

Identification and Assessment of timber species case: Plaza de Toros la Petatera.

Iris Marisol Ortiz Llerenas⁵, Nora Evelia Ríos Silva¹, Carmen Ivonne Calvillo González²,
María de Guadalupe Zepeda Martínez³, Carlos Palacios Mendoza⁴, Christian Trinidad Zamora Alvarado.

The objective of this case study was to determine the types of wood used in the monument known as “Plaza de Toros la Petatera” in the town of Villa de Álvarez that belongs to the State of Colima, México, being the only in its genre. It is conformed of a constructive system completely made of endemic wood. It also has a special characteristic of being assembled and unassembled once the bullfighting annual activities are over and therefore considered a portable bullfighting plaza.

Such construction according to the Ordinance Num. 52 published in the Official Gazette of the Constitutional Government of the State of Colima on January 30th, 2016 approved by the FIFTY-EIGHTH LEGISLATURE OF THE HONORABLE STATE OF COLIMA CONGRES, declaring the "Bullfighting and Horseback Festivities" of the town of Villa de Álvarez, including all the traditional activities that belong to this event, like Intangible Cultural Heritage of the State, it is also approved that whichever is the Secretary of Culture of the State guarantees the protection and promotion of such bullfighting and horseback festivities. Mentions:

SECOND.- In an extract of the motives exposed that the initiative possess, the following can be seen: "The present initiative has as a purpose to enhance awareness between authorities, representatives, and the citizens, of the importance that Colima's traditions have in the makeup of our identity as a group; of our background, that differentiates the state within Mexico and brings us unlikeable richness... Las Fiestas Charrotaurinas de Villa de Álvarez, an activity where art, religion, and local culture are joined, have been celebrated in this town during the last 158 years. Within this annual tradition, the visitors can enjoy different events and shows, and appreciate elements such as: the construction of the bullfighting ring "La Petatera" of Villa de Álvarez, made with posts and petates (mats made of palm leaves). "La Petatera" of the town of Villa de Alvarez is also inscribed

within the inventory of the Instituto Nacional de Antropología e Historia (INAH), being recognized as Intangible Cultural Heritage of the Nation, since February 2009.

The timber materials used in the Petatera plaza are endemic species like: Tepehuaje (*Lysiloma acapulcensis*), Cypress Salve (*Cupressus sempervirens*), Pine (*Pinus*), Encino (*Quercus magnifolia*) including others, such species were able to be identified since XVI century according to the paleographic document by Acuña, in the following chapter: “*La Relación de la Provincia de Motines de Colima*”, (nowadays the State of Colima) where it is mentioned “wild trees, that are of hard sierra wood”.

According to the doctoral tesis of Maria Guadalupe Zepeda Martinez to what it says:

...Historic Wood: can be observed some wood species that are shown in the geographic Relations of the XVI century... from this assessment non written and fundamental traditional knowledge are rescued to obtain the efficiency of this material not only in the restoration of monuments but also in new architectural constructions. Knowing that the species are efficient in architectural usage allows indicating the supply needed of the adequate wood for different usages.

It can be inferred that the timber species found in the “La Petatera” could be considered historic wood, species with cultural value.

According to the sampling taken from the site at the moment of the construction of the Plaza de Toros “La Petatera”, it was recollected from the results the finding of 13 different species belonging to the families of Fabaceae, Cupressaceae, Fagaceae, Pinaceae, Papaveraceae y Boraginaceae used as supporting elements of construction. (see square num. 1)

¹ Master Education, Architect, Professor and Researcher the Institute Technological the Colima, México.

² Master Architecture, Architect, Professor and Researcher the Institute Technological the Colima, México..

³ Doctorate en History and Cultural Heritage, Researcher the Center INAH Jalisco, México.

⁴ Student 8 vo. Semester the Architecture , Institute Technological the Colima, México.

⁵ Student 8 vo. Semester the Architecture , Institute Technological the Colima, México.

Sample the wood	Scientific Name	Families
1° sample Tepeguaje	Lysiloma Acapulcensi	Fabaceaea
2° sample Cypress	Cupressus	Cupressuaceae
3° sample Encino	Quercus	Fagaceae
4° sample Brasil	Caesalpinia echinata	Fabaceaea
5° sample Bambu	Bambusoideae	Poaceae
6° sample pine	Pinus	Pinaceae
7° sample pinabete	Abies Alba	Pinaceae
8° sample parota	Entorolobium cyclocarpum	Fabaceaea
9° sample Lloro sangre	Bocconia arborea	Papaveraceae
10° sample barcino	Cordia elaeagnoides	Boraginaceae
11° sample fibra petate	Leucothrinax morrissii	Arecaceae
12° sample sogá de ixtle	Aechmea magadalanae	Bromeliaceae

Square No.1 Classification de species endemic

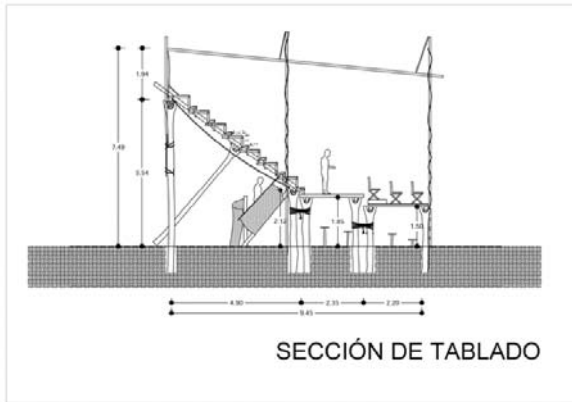
The mechanic properties such as bend, compression, and resistance of the mentioned wood allows them to be used in the construction; for 158 years this characteristics have determined the function of each one in the makeup of the structure “La Petatera”, being a tradition the how it has been constructed such monument passing from generation to generation


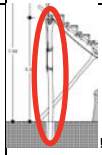

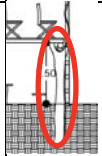

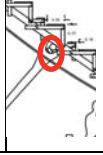
the form of work, where empiricism is the only base technique that there is, the cluster of experience of those generations is what has determine the usage of one specie, its treatment and storage, reason that sometimes other species are used substituting the ones that are commonly applied, the election of another specie resides then in the preference of the tabladero (wood owner and worker) that decides to use one or another wood being it a substitution of a piece that already fulfilled its function or the wood of his preference is another one, this is as always the physical and mechanical characteristics are equal to the specie that is being substituted for, in which we will find species that are predominant and alternative species, in the following square num. 2 it is mentioned according to the construction element of the structure, the correspondent wood. Some species are used witho any brushing maintaining even the tree bark, being the part of the trunk applied to assemble the structure, this is tied up with ixtle (fiber), a rope made up of palm leaves using different knots for each element that allows to maintain the construction elements fixed between them.

Structure element	species predominant (Common Name)	Scientific Name	Alternative species
Pie derecho	Huesillo	Oxandra lanceolata	Tepehuaje, Balsamo, encino, granadillo, Nogal, guayabillo, palo fierro.
Horcones	Tepehuaje	Lysiloma acapulcensis	Primavera, encino, guayabillo, xolocuahuil, huesillo, culebro, palo sangre, parotilla, guamúchil, palo fierro, guayabo, barcino, nogal, checalcahue, chigüillín, temezquite, bálsmo,
Cadenas	Huesillo	Oxandra lanceolata	Ciprés rosa morada, chigüillín, pino, palo fierro
Horcones de cadena	Encino	Quercus chihuahuensis	Tepemezquite, chigüillín, tepehuaje,nance, palo fierro, barcino,roble,
Latas	Ciprés	Cupressus empervirens	Huesillo, nogal, chigüillín, xolocuahuil, pino, rosa morada, ocote, encino, cucharo, palo de fierro
Soleras	Bálsamo	Myroxyton balsamun	Huesillo, chacalcahue, chigüillín, xolocuahuil, palo fierro, granadillo, pino, nogal
Velas polines Escuadras Estribos Gradas/tablas Trancas	Cypress	Cupressus sempervirens	Nogal, huesillo, encino, xolocuahuil ,pino
	Pine	Pinus sp.	Palma
	Pine		Nogal, palma, ciprés
Estructura ppal. Sombra	Bambú	Guadua angustifolia	
Estructura ppal. Sombra	Otate	Guadua angustifolia	
Revestimiento	Petate.	Cyperus articulatus var. nodosus	

Square no.2 Predominant and alternative species.







The totality of the structure is made up of 70 (platforms) tablados, this is composed of supporting elements and sustained elements, the ones which work structurally by sections, like you can see in the image.



Structure element	species predominant (Common Name)	Scientific Name	Species	Location the element
Pie derecho	Huesillo	Oxandra lanceolata		
Horcones	Tepehuaje	Lysiloma acapulcensis		
Cadenas	Ciprés	Cupressus lusitana		






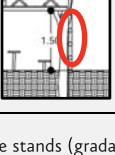
Square no.3 Structural elements of support

The structural elements of support called elements of support, these are right footings, wooden pillars or posts and chains the ones which hold the complete structure, they are found distributed between the entire perimeter of the surface, where the wood used for this purpose, el Huesillo (*Oxandra lanceolata*), Tepehuaje (*Lysiloma acapulcensis*) y cypress (*Cupressus sempervirens*) their firmness makes of these types of wood excellent for this purpose. (see square num. 3)


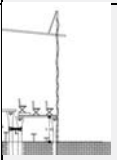



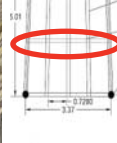


Structure element	species predominant (Common Name)	Scientific Name	species	Location the element
Horcones de cadena	Encino	Quercus chihuahuensis		
Latas	Ciprés	Cupressus sempervirens		
Soleras	Huesillo	Oxandra lanceolata		

Square No.4 Structural elements of support stands (gradas)

As it can be seen in squares num. 4 and 5, other elements of support are the chain, can, sill pillars, the wood is Huesillo (*Oxandra lanceolata*), Encino (*Quercus magnolifolia*), Cypress (*Cupressus sempervirens*), the function of such elements is to support or hold the structure called gradería (stands), in this area pine boards are installed that are used as part of the stands or bleachers where wooden seats are set.

Structure element	species predominant (Common Name)	Scientific Name	species	Location the element
Polines, escuadras, estribos, gradas, trancas	Pine	Pinus sp.		
				
				

Square No.5 Structure element the stands (gradas)

Structure element	species predominant (Common Name)	scientific name	species	Location the element
Velas	Cipres	Cupressus sempervirens		
Cubierta (sombra) Largueros	Bambú	Guadua angustifolia		
Cubierta (sombra) Transeptos	Otate	Guadua amplexifolia		
Revestimiento	Petate.	Leucothrinax morrissii		

Square No.6 sustained structure (Cover)

Lastly, the sustained structure (Cover), the wood used with this purpose with the exception of the sails is the Cypress (*Cupressus sempervirens*), the rest are materials that are only used twice, the bamboo (*Guadua angustifolia*) and the otate (reed)(*Guadua amplexifolia*), the mechanic characteristics are very low therefor the resistance of the materials will tend to fail. (see square num. 6)

El petate(mat made of palm leaves), is the material that is the origin of the name of this monument, it is the only material obtained from another place, this material will have the function of coating or lining of the entire support structure, as well as, the sustained structure or (cover).

El petate has an elaboration system from Pre-Colombian times, making this material one of the most important in Mexico.

Diverse are the raw materials used in the elaboration, in the case of the petate used in this monument is the palm (*Leucothrinax morrissii*), the leaves are the prime material for its elaboration. This is the handcraft work where the technique has been passed down from generation to generation, like it can be seen in the images.

Conclusion

La Petatera with unique characteristics is a monument done by society, the tradition in its materials, constructive systems and the activities that are done once finished, “the above produces an asset disposal of the social group towards the wooden structure”.(Zepeda,2012)

To guarantee that it continues depends on two factors, first, that the tradition of instructing generations to generation continues existing what has been learnt from the constructive system and the identification of the wood; nowadays it still continues, it is important to reinforce in the new generations the importance and significance of their labor.

Second, guarantee the raw material and the controlled usage the tree species, through strategies in society, organizations like the CONAFOR and State Government and City Hall Councils, in such a way that the equilibrium is guaranteed in nature and the adequate usage of the species.

Carlos Chafon Olmos, says: “Architecture is essentially a social product”; therefor the existence or inexistence of it depends on the equilibrium found in both society and architecture being a clear example the making of this construction year by year of the Plaza de Toros “La Petatera” Intangible Cultural Heritage of the Nation, México.

Referencias

Acuña, R. (1987). Relaciones Geográficas del siglo XVI:Michoacá. México: UNAM.

CIRE. (08 de Marzo de 2016). *Cupressus lusitana* Mill. Obtenido de Paquetes Tecnológicos: <http://www.conafor.gob.mx:8080/documentos/docs/13/911Cupressus%20lusitana.pdf>

Contreras Tene, D. (19 de Octubre de 2015). Entrevista al Director responsable de la construcción de La Petatera. (C. Palacios, I. Ortiz, & C. Zamora, Entrevistadores)

Flores Alejandres, A., & Alejandres Rodríguez, M. (03 de Febrero de 2016). Entrevista a proveedores de madera de La Petatera. (C. Palacios Mendoza, Entrevistador)

Guerrero Ramírez, C. A. (15 de Octubre de 2015). Entrevista a historiador del municipio de Villa de Álvarez, Colima. (C. Zamora, & I. Ortiz, Entrevistadores)

Guerrero Zamora, D. (02 de Diciembre de 15). Entrevista a Tabladero de La Petatera. (C. D. Palacios Mendoza, Entrevistador)

Gutiérrez Carvajal, L., & Dorantes López, J. (2004). Especies forestales de uso tradicional en el estado de Veracruz. Recuperado el 20 de Febrero de 2016, de Verarboles: <http://www.verarboles.com/>

INEGI. (Septiembre de 2001). Catálogo técnico de nombre comunes de las especies forestales maderables. Recuperado el 22 de Febrero de 2016, de ceiegveracruz.egobierno.gob.mx: <http://ceiegveracruz.egobierno.gob.mx/files/2015/02/Cat%C3%A1logo-t%C3%A9cnico.pdf>

Palacios Mendoza, C., Ortíz Llerenas, I. M., & Zamora, C. (2016). Elementos Constructivos, La Petatera. Villa de Álvarez: Fotografías y Dibujos.

Richter, H., Silva Gumán, J., Fuentes Talavera, F., Rodríguez Anda, R., & Torres Andrade, P. (Marzo de 2012). Fichas de propiedades tecnológicas de la maderas; Proyecto ITTO PD 385/05 Rev. (I,F.). Recuperado el 27 de Diciembre de 2015, de International Tropical Timber Organization: http://www.itto.int/files/itto_project_db_input/2596/Tecnica/Capitulo%207%20Fichas%20Tecnol%C3%B3gicas%20de%20las%20Especies%20de%20Madera.pdf

SEMARNAT. (2 de Febrero de 2016). Fichas técnicas sobre características tecnológicas y usos de maderas comercializadas en México. Recuperado el 12 de Enero de 2016, de Conafor: <http://www.conafor.gob.mx/biblioteca/catalogo-maderas-tomo2.pdf>

Solorio Cervantes, J. (08 de Noviembre de 2015). Entrevista a Administrador de La Petatera. (C. D. Palacios Mendoza, & C. Zamora, Entrevistadores)

Zepada Martínez, M. G. (2012). La madera en la arquitectura y carpinterías barrocas de Jalisco: Preservación vs. Sustitución. Guadalajara.