
<td>0.12</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>US</td>
<td>DE</td>
<td>GT</td>
<td>0.053</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>US</td>
<td>DE</td>
<td>GT</td>
<td>0.053</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>US</td>
<td>DE</td>
<td>GT</td>
<td>63</td>
<td>KIL</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>US</td>
<td>DE</td>
<td>GT</td>
<td>63</td>
<td>KIL</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>DE</td>
<td>GT</td>
<td></td>
<td>172.65</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>DE</td>
<td>GT</td>
<td></td>
<td>172.65</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>ES</td>
<td>GT</td>
<td></td>
<td>5</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>3</td>
<td><em>Dalbergia stevensonii</em></td>
<td>ES</td>
<td>GT</td>
<td></td>
<td>5</td>
<td>CUM</td>
<td>sawn wood</td>
<td>T</td>
<td>W</td>
<td></td>
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</tbody>
</table>

This is further illustrated by examining available trade information from Guatemala and Belize. When cross-referencing a CITES questionnaire with trade

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92 CITES, “Comparative Tabulation Report.”
records from the CITES trade database, notable discrepancies are found. Guatemala states in the questionnaire that it exported 124.39 cubic meters in 2008, while the CITES trade database shows that 186.45 cubic meters were exported in the same year. A recent study states the volume of *Dalbergia stevensonii* exported by Belize appears constant at around 30,000 board feet per year. This is in comparison to the 20.787 cubic meters, or 8,809.03 board feet, recorded by the CITES trade database. Furthermore, the Appendix III listing of *Dalbergia stevensonii* is annotated to include only the populations of Guatemala. As such, records of trade from Belize should, in theory, not exist in the CITES database and yet there is recorded data of trade from the country. An ITTO report on the review of the market for tropical timber products notes that CITES signatories are supposed to maintain records and prepare periodic reports of certificates issued, but data on trade of CITES listed species are not consistent or consistently reported. As such, it is difficult to determine from publicly available information the volume of various products imported under valid CITES certificates.

### 3.2 What is Being Done?

**CITES**

The Convention on the International Trade in Endangered Species of Wild Flora and Fauna is an international agreement between the governments of its 175 member countries, referred to as Parties. Its aim is to ensure that international trade in specimens of wild flora and fauna do not threaten their survival. Currently, CITES, as one of the largest conservation agreements in the world, offers varying degrees of protection to more than 30,000 species of animals and plants.

CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for the Conservation of Nature (IUCN). The final text of the Convention was agreed upon at an IUCN meeting in Washington, D.C. on March 3, 1973 and was enforced beginning July 1, 1975.

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93 Georgina Magin and Nick Wicks, “Rosewood in Southern Belize: A Preliminary Assessment,” unpublished; acquired via e-mail message to author. 16 Sept 2009.
As an international agreement, adherence to the CITES guidelines is voluntary. Although CITES is legally binding on the Parties (i.e., they have to implement the Convention) it does not take the place of national laws. At the national level, CITES acts as a framework for each party to adopt its own legislation to ensure the implementation of the Convention. 94

The CITES Appendices

The primary way in which CITES operates is by implementing certain controls on the international trade of selected species. The primary control mechanism requires that all imports, exports, re-exports, and introductions of CITES-controlled species be authorized by a licensing system administered by the importing and/or the exporting party. Additionally, each Party to the Convention must have one or more Management Authorities and one or more Scientific Authorities. The primary charge of the Management Authority is to administer the licensing system according to CITES protocols. The Scientific Authority’s primary duty is to advise its respective Management Authority on the effects that current trade trends have on CITES species.

CITES affords its species three degrees of protection according to its assignment within the three CITES Appendices. The species are grouped in the Appendices according to how threatened they are by international trade. Some whole groups, such as primates or sea turtles, are included in certain cases. In other cases, only a specific subspecies or a particular geographical population are listed in the Appendices. 95

Appendix I includes species threatened with extinction. As these are the most threatened CITES-listed species, international trade of specimens is prohibited unless the purpose for trade is non-commercial, such as for scientific research. In these cases, an import permit issued by the Management Authority of the State of Import and an export permit or re-export certificate issued by the State of Export are required. These

certificates are required primarily to ensure that the specimen was legally obtained, that the specimen will not be used for commercial purposes or any purpose detrimental to the species, and that the preparation and shipping of the live specimen is done so to minimize any risk of injury or cruel treatment.

Appendix II species are not necessarily threatened with extinction, however, they will become so without the close control of trade. For these species, only an export or re-export permit issued by the State’s Management Authority is required. The permit is issued only if the specimen was legally obtained and if the export is not detrimental to the survival of the species. An import certificate is only needed if required by the State of Import’s national law.

Appendix III is a list of species included at the request of a Party that already regulates trade in the species and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation. If a specimen is being exported from the State that included the species in Appendix III, an export permit issued by the Management Authority certifying the legal obtaining and proper shipping of the specimen is required. In the case of export from any other State, its own Management Authority must issue a certificate of origin of the species.\(^{96}\)

An endangered species can only be entered into Appendix I or II by the Conference of the Parties, which is the collective term for CITES member Parties. The Parties convene every two to three years to review the implementation of the Convention and to consider or adopt proposals to amend the lists of species in Appendices I and II. A species may be added to or removed from Appendix III at any time and by any Party unilaterally.

### Honduras Rosewood and CITES

From June 3-15, 2007, during the Fourteenth Conference of the Parties, the German delegation of CITES submitted a proposal, prepared by the Netherlands, to amend CITES Appendix II by adding *Dalbergia stevensonii*, among other timber species.\(^{96}\)

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species, to it. After substantial discussion amongst member states and observers, the German proposal was withdrawn due to strong opposition from range states and others, who claimed that the proposal was incomplete and that further population assessments were needed. Ramon Carillo Arelano, of the Mexican delegation of CITES, went so far as to say that “The species is not in danger in Mexico. We need to collect data and...research first. If it proves that the trees are in danger, then we would support a listing.” Shortly thereafter, Guatemala proposed that only its own populations of *Dalbergia stevensonii* be added to CITES Appendix III. This proposal took effect on February 12, 2008.

Furthermore, the Conference formed an Action Plan calling on range states to update available information on the species, more accurately assess its population status, report on its existence in plantations, and gather trade data on the species. The Action Plan also calls on all CITES Parties to compile further trade records and for the Plants Committee, a branch of CITES, to analyze the given data and propose relevant recommendations at the Fifteenth Conference of the Parties on March 13-25, 2010 in Qatar.

Since the adoption of the Action Plan, the CITES Plants Committee has had two meetings in which an assessment of the plan’s implementation has taken place. The first, the Seventeenth meeting of the Plants Committee, took place in Geneva, Switzerland on April 15-19, 2008 and the second, the Eighteenth meeting of the Plants Committee, was in Buenos Aires, Argentina on March 17-21, 2009. Prior to the first meeting, a questionnaire was prepared that asked range states of *Dalbergia stevensonii* and other CITES Parties to compile and share information relating to the aforementioned tasks set forth by the Action Plan.

Upon receiving and collating the responses from this questionnaire, a number of issues relating to an accurate assessment of the endangerment of *Dalbergia*...
*stevensonii* were made clear. The responding CITES Parties reported no information on trade in the species. This might be due to the questionnaire’s close chronological proximity to the Appendix III listing of *Dalbergia stevensonii* (thus not allowing sufficient time to gather data) or to inaccurate record keeping up to that point. The range states’ reports were also incomplete. First, and perhaps most curiously, Belize, a standing CITES member and home to some of the most concentrated populations of the wood, is not included in the report. It is not clear whether the questionnaire was never sent to Belize’s Management Authority, or if it did not respond. From those range states that did respond, only general commentary was provided on the implementation of large-scale forest management plans and legislation. However, specific information regarding an assessment of the population of *Dalbergia stevensonii* was almost non-existent.

Mexico provided a map showing the distribution of *Dalbergia stevensonii* throughout the country, but no specific land area measurements, quantities, or other data are mentioned. Guatemala only states that the general *Dalbergia* population is fragmented due to human activity. It also reports having plantations of *Dalbergia* species but fails to specifically mention *Dalbergia stevensonii*. The country also reports that it has signed an agreement with a non-governmental organization to formulate a project to undertake the national inventory of *Dalbergia stevensonii* and other endangered tropical timbers.  

At the Seventeenth Meeting of the Plants Committee, the United States submitted a proposal noting many issues that have arisen from having a CITES Party list a timber species in Appendix III, but annotating the listing to include only its own national population. Of the 135 listings of fauna and flora species in Appendix III, three are annotated to include only the national populations of the listing countries. All three are for timber species: *Cedrela odorata* (Spanish Cedar), annotated to include only the national populations of Colombia, Guatemala, and Peru; *Dalbergia retusa* (a form of Cocobolo), annotated to include only the national population of Guatemala; and

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**Dalbergia Stevensonii**, also annotated to include only the national population of Guatemala.\(^{101}\)

This document outlines inconsistencies and resultant problems of such Appendix III listings. The document focuses upon discrepancies in the implementation of these listings and the ramifications that these inconsistencies have on trade record keeping. For instance, it is not uncommon for non-listing range countries, which are not required to abide by the rules of the listing, to issue CITES certificates of origin for the export of the species, whereas other range countries do not issue any CITES documents.\(^{102}\) Furthermore, specimens of a listed species could potentially be transported illegally over the border of the listing country into a neighboring and non-listing range country and then exported free from any CITES requirements. The document shows that a listing of this type limits CITES’s ability to collect comprehensive information about the trade in such a species, due to the narrow scope of the listing and the aforementioned inconsistencies.

With the conclusion of the Eighteenth meeting of the Plants Committee, the committee made several recommendations for further implementation and deliberation at the Fifteenth Conference of the Parties in March of 2010. First and foremost, the Committee notes that, because current research does not include all current knowledge on the *Dalbergia stevensonii* population, it is unable to conclude whether the criteria for inclusion in the CITES Appendices are met. Additionally, the committee urged range states of Appendix III species to include all of the populations within the ranges of the species in their listings to ensure consistent implementation and enforcement of CITES guidelines. A recommendation was also made for the Conference of the Parties to specifically revise the listing of *Dalbergia stevensonii* to include all extant populations and not the just a single Party’s.\(^{103}\)

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Population Status Assessments

As stated previously, comprehensive data on the status of *Dalbergia stevensonii* is currently lacking. However, steps have recently been taken to gather this data and compile an accurate picture of the *Dalbergia stevensonii* population. Between the years 2002 and 2003, Guatemala, with the assistance of the Food and Agriculture Organization of the United Nations, undertook a scientific inventory of its National Forests. In this research, no wood under the name of *Dalbergia stevensonii* was listed in the inventory. However, in response to the previously discussed CITES questionnaire, Guatemala notes that it is implementing a national inventory of *Swietenia macrophylla* (Big-Leaf Mahogany), *Cedrela odorata* (Spanish Cedar), and *Dalbergia stevensonii*. There is little available data as to the progress of this project, but Guatemala reports having financed only 30 percent of it.104

Belize is further along in assessing the status of *Dalbergia stevensonii* populations within its borders. As part of the Global Trees Campaign, Fauna & Flora International via its partner in Belize, the Ya’axché Conservation Trust (YCT) collaborated with the Government of Belize’s Forest Department to survey populations of *Dalbergia stevensonii* and other endangered species in private and national forests in southern Belize. The survey, which lasted from March to May of 2007, surveyed 44.16 hectares of land, or 7,078,347 square feet, in forested areas within the southern Toledo District. The survey was conducted by utilizing 4 meter wide by 200 meter long belt transects105 separated from each other by 1 kilometer intervals. The surveying team sampled 822 transects and counted trees larger than 10cm Diameter at Breast Height (DBH) and also recorded their DBH. Additionally, seedling tree populations with a DBH of less than 10cm were inventoried.

The survey indicates that there is a reasonable size population of *Dalbergia stevensonii* within the forests of Belize. However, anecdotal reports from local inhabitants indicate that rosewood is becoming harder to find, as it is being harvested farther away from villages, and that trees of increasingly smaller sizes are being cut.

105 A belt transect is a rectangular plot of land typically used to study vegetation.
Table 3.2. A summary of the results of the Belizean Rosewood Project conducted by the Ya’axche Conservation Trust in 2007.\textsuperscript{106}

<table>
<thead>
<tr>
<th></th>
<th>Adult trees (&gt;10cm dbh)</th>
<th>Seedlings/saplings (&lt;10cm dbh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rosewood</td>
<td>Mahogany</td>
</tr>
<tr>
<td>Number of transects sampled</td>
<td>822</td>
<td>823</td>
</tr>
<tr>
<td>Hectares sampled (ha)</td>
<td>65.76</td>
<td>65.84</td>
</tr>
<tr>
<td>Number of plants found</td>
<td>333</td>
<td>167</td>
</tr>
<tr>
<td>Density (plants per ha)</td>
<td>5.06</td>
<td>2.54</td>
</tr>
<tr>
<td>Number of transects with species</td>
<td>128</td>
<td>84</td>
</tr>
<tr>
<td>% transects with species present</td>
<td>15.6%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>

The survey also indicates that the number of large trees, those with a DBH of 45cm or larger, appears to be relatively low. While the main cause of this is believed to be habitat loss due to extensive logging and agriculture, a further cause could be damage from Hurricane Iris in 2001. The tropical broadleaf forests in which *Dalbergia stevensonii* resides were severely damaged during the hurricane, with some areas suffering total defoliation.\textsuperscript{107} Recognizing that many trees were killed or extensively damaged during the storm, the Forest Department granted permits for salvage logging under which the regulations on the size and number of trees that could be removed became more lenient.

Six months after the completion of the survey, the YCT alongside the Toledo Healthy Forests Initiative (THFI) held a workshop to consider the results of the survey and to create outcomes and recommendations based on the research. The major outcomes of the workshop, as it relates to *Dalbergia stevensonii*, are as follows:

\textsuperscript{106} Nick Wicks, “Belizean Rosewood Project,” unpublished; sent via e-mail message to author. 16 Sept 2009.

- Modeling of rosewood habitat should be further expanded to ensure that the preliminary results are correct and to determine whether the current protected areas are effectively protecting rosewood.
- The data gathered during this survey can serve as a baseline for future studies. Therefore, follow up surveys should be conducted between three and five years to reassess forest product, especially rosewood populations across Southern Belize.
- Reforestation of rosewood should be encouraged, especially in areas that are suitable for either species.
- The rosewood habitat in private reserves should be protected in case they are depleted in surrounding lands, as they can then serve as sources for these lands.
- Community forestry should be continued and expanded through THFI to ensure stewardship of forest resources by local communities.
- As information on rosewood, and several other species, is missing in scientific literature, the results from the research should be published in peer reviewed scientific journals. However, an independent expert must identify the accuracy with which tree and other plant species in the study were identified and appropriate action taken based on this.\(^{108}\)

**Governmental Legislation**

While not always aimed at protecting *Dalbergia stevensonii* specifically, range states have implemented legislation aimed at protecting their forests and the species of flora and fauna within them. In 2003, Belize adopted Chapter 213 of the Forests Act, which placed *Dalbergia stevensonii* and other plant species in its First Schedule. This schedule states that “no person shall cut or injure any listed species within forest reserves, national land, and private land under the Act without obtaining a license.” Additionally, the felling of live, natural trees is prohibited in Belize. Also, it should be noted that forest reserves in Belize are created for controlled wood exploitation and not

\(^{108}\) Nick Wicks, “Belizean Rosewood Project.”
As such, it can be inferred in this instance that the commodity value of the forest is of more value than any conservation concerns.

In Guatemala, two institutions exist to oversee the use and protection of its forests, the National Protected Areas Council (CONAP) and the National Forests Institute (INAB). Under Guatemala’s 1989 Forest Law (Decree 101-96) CONAP was given oversight of protected areas in Guatemala in order to preserve its biodiversity, which ranks among the highest in the world, and was made responsible for the implementation of its Forestry Laws. In 1996, the Protected Areas Law (Decree 4-89) created INAB to oversee the reforestation and conservation of forests through forest development and sustainable management. Unlike CONAP, INAB’s jurisdiction includes all national territory and not just protected lands. Additionally, INAB oversees customs and sawmill operations so as to quantify, qualify, and verify the legal origin of forest products. Additionally, the creation of the Programa de Incentivos Forestales (PINFOR) approved *Dalbergia stevensonii* as a subsidized species for planting in private areas. However, zero hectares of the tree had been planted up to 2004.110

**Forest Certification**

Forest certification is a voluntary process in which owners of private or governmental land allow their land and management practices to be aligned with a neutral third party’s certification standards, thus showing the owner’s use of responsible and sustainable forestry methods from forest to finished product. While there seems to be little, if any, certified products of *Dalbergia stevensonii*, forest certification is rapidly emerging as the leading option for protecting and promoting sustainable utilization of forests. Initiated in the early 1990s, forest certification has emerged as a force in the retail world with large lumber retailers like Home Depot and Lowe’s purchasing certified wood products.

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110 Ibid.
In the range countries where *Dalbergia stevensonii* grows, the two dominant organizations in forest certification are SmartWood, the certifying body, and the Forest Stewardship Council (FSC), which accredits certification bodies around the world. As one of the leading certification systems in the world, the FSC is an independent, non-governmental, not-for-profit organization that provides internationally recognized standard-setting, trademark assurance, and accreditation services to companies, organizations, and communities interested in responsible forestry.\(^\text{111}\) The FSC does not issue certificates itself. That process is carried out by organizations called certification bodies, like SmartWood, which have to gain FSC accreditation in order to certify to FSC standards. The FSC’s forest management standards operate on ten Principles and fifty-six Criteria (P&C), a summary of which appears below:

- Prohibit conversion of forests or any other natural habitat
- Respect of international worker’s rights
- Respect of Human Rights with particular attention to indigenous peoples
- Prohibit the use of hazardous chemicals
- No corruption – follow all applicable laws
- Identification and appropriate management of areas that need special protection (e.g. cultural or sacred sites, habitat of endangered animals or plants)\(^\text{112}\)

In regards to *Dalbergia stevensonii* specifically, the FSC and its certification bodies do not certify individual species of flora and fauna, but rather, the forests they reside in. One of the main goals of the FSC is to certify enough adjacent lands to create a large impact at the landscape level, which, in theory, incorporates all species of fauna and flora within.\(^\text{113}\) In the case of *Dalbergia stevensonii*’s range countries, Belize has


one FSC certificate containing 104,888 hectares of certified land, Guatemala has thirteen certificates covering 509,425 hectares, and Mexico has thirty-seven certificates covering 658,864 hectares of land.\(^{114}\) Currently, the Forest Certification Resource Center shows that *Dalbergia stevensonii* is not explicitly listed as a species existing in these certified areas but an FSC-certified operation in La Gloria, Guatemala generically lists having species of *Dalbergia* reside in its borders.\(^{115}\) Thus, it can be said that there is currently not a supply of FSC-certified *Dalbergia stevensonii*.

FSC certification has two components. The first component, Forest Management certification, is for forest owners or forest managers who voluntarily agree to meet the FSC standards of good forest management. FSC also has developed Chain of Custody certification (CoC) for operations that manufacture, process, or trade in timber or non-timber forest products. CoC certification tracks FSC-certified materials through all aspects of the manufacturing process, from forest to consumer, to ensure that the use of these products is in accordance with FSC standards. Businesses with CoC certification thus use the FSC trademarks on their products to display their responsible and sustainable usage of natural resources to customers.

The music industry has taken an interest in certified forestry methods as a means of promoting responsible and sustainable forestry techniques. Conservation groups like Fauna & Flora International and Greenpeace have formed organizations and coalitions like SoundWood and MusicWood (respectively) which actively work with entities on both the supply and demand side of the instrument manufacturing chain to develop conservation solutions. This includes harvesters, scientists, governments, and consumers. Both organizations, while relatively young, have been met with initial success, garnering endorsements from musicians such as the Blues Travelers, Don Henly, and Bonnie Raitt, and from large companies like Yamaha Corporation, Gibson Guitar Corporation, Fender, and the Martin Guitar Company. While many of the


\(^{115}\) On 15 October 2009, the Forest Certification Resource’s public database, which contains records of certified products and forests worldwide, was disabled due to lack of funding. The data gathered in this treatise was acquired just days prior to this but is no longer publicly accessible.
The aforementioned manufacturers are large-scale companies and corporations, SoundWood, MusicWood, and the FSC have all developed strategies and processes for Small Forest Enterprises (SFE) to obtain FSC certification at a reasonable cost.

Figure 3.3: A flowchart showing the process of attaining FSC certification and producing FSC-certified products.\textsuperscript{116}

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\end{quote}
CHAPTER 4
VIEWS FROM THE PERCUSSION INDUSTRY

The regulation of trade and conservation of Honduras Rosewood in the species is an ongoing and ever changing process, as evidenced by the previous chapter. Since it is widely recognized that the manufacturing of marimbas and xylophones is the primary use of the wood, then it is this industry that stands to be the most effected, positively or negatively, by changes in trade and conservation policies. Conversely, it is also possible for the industry to effect the most change by its collective choices and actions in every aspect of manufacturing from tree to instrument. As such, an examination of this industry is justified.

To this end, seven prominent percussion instrument manufacturers and suppliers were approached to speak on the topic. Of these seven, four were willing to respond via telephone interview and one was willing to answer questions via email. The topics covered in the interviews ranged from timber procurement, to the recent CITES regulations, and to the possibilities of using FSC-certified wood. The results of these interviews are discussed in following sections.

4.1 The Inclusion of Dalbergia stevensonii in the CITES Appendices and its Effects on the Percussion Industry

All of the persons interviewed, from supplier to manufacturer, noted an increase in the cost of procuring the wood for their own use. This can be attributed primarily to the additional costs of securing the appropriate CITES permits. For instance, if a company based in the United States were to import a shipment of Honduras Rosewood and then re-export the shipment to another country (thus requiring a CITES permit) the cost, would be $100 per shipment or $200 for a three-year Master

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117 The importing of a CITES III species does not require a CITES certificate from the importing country, rather, a CITES export permit would be required from the exporting country only. However, the importing party does have to pay any required inspection fees and/or premium fees at the port of import.
File. This Master File enables an exporter of Honduras Rosewood to export at a cheaper rate with a $5 single-use permit that is renewed every six months. If the aforementioned company established a Master File and exported twenty shipments in a six month period, the total cost of export for CITES licenses only is $300 with a recurring cost of $100 every six months and an additional $200 every three years. This estimate does not take into account any rise in the purchasing price for the wood or any additional costs incurred at international borders, such as inspection fees or premium fees for shipping protected wildlife. Also, it should be noted that these costs are calculated from the CITES Management Authority in the United States, the U.S. Fish & Wildlife Service and apply to exports from the United States only. The costs for a similar export from another country may be significantly different.

Laura Robertson and Rico Franklyn, of the Missouri-based Honduras Rosewood supplier Tropical Hardwoods Inc., have direct experience with the post-CITES costs of importing and exporting Honduras Rosewood:

We had to prepare all of this paperwork and photographs for a CITES permit. When the wood went on CITES, we had a bunch of wood [in Missouri] and had to be approved for what we had here. Each shipment that we ship has to have its own permit and you have to keep reapplying for a permit each time you ship. The USDA (United States Department of Agriculture) also has to approve it and it costs money just for them to check the shipment. Right now, we have a package going to Poland and it has to leave the United States through an approved wildlife port. At the port, APHIS (Animal and Plant Health Inspection Service) has to inspect and stamp the permit to approve that it is sanitary. This also costs additional money.

Additional CITES-related costs can include freight, as there are also regulations for transporting CITES protected wildlife over land. Franklyn says, “I was just looking at a trucking bill from eight years ago out of the Port of Houston to our mill and it was $825

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for the truck. The most recent shipment we had in was $2,226. Not only has everything gone up massively, they have gotten stricter on how much we can put in a container. We can only fill a twenty-foot container up to two-thirds full since the wood is so dense; it’s a very unique thing. Additionally, some lumber wholesale companies that carry CITES woods refuse to export it because of the complications and cost.”

Robertson and Franklyn also believe that there were some unintended consequences from the 2008 listing of Honduras Rosewood in the CITES Appendices.

When Rosewood went on the CITES III list, it seemed that anybody who was remotely interested in the wood came running to buy it up. So, what used to be a small market with few competitors quickly brought everybody running to buy the wood, which substantially raised the price on it. I’m really not sure who our competitors are, but our suppliers in Guatemala have told us ‘We can’t sell to you at this price anymore because other people are coming here willing to pay thirty to forty percent more and so that is now your price.’ However, these people find out that once they buy it, that there is no giant market for it.

The manufacturers interviewed all noted an increase cost in purchasing the wood, but beyond that, have not noticed any other effects in their operations. Ron Samuels of the Marimba One Company states that “other than my supplier having more permit costs to ship into the United States, there has been absolutely nothing. There are specific permit requirements and we have to adhere to those, and that has to be value added. Honestly though, the effect has been very little.” Matt Coe of Coe Percussion is if a similar opinion. “Other than the price going up slightly, no it has not had an effect…I think that pre-2007, not many people outside of this industry and the furniture industry even knew [Honduras Rosewood] existed. Post-2007, many more environmentalists have learned about the wood and what it is used for. Consequently, I think there has been a little bit of an over-reaction about the amount of wood that is being used.”
4.2 Conservation Methods in the Manufacturing Process

The national and international legislation currently in place to protect Honduras Rosewood primarily deals with the logging practices to harvest it, the protection of its habitat, and the regulations to ship it internationally. In terms of the percussion instrument manufacturing industry, these laws have little to do with the conservation of the wood upon entering the country of import and with the methods used to process it by manufacturers. Despite this, all of the persons interviewed, and the companies they represent, are acutely aware of the increasing endangerment of the wood and each has a unique approach to use it responsibly.

The part of the manufacturing process that perhaps has the greatest ability to waste or conserve wood is the sawing methods employed when converting the tree into lumber that can be sold. In the making of marimba and xylophone bars, the two most preferred types of sawn lumber are quarter-sawn and plain-sawn (also called flat-sawn). These two methods produce distinctly different features in both the look and durability of the wood. In plain-sawn wood, the log is cut with evenly spaced parallel cuts that produce varied grain patterns. Plain-sawn wood often has a grain pattern that runs parallel to the face the board. Other distinctive grain pattern in plain-sawn wood are the cathedrals, named for the arc shapes in the grain on the face of the board. Plain-sawing is the most common and economical sawing method in that it produces the most yield from the log. Conversely, quarter-sawing produces a very durable board in which the grain runs vertically through it. There are many different versions of this method of sawing. A common method of quarter-sawing is where the log is cut into quarters and each quarter is then rotated back and forth by ninety degrees, sawing a board off of the face of the log each time. Quarter-sawing is much more labor intensive and also much more wasteful than any other sawing method, producing as much waste as 70-80 percent if one is looking only for wood of the straightest grain. ¹¹⁹

The cut preference among percussion instrument manufacturers greatly varies. Additionally, manufacturers may also prefer a similar cut of wood for very different

reasons. For example, a proponent of using solely quarter-sawn wood may prefer it for visual appeal and another may feel it is a tradition passed down from earlier marimba and xylophone manufacturers such as the J.C. Deagan Company. Of the manufacturers interviewed, Marimba One, Coe Percussion and DeMorrow Instruments Ltd. are willing to use both flat-sawn and quarter-sawn wood; the Yamaha Corporation only uses quarter-sawn wood in their marimbas and xylophones.

Regarding the use of either flat-sawn or quarter-sawn wood, Samuels says:

You can have a flat-sawn piece of wood sound just as good as any straight-grain\textsuperscript{120} piece of wood. This is an important thing because many suppliers demand straight-grain wood and there is really no reason behind it. The bottom line on a piece of tonewood is ‘Does it sound good?’ A blind person should be able to make that assessment because it is all about music. Sometimes people will try to quantify sound through a cut of wood, and quantify sound through how long it has been aged, but again, the bottom line is sound. For us here at Marimba One, that means that every piece of wood has to be listened to and nothing looked at in a generic fashion. In this non-traditional age we have to be non-traditional craftspeople. Some people now are grabbing onto old ways of doing things when it did make sense to manufacture that way. Back then, there wasn’t pressure to cut the wood and use it responsibly. There is a whole different set of parameters in terms of how the wood is used now than when Deagan began.

We have what I deem purely musical reasons to conserve our supply of wood, and that is through the making of high-quality instruments that are tuned correctly. Using wine as an example, you can take great quality grapes and make vinegar out of it. Likewise, you can take great quality Honduras Rosewood and you can ruin it by not tuning it properly. A big problem in our industry is manufacturers who are not interested in making great quality instruments but make commodity instruments in high quantities using a non-

\textsuperscript{120} Straight-grain wood is another term for quarter-sawn wood. The term is used in reference to the visual configuration of the grain.
commodity resource. I think this is a huge problem and it puts a tremendous burden on the resource.

Doug DeMorrow, of DeMorrow Instruments Ltd., shares a similar viewpoint.

I absolutely will not exclusively use quarter-sawn wood. Gone are the glory days when J.C. Deagan first started using the wood, back in the early 1900s. In those days, since there was no pressure on the resource, you can throw away as much of the wood as you want and not think that it is a big deal. Today, we do not have that luxury. The look of the wood does not guarantee the sound. The only instance where I am very conscious of the cut of the wood I use is when I make xylophones. I try to use straight-grain wood on my xylophones because, from a wood technology standpoint, it’s a harder impact surface than a piece of flat-sawn wood. If I make an instrument from flat-sawn wood, that wood will defect faster than a quarter-sawn piece. So, because of the higher wear-and-tear on xylophone bars compared to marimba bars, that choice makes sense. Since a marimba doesn’t get the wear that a xylophone does, durability is not as big a factor and I can let sound be the primary criteria.”

I have always had respect for the wood and I have always hated to throw the wood away. It is depressing when you are cutting bar after bar and it doesn’t have a certain sound in trying to find that piece of wood that really does sound good. As a result of that, I have started doing instruments that have different quality levels. I am able to use almost all of my wood by making different quality instruments at different price levels.

Matt Coe of Coe Percussion operates in a very similar manner to DeMorrow, as each of them essentially runs a one-person business:

I used to believe that the best bars were made using straight-grain, quarter-sawn wood only. However, after making many keyboards over the past four years, I have completely changed my mind on this. From my experience,
grain structure has nothing to do with whether or not a marimba bar sounds good or not. I have made many bars with perfectly straight-grain, quarter-sawn wood, which theoretically should have sounded great, only to find that sometimes they sound terrible. I have also made many bars with grain going in every direction, sometimes completely flat-sawn, which have no right to sound good, and sometimes they sound fabulous! I’m not sure where the idea came from that you should only use straight-grain quarter-sawn wood, but it is not true. I believe Deagan and Leedy started this many, many years ago when the supply of wood was much greater and they could easily afford to use only straight grain, and somehow this became the lore of the land. It is false. If instrument makers continue to throw away all the flat-sawn and rift-sawn\textsuperscript{121} wood, then they are just adding to the depletion of rosewood as a species and throwing away perfectly good wood to use! It all comes down to what sounds good regardless of what the wood looks like in terms of grain structure.

The only reason that I can see to continue to use straight-grain wood is on xylophones. The strength of the wood lies in the grain and when the wood is quarter-sawn you are striking the hardest part of the wood. This will prevent it from denting when using the hard mallets that xylophone playing requires. This is, of course, assuming that you are using the hardest wood that you can find, as rosewood varies greatly in hardness and color, even within the same tree and the same board. I can see using straight-grain and quarter-sawn wood in xylophones for that reason only. In this regard, it has nothing to do with sound, but rather with the durability of the instrument. In the long run this will help save wood because the instruments will last longer and not need bar replacements as frequently.

In order to preserve wood, I do not throw out any of this wood, and have not since I started as a business in 1998. I have boxes and boxes of scrap in my shop. Sometimes I sell this to arts and crafts people to make items out of. About four years ago I started building practice marimbas using all of the scrap of the correct size that I had saved over the years and I continue to do this with my current supply of wood if I determine it is not good enough for a concert quality

\textsuperscript{121} Rift-sawn wood is another sawing method in which the grain runs diagonally through the board.
instrument. I am currently looking at ways to sell the remaining scrap that I have so that it can be made into meaningful things, rather than just burning it or throwing it away.

Conversely, the Yamaha Corporation chooses to use quarter-sawn wood exclusively in its marimbas and xylophones. A primary driving factor behind this choice is consistency in the product. Chris Dolson, a Market Development Specialist for Yamaha’s percussion products, speaks to this:

[Consistency] is something we strive for in every product we make whether it is a piano, a motorcycle, or a door. A large part of every wood product we make, not just the products made of Honduras Rosewood, is the control placed on the manufacturing process from the time the tree is cut down, through the logging process, through turning the log into usable lumber, and through all of the non-lumber parts and pieces…it is all controlled by Yamaha, even down to the screws used. In this manner, every part used in our products is made by Yamaha, not a part purchased by a distributor somewhere. Every piece of material has a standard that has to be met.

In making marimbas and xylophones, we have a separate facility that is solely dedicated to manufacturing wood. This facility takes any wood, but in this case rosewood, and turns it into the blanks and stock we need, again in this case for marimba and xylophone bars. Thus, when the wood reaches the point where it is made into a tone bar, it is already roughly cut into shape. The look of an unfinished bar is consistently the same color as well, which is different from a Malletech or an Adams marimba for example. The reason for this is that we primarily use one vendor and oftentimes, multiple bars of an instrument will come from one tree. We do have a clear coat finishing process on the bars to help create a consistent look, but before that even happens, the bars are very consistent from one to another. The advantage to this is if you crack a bar, a bar right out of our stock will fit right onto the instrument and will look and sound just like the other bars.
All of the interviewees mention, and Dolson freely admits, that using quarter-sawn wood exclusively produces a large amount of waste,

Yes it is a high-waste process, as there is very little straight-grain wood in a rosewood log. However, we have an advantage at Yamaha by having our hands in many different industries. The parts that don’t get used for tone bars get used in a lot of different forms. We make a rosewood snare drum from marimba bar stock; Yamaha violins, clarinets, guitars all use rosewood in some shape or form; and we even use the wood for the interior of cars. This allows us to buy and use the whole log and not just parts of it, and our suppliers like that. We even take the sawdust created during the manufacturing process and mix it in with a plastic resin to create a product to be used in other aspects of production both inside and outside of Yamaha. It is our goal to waste the least amount of resources possible in everything we do.

Robertson and Franklyn offer their own perspective on the merits of quarter-sawn and flat-sawn wood based on fourteen years of experience in the Belize lumber industry and over twenty-five years of experience supplying Honduras Rosewood to the music industry:

The most wasteful thing you can do with this wood is to demand only straight-grain wood as many manufacturers try to do because of some sort of style they have become accustomed to. The trees do not lend themselves to quarter-sawing. They are not like a big round pine tree, they’re jungle trees with big trusses. If they grow on a hillside, the heart can all be one side, the uphill side. Quarter-sawing is very wasteful even on a pine tree but in a jungle tree like Honduras Rosewood, the irregularities make quarter-sawing even more wasteful. In addition to that, you always lose about as much wood as a round fence post in the center of the tree because all hardwood trees have heart cracks in direct relation to age and height. The bigger and older the tree, the more cracks they
have because of the wind and storms they have experienced. It is very difficult to quarter-saw wild trees with irregularities like off center hearts or big trusses and we try to saw for yield. Some of our wood does indeed come out straight-grained, but we always try to get the most out of the tree so that we are not wasteful.

While they do not manufacture instruments themselves, Robertson and Franklyn do have their own methods for conserving their supply of Honduras Rosewood:

We do something that I don’t think anyone else does, because it is hard to make money doing it. We air-dry our wood very slowly over three to five years; we try not to hurry it. The reason we do that is to try and prevent any unnatural drying of the wood. If the outside of the wood dries before the core, you will have cracks that will then go all the way through the board. After air-drying for three to five years, we kiln-dry the wood until it gets down to a 5-6 percent average moisture content. When kiln-drying, straight-grain wood will sometimes have a tiny pre-existing crack run right up through the grain and through the entire board. You can lose up to 10 percent or more in kiln-drying quarter-sawn wood. So with our process, we’re trying to keep those cracks from occurring to try and cut back on loss. This does not fit the current image of the ‘Just-In-Time Inventory’ in the American economy, but it helps us to responsibly use the wood. In these days, I think it is sad that we are eliminating a species because of a certain kind of grain and not sound, which should be the bottom line.

4.3 Changes in the Quality and Age of Harvested Honduras Rosewood

In his 1969 Book of Marimba, Frank MacCallum calls the years from 1920 to 1930 the greatest years for marimba and xylophone manufacturing. The wood used was the oldest and most aged, and therefore at its prime point for use in marimbas and xylophones. The superiority of Honduras Rosewood instruments made during those years is also a common conception held by many percussionists today. Gilberto Serna, a former tuner for the J.C. Deagan Company and founder of Century Mallet Instrument
Service, says, “The grade of the rosewood used after the 1920s was different than the earlier bars. It’s especially noticeable with the wood used in the 1930s.” It has also been written that, “Today, the rosewood used for manufacturing is younger and is consequently not as durable and splinters more easily. Deagan was adamant about using the wood only when it was ready, and today that dedication to quality and sound is not commonly shared or practiced.”

The manufacturers interviewed were asked to speak to this, as many of them have been manufacturing marimbas and xylophones for over twenty years. This wide span of experience with not only manufacturing their own instruments, but also re-tuning other companies’ instruments (including Deagan instruments), provides the perspective necessary to speak to changes in the qualities of imported Honduras Rosewood. Doug DeMorrow, who has been manufacturing marimbas and xylophones full-time since 1984, speaks very openly to the topic:

I do not understand what these people hear. There are surely great Deagan instruments out there, but being a Deagan does not necessarily make it a great instrument. I have just recently re-tuned some Deagan instruments for some internationally-renowned musicians. Out of the six I tuned, one was decent. Even on that instrument, though, there were some pieces of wood that were just dead.

As for the older wood being better…the older the tree the more the defect. This is according to Rico [Franklyn] and he has seen the trees and knows what they look like when they are still in the ground. They defect from the center outwards and the oldest and hardest part of the tree is in the center, of course. Well, that is where all of the cracks are so they couldn’t use that wood. So they were still using the newer growth anyway, despite the tree being hundreds of years old. It all comes down to how the wood sounds, not necessarily how old it is or how it looks.

122 Shannon Wood, “Nagaed, Just a Myth?,” 5.
123 Ibid., 7
Figure 4.1: Photographs of the ends of two marimba bars showing two distinctly different grain patterns. The bar on the left was made from flat-sawn wood and the bar on the right is most likely made from quarter-sawn wood.\(^\text{124}\)

Figure 4.2: Photographs of the same bars from Figure 4.1, but taken from the tops of the bars. The bar on the left clearly shows the distinctive cathedral grain patterns sometimes present in flat-sawn wood. The bar on the right shows the straight-grain patterns present in quarter-sawn wood.

\(^{124}\) By virtue of how the log is cut, the method of flat-sawing sometimes produces straight-grain boards. As such, the bar on the right may come from a flat-sawn log as well.
Ron Samuels has been making marimbas since 1983. He was asked to comment on the superiority of Deagan rosewood, particularly the *Nagaed* wood, and if the modern, younger rosewood is of any of any less quality:

I honestly have not seen a change in the quality of the wood and I don’t think that there is any truth to that. Deagan was clearly using old growth trees, not entirely, but a lot...I think Deagan was really selective of their wood and used what sounded good and had a good sense about it. When he was in business, he had the dominant company and there are, of course, many more companies today. Despite this, I have not seen the quality of the wood go down.

Anybody that wants to make a fine musical instrument has to select the wood themselves. In this regard, some companies do and some companies don’t. You just cannot have somebody with an MBA degree treating the wood like a commodity saying ‘You have to use one hundred percent of the wood to make the budget numbers work.’ If you do that, then of course you are going to get lousy sounding instruments. I think that it is the tactic that drives a lot of people to say that the wood has gotten worse, but that is really just not the case.

The Yamaha Corporation is able to take advantage of its resources as a large multi-national corporation by creating a synthetic aging process that speeds up the changes of climate a Honduras Rosewood tree would see in the span of a year.

I have noticed that the rosewood trees we see are younger, and at Yamaha, before a bar is tuned, it goes through a three-year synthetic aging process. Before going through this process, a bar is cut to the approximate size of the note that it is going to be. After this, these bar blanks are then put in a room in our factory in Japan that literally changes climates and speeds up the aging process. From that point, the bar is then fine-tuned and made into a marimba bars. So, no matter the age of the wood before going through this process, the product is consistent from start to finish.
As a supplier to manufacturers of percussion instruments, Franklyn and Robertson also offer their view on the topic, “It seems to me that a long time ago we used to have a lot more wide boards available to us ranging from twelve to eighteen inches wide. Today, we get a lot more boards measuring less than ten inches with most of it being three, four, or five inches wide. Also, we used to buy a lot of the wood from the department of Petén in Guatemala but now it is almost completely off-limits to buy from there.”

4.4 Alternative Wood Possibilities

An immediate consideration one would have, given the current endangerment of Honduras Rosewood, would be to seek out alternative types of wood for use in marimba and xylophone manufacturing. Synthetic bars made of fiberglass exist under various names by various companies including Musser’s Kelon bars and Yamaha’s Acoustalon bars. While providing a durable and cost-effective alternative, synthetic bars have a tone and feel that is strikingly different from Honduras Rosewood. African Padauk (*Pterocarpus soyauxii*) has recently entered the market as a low-cost alternative to Honduras Rosewood, particularly through the efforts of companies like Yamaha and Vancore. While providing a natural wood sound, African Padauk, like a bar of synthetic material, sounds and feels substantially different from Honduras Rosewood. Furthermore, Chris Dolson notes that African Padauk is used in Yamaha’s entry-level instruments only. Thus, none of the aforementioned options provide a comparable alternative to Honduras Rosewood.

Each interviewee was asked if they had pursued using an alternative wood that would sound and feel similar to Honduras Rosewood. Each notes that they have done so and with different results. Rico Franklyn says:

At one time, Musser had us looking into a lot of different woods. All of the experiments I did were a nuisance. The wood suppliers we were working with wanted to sell large quantities, which made purchasing small amounts to experiment with difficult. We made small amounts of keys of all different types of
woods for Musser and none of them really panned out. We stock African Padauk now but it dents really easily and is about half the weight of rosewood. It is an average wood and I think it is appropriate for practice instruments or entry-level instruments.

Samuels has traveled extensively to search for other alternative tone woods.

I’ve gone throughout Asia and Central America looking for different tone woods. I was looking for a wood with resonance, warmth of tone, a strong bass sound, and brilliance in the upper range and I haven’t yet found anything that holds up to Honduras Rosewood. Now, part of it is that, as marimba players, we all have the sound of Honduras Rosewood in our heads. I think that African Padauk is a bad habit (laughs) as I am sure that there other woods superior to Padauk, but it just happens to be the wood that currently has the market attention.

DeMorrow is quite clear about his belief in alternative woods:

There isn’t one. Deagan tried different woods a long time ago and I know that Rico [Franklyn] experimented with Musser, but I don’t think any of it was fruitful. I have made instruments out of Padauk for another company but they are beginner instruments. However, I would much rather use Padauk than Honduras Rosewood for those keyboards and I am glad that this alternative now exists for instruments like that. I have also tried other rosewoods. Indian Rosewood doesn’t work at all. Bolivian Rosewood, which is an incredibly beautiful wood, does not work at all. It is hard, but has no sound to it.

Matt Coe has also avidly looked for wood alternatives:

I have tried many different species of wood. Unfortunately, Honduras Rosewood just cannot be matched for its sound quality. People have been
looking for alternatives for over fifty years and have not found any wood that even comes close. A year ago, I participated in a project with the University of Florida’s Department of Materials Science and Engineering to find alternative synthetic material to use that would be better than the current fiberglass synthetics. Although we did not come up with a working material for production, it did yield several new ideas I will be exploring in the future.

The Yamaha Corporation, with its large pool of resources, is able to pursue technologically advanced avenues in the search for Honduras Rosewood alternatives:

We have looked into all different types of wood. Some of our research I can talk about and some I can’t, but what I can say is we are improving our technology within Yamaha Musical Instruments and borrowing technology from other branches of Yamaha to create alternatives that we can use instead of rosewood to create the same sound. This could be a hybrid bar of rosewood and something else, or a different wood altogether. Yamaha has been exploring these opportunities during my seven years working here and we will probably continue until a suitable replacement is found or until this is no longer an issue. A lot of people do not have the technology to do things like this but we feel that anything is possible here at Yamaha.

We have researched a lot of options, and some of them have had better success than others, but the challenge is just going to be changing the mystique that Honduras Rosewood is the best possible marimba sound. If there were ever to be a moratorium on trade in rosewood, then people may have to live with some sort of synthetic bar or some other alternative. Yamaha may have the advantage here compared to other smaller companies. If some of the smaller boutique companies were forced to do something with a synthetic or carbon composites then they may be way in over their heads. Some of these companies were practically started in a woodshop in a garage and now they have a great business and make fantastic marimbas. However, this technology would be a
tough road for them to go down and I would hate to see them leave the industry because they cannot afford to produce it.

4.5 FSC-Certified Wood and Chain of Custody Certification

Given the information presented in the previous chapter on the Forest Stewardship Council and its emerging status as a viable method of natural resource conservation, the interviewees were asked to share their knowledge and experiences with FSC-certified wood, if any experience existed. Furthermore, a freelance consultant by the name of Tim Cumine was approached to specifically speak to this topic. Cumine is currently a timber auditor for the Soil Association, a UK-based FSC certifying body, and has served as a consultant for Fauna & Flora International. He was also consulted by an anonymous organization to comment on the original proposal to list *Dalbergia stevensonii* in the CITES Appendices.

Opinions on the use of certified wood are varied amongst those interviewed. DeMorrow states that:

I have not ever been approached to purchase certified wood, but I hope that our market doesn’t go in that direction. If it does, I think the price of the wood is going to become unbelievable. I have customers that complain about instrument prices now. So, what will happen when we have to double our prices? From what I have learned from people inside the business, buying certified wood is just a governmental nightmare that causes problems and doesn’t necessarily mean anything. Not only that, if there gets to be a large amount of pressure to use certified wood in the market, small manufacturers like myself will be out of business because we won’t be able to afford it. It’s going to be the big companies that go in and buy up the wood. I don’t see it making the wood last longer. It will just shut the little guys out.

Robertson and Franklyn view certified wood in a similar manner:
I have heard of forest certification in the woodworking journals we subscribe to, but we have not run into any availability of certified Honduras Rosewood in Central America. We have always thought that CITES has been the best way of regulating the wood, even though it has its share of problems. To our knowledge, forest certification is voluntary, like trade organizations. Also, just like shopping for organic food at a health food store, you're going to end up paying a lot more for certified wood. If we try to raise our prices anymore, we are going to be in trouble. The price of the wood has already gone up enough with the recent developments of CITES.

To the contrary, Samuels is willing to purchase certified wood:

I would absolutely be happy to spend something on it. If we were to purchase certified wood, that is something that we would want to communicate to our customers and I think it would be important to people. I think that percussionists around the country are thinking 'how much longer will we have this wood for?' and if they are not thinking that, they should. This would help for sure.

Coe feels much the same, “I would definitely be open to using certified wood, my only concerns are price, obviously, and being able to consistently get the wood in the dimensions I need.”

Dolson notes that the Yamaha Corporation already has a program in place to facilitate environmental stewardship and also believes that the use of FSC-certified wood is something interests Yamaha:

Around 1994, Yamaha started to really look at the environment and our relationship to it. The Motors Division started a program called the Yamaha Forests program and the Music Division has worked jointly with them to develop the program for our purposes. Basically, we strive for our factories to have zero emissions and we also have a program named Green Procurement where we
have to know from our suppliers exactly what is in every product we purchase. We examine how the products are grown, how they are made, and what chemicals are used in their production. We don’t use suppliers that do not meet our standards in this regard. For instance, we have worked in conjunction with our largest supplier of Honduras Rosewood to help them become greener. Prior to this, they weren’t necessarily a green company, but we worked with them to help them along to meet our standards so that we could use them. So, we were able to take this Yamaha Forest project and adapt it for our suppliers. We make a lot of marimbas and other instruments that use Honduras Rosewood and we want to do what we can for our supply to be able to replenish. We do not own a forest or a plot of land where we grow the wood ourselves, but we consider this the next best thing.

Regarding FSC-certified wood, my understanding is that there is no certified Honduras Rosewood available. However, if it were available, I believe that Yamaha would be willing to use it. The sources of the wood would be more consistent, so it seems like a natural fit for us. One can assume that there would be a price increase with certified wood but, given our buying power, I don’t think that would affect us as much as some people.

As stated in the previous chapter, FSC certification is rapidly becoming a very viable option for responsibly using forests and forest products. Using certified wood guarantees that the forest is sustainably harvested, that its workers, many of whom are poor, are paid a fair wage and work under reasonable conditions, and that the products are treated in a responsible fashion through every step of the manufacturing process. However, as noted by those interviewed, using certified wood in conjunction with the current CITES trade restrictions can significantly raise the prices for obtaining Honduras Rosewood and thus greatly affect many manufacturers’ abilities to stay in operation, particularly smaller businesses like DeMorrow Instruments Inc. and Coe Percussion.

The Forest Stewardship Council and many other organizations are aware of the danger that small businesses could be placed in when put in competition with large companies to use certified wood. As such, the FSC has developed programs for small
forest owners and small businesses throughout the manufacturing chain to attain certification within their means. These programs include Small and Low Intensity Managed Forests (SLIMF), which is a streamlined certification process, and Group Certification, which allows businesses to group together and share the cost of an FSC certificate.

To this end, Tim Cumine has conducted research for Fauna and Flora International, the world’s first international conservation organization, to assess the viability of a Chain of Custody (CoC) Group for musical instrument makers and suppliers in the United Kingdom. The CoC group that Cumine proposes would allow United Kingdom-based musical instrument manufacturers to share the cost and burden of attaining FSC certification. This research was conducted in reaction to the FSC certification of African Blackwood, which is a highly valued wood used to make clarinets, oboes, and bagpipes. The FSC certification occurred in April 2009 and was awarded to four villages in Tanzania who have been working with the Mpingo Conservation Project to promote sustainable and equitable harvesting of valued timbers in East Africa with a particular focus on Mpingo, or African Blackwood. While no manufacturers of percussion instruments were involved in Cumine’s study, it can serve as a potential model for the viability of a Chain of Custody Group should Honduras Rosewood become FSC-certified in the future.

Cumine’s research involved manufacturers that use African Blackwood and others that did not necessarily use blackwood, but were interested in obtaining FSC certification for the use other certified timbers. Of the thirty manufacturers surveyed, twenty-one were interested in certified timber. Twelve of these twenty-one used African Blackwood and nine were makers of instruments utilizing other timbers. Also, fourteen of these twenty-one met the requirements to be considered for CoC group certification. Such requirements include a size limit which limits a CoC Group member to less than fifteen employees or less than twenty-five employees with less than one million dollars in annual sales. Additionally, the manufacturers surveyed are all intentionally based in the United Kingdom as, at the time of the research, the rules for CoC groups limited its membership to within national boundaries. That rule has since been changed, thus allowing for further possibilities of CoC group membership.
Cumine’s report proposes a CoC Group of United Kingdom-based musical instrument manufacturers with fifteen new members each year for three years. This hypothetical group would require a budget between £31,300 and £34,500 (approximately $52,000 USD and $57,000 USD respectively) assuming grant support of £25,000, £20,000, and £5,000 for its first three years of operation. This group, with its projected membership, would have membership dues between £300 and £400 (approx. $500 and $662 respectively).

Members of the CoC Group would have to comply with a range of FSC standards. This includes verification of incoming FSC products, separation of FSC material throughout production, measurement of FSC input and output volumes, staff training, record keeping, and logo approval. Additionally, the CoC Group would be required to appoint a Group Manager whose charge would be to oversee the implementation and perpetuity of the group, and to act as the primary contact point for the certification body. The Group Manager can be an individual person, a company, a cooperative, a Non-Governmental Organization, or any other legal entity.

Cumine states that, upon attaining certification, “…every part of the supply chain in instrument manufacturing will see benefits. Poor producers, who are the most effective stewards of scarce resources, will improve their livelihoods, diligent saw-mills and distributors will have a premium product in the trade, forward-thinking manufacturers can demonstrate their commitment to principled trade by developing specialized markets and ethical consumers can finally have an instrument to buy that meets both their environmental and musical standards.”

While Cumine’s research shows promise in the use of FSC-certified wood for small and large enterprises alike, it is not without opposition. John Griffin, a former conservation agent for the state of Missouri and founder of the timber supply company Old Standard Wood, holds to a philosophy that is based on selective and responsible use of the forest:

I believe in a principle of conservation. Sadly, it is a misused word. Most

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125 Tim Cumine “Honduras Rosewood Research,” unpublished; sent via e-mail message to author. 13 Oct 2009.
people use parts of the principle but the real definition of the word is often not fully applied. In simple terms, the principle of conservation can be defined as a wise use of natural resources. In my view, environmental groups like Greenpeace and the Forest Stewardship Council are 99 percent preservationists. Preservation is only a part of conservation and it means no use of the resource at all. Many environmentalists and governments want to place controls on the use of an endangered species so as to stop commercial activity in it. In reality, this doesn’t work, especially in the agriculture-based cultures of Central America, because if a poor family is hungry, they are going to do what they have to do survive, including chopping down the forest to plant crops.

The best way to look at this is from the tree’s point of view. The more economically valuable a tree is, the more likely it is to survive. In my view, the more that governments and environmental groups get involved in managing that tree, the more likely it is going to spell its demise. In order to create value, you have to create a viable market for the local peoples to sell their product, you have to get smart entrepreneurs involved in building a strong small-business sector, and you have to embrace selective harvesting, or cutting down only the trees you need and can turn into a profit, rather than the clear-cutting of forests. In my view, the FSC and CITES are nothing more than a stamp that use propaganda to say that a tree is controlled and comes from a renewable source. What is actually happening is that they are destroying the network of existing small businesses that encourage cooperation, build viable markets, and therefore provide value for the forest. In my experience, when governments or large landowners get involved, heavy machinery soon follows and then the forest is gone.

If there were a moratorium on trade, such as with CITES Appendix I, the sum effect would be disaster. It’s not conservation but rather, it’s preservation. Now, some of the species may be locked up in a national park somewhere, but the rest of it will then be value-less since there is no market for it. This will then encourage it to be cut down, used for firewood, and be turned into something profitable like a corn patch.
A lot of what you hear from CITES and the FSC is the prevention of illegal logging. However, in terms of what I’ve just mentioned, illegal logging is not a terribly bad thing if it’s done on the scale I’m talking about. In Central America, illegal logging doesn’t happen with large bulldozers that level the forest. If it is done by poor people that selectively cut the logs they need to sell or use to survive, then I do not see how that is a bad thing. Herein lies the answer and it is with small businesses. The poorest loggers in Central America can be, oddly enough, the best stewards of the forest because they need it to survive. A network of small business opportunities would do a lot to enhance their livelihoods and provide a future for the forest because it is their crop. It’s a way for them to make a living. The answer does not lie with a western-influenced or government-controlled scheme. We have to approach our use of the forest from the bottom-up and not from the top-down because responsible commercial usage of the forest is, in fact, the best way to ensure its longevity, not a total moratorium on its use.
CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

The inclusion of Honduras Rosewood in the CITES III list in early 2008 served as an official recognition of the endangerment of the species. In the short span of time since then, research has been undertaken by governments and conservation organizations to provide a clearer picture of the effects that modern industry has had on Honduras Rosewood populations. The results of this work can then be used to better choose the appropriate course of action in the conservation of the species. Thus, this treatise seeks to close a perceived hole in the current body of research, and that is the views and experiences of the primary users of the timber, the percussion instrument manufacturing industry. By juxtaposing their knowledge and experiences with the research and conservation efforts taking place in Central America, a more complete perspective of Honduras Rosewood’s endangerment is created. While some of the research by the author and other conservation organizations has been completed and some has not, all efforts have been made to provide the most up-to-date information available in this treatise. However, the timing of the writing of this treatise, and the immediacy of the issues at hand, may prove this treatise to be out-of-date soon after its completion. The following recommendations are being made with this in mind.

5.1 CITES

At the time of writing, the Fifteenth Conference of the Parties (CoP15) is four months away. At this conference, a reexamination of the status of *Dalbergia stevensonii* in regards to the CITES Appendices is on the agenda. It is here where the CITES Plants Committee will present their findings and recommendations based on the research it has gathered since CoP14. As much of this research as is available has been presented in this treatise. However, it is almost a certainty that the Plants Committee has collected more research data than what is available to the public. An avenue for
further research in this regard would be to collect the data presented at CoP15 and utilize these findings to expand the information presented in this treatise.

There are a number of actions that the CITES body may choose to make when *Dalbergia stevensonii*’s status is reexamined at CoP15: 1.) The data presented by the Plants Committee may still be deemed inadequate for an Appendix II listing and, as such, the Action Plan put into place at CoP14 will continue to act as the guiding document for further action. 2.) The Conference of the Parties may deem it necessary to implement an Appendix II listing for *Dalbergia stevensonii*, thus creating further restrictions in international trade. 3.) As recommended by the United States at the Eighteenth Meeting of the Plants Committee, *Dalbergia stevensonii* will retain its Appendix III listing but all populations of the species, and not just the populations of Guatemala, will be included in it.

Should any of the aforementioned possibilities come to be realized, there will be related effects, both intended and unintended, across all commercial aspects of *Dalbergia stevensonii*’s industrial chain. As such, these effects will deserve further investigation, particularly relating to how the marimba and xylophone manufacturers will be effected. These manufacturers, many of whom are small businesses, may have some difficulty staying in business due to increased trade restrictions and further price increases. Thus, yet another avenue for further study would be to gather data on the feasibility of this industry to withstand such effects should they come to pass.

### 5.2 Forest Certification

As noted in this treatise, there is currently no available supply of certified Honduras Rosewood. When taking into account that the FSC certifies forests and not particular species, the larger statement is that there are no certified forests within Honduras Rosewood’s range. As Hank Cauley, Executive Director of the FSC in the United States, stated at SoundWood’s Sustainable Tonewood Sourcing Conference in
2002, “There are still many problems with not enough tropical forests being certified and they are a top priority.”

As evidenced by the rapidly growing popularity of certified forestry practices, all aspects of the marimba and xylophone manufacturing industry can benefit from well-organized and well-implemented Chain of Custody certifications. However, none of this will prove to be viable until a sufficient and consistent supply of FSC-certified Honduras Rosewood is available. A number of obstacles stand in the way:

- There are contentious debates on the use of governmental lands for commercial logging. In fact, many areas within Honduras Rosewood’s range, such as the department of Péten in Guatemala, are completely closed off to commercial logging of Honduras Rosewood.
- Many protected areas within the range of Honduras Rosewood lack the funding to enforce their current conservation laws, let alone the additional costs of maintaining an FSC certification.
- Marimba and xylophone manufacturers require wood of the highest tonal quality. Thus, even if certified Honduras Rosewood were available, there needs to be economic incentive to cut and sort out the highest grade certified rosewood from the certified rosewood that does not meet the quality standards for musical instruments.

Should there come to be a commercial supply of certified Honduras Rosewood, the next step would be to integrate it into the manufacturing chain by helping operations become Chain of Custody certified. As this emerges as a viable option, Tim Cumine’s research into CoC group certifications for small businesses using African Blackwood will become an important model to explore, as many marimba and xylophone manufacturers are small businesses when compared to large corporations like Yamaha.

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Future research into this area will prove to be very important and fruitful should certified Honduras Rosewood enter the commercial supply chain.

5.3 The Percussion Industry

Whether large or small, businesses in all parts of the marimba and xylophone manufacturing industry have a particularly high stake in the conservation of Honduras Rosewood. By virtue of their work, they are bound to use the wood as responsibly as possible and to procure wood of appropriately high quality. It is the author’s belief that this provides a natural incentive for participation in further conservation efforts whether it is a Chain of Custody Group or other means. As noted in this treatise however, additional costs and logistical burdens prove to be a dissuading factor. As such, further research involving a larger sample of manufacturers is called for to further ascertain the feasibility of Chain of Custody certification in the industry.

An issue that has arisen in the course of this research is the perception of the true definition of certified wood amongst suppliers and producers. Harry Page, an authority on certified wood in Central America, notes that, “Many wood suppliers and producers don’t understand the chain of custody. A lot of wood is sold as certified that is not…and much of the certified wood coming from Central America is sold as non-certified.”\(^{127}\) This issue is also noted amongst those manufacturers interviewed for this treatise. Ron Samuels says thus, “I have some orders in right now and all that wood is, I am told from my suppliers, certified. However, I guess I’m a little sketchy on this. The wood is not being poached, and the wood is cut with a legal permit. I am not really sure if that means it is certified.”

All the manufacturers interviewed seem to have passive touchpoints (word of mouth, journal advertisements and articles, etc…) with the concept of certified wood, as none of them have been engaged in direct discussion about any certified wood programs. This is by no means their fault, as there is no certified product relevant to their line of work. In the future, it will most likely be important for those in the percussion

industry to be educated on the benefits, and potential concerns, of using certified wood. Additional investigation will be needed at this point, including attaining a larger sample of manufacturers than presented in this treatise. Also, direct research in ascertaining the industry’s views and willingness to participate in certified trade will certainly be a possible avenue to pursue.

In the short term, it has been proven by instrument manufacturers such as Marimba One, Coe Percussion, and DeMorrow Instruments that the tradition of using only straight-grain, quarter-sawn wood is not a necessity to make marimbas of high quality. However, this type of wood should be used for xylophones since it will prove to be more durable in the high-impact playing required by it. Conversely, the Yamaha Corporation has proven that a business with large resources can indeed use quarter-sawn wood responsibly by using every part of the log, down to the sawdust, in the manufacturing of other products. In this regard, the businesses that use only quarter-sawn wood and that do not re-use the high amounts of resultant waste should re-examine their manufacturing methods to ensure efficient and responsible usage of an increasingly scarce resource. While research into these practices could prove to be controversial, the author believes that it is necessary in order to improve any inefficiencies that exist in the manufacturing process.

There is no doubt that the percussion industry is a competitive one. Every manufacturer believes that they have a unique production technique that makes their product superior to the rest of the market. Nevertheless, in a world of increasingly scarce resources, the time may be fast approaching where collaboration amongst those in the industry is necessary in order to ensure their livelihoods. Matt Coe says thus, “It would sure be nice to somehow get our industry together to brainstorm on how to help protect the supply of wood for making our instruments. Unfortunately, everyone in this industry is way too protective for that to happen, they are afraid everyone might steal their secrets.”
5.4 The Percussion Community

An under-represented party in this treatise that has a particularly high stake in the conservation of Honduras Rosewood are the musicians that play Rosewood instruments. As consumers in a free market, percussionists have the ability to drive the instrument market into any direction. To this end, the percussion community should be educated on the increasing endangerment of Honduras Rosewood. This can, in turn, create a more ethical percussion consumer that not only considers sound when purchasing an instrument, but also environmental stewardship. Doug DeMorrow offers an immediate solution for consumers to take part in the conservation of Honduras Rosewood and that is through proper use of, and respect for, our musical instruments. “Respect for the instrument is a huge deal with me. When I get instruments to be retuned that have been abused it drives me crazy. This can be from any number of things from poor mallet selection, to touch, to music selection. I have seen professional players play pieces that abuse the instruments because of some new and unique effect. Well, you don’t see a string player with his 300-year-old Stradivarius playing a piece that puts the instrument in any kind of jeopardy because he knows his instrument is unique and irreplaceable. As a percussion community, we don’t make those judgments yet because we haven’t developed that kind regard for the instrument. Many people still assume that ‘The company can get me another bar,’ but what is going to happen if we run out of resources to build those bars? I know how hard it is to find good wood and if those musicians that abuse the instrument knew what I know, then our instruments would last much longer and we would use less natural resources to maintain them. All of the government paperwork and legislation in the world is not going to change the fact that there is instrument abuse by amateur and professional players alike.”

Currently, there exists no appreciable demand for a marimba or xylophone made from sustainably- and ethically-procured wood. However, with the advent of the modern ethical consumer, products ranging from organic food to conflict-free diamonds have become staples in the international market. It is the author’s belief that, as the certified wood movement becomes more viable and efficient thus providing positive incentives for participation, a new breed of musical consumer will emerge. This has already been
successfully shown with guitar makers like Martin and Gibson producing instruments made of FSC-certified timbers.

Furthermore, it is no mystery that legal irregularities occur constantly within the lumber trade. Forests are illegally poached, poor workers are paid subpar wages, and legal legislation is circumvented on a regular basis. Nevertheless, as proven by the organic food movement, consumer demand for ethically and sustainably produced products is the most proven way to guarantee the existence and viability of ethical and sustainable manufacturing practices. An ethical consumer deserves to know how a product is manufactured, whether or not the workers that make the product have a fair wage and decent working conditions, and whether or not purchasing a product will support commercial practices that align with his or her beliefs. In the current system, it is virtually impossible for an instrument manufacturer to be certain that all of the Honduras Rosewood he or she purchases meets these requirements, let alone an ethical consumer.

To this end, research into the opinions of consumers within the percussion community regarding certified wood could prove valuable and fruitful. This research could also serve to make consumers more aware of the existence of such a product, thus potentially creating demand for a necessary new market for environmentally-minded manufacturers to enter.
APPENDIX

CITES DOCUMENT PLACING Dalbergia stevensonii ON APPENDIX III

NOTIFICATION TO THE PARTIES

No. 2007/038
Geneva, 13 November 2007

CONCERNING:

Appendix III

1. In accordance with the provisions of Article XVI, paragraph 1, of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Governments of the following States have requested the Secretariat to include in Appendix III the species indicated:

   Algeria
   F A U N A
   ARTIODACTyla
   Bovidae
   Gazella dorcas
   Cervidae
   Cervus elaphus barbarus

   Argentina
   F L O R A
   ZYGOPHYLLACEAE
   Buniosia sarmientoi

   Guatemala
   F L O R A
   LEGUMINOSAE
   Dalbergia retusa Hemsl (population of Guatemala)
   Dalbergia stevensonii Standl
   (population of Guatemala)
   MELIACEAE
   Cedrela odorata (population of Guatemala)

   The last three species are to be annotated to indicate that the only parts and derivatives included are logs, sawn wood and veneer sheets.

2. In accordance with the provisions of Article XVI, paragraph 2, of the Convention, inclusion of these species in Appendix III shall take effect 90 days after the date of this Notification, i.e. on 12 February 2008.

3. Before that date, a revised edition of the CITES Appendices will be placed on the CITES website.
LIST OF REFERENCES


Eyler, David P. “Early Development of the Xylophone in Western Music.” Percussive Notes 41, no. 6 (2003): 42-44.


Magin, Georgina and Nick Wicks. “Rosewood in Southern Belize: A Preliminary Assessment.” unpublished; acquired via e-mail message to author. 16 Sept 2009.


Wicks, Nick. “Belizean Rosewood Project.” unpublished; sent via e-mail message to author. 16 Sept 2009.


Omar Carmenates is currently the Instructor of Percussion at Furman University in Greenville, SC where he oversees all aspects of the percussion program including classical, jazz, and world percussion studies. He holds a Master of Music Degree in Percussion Performance from the University of North Texas, and a Bachelor's degree in Music Education from the University of Central Florida. He has studied with Dr. John W. Parks IV, Mark Ford, Christopher Deane, Ed Soph, Ed Smith, Paul Rennick, Dr. Robert Schietroma, and Jeff Moore. In 2006, Omar entered the doctoral program at Florida State University.

In addition to his duties at Furman, Omar is also the Percussion Caption Head and Arranger for the internationally-renowned Boston Crusaders Drum & Bugle Corps. In addition to his work with the Crusaders, Omar’s writing credits include arrangements and original works for groups such as the Beatrix Drum and Bugle Corps from Hilversum, Holland, Infinity Indoor Percussion, the Florida State University Marching Chiefs, the Furman University Paladin Regiment, the Etiwanda High School Marching Eagle Regiment from Ontario, CA, and numerous other high school programs across the United States. As an adjudicator/clinician, Omar has also appeared at various festivals and Percussive Arts Society Days of Percussion throughout the United States. Omar is a proud endorser/clinician for Vic Firth, Inc. Remo Drumheads, Sabian Cymbals, and Pearl Corporation/Adams Musical Instruments.

As a performer, Omar is a versatile musician, having played in many groups in various genres. His interest in contemporary chamber and solo music has led to commissions and collaborations with such notable composers as John Luther Adams, Christopher Deane, Brian Nozny, and David Skidmore. He has been a percussionist with the Greenville Symphony Orchestra, the Greenville Pops Orchestra, the Tallahassee Symphony Orchestra, and the Las Colinas and Garland Symphony Orchestras. In addition, he has been a featured performer as a member of the Bravura Percussion Trio, which has performed and/or given clinics at universities and other venues throughout the United States. For five years, Omar was a musician at Walt Disney World, holding positions such as percussionist with the Village Beatniks in...
Disney’s Animal Kingdom. Omar is also an active scholar having published articles in Percussive Notes, Massachusetts Music News, and Drum Corps International Magazine, among others.