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Paleoclimate and Paleoecology of the Upper Oligocene Tehuacán of Formation, Puebla State, Mexico as determined from wood anatomical characters

Primary information of the 20 morphotypes recognized in this work (Morpho 1 to Morpho 20) and the information collected from 8 morphotypes studied by Sainz-Reséndis (2008) (S.R. Morpho 1 to S.R. Morpho 8). For the morphotypes studied in this work, the 25 different observations are shown for each of the 34 wood anatomy characters strongly related to climatic variables (Martínez-Cabrera and Cevallos-Ferriz, 2008).

## APPENDIX 1

**Morpho. 1**

Colección Nacional de Paleontología (UNAM) catalogue numbers

### IGM-LPB 4931 to IGM-LPB 4945

#	Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Sum	Mean/Proportion	
1	Growth rings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Vessel grouping																											1.59	
	Clusters (2)	0	0	0	0	1	3	2	2	0	2	0	2	0	2	1	1	3	0	3	3	2	1	2	2	2	34	1.26	
	Clusters (3)	0	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	1	1	0	0	1	1	8	0.30	
	Clusters (>4)	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.04	
3	Vessel frequency (V/mm2)	13	8	5	8	8	7	8	6	7	9	10	6	9	8	8	7	9	6	9	15	12	7	8	7	9	209	7.74	
4	Vessel diameter (µm)	170	150	150	160	130	150	160	120	150	170	180	150	190	170	170	110	170	200	140	140	150	170	200	130	150	3930	157.2	
5	Vessel wall thickness (µm)	10	10	15	10	10	15	10	15	10	15	10	10	10	10	10	15	10	10	10	20	10	20	15	10	10	295	11.8	
6	Helical sculpture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	Intervascular pit apertura diameter (µm)	5	5	7.5	7.5	7.5	7.5	5	6.3	7.5	5	7.5	7.5	6.3	7.5	5	5	5	5	5	5	5	5	5	6.3	5	5	148.75	5.95
8	Alternate intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
9	Opposite intervessel pits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
10	Scalariform intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	Simple perforation plates	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
12	Scalariform perforation plates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	Fibre wall thickness (µm)	2.5	3.8	2.5	2.5	2.5	5	3.8	2.5	2.5	2.5	5	2.5	5	3.8	2.5	2.5	2.5	5	2.5	2.5	2.5	3.8	2.5	2.5	2.5	77.5	3.1	
14	Fibre lumen diameter (µm)	20	10	15	15	13	10	10	18	13	15	20	10	30	18	15	15	20	15	5	15	25	10	25	23	25	407.5	16.3	
15	Tracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	Fibrotracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	Libriform fibres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	Parenchyma diffuse in aggregates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	Vasicentric parenchyma	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
20	Aliform parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	Apotracheal bands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	Concentric bands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
23	Marginal parenchyma	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
24	Height of uniseriate ray (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	Height of uniseriate ray (n° cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	Percentage of uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	Exclusively uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	Width of multiseriate ray (µm)	90	90	80	60	60	100	60	70	70	100	100	100	100	110	70	100	90	70	70	60	70	40	70	90	1990	79.6		
29	Width of multiseriate ray (n° cells)	4	3	3	2	2	3	3	3	3	3	3	3	3	3	3	3	3	4	3	3	3	3	2	3	3	74	2.96	
30	Length of uniseriate extensions (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	Length of uniseriate extensions (n° cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32	Storied structure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
33	Heterocellular rays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
34	Homocellular rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 4946 to IGM-LPB 4960

#	Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Sum	Mean/Proportion	
1	Growth rings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Vessel grouping																											5.74	
	Clusters (2)	2	6	4	3	6	5	3	3	4	5	5	3	4	4	6	2	1	2	3	5	1	1	1	1	4	4	87	3.22
	Clusters (3)	6	0	3	1	2	2	2	3	1	4	2	3	0	0	0	3	2	1	1	1	4	5	2	1	2	51	1.89	
	Clusters (>4)	0	1	1	0	0	0	1	0	1	2	0	2	2	0	0	0	0	0	0	0	0	0	3	2	2	17	0.63	
3	Vessel frequency (V/mm2)	23	22	26	14	19	23	22	18	17	33	19	26	21	12	15	14	12	12	10	14	17	21	24	27	24	485	19.4	
4	Vessel diameter (µm)	100	170	170	160	170	140	140	160	175	180	170	160	190	180	180	160	200	170	140	185	130	150	195	170	140	4085	163.4	
5	Vessel wall thickness (µm)	10	15	10	10	5	10	10	10	20	10	15	20	10	10	10	20	10	10	10	10	10	15	20	10	300	12		
6	Helical sculpture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	Intervascular pit apertura diameter (µm)	7.5	7.5	8.8	7.5	10	7.5	7.5	7.5	7.5	7.5	7.5	8.8	7.5	7.5	7.5	7.5	6.3	10	7.5	7.5	7.5	6.3	7.5	7.5	7.5	192.5	7.7	
8	Alternate intervessel pits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
9	Opposite intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	Scalariform intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	Simple perforation plates	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
12	Scalariform perforation plates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	Fibre wall thickness (µm)	2.5	3.8	2.5	2.5	2.5	5	3.8	2.5	2.5	2.5	5	2.5	5	3.8	2.5	2.5	2.5	5	2.5	2.5	2.5	3.8	2.5	2.5	2.5	77.5	3.1	
14	Fibre lumen diameter (µm)	20	10	15	15	13	10	10	18	13	15	20	10	30	18	15	15	20	15	5	15	25	10	25	23	25	407.5	16.3	
15	Tracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	Fibrotacheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	Libriform fibres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	Parenchyma diffuse in aggregates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	Vasicentric parenchyma	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
20	Aliform parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	Apotracheal bands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	Concentric bands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	Marginal parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	Height of uniseriate ray (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	Height of uniseriate ray (n° cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	Percentage of uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	Exclusively uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	Width of multiseriate ray (µm)	90	95	65	80	65	65	75	65	60	40	35	35	30	30	40	35	45	30	40	35	35	35	35	35	35	1230	49.2	
29	Width of multiseriate ray (n° cells)	4	5	3	4	3	3	3	3	3	4	3	3	4	3	3	3	5	4	4	3	3	3	4	3	3	86	3.44	
30	Length of uniseriate extensions (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	Length of uniseriate extensions (n° cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32	Storied structure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
33	Heterocellular rays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
34	Homocellular rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 4961 to IGM-LPB 4975

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 4976 to IGM-LPB 4990

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 4991 to IGM-LPB 5005

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5006 to IGM-LPB 5020

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
**IGM-LPB 5021 to IGM-LPB 5035**

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5036 to IGM-LPB 5050

#	Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Sum	Mean/Proportion
1	Growth rings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	Vessel grouping																											0.2
	Clusters (2)	0	0	2	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0.2
	Clusters (3)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Clusters (>4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	Vessel frequency (V/mm2)	9	6	6	7	9	7	7	8	9	10	10	7	5	7	5	6	5	9	8	7	6	6	5	6	6	176	7.04
4	Vessel diameter (µm)	230	240	290	280	250	160	160	310	250	230	200	290	220	245	280	210	160	130	150	225	210	260	210	205	425	5820	232.8
5	Vessel wall thickness (µm)	35	30	20	15	15	15	15	15	10	15	20	10	10	10	15	10	15	7.5	10	10	10	5	/	/	/	318	15.12
6	Helical sculpture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Intervascular pit apertura diameter (µm)	5	5	5	7.5	6.3	7.5	7.5	7.5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	6.3	6.3	7.5	10	7.5	7.5	7.5	6.3	/	165	6.88
8	Alternate intervessel pits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
9	Opposite intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Scalariform intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Simple perforation plates	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
12	Scalariform perforation plates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Fibre wall thickness (µm)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	62.5	2.5
14	Fibre lumen diameter (µm)	2.5	5	5	2.5	5	3.8	2.5	2.5	5	2.5	7.5	3.8	2.5	2.5	5	2.5	3.8	3.8	5	7.5	5	5	5	2.5	3.8	101	4.05
15	Tracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Fibrotracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Libriform fibres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Parechyma diffuse in aggregates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Vasicentric parenchyma	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
20	Aliform parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Apotracheal bands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Concentric bands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
23	Marginal parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Height of uniseriate ray (µm)	310	310	210	250	200	170	250	160	180	170	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	2210	221
25	Height of uniseriate ray (nº cells)	3	9	4	4	4	4	5	4	3	4	6	5	6	8	6	4	5	5	/	/	/	/	/	/	/	89	4.94
26	Percentage of uniseriate rays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
27	Exclusively uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Width of multiseriate ray (µm)	340	330	240	290	400	190	220	340	310	200	300	250	220	300	320	270	400	250	150	180	280	200	400	250	260	6890	275.6
29	Width of multiseriate ray (nº cells)	3	2	2	3	2	2	2	3	3	2	2	2	2	3	2	2	2	3	3	3	3	2	2	2	2	59	2.36
30	Length of uniseriate extensions (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Length of uniseriate extensions (nº cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Storied structure	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
33	Heterocellular rays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1
34	Homocellular rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5051 to IGM-LPB 5065

[illegible]

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5066 to IGM-LPB 5080

#	Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Sum	Mean/Proportion	
1	Growth rings	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2	Vessel grouping																											0.48	
	Clusters (2)	1	0	0	0	1	0	0	0	1	2	1	0	0	0	1	0	0	0	0	0	0	1	2	0	0	1	11	0.44
	Clusters (3)	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.04	
	Clusters (>4)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
3	Vessel frequency (V/mm2)	7	8	8	8	9	7	7	8	7	6	8	8	8	7	11	9	6	9	8	10	10	10	10	8	8	9	204	8.16
4	Vessel diameter (µm)	190	200	170	150	180	160	230	160	200	180	200	200	170	180	150	250	200	220	210	260	200	190	160	180	210	4800	192	
5	Vessel wall thickness (µm)	25	20	20	15	20	15	10	20	15	20	25	15	20	10	10	20	20	15	20	10	15	15	10	20	15	420	16.8	
6	Helical sculpture	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	Intervascular pit apertura diameter (µm)	5	5	5	5	7.5	5	5	2.5	2.5	3.8	2.5	2.5	5	5	2.5	5	5	5	5	7.5	7.5	5	5	6.3	6.3	7.5	124	4.95
8	Alternate intervessel pits	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
9	Opposite intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10	Scalariform intervessel pits	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	Simple perforation plates	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
12	Scalariform perforation plates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	Fibre wall thickness (µm)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	62.5	2.5	
14	Fibre lumen diameter (µm)	13	6.3	10	10	10	15	13	15	10	7.5	7.5	7.5	13	15	10	15	18	13	13	13	14	7.5	13	10	10	285	11.4	
15	Tracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16	Fibrotracheids	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	Libriform fibres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	Parenchyma diffuse in aggregates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	Vasicentric parenchyma	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
20	Aliform parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	Apotracheal bands	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
22	Concentric bands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
23	Marginal parenchyma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	Height of uniseriate ray (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	Height of uniseriate ray (nº cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	Percentage of uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	Exclusively uniseriate rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	Width of multiseriate ray (µm)	50	40	40	40	50	40	50	50	50	50	50	40	40	60	50	50	50	50	35	30	40	50	50	40	40	1135	45.4	
29	Width of multiseriate ray (nº cells)	2	2	2	2	2	2	3	2	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	52	2.08	
30	Length of uniseriate extensions (µm)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
31	Length of uniseriate extensions (nº cells)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
32	Storied structure	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
33	Heterocellular rays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	25	1	
34	Homocellular rays	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5081 to IGM-LPB 5095

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Colección Nacional de Paleontología (UNAM) catalogue numbers  
**IGM-LPB 5096 to IGM-LPB 5110**

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Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5111 to IGM-LPB 5125

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Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5126 to IGM-LPB 5140

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Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5141 to IGM-LPB 5155

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IGM-LPB 5156 to IGM-LPB 5170

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IGM-LPB 5171 to IGM-LPB 5185

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IGM-LPB 5186 to IGM-LPB 5200

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IGM-LPB 5201 to IGM-LPB 5215

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Colección Nacional de Paleontología (UNAM) catalogue numbers  
IGM-LPB 5216 to IGM-LPB 5230

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# S.R. Morpho 1

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	11.7
4	Vessel diameter (µm)	162
5	Vessel wall thickness (µm)	9
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	6
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	5
14	Fibre lumen diameter (µm)	12
15	Tracheids	0
16	Fibrotacheids	0
17	Libriform fibres	0
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	1
20	Aliform parenchyma	0
21	Apotracheal bands	1
22	Concentric bands	1
23	Marginal parenchyma	1
24	Height of uniseriate ray (µm)	0
25	Height of uniseriate ray (n° cells)	0
26	Percentage of uniseriate rays	0
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	74
29	Width of multiseriate ray (n° cells)	2
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	1
33	Heterocellular rays	1
34	Homocellular rays	0

**S.R. Morpho. 2**

#	Character	Mean/Proportion
1	Growth rings	0
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	11
4	Vessel diameter (µm)	178
5	Vessel wall thickness (µm)	8
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	6
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	/
14	Fibre lumen diameter (µm)	/
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	0
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	0
20	Aliform parenchyma	0
21	Apotracheal bands	1
22	Concentric bands	0
23	Marginal parenchyma	0
24	Height of uniseriate ray (µm)	237
25	Height of uniseriate ray (n° cells)	8
26	Percentage of uniseriate rays	1
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	45
29	Width of multiseriate ray (n° cells)	2.5
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	1
34	Homocellular rays	0

**S.R. Morpho. 3**

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	7
4	Vessel diameter (µm)	80.5
5	Vessel wall thickness (µm)	7.25
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	5.6
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	4
14	Fibre lumen diameter (µm)	10
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	0
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	1
20	Aliform parenchyma	1
21	Apotracheal bands	1
22	Concentric bands	1
23	Marginal parenchyma	0
24	Height of uniseriate ray (µm)	0
25	Height of uniseriate ray (n° cells)	0
26	Percentage of uniseriate rays	1
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	56
29	Width of multiseriate ray (n° cells)	2
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	0
34	Homocellular rays	1

**S. R. Morpho. 4**

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	9.7
4	Vessel diameter (µm)	187.5
5	Vessel wall thickness (µm)	8.6
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	7.4
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	5.4
14	Fibre lumen diameter (µm)	11.9
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	1
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	1
20	Aliform parenchyma	0
21	Apotracheal bands	1
22	Concentric bands	0
23	Marginal parenchyma	1
24	Height of uniseriate ray (µm)	270.4
25	Height of uniseriate ray (n° cells)	8.5
26	Percentage of uniseriate rays	1
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	43.8
29	Width of multiseriate ray (n° cells)	2.5
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	1
33	Heterocellular rays	0
34	Homocellular rays	1



**S.R. Morpho. 5**

#	Character	Mean/Proportion
1	Growth rings	0
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	19.5
4	Vessel diameter (µm)	99.6
5	Vessel wall thickness (µm)	7.4
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	8.1
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	5.4
14	Fibre lumen diameter (µm)	8.1
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	1
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	0
20	Aliform parenchyma	0
21	Apotracheal bands	0
22	Concentric bands	0
23	Marginal parenchyma	0
24	Height of uniseriate ray (µm)	0
25	Height of uniseriate ray (n° cells)	0
26	Percentage of uniseriate rays	0
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	81
29	Width of multiseriate ray (n° cells)	2.5
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	0
34	Homocellular rays	1

**S.R. Morpho. 6**

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	7.5
4	Vessel diameter (µm)	138.2
5	Vessel wall thickness (µm)	7.3
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	7
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	/
14	Fibre lumen diameter (µm)	/
15	Tracheids	0
16	Fibrotracheids	1
17	Libriform fibres	0
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	1
20	Aliform parenchyma	0
21	Apotracheal bands	0
22	Concentric bands	1
23	Marginal parenchyma	1
24	Height of uniseriate ray (µm)	198.2
25	Height of uniseriate ray (n° cells)	7
26	Percentage of uniseriate rays	1
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	45.6
29	Width of multiseriate ray (n° cells)	3
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	0
34	Homocellular rays	1

**S.R. Morpho. 7**

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	10.6
4	Vessel diameter (µm)	135
5	Vessel wall thickness (µm)	6
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	5.7
8	Alternate intervessel pits	1
9	Opposite intervessel pits	0
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	/
14	Fibre lumen diameter (µm)	/
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	1
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	1
20	Aliform parenchyma	0
21	Apotracheal bands	0
22	Concentric bands	1
23	Marginal parenchyma	0
24	Height of uniseriate ray (µm)	0
25	Height of uniseriate ray (n° cells)	0
26	Percentage of uniseriate rays	0
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	48
29	Width of multiseriate ray (n° cells)	2
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	0
34	Homocellular rays	1

**S.R. Morpho. 8**

#	Character	Mean/Proportion
1	Growth rings	1
2	Vessel grouping	/
	Clusters (2)	/
	Clusters (3)	/
	Clusters (>4)	/
3	Vessel frequency (V/mm <sup>2</sup> )	6.4
4	Vessel diameter (µm)	191
5	Vessel wall thickness (µm)	8.4
6	Helical sculpture	0
7	Intervascular pit apertura diameter (µm)	6.4
8	Alternate intervessel pits	0
9	Opposite intervessel pits	1
10	Scalariform intervessel pits	0
11	Simple perforation plates	1
12	Scalariform perforation plates	0
13	Fibre wall thickness (µm)	0
14	Fibre lumen diameter (µm)	0
15	Tracheids	0
16	Fibrotracheids	0
17	Libriform fibres	0
18	Parenchyma diffuse in aggregates	0
19	Vasicentric parenchyma	0
20	Aliform parenchyma	0
21	Apotracheal bands	1
22	Concentric bands	1
23	Marginal parenchyma	0
24	Height of uniseriate ray (µm)	190.4
25	Height of uniseriate ray (n° cells)	6
26	Percentage of uniseriate rays	1
27	Exclusively uniseriate rays	0
28	Width of multiseriate ray (µm)	93.2
29	Width of multiseriate ray (n° cells)	2.5
30	Length of uniseriate extensions (µm)	0
31	Length of uniseriate extensions (n° cells)	0
32	Storied structure	0
33	Heterocellular rays	0
34	Homocellular rays	1