

MORPHOTYPE	NAME		<i>Alnus sp.</i>
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY <u>Betulaceae</u> ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC.	<u>HB-1704</u>	EXEMPLAR	<u>EC1518A</u> OTHERS LOC. _____
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<p><u>The teeth distinguish Alnus sp. from other morphospecies. Unlike other toothed specimens found within the basin, Alnus sp. has two orders of teeth. Also, the spacing of the teeth is irregular with approximately 4 teeth/cm.</u></p>			
MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT:	<u>Not Preserved</u>	LEAFLET ORGANIZATION:	<u>Not Preserved</u>
LEAF ARRANGEMENT:	<u>Not Preserved</u>	LEAFLET ATTACHMENT:	<u>np</u>
LEAF ORGANIZATION:	<u>Not Preserved</u>	PETIOLE ATTACHMENT.:	<u>Not Preserved</u>
BLADE SIZE:	<u>Microphyll</u>	PETIOLE BASE:	<u>Not Preserved</u>
BLADE SHAPE:	<u>Ovate</u>	PETIOLE GLANDS.:	<u>None</u>
BLADE RATIO L:W:	<u>2:1</u>	PETIOLE X-SECTION:	<u>Not Preserved</u>
LOBATION:	<u>Unlobed</u>	MARGIN TYPE	<u>Serrate</u>
BASE ASYMMETRY:	<u>Symmetrical</u>	MEDIAL SYMMETRY:	<u>Asymetrical</u>
BASE SHAPE:	<u>Not Preserved</u>	APEX SHAPE:	<u>Not preserved</u>
BASE ANGLE:	<u>Not Preserved</u>	APEX ANGLE:	<u>Not preserved</u>
		Special Margin Features:	<u>Not Preserved</u>
		Terminal apex features:	<u>Not Preserved</u>
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION:	<u>Pinnate</u>	NAKED BASAL VEINS:	<u>Not Preserved</u>
MAJOR 2° Framework:	<u>Craspedodromous</u>	N° BASAL VEINS:	<u>1</u> Interior 2° <u>Absent</u>
MAJOR 2° Attachment:	<u>Decurrent</u>	MINOR-2° Course:	_____
MAJOR 2° SPACING:	<u>Irregular</u>	MAJOR 2° VEIN ANGLE:	<u>Smoothly increasing toward base</u>
		AGROPHIC VEINS:	<u>Absent</u>
INTER-2° proximal course:	_____	INTER-2° VEIN LENGTH:	_____
INTER-2° distal course:	_____	INTER-2° FREQUENCY:	_____
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°:	<u>Opposite percurrent - straight</u>	PERIMARGINAL VEINS:	<u>None</u>
EPIMEDIAL 3°:	<u>Not preserved</u>	INTER-3° ANGLE TO 1°:	<u>Acute to midvein</u>
ADMEDIAL COURSE:	<u>Not preserved</u>	EXTERIOR 3° COURSE:	<u>Not preserved</u>
EXMEDIAL COURSE:	<u>not preserved</u>	INTERCOSTAL 3° VARIABILITY:	<u>Consistent</u>
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC:	<u>Opposite percurrent</u>	VEINLETS -F/E/V/s:	<u>Not Preserved</u>
5° VEIN FABRIC:	<u>Regular reticulate</u>	TYPE OF F.E.V. BRANCHING:	<u>n.p</u>
MARGINAL VENATION:	<u>Not Preserved</u>	F.E.V.s TERMINATIONS:	<u>Not Preserved</u>
AREOLATION:	<u>Well developed</u>	LEAF RANK:	_____
TOOTH FEATURES			
ORDERS OF TEETH:	<u>2</u>	No TEETH/cm:	<u>4</u>
TOOTH SHAPE:	<u>cv/st</u>	TEETH GLANDULARITY:	<u>Non-specific glandular</u>
PRINCIPAL VEIN:	<u>Present</u>	TOOTH SPACING:	<u>Irregular</u>
		SINUS SHAPE:	<u>Rounded</u>
ACCESSORY VEIN COURSE:	_____	PRINCIPAL VEIN TERM.:	<u>Marginal, at apex</u>
NOTES			
This morphosheet was filled out using specimen: 1704_13-A and a previously collected specimen EC1518A _____			



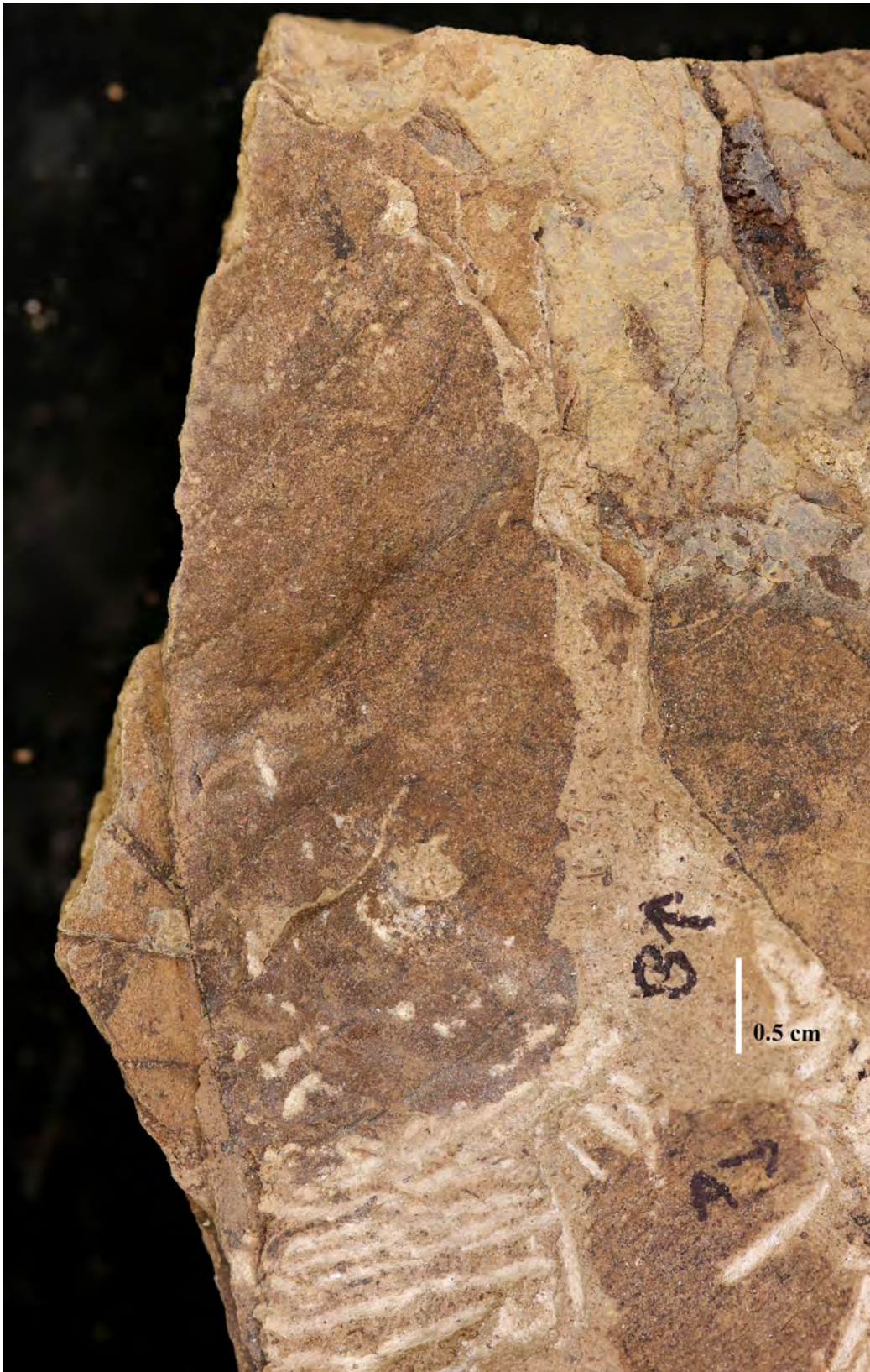
0.5 cm

MORPHOTYPE				NAME	<i>Averrhoites affinis</i>
GENERAL	MAJOR GROUP	<u>DIC</u>	INFERED FAMILY	ORGAN TYPE	
EXEMPLAR LOC.	<u>HB</u>	EXEMPLAR	<u>1701-79, 1706-39</u>	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
<u>Base of midvein thick and decreases in thickness as you move towards the apex.</u>					
<u>Midvein at base is 2x thicker than at the apex. The base is also asymmetrical intersecondary veins and the preservation is lacking.</u>					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	<u>Petiolate</u>	LEAFLET ORGANIZATION:	<u>Not Preserved</u>		
LEAF ARRANGEMENT:	<u>Not Preserved</u>	LEAFLET ATTACHMENT:	<u>np</u>		
LEAF ORGANIZATION:	<u>Not Preserved</u>	PETIOLE ATTACHMENT.:	<u>Not Preserved</u>		
BLADE SIZE:	<u>Microphyll-Mesophyll</u>	PETIOLE BASE:	<u>Not Preserved</u>		
BLADE SHAPE:	<u>Elliptic</u>	PETIOLE GLANDS.:	<u>NP</u>		
BLADE RATIO L:W:	<u>2:1</u>	PETIOLE X-SECTION:	<u>NP</u>		
LOBATION:	<u>Unlobed</u>	MARGIN TYPE	<u>Untoothed</u>		
BASE ASYMMETRY:	<u>Basal width asymmetrical</u>	MEDIAL SYMMETRY:	<u>Asymetrical</u>		
BASE SHAPE:	<u>Convex</u>	APEX SHAPE:	<u>Rounded</u>	Special Margin Features:	<u>Not Preserved</u>
BASE ANGLE:	<u>Acute</u>	APEX ANGLE:	<u>Obtuse</u>	Terminal apex features:	<u>Not Preserved</u>
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	<u>Pinnate</u>	NAKED BASAL VEINS:	<u>Absent</u>		
MAJOR 2° Framework:	<u>Simple brochidodromous</u>	N° BASAL VEINS:	<u>1</u>	Interior 2°:	<u>Absent</u>
MAJOR 2° Attachment:	<u>Decurrent</u>	MINOR-2° Course:	<u>Semicraspedodromous</u>		
MAJOR 2° SPACING:	<u>Irregular</u>	MAJOR 2° VEIN ANGLE:	<u>Abruptly increasing toward base</u>		
INTER-2° proximal course:		AGROPHIC VEINS:	<u>Absent</u>		
INTER-2° distal course:		INTER-2° VEIN LENGTH:			
		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	<u>Alternate percurrent</u>	PERIMARGINAL VEINS:	<u>None</u>		
EPIMEDIAL 3°:	<u>Not preserved</u>	INTER-3° ANGLE TO 1°:	<u>Not Preserved</u>		
ADMEDIAL COURSE:	<u>Not preserved</u>	EXTERIOR 3° COURSE:	<u>Not Preserved</u>		
EXMEDIAL COURSE:	<u>Not Preserved</u>	INTERCOSTAL 3° VARIABILITY:	<u>Not Preserved</u>		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	<u>Not Preserved</u>	VEINLETS -F/E/V/s:	<u>Not Preserved</u>		
5° VEIN FABRIC:	<u>Not Preserved</u>	TYPE OF F.E.V. BRANCHING:	<u>n.p</u>		
MARGINAL VENATION:	<u>Not Preserved</u>	F.E.V.s TERMINATIONS:	<u>Not Preserved</u>		
AREOLATION:	<u>Not Preserved</u>	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:		No TEETH/cm:		TEETH GLANDULARITY:	
TOOTH SHAPE:		TOOTH SPACING:			
PRINCIPAL VEIN:		SINUS SHAPE:			
ACCESSORY VEIN COURSE:		PRINCIPAL VEIN TERM.:			
NOTES					
Specimens used to make sheet: 1701-79 and 1706-39					



0.5 cm

MORPHOTYPE	NAME			<i>Fagopsiphyllum groenlandicum</i>
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE
EXEMPLAR LOC.	Hanna Basin, WY	EXEMPLAR	1710-20	OTHERS LOC.
DIAGNOSTIC FEATURES OF MORPHOTYPE				
<p style="color: blue; text-align: center;">Large crenate teeth with thick 2° vein that terminates in the apex of the tooth. Only one order of teeth and 1 tooth/cm. This distinguishes it apart from other crenate toothed leaves from this basin.</p>				
				MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES				
LEAF ATTACHMENT:	Not Preserved	LEAFLET ORGANIZATION:	Not Preserved	
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np	
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved	
BLADE SIZE:	Microphyll-Notophyllum	PETIOLE BASE:	Not Preserved	
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved	
BLADE RATIO L:W:	1.5:1	PETIOLE X-SECTION:	Not Preserved	
LOBATION:	Unlobed	MARGIN TYPE	Crenate	
BASE ASYMMETRY:	Not Preserved	MEDIAL SYMMETRY:	Not Preserved	
BASE SHAPE:	Not Preserved	APEX SHAPE:	Not preserved	Special Margin Features: Not Preserved
BASE ANGLE:	Not Preserved	APEX ANGLE:	Not preserved	Terminal apex features: Not Preserved
PRIMARY & SECONDARY VEIN FEATURES				
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Not Preserved	
MAJOR 2° Framework:	Craspedodromous	N° BASAL VEINS:	1	Interior 2°: Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:		
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base	
		AGROPHIC VEINS:	Absent	
INTER-2° proximal course:		INTER-2° VEIN LENGTH:		
INTER-2° distal course:		INTER-2° FREQUENCY:		
TERTIARY VEIN FEATURES				
INTERCOSTAL 3°:	Mixed opp/alt percurrent	PERIMARGINAL VEINS:	None	
EPIMEDIAL 3°:	Not preserved	INTER-3° ANGLE TO 1°:	Acute to midvein	
ADMEDIAL COURSE:	Not Preserved	EXTERIOR 3° COURSE:	Not Preserved	
EXMEDIAL COURSE:	Not Preserved	INTERCOSTAL 3° VARIABILITY:	Not Preserved	
FOURTH & HIGHER ORDER VEIN FEATURES				
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved	
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p	
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved	
AREOLATION:	Not Preserved	LEAF RANK:		
TOOTH FEATURES				
ORDERS OF TEETH:	1	No TEETH/cm:	1	TEETH GLANDULARITY:
TOOTH SHAPE:	rt/rt	TOOTH SPACING:	Regular	Not Preserved
PRINCIPAL VEIN:	Present	SINUS SHAPE:	Rounded	
ACCESSORY VEIN COURSE:	Not Preserved	PRINCIPAL VEIN TERM.:	Marginal, at apex	
NOTES				
Morphotype sheet completed with specimens: 1710-20 and 1703-7				



MORPHOTYPE	HB171	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	Hanna Basin 1706	EXEMPLAR	1706-42	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
Thickened margin but not enough preserved to claim a perimarginal vein.					
Also the base is wide obtuse and concave, and the intercostal 3 are chevroned.					
					MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Not Preserved	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Notophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved		
BLADE RATIO L:W:	1:1	PETIOLE X-SECTION:	Not Preserved		
LOBATION:	Not Preserved	MARGIN TYPE	Untoothed		
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Concave	APEX SHAPE:	Not preserved	Special Margin Features:	Not Preserved
BASE ANGLE:	Wide obtuse	APEX ANGLE:	Not preserved	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Absent		
MAJOR 2° Framework:	Simple brochidodromous	N° BASAL VEINS:	1	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:	Not Preserved		
MAJOR 2° SPACING:	Irregular	MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base		
INTER-2° proximal course:		AGROPHIC VEINS:	Absent		
INTER-2° distal course:		INTER-2° VEIN LENGTH:			
		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Opposite percurrent - chevroned	PERIMARGINAL VEINS:	Not Preserved		
EPIMEDIAL 3°:	Not preserved	INTER-3° ANGLE TO 1°:	Not Preserved		
ADMEDIAL COURSE:	Not Preserved	EXTERIOR 3° COURSE:	Not Preserved		
EXMEDIAL COURSE:	Not Preserved	INTERCOSTAL 3° VARIABILITY:	Not Preserved		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Not Preserved	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:		No TEETH/cm:		TEETH GLANDULARITY:	
TOOTH SHAPE:		TOOTH SPACING:			
PRINCIPAL VEIN:		SINUS SHAPE:			
ACCESSORY VEIN COURSE:		PRINCIPAL VEIN TERM.:			
NOTES					
Specimen 1706_42 was used to make this morphosheet					



MORPHOTYPE	HB172	NAME	
GENERAL	MAJOR GROUP <u>DIC</u>	INFERED FAMILY _____	ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC. <u>Hanna Basin WY</u>	EXEMPLAR <u>1701-1</u>	OTHERS LOC. _____	
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<u>Cordate base.</u>			
<u>Thickened midvein at base and decreases towards apex. Base is 3x thicker than apex.</u>			
<u>Higher order veins are not preserved. Second degree veins are very distinct with a sharp increase toward the base of the leaf.</u>			
MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT: <u>Petiolate</u>	LEAFLET ORGANIZATION: <u>Not Preserved</u>		
LEAF ARRANGEMENT: <u>Not Preserved</u>	LEAFLET ATTACHMENT: <u>np</u>		
LEAF ORGANIZATION: <u>Not Preserved</u>	PETIOLE ATTACHMENT.: <u>Not Preserved</u>		
BLADE SIZE: <u>Nanophyll-Notophyll</u>	PETIOLE BASE: <u>Not Preserved</u>		
BLADE SHAPE: <u>Oblong</u>	PETIOLE GLANDS.: <u>NP</u>		
BLADE RATIO L:W: <u>1.5:1</u>	PETIOLE X-SECTION: <u>NP</u>		
LOBATION: <u>Unlobed</u>	MARGIN TYPE: <u>Serrate</u>		
BASE ASYMMETRY: <u>Symmetrical</u>	MEDIAL SYMMETRY: <u>Symmetrical</u>		
BASE SHAPE: <u>Cordate</u>	APEX SHAPE: <u>Not preserved</u>	Special Margin Features: <u>Not Preserved</u>	
BASE ANGLE: <u>Wide obtuse</u>	APEX ANGLE: <u>Not preserved</u>	Terminal apex features: <u>Not Preserved</u>	
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION: <u>Pinnate</u>	NAKED BASAL VEINS: <u>Absent</u>		
MAJOR 2° Framework: <u>Semicraspedodromous</u>	N° BASAL VEINS: <u>1</u>	Interior 2°: <u>Absent</u>	
MAJOR 2° Attachment: <u>Decurrent</u>	MAJOR 2° VEIN ANGLE: <u>Abruptly increasing toward base</u>	MINOR-2° Course: _____	
MAJOR 2° SPACING: <u>Regular</u>	AGROPHIC VEINS: <u>Absent</u>		
INTER-2° proximal course: _____	INTER-2° VEIN LENGTH: _____		
INTER-2° distal course: _____	INTER-2° FREQUENCY: _____		
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°: <u>Opposite percurrent - straight</u>	PERIMARGINAL VEINS: <u>None</u>		
EPIMEDIAL 3°: <u>Opposite percurrent</u>	INTER-3° ANGLE TO 1°: <u>Acute to midvein</u>		
ADMEDIAL COURSE: <u>Acute to midvein</u>	EXTERIOR 3° COURSE: <u>Absent</u>		
EXMEDIAL COURSE: <u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY: <u>Increasing exmedially</u>		
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC: <u>Not Preserved</u>	VEINLETS -F/E/V/s: <u>Not Preserved</u>		
5° VEIN FABRIC: <u>Not Preserved</u>	TYPE OF F.E.V. BRANCHING: <u>n.p</u>		
MARGINAL VENATION: <u>Not Preserved</u>	F.E.V.s TERMINATIONS: <u>Not Preserved</u>		
AREOLATION: <u>Not Preserved</u>	LEAF RANK: _____		
TOOTH FEATURES			
ORDERS OF TEETH: <u>1</u>	No TEETH/cm: <u>1</u>	TEETH GLANDULARITY: <u>Not Preserved</u>	
TOOTH SHAPE: <u>cv/cc</u>	TOOTH SPACING: <u>Not Preserved</u>		
PRINCIPAL VEIN: <u>Present</u>	SINUS SHAPE: <u>Angular</u>		
ACCESSORY VEIN COURSE: <u>Not Preserved</u>	PRINCIPAL VEIN TERM.: <u>Marginal, on proximal flank</u>		
NOTES			
Morphotype sheet filled out using specimens: 1706-4 and 1701-1			



MORPHOTYPE	HB173	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	Hanna Basin, WY	EXEMPLAR	1712-1	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
3° veins perpendicular to midvein at the base but becomes acute to midvein towards the apex. Beautifully looped agrophic veins and very consistant, closely spaced 3° veins at the base. Lastly this morphotype has an asymmetrical basal insertion.					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Microphyll-Mesophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Elliptic	PETIOLE GLANDS.:	Not Preserved		
BLADE RATIO L:W:	1.5:1	PETIOLE X-SECTION:	Not Preserved		
LOBATION:	Unlobed	MARGIN TYPE	Untoothed		
BASE ASYMMETRY:	Basal insertion asymmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Rounded	APEX SHAPE:	Not preserved	Special Margin Features:	Not Preserved
BASE ANGLE:	Obtuse	APEX ANGLE:	Not preserved	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Basal actinodromous	NAKED BASAL VEINS:	Absent		
MAJOR 2° Framework:	Eucamptodromous	N° BASAL VEINS:	3	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:			
MAJOR 2° SPACING:	Decreasing proximally	MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base		
		AGROPHIC VEINS:	Simple		
INTER-2° proximal course:		INTER-2° VEIN LENGTH:			
INTER-2° distal course:		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Mixed opp/alt percurrent	PERIMARGINAL VEINS:	None		
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Perpendicular to midvein		
ADMEDIAL COURSE:	Perpendicular to midvein	EXTERIOR 3° COURSE:	Looped		
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Inconsistent		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Not Preserved	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:		No TEETH/cm:		TEETH GLANDULARITY:	
TOOTH SHAPE:		TOOTH SPACING:			
PRINCIPAL VEIN:		SINUS SHAPE:			
ACCESSORY VEIN COURSE:		PRINCIPAL VEIN TERM.:			
NOTES					
Morphotype sheet completed with specimens: 17012-1, 1704-80 and 1710-214					



0.5 cm

MORPHOTYPE	HB174	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	Hanna Basin, WY	EXEMPLAR	1710-6A, 1710-13B	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
Crenate teeth with only one order of teeth and 5 teeth/cm. This is different from Fagopsophyllum which only has 1 tooth/cm. 2° veins spacing is regular however the veins are more compressed at the base and apex. This is a morphological feature that is unlike any other morphotype within the basin. The base is also cordate. MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Not Preserved	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Nanophyll-Mesophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved		
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	Not Preserved		
LOBATION:	Unlobed	MARGIN TYPE	Crenate		
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Cordate	APEX SHAPE:	Not preserved	Special Margin Features:	Not Preserved
BASE ANGLE:	Obtuse	APEX ANGLE:	Not preserved	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Absent		
MAJOR 2° Framework:	Eucamptodromous	N° BASAL VEINS:	1	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:			
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base		
INTER-2° proximal course:		AGROPHIC VEINS:	Absent		
INTER-2° distal course:		INTER-2° VEIN LENGTH:			
		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Opposite percurrent - straight	PERIMARGINAL VEINS:	None		
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Acute to midvein		
ADMEDIAL COURSE:	Perpendicular to midvein	EXTERIOR 3° COURSE:	Looped		
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Consistent		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Not Preserved	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:	1	No TEETH/cm:	5	TEETH GLANDULARITY:	Not Preserved
TOOTH SHAPE:	cv/rt	TOOTH SPACING:	Regular		
PRINCIPAL VEIN:	Absent	SINUS SHAPE:	Rounded		
ACCESSORY VEIN COURSE:	Looped	PRINCIPAL VEIN TERM.:	Not Preserved		
NOTES					
Morphosheet completed with spimens: 1710-6A and 1710-13B					



MORPHOTYPE	HB175	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	LAS1703	EXEMPLAR	1703-2, 1704-111A	OTHERS LOC.	LAS 1704
DIAGNOSTIC FEATURES OF MORPHOTYPE					
2° veins are regularly spaced throughout the leaf, while the higher order veins at the apex and base are rarely preserved. Unlike Fagopsophyllum, this species has serrate teeth with 2 orders and averages 4 teeth/cm.					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Microphyl-Notophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Not Preserved	PETIOLE GLANDS.:	NP		
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	NP		
LOBATION:	Unlobed	MARGIN TYPE	Serrate		
BASE ASYMMETRY:	Not Preserved	MEDIAL SYMMETRY:	Not Preserved		
BASE SHAPE:	Rounded	APEX SHAPE:	Acuminate	Special Margin Features:	Not Preserved
BASE ANGLE:	Obtuse	APEX ANGLE:	Acute	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Not Preserved		
MAJOR 2° Framework:	Craspedodromous	N° BASAL VEINS:	1	Interior 2°:	Absent
MAJOR 2° Attachment:	Excurent	MINOR-2° Course:			
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Uniform		
INTER-2° proximal course:		AGROPHIC VEINS:	Absent		
INTER-2° distal course:		INTER-2° VEIN LENGTH:			
		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Opposite percurrent - convex	PERIMARGINAL VEINS:	None		
EPIMEDIAL 3°:	Not preserved	INTER-3° ANGLE TO 1°:	Acute to midvein		
ADMEDIAL COURSE:	Obtuse to midvein	EXTERIOR 3° COURSE:	Absent		
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Increasing proximally		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Opposite percurrent	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Regular reticulate	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Moderately developed	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:	2	No TEETH/cm:	4	TEETH GLANDULARITY:	None
TOOTH SHAPE:	cv/rt	TOOTH SPACING:	Regular		
PRINCIPAL VEIN:	Present	SINUS SHAPE:	Angular		
ACCESSORY VEIN COURSE:	Absent	PRINCIPAL VEIN TERM.:	Marginal, at apex		
NOTES					
Specimens used to complete morphosheet: 1703-2 and 1704-111A					



MORPHOTYPE	HB176	NAME	
GENERAL	MAJOR GROUP <u>DIC</u>	INFERED FAMILY _____	ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC. <u>Hanna Basin, WY</u>	EXEMPLAR <u>1704-1, 1704-76</u>	OTHERS LOC. _____	
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<u>2° veination is mixed! The framework is both eucamptodromous and simply brochidodromous as you move from the base of the leaf to the apex. When preserved, apex has a very dramatic/extended drip tip.</u>			
			MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT: <u>Not Preserved</u>	LEAFLET ORGANIZATION: <u>Not Preserved</u>		
LEAF ARRANGEMENT: <u>Not Preserved</u>	LEAFLET ATTACHMENT: <u>np</u>		
LEAF ORGANIZATION: <u>Not Preserved</u>	PETIOLE ATTACHMENT.: <u>Not Preserved</u>		
BLADE SIZE: <u>Microphyll-Mesohyll</u>	PETIOLE BASE: <u>Not Preserved</u>		
BLADE SHAPE: <u>Not Preserved</u>	PETIOLE GLANDS.: <u>NP</u>		
BLADE RATIO L:W: <u>1.5:1</u>	PETIOLE X-SECTION: <u>NP</u>		
LOBATION: <u>Unlobed</u>	MARGIN TYPE: <u>Untoothed</u>		
BASE ASYMMETRY: <u>Not Preserved</u>	MEDIAL SYMMETRY: <u>Symmetrical</u>		
BASE SHAPE: <u>Convex</u>	APEX SHAPE: <u>Acuminate</u>	Special Margin Features: <u>Not Preserved</u>	
BASE ANGLE: <u>Obtuse</u>	APEX ANGLE: <u>Acute</u>	Terminal apex features: _____	
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION: <u>Pinnate</u>	NAKED BASAL VEINS: <u>Not Preserved</u>		
MAJOR 2° Framework: <u>Mixed framework</u>	N° BASAL VEINS: <u>1</u>	Interior 2°: <u>Absent</u>	
MAJOR 2° Attachment: <u>Decurrent</u>	MAJOR 2° VEIN ANGLE: <u>Smoothly increasing toward base</u>	MINOR-2° Course: _____	
MAJOR 2° SPACING: <u>Regular</u>	AGROPHIC VEINS: <u>Absent</u>		
INTER-2° proximal course: _____	INTER-2° VEIN LENGTH: _____		
INTER-2° distal course: _____	INTER-2° FREQUENCY: _____		
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°: <u>Mixed opp/alt percurrent</u>	PERIMARGINAL VEINS: <u>None</u>		
EPIMEDIAL 3°: <u>Mixed opp/alt percurrent</u>	INTER-3° ANGLE TO 1°: <u>Obtuse or perpendicular</u>		
ADMEDIAL COURSE: <u>Acute to midvein</u>	EXTERIOR 3° COURSE: <u>Looped</u>		
EXMEDIAL COURSE: <u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY: <u>Decreasing exmedially</u>		
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC: <u>Alternate percurrent</u>	VEINLETS -F/E/V/s: <u>Not Preserved</u>		
5° VEIN FABRIC: <u>Regular reticulate</u>	TYPE OF F.E.V. BRANCHING: <u>n.p</u>		
MARGINAL VENATION: <u>Not Preserved</u>	F.E.V.s TERMINATIONS: <u>Not Preserved</u>		
AREOLATION: <u>Well developed</u>	LEAF RANK: _____		
TOOTH FEATURES			
ORDERS OF TEETH: _____	No TEETH/cm: _____	TEETH GLANDULARITY: _____	
TOOTH SHAPE: _____	TOOTH SPACING: _____		
PRINCIPAL VEIN: _____	SINUS SHAPE: _____		
ACCESSORY VEIN COURSE: _____	PRINCIPAL VEIN TERM.: _____		
NOTES			
Specimens used for morphosheet: 1704-1, 1704-76			

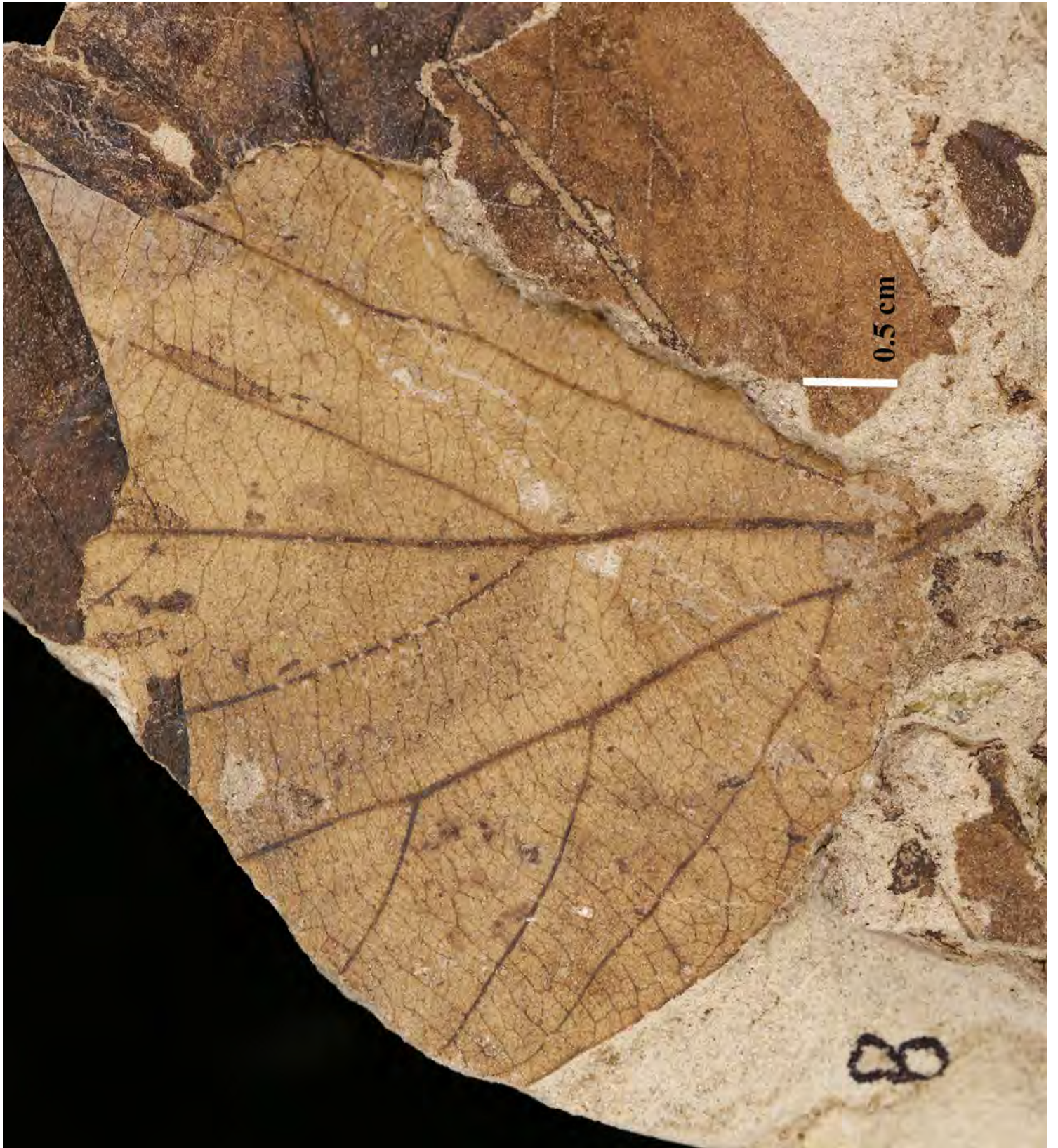


MORPHOTYPE	HB177	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	Hanna Basin, WY	EXEMPLAR	1704-9A	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
2° veins have a mixed framework which is unlike any other pinnate leaf found at these sites. The framework is both brochidodromous and eucamptodromous.					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Notophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Obovate	PETIOLE GLANDS.:	NP		
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	NP		
LOBATION:	Unlobed	MARGIN TYPE	Untoothed		
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Convex	APEX SHAPE:	Straight	Special Margin Features:	Not Preserved
BASE ANGLE:	Acute	APEX ANGLE:	Acute	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Not Preserved		
MAJOR 2° Framework:	Mixed framework	N° BASAL VEINS:	1	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:			
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Abruptly increasing toward base		
INTER-2° proximal course:		AGROPHIC VEINS:	Absent		
INTER-2° distal course:		INTER-2° VEIN LENGTH:			
		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Opposite percurrent - straight	PERIMARGINAL VEINS:	None		
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Obtuse to midvein		
ADMEDIAL COURSE:	Acute to midvein	EXTERIOR 3° COURSE:	Absent		
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Consistent		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Not Preserved	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:		No TEETH/cm:		TEETH GLANDULARITY:	
TOOTH SHAPE:		TOOTH SPACING:			
PRINCIPAL VEIN:		SINUS SHAPE:			
ACCESSORY VEIN COURSE:		PRINCIPAL VEIN TERM.:			
NOTES					
Morphosheet completed using specimens: 1704-46, 1704-212 and 1704-9A					



0.5 cm

MORPHOTYPE	HB178	NAME				
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	Moraceae	ORGAN TYPE	Leaf
EXEMPLAR LOC.	Hanna Basin, WY	EXEMPLAR	EC1508_1, 1701_17B	OTHERS LOC.		
DIAGNOSTIC FEATURES OF MORPHOTYPE				3° veins are closely spaced and alternate between mixed opp/alt percurrent. The veins located in the middle of the leaf are dominated by opposite percurrent and become alternate toward the exterior of the leaf. 2° veins are eucamptoromous which is unlike other morphotypes with mixed frameworks and the base is symmetrical.		
				MQI:		
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES						
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved			
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np			
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved			
BLADE SIZE:	Nanophyll-Mesophyll	PETIOLE BASE:	Not Preserved			
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	NP			
BLADE RATIO L:W:	1:1	PETIOLE X-SECTION:	NP			
LOBATION:	Unlobed	MARGIN TYPE	Untoothed			
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical			
BASE SHAPE:	Concave	APEX SHAPE:	Not preserved	Special Margin Features:	Not Preserved	
BASE ANGLE:	Acute	APEX ANGLE:	Not preserved	Terminal apex features:	Not Preserved	
PRIMARY & SECONDARY VEIN FEATURES						
PRIMARY VENATION:	Basal actinodromous		NAKED BASAL VEINS:	Absent		
MAJOR 2° Framework:	Eucamptodromous		N° BASAL VEINS:	3	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent		MINOR-2° Course:	Semicraspedodromous		
MAJOR 2° SPACING:	Decreasing proximally		MAJOR 2° VEIN ANGLE:	Uniform		
INTER-2° proximal course:			AGROPHIC VEINS:	Simple		
INTER-2° distal course:			INTER-2° VEIN LENGTH:			
			INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES						
INTERCOSTAL 3°:	Mixed opp/alt percurrent		PERIMARGINAL VEINS:	None		
EPIMEDIAL 3°:	Opposite percurrent		INTER-3° ANGLE TO 1°:	Perpendicular to midvein		
ADMEDIAL COURSE:	Perpendicular to midvein		EXTERIOR 3° COURSE:	Terminating at the margin		
EXMEDIAL COURSE:	Basiflexed		INTERCOSTAL 3° VARIABILITY:	Decreasing exmedially		
FOURTH & HIGHER ORDER VEIN FEATURES						
4° VEIN FABRIC:	Alternate percurrent		VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Irregular reticulate		TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved		F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Poorly developed		LEAF RANK:			
TOOTH FEATURES						
ORDERS OF TEETH:			No TEETH/cm:			TEETH GLANDULARITY:
TOOTH SHAPE:			TOOTH SPACING:			
PRINCIPAL VEIN:			SINUS SHAPE:			
ACCESSORY VEIN COURSE:			PRINCIPAL VEIN TERM.:			
NOTES						
Morphotype sheet completed using specimens: EC1508-1, 1704-44 and 1704-14C						



MORPHOTYPE	HB179	NAME	
GENERAL	MAJOR GROUP <u>DIC</u>	INFERED FAMILY _____	ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC. <u>LAS 1714</u>	EXEMPLAR <u>1713-14</u>	OTHERS LOC. <u>LAS 1713, LAS 1715</u>	
DIAGNOSTIC FEATURES OF MORPHOTYPE <u>2° framework is strongly brochidodromous and the major vein angle decreases towards the base. This is unlike any other morphotype at these sites.</u>			
<u>Lastly, the base is asymmetrical and the 5° vein fabric is freely ramifying .</u>			
MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT: <u>Petiolate</u>	LEAFLET ORGANIZATION: <u>Not Preserved</u>		
LEAF ARRANGEMENT: <u>Not Preserved</u>	LEAFLET ATTACHMENT: <u>np</u>		
LEAF ORGANIZATION: <u>Not Preserved</u>	PETIOLE ATTACHMENT.: <u>Not Preserved</u>		
BLADE SIZE: <u>Microphyl-Notophyll</u>	PETIOLE BASE: <u>Not Preserved</u>		
BLADE SHAPE: <u>Ovate</u>	PETIOLE GLANDS.: <u>Not Preserved</u>		
BLADE RATIO L:W: <u>2:1</u>	PETIOLE X-SECTION: <u>Not Preserved</u>		
LOBATION: <u>Unlobed</u>	MARGIN TYPE: <u>Untoothed</u>		
BASE ASYMMETRY: <u>Basal width asymmetrical</u>	MEDIAL SYMMETRY: <u>Asymetrical</u>		
BASE SHAPE: <u>Concave</u>	APEX SHAPE: <u>Acuminate</u>	Special Margin Features: <u>Sinuus</u>	
BASE ANGLE: <u>Not Preserved</u>	APEX ANGLE: <u>Acute</u>	Terminal apex features: <u>Not Preserved</u>	
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION: <u>Pinnate</u>	NAKED BASAL VEINS: <u>Absent</u>		
MAJOR 2° Framework: <u>Simple brochidodromous</u>	N° BASAL VEINS: <u>1</u>	Interior 2°: <u>Absent</u>	
MAJOR 2° Attachment: <u>Decurrent</u>	MAJOR 2° VEIN ANGLE: <u>Smoothly decreasing toward base</u>	MINOR-2° Course: _____	
MAJOR 2° SPACING: <u>Gradually increasing proximally</u>	AGROPHIC VEINS: <u>Absent</u>		
INTER-2° proximal course: _____	INTER-2° VEIN LENGTH: _____		
INTER-2° distal course: _____	INTER-2° FREQUENCY: _____		
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°: <u>Opposite percurrent - sinuous</u>	PERIMARGINAL VEINS: <u>Not Preserved</u>		
EPIMEDIAL 3°: <u>Opposite percurrent</u>	INTER-3° ANGLE TO 1°: <u>Acute to midvein</u>		
ADMEDIAL COURSE: <u>Not Preserved</u>	EXTERIOR 3° COURSE: <u>Not Preserved</u>		
EXMEDIAL COURSE: <u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY: <u>Not Preserved</u>		
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC: <u>Opposite percurrent</u>	VEINLETS -F/E/V/s: <u>Not Preserved</u>		
5° VEIN FABRIC: <u>Freely ramifying</u>	TYPE OF F.E.V. BRANCHING: <u>n.p</u>		
MARGINAL VENATION: <u>Not Preserved</u>	F.E.V.s TERMINATIONS: <u>Not Preserved</u>		
AREOLATION: <u>Poorly developed</u>	LEAF RANK: _____		
TOOTH FEATURES			
ORDERS OF TEETH: _____	No TEETH/cm: _____	TEETH GLANDULARITY: _____	
TOOTH SHAPE: _____	TOOTH SPACING: _____		
PRINCIPAL VEIN: _____	SINUS SHAPE: _____		
ACCESSORY VEIN COURSE: _____	PRINCIPAL VEIN TERM.: _____		
NOTES			
Specimens used to complete morphosheet: 1701-97, 1713-1000 and 1713-14			



0.5 cm

MORPHOTYPE	HB180	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	LAS 1701	EXEMPLAR	1701-45	OTHERS LOC.	LAS 1713
DIAGNOSTIC FEATURES OF MORPHOTYPE					
Weakly brochidodromous and eucamptodromous however, the 3° are opposite percurrent-straight and obtuse to midvein. Also the 2° spacing gradually increases proximally and is acute compared to HB176.					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Microphyll-Mesophyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved		
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	Not Preserved		
LOBATION:	Unlobed	MARGIN TYPE	Untoothed		
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Convex	APEX SHAPE:	Not preserved	Special Margin Features:	Not Preserved
BASE ANGLE:	Acute	APEX ANGLE:	Not preserved	Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Not Preserved		
MAJOR 2° Framework:	Mixed framework	N° BASAL VEINS:	1	Interior 2°:	Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:			
MAJOR 2° SPACING:	Gradually increasing proximally	MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base		
		AGROPHIC VEINS:	Absent		
INTER-2° proximal course:		INTER-2° VEIN LENGTH:			
INTER-2° distal course:		INTER-2° FREQUENCY:			
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Opposite percurrent - straight	PERIMARGINAL VEINS:	Not Preserved		
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Obtuse to midvein		
ADMEDIAL COURSE:	Not Preserved	EXTERIOR 3° COURSE:	Not Preserved		
EXMEDIAL COURSE:	Not Preserved	INTERCOSTAL 3° VARIABILITY:	Consistent		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved	VEINLETS -F/E/V/s:	Not Preserved		
5° VEIN FABRIC:	Not Preserved	TYPE OF F.E.V. BRANCHING:	n.p		
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved		
AREOLATION:	Not Preserved	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:		No TEETH/cm:		TEETH GLANDULARITY:	
TOOTH SHAPE:		TOOTH SPACING:			
PRINCIPAL VEIN:		SINUS SHAPE:			
ACCESSORY VEIN COURSE:		PRINCIPAL VEIN TERM.:			
NOTES					
Specimen used to complete morphosheet is: 1701-45					



0.5 cm

MORPHOTYPE	HB181	NAME	
GENERAL	MAJOR GROUP <u>DIC</u>	INFERED FAMILY _____	ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC. <u>1704</u>	EXEMPLAR <u>1704-13C</u>	OTHERS LOC. _____	
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<u>Very poorly preserved however, interesting morphology!</u>			
<u>4 primary veins preserved and agrophic veins however no other features are preserved.</u>			
<u>Due to the primary veins, this leaf can not be put in any other morphospecies.</u>			
			MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT: <u>Not Preserved</u>	LEAFLET ORGANIZATION: <u>Not Preserved</u>		
LEAF ARRANGEMENT: <u>Not Preserved</u>	LEAFLET ATTACHMENT: <u>np</u>		
LEAF ORGANIZATION: <u>Not Preserved</u>	PETIOLE ATTACHMENT.: <u>Not Preserved</u>		
BLADE SIZE: <u>Notophyll</u>	PETIOLE BASE: <u>Not Preserved</u>		
BLADE SHAPE: <u>Not Preserved</u>	PETIOLE GLANDS.: <u>Not Preserved</u>		
BLADE RATIO L:W: <u>Not Preserved</u>	PETIOLE X-SECTION: <u>Not Preserved</u>		
LOBATION: <u>Not Preserved</u>	MARGIN TYPE: <u>Untoothed</u>		
BASE ASYMMETRY: <u>Not Preserved</u>	MEDIAL SYMMETRY: <u>Not Preserved</u>		
BASE SHAPE: <u>Not Preserved</u>	APEX SHAPE: <u>Not preserved</u>	Special Margin Features: <u>Not Preserved</u>	
BASE ANGLE: <u>Not Preserved</u>	APEX ANGLE: <u>Not preserved</u>	Terminal apex features: <u>Not Preserved</u>	
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION: <u>Some kind of Palmate</u>	NAKED BASAL VEINS: <u>Not Preserved</u>		
MAJOR 2° Framework: <u>Semicraspedodromous</u>	N° BASAL VEINS: <u>4</u>	Interior 2°: <u>NP</u>	
MAJOR 2° Attachment: <u>Decurrent</u>	MINOR-2° Course: <u>Not Preserved</u>		
MAJOR 2° SPACING: <u>Not Preserved</u>	MAJOR 2° VEIN ANGLE: <u>Not Preserved</u>		
	AGROPHIC VEINS: <u>Simple</u>		
INTER-2° proximal course: _____	INTER-2° VEIN LENGTH: _____		
INTER-2° distal course: _____	INTER-2° FREQUENCY: _____		
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°: <u>Not Preserved</u>	PERIMARGINAL VEINS: <u>Not Preserved</u>		
EPIMEDIAL 3°: <u>Not preserved</u>	INTER-3° ANGLE TO 1°: <u>Not Preserved</u>		
ADMEDIAL COURSE: <u>Not Preserved</u>	EXTERIOR 3° COURSE: <u>Not Preserved</u>		
EXMEDIAL COURSE: <u>Not Preserved</u>	INTERCOSTAL 3° VARIABILITY: <u>Not Preserved</u>		
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC: <u>Not Preserved</u>	VEINLETS -F/E/V/s: <u>Not Preserved</u>		
5° VEIN FABRIC: <u>Not Preserved</u>	TYPE OF F.E.V. BRANCHING: <u>n.p</u>		
MARGINAL VENATION: <u>Not Preserved</u>	F.E.V.s TERMINATIONS: <u>Not Preserved</u>		
AREOLATION: <u>Not Preserved</u>	LEAF RANK: _____		
TOOTH FEATURES			
ORDERS OF TEETH: _____	No TEETH/cm: _____	TEETH GLANDULARITY: _____	
TOOTH SHAPE: _____	TOOTH SPACING: _____		
PRINCIPAL VEIN: _____	SINUS SHAPE: _____		
ACCESSORY VEIN COURSE: _____	PRINCIPAL VEIN TERM.: _____		
NOTES			
Specimen used to complete morphosheet: 1704-13C			



0.5 cm

MORPHOTYPE	HB182	NAME			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	1710	EXEMPLAR	1710-26	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
Very regularly spaced 2° veins with consistent acute angles and the framework is eucamptodromous. The acute angel measures at 30°.					
MQI: _____					
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Not Preserved		LEAFLET ORGANIZATION:	Not Preserved	
LEAF ARRANGEMENT:	Not Preserved		LEAFLET ATTACHMENT:	np	
LEAF ORGANIZATION:	Not Preserved		PETIOLE ATTACHMENT.:	Not Preserved	
BLADE SIZE:	Microphyll-Mesophyll		PETIOLE BASE:	Not Preserved	
BLADE SHAPE:	Ovate		PETIOLE GLANDS.:	Not Preserved	
BLADE RATIO L:W:	2:1		PETIOLE X-SECTION:	Not Preserved	
LOBATION:	Unlobed		MARGIN TYPE	Untoothed	
BASE ASYMMETRY:	Not Preserved		MEDIAL SYMMETRY:	Symmetrical	
BASE SHAPE:	Not Preserved		APEX SHAPE:	Acuminate	
BASE ANGLE:	Not Preserved		APEX ANGLE:	Acute	
			Special Margin Features:	Not Preserved	
			Terminal apex features:	Not Preserved	
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Pinnate		NAKED BASAL VEINS:	Not Preserved	
MAJOR 2° Framework:	Eucamptodromous		N° BASAL VEINS:	1	Interior 2° Absent
MAJOR 2° Attachment:	Decurrent		MINOR-2° Course:		
MAJOR 2° SPACING:	Regular		MAJOR 2° VEIN ANGLE:	Smoothly increasing toward base	
			AGROPHIC VEINS:	Absent	
INTER-2° proximal course:			INTER-2° VEIN LENGTH:		
INTER-2° distal course:			INTER-2° FREQUENCY:		
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Mixed opp/alt percurrent		PERIMARGINAL VEINS:	Not Preserved	
EPIMEDIAL 3°:	Mixed opp/alt percurrent		INTER-3° ANGLE TO 1°:	Acute to midvein	
ADMEDIAL COURSE:	Perpendicular to midvein		EXTERIOR 3° COURSE:	Not Preserved	
EXMEDIAL COURSE:	Basiflexed		INTERCOSTAL 3° VARIABILITY:	Consistent	
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Mixed percurrent		VEINLETS -F/E/V/s:	Not Preserved	
5° VEIN FABRIC:	Regular reticulate		TYPE OF F.E.V. BRANCHING:	n.p	
MARGINAL VENATION:	Not Preserved		F.E.V.s TERMINATIONS:	Not Preserved	
AREOLATION:	Well developed		LEAF RANK:		
TOOTH FEATURES					
ORDERS OF TEETH:			No TEETH/cm:		
TOOTH SHAPE:			TEETH GLANDULARITY:		
PRINCIPAL VEIN:			TOOTH SPACING:		
			SINUS SHAPE:		
ACCESSORY VEIN COURSE:			PRINCIPAL VEIN TERM.:		
NOTES					
Specimens used to complete morphotype sheet: 1710-6B and 1710-207					



0.5 cm

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MORPHOTYPE	HB183	NAME	
GENERAL	MAJOR GROUP <u>DIC</u>	INFERED FAMILY _____	ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC. <u>LAS 1701</u>	EXEMPLAR <u>1704-47A</u>	OTHERS LOC. <u>LAS 1706</u>	
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<u>Thick petiole and midvein that decreases in width apically.</u>			
<u>Midevein at base is 2x thicker than at apex. Unlike Averrhoites, HB183 doesn't have intersec 2° veins and the preservation on this morphotype is superior to Averrhoites. The 2° framewo is weakly brochidodromous with irregular spacing throughout the leaf.</u>			
MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT: <u>Petiolate</u>	LEAFLET ORGANIZATION: <u>Not Preserved</u>		
LEAF ARRANGEMENT: <u>Not Preserved</u>	LEAFLET ATTACHMENT: <u>np</u>		
LEAF ORGANIZATION: <u>Not Preserved</u>	PETIOLE ATTACHMENT.: <u>Not Preserved</u>		
BLADE SIZE: <u>Microphyll-Mesophyll</u>	PETIOLE BASE: <u>Not Preserved</u>		
BLADE SHAPE: <u>Elliptic</u>	PETIOLE GLANDS.: <u>Not Preserved</u>		
BLADE RATIO L:W: <u>2:1</u>	PETIOLE X-SECTION: <u>Not Preserved</u>		
LOBATION: <u>Unlobed</u>	MARGIN TYPE: <u>Untoothed</u>		
BASE ASYMMETRY: <u>Basal width asymmetrical</u>	MEDIAL SYMMETRY: <u>Symmetrical</u>		
BASE SHAPE: <u>Concave</u>	APEX SHAPE: <u>Not preserved</u>	Special Margin Features: <u>Not Preserved</u>	
BASE ANGLE: <u>Acute</u>	APEX ANGLE: <u>Not preserved</u>	Terminal apex features: <u>Not Preserved</u>	
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION: <u>Pinnate</u>	NAKED BASAL VEINS: <u>Not Preserved</u>		
MAJOR 2° Framework: <u>Simple brochidodromous</u>	N° BASAL VEINS: <u>1</u>	Interior 2°: <u>Absent</u>	
MAJOR 2° Attachment: <u>Decurrent</u>	MAJOR 2° VEIN ANGLE: <u>Inconsistent</u>	MINOR-2° Course: _____	
MAJOR 2° SPACING: <u>Irregular</u>	AGROPHIC VEINS: <u>Absent</u>		
INTER-2° proximal course: _____	INTER-2° VEIN LENGTH: _____		
INTER-2° distal course: _____	INTER-2° FREQUENCY: _____		
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°: <u>Opposite percurrent - convex</u>	PERIMARGINAL VEINS: <u>None</u>		
EPIMEDIAL 3°: <u>Opposite percurrent</u>	INTER-3° ANGLE TO 1°: <u>Acute to midvein</u>		
ADMEDIAL COURSE: <u>Acute to midvein</u>	EXTERIOR 3° COURSE: <u>Terminating at the margin</u>		
EXMEDIAL COURSE: <u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY: <u>Inconsistent</u>		
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC: <u>Not Preserved</u>	VEINLETS -F/E/V/s: <u>Not Preserved</u>		
5° VEIN FABRIC: <u>Not Preserved</u>	TYPE OF F.E.V. BRANCHING: <u>n.p</u>		
MARGINAL VENATION: <u>Not Preserved</u>	F.E.V.s TERMINATIONS: <u>Not Preserved</u>		
AREOLATION: <u>Not Preserved</u>	LEAF RANK: _____		
TOOTH FEATURES			
ORDERS OF TEETH: _____	No TEETH/cm: _____	TEETH GLANDULARITY: _____	
TOOTH SHAPE: _____	TOOTH SPACING: _____		
PRINCIPAL VEIN: _____	SINUS SHAPE: _____		
ACCESSORY VEIN COURSE: _____	PRINCIPAL VEIN TERM.: _____		
NOTES			
Specimens used to complete morphosheet: 1704-47A and 1704-47C			



0.5 cm

MORPHOTYPE	NAME		<i>Macginitiea gracilis</i>
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY <u>Platanaceae</u> ORGAN TYPE <u>Leaf</u>
EXEMPLAR LOC.	<u>1703</u>	EXEMPLAR	<u>1703-9A, 1703-1</u> OTHERS LOC. _____
DIAGNOSTIC FEATURES OF MORPHOTYPE			
<u>Untoothered, palmate lobed leaf with symetrical base. This is the only palmate lobed leaf we have across stratigraphic levels. Agrophic veins are absent and the secondary vein spacing decreases proximally.</u>			
			MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT:	<u>Petiolate</u>	LEAFLET ORGANIZATION:	<u>Not Preserved</u>
LEAF ARRANGEMENT:	<u>Not Preserved</u>	LEAFLET ATTACHMENT:	<u>np</u>
LEAF ORGANIZATION:	<u>Not Preserved</u>	PETIOLE ATTACHMENT.:	<u>Not Preserved</u>
BLADE SIZE:	<u>Notophyll-Macrophyll</u>	PETIOLE BASE:	<u>Not Preserved</u>
BLADE SHAPE:	<u>Wide elliptic</u>	PETIOLE GLANDS.:	<u>NP</u>
BLADE RATIO L:W:	<u>1:5-1</u>	PETIOLE X-SECTION:	<u>NP</u>
LOBATION:	<u>Palmately lobed</u>	MARGIN TYPE	<u>Untoothered</u>
BASE ASYMMETRY:	<u>Symmetrical</u>	MEDIAL SYMMETRY:	<u>Symmetrical</u>
BASE SHAPE:	<u>Concave</u>	APEX SHAPE:	<u>Not preserved</u>
BASE ANGLE:	<u>Obtuse</u>	APEX ANGLE:	<u>Not preserved</u>
		Special Margin Features:	<u>Not Preserved</u>
		Terminal apex features:	<u>Not Preserved</u>
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION:	<u>Basal palinactinodromous</u>	NAKED BASAL VEINS:	<u>Absent</u>
MAJOR 2° Framework:	<u>Semicraspedodromous</u>	N° BASAL VEINS:	<u>3</u> Interior 2° <u>Present</u>
MAJOR 2° Attachment:	<u>Decurrent</u>	MINOR-2° Course:	_____
MAJOR 2° SPACING:	<u>Gradually increasing proximally</u>	MAJOR 2° VEIN ANGLE:	<u>Smoothly decreasing toward base</u>
INTER-2° proximal course:	<u>Perpendicular to midvein</u>	AGROPHIC VEINS:	<u>Absent</u>
INTER-2° distal course:	<u>Perpendicular to major 2°</u>	INTER-2° VEIN LENGTH:	<u><50% of subjacent 2°</u>
		INTER-2° FREQUENCY:	<u>>1 per intercostal area</u>
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°:	<u>Mixed opp/alt percurrent</u>	PERIMARGINAL VEINS:	<u>None</u>
EPIMEDIAL 3°:	<u>Opposite percurrent</u>	INTER-3° ANGLE TO 1°:	<u>Obtuse to midvein</u>
ADMEDIAL COURSE:	<u>Obtuse to midvein</u>	EXTERIOR 3° COURSE:	<u>Not Preserved</u>
EXMEDIAL COURSE:	<u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY:	<u>Consistent</u>
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC:	<u>Altemate percurrent</u>	VEINLETS -F/E/V/s:	<u>Not Preserved</u>
5° VEIN FABRIC:	<u>Regular reticulate</u>	TYPE OF F.E.V. BRANCHING:	<u>n.p</u>
MARGINAL VENATION:	<u>Not Preserved</u>	F.E.V.s TERMINATIONS:	<u>Not Preserved</u>
AREOLATION:	<u>Moderately developed</u>	LEAF RANK:	_____
TOOTH FEATURES			
ORDERS OF TEETH:	_____	No TEETH/cm:	_____
TOOTH SHAPE:	_____	TEETH GLANDULARITY:	_____
PRINCIPAL VEIN:	_____	TOOTH SPACING:	_____
ACCESSORY VEIN COURSE:	_____	SINUS SHAPE:	_____
		PRINCIPAL VEIN TERM.:	_____
NOTES			
Specimens used to complete sheet are: 1703-9A and 1703-1			



MORPHOTYPE		NAME	
		<i>Platanites raynoldsii</i> (Palmate)	
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY
	LAS1701		Platanaceae
EXEMPLAR LOC.	EXEMPLAR	OTHERS LOC.	ORGAN TYPE
	1701-62B		Leaf
DIAGNOSTIC FEATURES OF MORPHOTYPE			
Serrate teeth that resemble hooks with non-specific glands.			
Teeth only have one order and approximately 2 teeth/cm.			
When preserved, base is concave-convex. Palmate version of <i>Platanites</i> is suprabasal actinodromous			
MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES			
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved
BLADE SIZE:	Microphyll-Mesophyll	PETIOLE BASE:	Not Preserved
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	Not Preserved
LOBATION:	Unlobed	MARGIN TYPE	Serrate
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical
BASE SHAPE:	Concave-convex	APEX SHAPE:	Acuminate
BASE ANGLE:	Acute	APEX ANGLE:	Acute
		Special Margin Features:	Not Preserved
		Terminal apex features:	Not Preserved
PRIMARY & SECONDARY VEIN FEATURES			
PRIMARY VENATION:	Suprabasal actinodromous	NAKED BASAL VEINS:	Absent
MAJOR 2° Framework:	Craspedodromous	N° BASAL VEINS:	1 Interior 2° Absent
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:	Craspedodromous
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Inconsistent
		AGROPHIC VEINS:	Simple
INTER-2° proximal course:		INTER-2° VEIN LENGTH:	
INTER-2° distal course:		INTER-2° FREQUENCY:	
TERTIARY VEIN FEATURES			
INTERCOSTAL 3°:	Opposite percurrent - convex	PERIMARGINAL VEINS:	None
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Obtuse to midvein
ADMEDIAL COURSE:	Perpendicular to midvein	EXTERIOR 3° COURSE:	Looped
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Consistent
FOURTH & HIGHER ORDER VEIN FEATURES			
4° VEIN FABRIC:	Mixed percurrent	VEINLETS -F/E/V/s:	Not Preserved
5° VEIN FABRIC:	Irregular reticulate	TYPE OF F.E.V. BRANCHING:	n.p
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved
AREOLATION:	Moderately developed	LEAF RANK:	
TOOTH FEATURES			
ORDERS OF TEETH:	1	No TEETH/cm:	2
TOOTH SHAPE:	cc/rt	TEETH GLANDULARITY:	Non-specific glandular
PRINCIPAL VEIN:	Present	TOOTH SPACING:	Regular
		SINUS SHAPE:	Rounded
ACCESSORY VEIN COURSE:	Straight or concave	PRINCIPAL VEIN TERM.:	Marginal, at apex
NOTES			
Specimens used to complete morphopheet are: 1701-62B, 1701-50			



0.5 cm

MORPHOTYPE	NAME		<i>Platanites raynoldsii</i> (Pinnate)			
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	Platanaceae	ORGAN TYPE	Leaf
EXEMPLAR LOC.	LAS1706	EXEMPLAR	1706-40C	OTHERS LOC.	LAS1701	
DIAGNOSTIC FEATURES OF MORPHOTYPE			Serrate teeth that resemble hooks with non-specific glands.			
Teeth only have one order and approximately 2 teeth/cm. When base is preserved, it is			concave-convex.			
			MQI: _____			
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES						
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved			
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np			
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved			
BLADE SIZE:	Microphyl	PETIOLE BASE:	Not Preserved			
BLADE SHAPE:	Ovate	PETIOLE GLANDS.:	Not Preserved			
BLADE RATIO L:W:	2:1	PETIOLE X-SECTION:	Not Preserved			
LOBATION:	Unlobed	MARGIN TYPE	Serrate			
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical			
BASE SHAPE:	Concave-convex	APEX SHAPE:	Acuminate	Special Margin Features:	Not Preserved	
BASE ANGLE:	Acute	APEX ANGLE:	Acute	Terminal apex features:	Not Preserved	
PRIMARY & SECONDARY VEIN FEATURES						
PRIMARY VENATION:	Pinnate	NAKED BASAL VEINS:	Absent			
MAJOR 2° Framework:	Craspedodromous	N° BASAL VEINS:	1	Interior 2°:	Absent	
MAJOR 2° Attachment:	Decurrent	MINOR-2° Course:				
MAJOR 2° SPACING:	Regular	MAJOR 2° VEIN ANGLE:	Inconsistent			
INTER-2° proximal course:		AGROPHIC VEINS:	Absent			
INTER-2° distal course:		INTER-2° VEIN LENGTH:				
		INTER-2° FREQUENCY:				
TERTIARY VEIN FEATURES						
INTERCOSTAL 3°:	Opposite percurrent - convex	PERIMARGINAL VEINS:	None			
EPIMEDIAL 3°:	Opposite percurrent	INTER-3° ANGLE TO 1°:	Obtuse to midvein			
ADMEDIAL COURSE:	Perpendicular to midvein	EXTERIOR 3° COURSE:	Looped			
EXMEDIAL COURSE:	Basiflexed	INTERCOSTAL 3° VARIABILITY:	Consistent			
FOURTH & HIGHER ORDER VEIN FEATURES						
4° VEIN FABRIC:	Mixed percurrent	VEINLETS -F/E/V/s:	Not Preserved			
5° VEIN FABRIC:	Irregular reticulate	TYPE OF F.E.V. BRANCHING:	n.p			
MARGINAL VENATION:	Not Preserved	F.E.V.s TERMINATIONS:	Not Preserved			
AREOLATION:	Moderately developed	LEAF RANK:				
TOOTH FEATURES						
ORDERS OF TEETH:	1	No TEETH/cm:	2	TEETH GLANDULARITY:	Non-specific glandular	
TOOTH SHAPE:	cc/rt	TOOTH SPACING:	Regular			
PRINCIPAL VEIN:	Present	SINUS SHAPE:	Rounded			
ACCESSORY VEIN COURSE:	Straight or concave		PRINCIPAL VEIN TERM.:	Marginal, at apex		
NOTES						
Specimens used to complete morphopheet is: 1706-40C						



0.5 cm

MORPHOTYPE				NAME	<i>Trochodendroides genatrix</i>
GENERAL	MAJOR GROUP	INFERED FAMILY	<u>Trochodendraceae</u>	ORGAN TYPE	<u>Leaf</u>
EXEMPLAR LOC.	<u>HB1706</u>	EXEMPLAR	<u>1706-10</u>	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					
<u>Rounded teeth starting approximately half-way up the leaf margin. Teeth are regularly spaced and consistent. Shape can vary but all leaves are obovate</u>					
					MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	<u>Petiolate</u>	LEAFLET ORGANIZATION:	<u>Not Preserved</u>		
LEAF ARRANGEMENT:	<u>Not Preserved</u>	LEAFLET ATTACHMENT:	<u>np</u>		
LEAF ORGANIZATION:	<u>Not Preserved</u>	PETIOLE ATTACHMENT.:	<u>Not Preserved</u>		
BLADE SIZE:	<u>Nanophyll-Notophyll</u>	PETIOLE BASE:	<u>Not Preserved</u>		
BLADE SHAPE:	<u>Obovate</u>	PETIOLE GLANDS.:	<u>Not Preserved</u>		
BLADE RATIO L:W:	<u>1:1</u>	PETIOLE X-SECTION:	<u>Not Preserved</u>		
LOBATION:	<u>Unlobed</u>	MARGIN TYPE	<u>Crenate</u>		
BASE ASYMMETRY:	<u>Symmetrical</u>	MEDIAL SYMMETRY:	<u>Symmetrical</u>		
BASE SHAPE:	<u>Convex</u>	APEX SHAPE:	<u>Straight</u>	Special Margin Features:	<u>Not Preserved</u>
BASE ANGLE:	<u>Acute</u>	APEX ANGLE:	<u>Obtuse</u>	Terminal apex features:	<u>None</u>
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	<u>Basal actinodromous</u>	NAKED BASAL VEINS:	<u>Absent</u>		
MAJOR 2° Framework:	<u>Cladodromous</u>	N° BASAL VEINS:	<u>3</u>	Interior 2°:	<u>Present</u>
MAJOR 2° Attachment:	<u>Decurrent</u>	MINOR-2° Course:	<u>Not Preserved</u>		
MAJOR 2° SPACING:	<u>Regular</u>	MAJOR 2° VEIN ANGLE:	<u>Uniform</u>		
INTER-2° proximal course:	<u>Not Preserved</u>	AGROPHIC VEINS:	<u>Absent</u>		
INTER-2° distal course:	<u>Basiflexed, not perpendicular to subjacent secondary</u>	INTER-2° VEIN LENGTH:	<u><50% of subjacent 2°</u>		
		INTER-2° FREQUENCY:	<u>>1 per intercostal area</u>		
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	<u>Opposite percurrent - straight</u>	PERIMARGINAL VEINS:	<u>Not Preserved</u>		
EPIMEDIAL 3°:	<u>Opposite percurrent</u>	INTER-3° ANGLE TO 1°:	<u>Acute to midvein</u>		
ADMEDIAL COURSE:	<u>Acute to midvein</u>	EXTERIOR 3° COURSE:	<u>Variable</u>		
EXMEDIAL COURSE:	<u>Basiflexed</u>	INTERCOSTAL 3° VARIABILITY:	<u>Consistent</u>		
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	<u>Opposite percurrent</u>	VEINLETS -F/E/V/s:	<u>Not Preserved</u>		
5° VEIN FABRIC:	<u>Irregular reticulate</u>	TYPE OF F.E.V. BRANCHING:	<u>n.p</u>		
MARGINAL VENATION:	<u>Not Preserved</u>	F.E.V.s TERMINATIONS:	<u>Not Preserved</u>		
AREOLATION:	<u>Moderately developed</u>	LEAF RANK:			
TOOTH FEATURES					
ORDERS OF TEETH:	<u>1</u>	No TEETH/cm:	<u>4</u>	TEETH GLANDULARITY:	<u>None</u>
TOOTH SHAPE:	<u>r/cv</u>	TOOTH SPACING:	<u>Regular</u>		
PRINCIPAL VEIN:	<u>Present</u>	SINUS SHAPE:	<u>variable</u>		
ACCESSORY VEIN COURSE:	<u>Looped</u>	PRINCIPAL VEIN TERM.:	<u>Marginal, at apex</u>		
NOTES					
Morphosheet completed using specimens: 1706-10, 1701-41					



MORPHOTYPE				NAME	<i>Zizyphoides flabella</i>
GENERAL	MAJOR GROUP	DIC	INFERED FAMILY	ORGAN TYPE	Leaf
EXEMPLAR LOC.	1701	EXEMPLAR	1701-84, 1706-36B	OTHERS LOC.	
DIAGNOSTIC FEATURES OF MORPHOTYPE					Similar overall shape to <i>Trochodendroides</i> but without teeth. In lue of teeth, <i>Zizyphoides</i> has "lobes" within the top 1/3 of the leaf, similar to <i>Platanties</i> (Palmate). 2° framework is simple brochidodromous and cladodromous. Lastly, <i>Zizyphoides</i> has 5 basal veins.
					MQI: _____
LEAF ATTACHMENT, ORGANIZATION, SIZE, SHAPE AND PETIOLE FEATURES					
LEAF ATTACHMENT:	Petiolate	LEAFLET ORGANIZATION:	Not Preserved		
LEAF ARRANGEMENT:	Not Preserved	LEAFLET ATTACHMENT:	np		
LEAF ORGANIZATION:	Not Preserved	PETIOLE ATTACHMENT.:	Not Preserved		
BLADE SIZE:	Microphyll	PETIOLE BASE:	Not Preserved		
BLADE SHAPE:	Elliptic	PETIOLE GLANDS.:	Not Preserved		
BLADE RATIO L:W:	1:1	PETIOLE X-SECTION:	Not Preserved		
LOBATION:	Unlobed	MARGIN TYPE	Untoothed		
BASE ASYMMETRY:	Symmetrical	MEDIAL SYMMETRY:	Symmetrical		
BASE SHAPE:	Concave	APEX SHAPE:	Straight	Special Margin Features:	Not Preserved
BASE ANGLE:	Obtuse	APEX ANGLE:	Wide obtuse	Terminal apex features:	None
PRIMARY & SECONDARY VEIN FEATURES					
PRIMARY VENATION:	Basal actinodromous		NAKED BASAL VEINS:	Absent	
MAJOR 2° Framework:	Mixed framework		N° BASAL VEINS:	5	Interior 2°: Absent
MAJOR 2° Attachment:	Decurrent	MAJOR 2° VEIN ANGLE:	Smoothly decreasing toward base		
MAJOR 2° SPACING:	Decreasing proximally		AGROPHIC VEINS:	Absent	
INTER-2° proximal course:			INTER-2° VEIN LENGTH:		
INTER-2° distal course:			INTER-2° FREQUENCY:		
TERTIARY VEIN FEATURES					
INTERCOSTAL 3°:	Not Preserved		PERIMARGINAL VEINS:	Not Preserved	
EPIMEDIAL 3°:	Not preserved		INTER-3° ANGLE TO 1°:	Not Preserved	
ADMEDIAL COURSE:	Not Preserved		EXTERIOR 3° COURSE:	Not Preserved	
EXMEDIAL COURSE:	Not Preserved		INTERCOSTAL 3° VARIABILITY:	Not Preserved	
FOURTH & HIGHER ORDER VEIN FEATURES					
4° VEIN FABRIC:	Not Preserved		VEINLETS -F/E/V/s:	Not Preserved	
5° VEIN FABRIC:	Not Preserved		TYPE OF F.E.V. BRANCHING:	n.p	
MARGINAL VENATION:	Not Preserved		F.E.V.s TERMINATIONS:	Not Preserved	
AREOLATION:	Not Preserved		LEAF RANK:		
TOOTH FEATURES					
ORDERS OF TEETH:			No TEETH/cm:		
TOOTH SHAPE:			TEETH GLANDULARITY:		
PRINCIPAL VEIN:			TOOTH SPACING:		
ACCESSORY VEIN COURSE:			SINUS SHAPE:		
			PRINCIPAL VEIN TERM.:		
NOTES					
Specimens used to complete morphosheet: 1701-84, 1706-36B					

42

0.5 cm

