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Ecological effects of the Paleozoic-Modern faunal transition: Comparing predation on Paleozoic brachiopods and molluscs

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SUPPLEMENTAL MATERIAL

We bulk-collected sediment and fossils from 33 fossiliferous horizons from eleven localities within the five shales: East Mountain Shale (Mineral Wells Fm.), Placid Shale (Brad Fm.), Colony Creek Shale (Caddo Creek Fm.), Finis Shale, and Wayland Shale (both in the Graham Fm.) (Fig. S1). The samples contained 9773 specimens from 55 brachiopod, gastropod, and bivalve genera. Each shale is typically about 7-10 meters thick in north-central Texas, and alternates with limestone units throughout the stratigraphic interval. Although the limestones are also fossiliferous, studies of predation traces require whole specimens for analysis, which would be difficult to obtain in numbers from the limestones without causing damage to the fossils; thus our study is restricted to the shales.

Horizons were chosen for the abundance and diversity of fossils; all horizons included both brachiopods and benthic molluscs. Horizons and specimens do not show any evidence for extensive transport; there is very little abrasion or fragmentation and specimens do not exhibit strong differential preservation across or within clades. The fossil communities from the five units are similar in composition; although there are differences in abundance among taxa as described in the Discussion, there is less difference in which taxa are present.

The specimens were wet-sieved to remove sediment and then identified and analyzed for both crushing and drilling traces (Fig. S2). Care must be taken to confirm that a scar or trace is due to predation, and not to other causes (e.g., post-mortem compaction). Similarly, holes that are predatory in origin must be distinguished from holes produced by domicile-dwellers or holes produced abiotically. We used a well-established and conservative set of criteria that has been used extensively in previous studies to identify predatory traces. The following evidence was used to identify predatory crushing scars. (a) The scar is a point-fracture. (b) Scar shape is non-random, e.g., trapezoidal, triangular, circular. (c) The scar will not be perfectly parallel to growth lines. (d) The damage has been repaired. (e) Scars on opposite sides of the shell match, implying that a predator enclosed and attempted to crush the prey. Such pairing will not always occur, as

not all predators can enclose the prey, but examples of pairing are strong evidence for a predatory origin of the scars.

We identified boreholes as predatory in origin if they possessed the following attributes: (a) are circular, (b) perpendicular to the shell surface, (c) penetrate only one valve, (d) are drilled from the outside of the shell, (e) involve only one successful hole per individual prey, and (f) are distributed in a stereotypic manner because the predator preferentially drills a particular area of the shell. There are notable exceptions to the crushing and drilling criteria (Bishop, 1975; Alexander, 1981; Baumiller, 1990; Brown and Alexander, 1994; Leighton, 2011) but all of these exceptions are cases in which a predatory trace does not match the criteria (e.g., some crushing scars are exactly parallel to growth-lines because the shell is designed to fail in that manner to prevent propagation of the fracture; parasitic drillers may drill multiple complete holes) as opposed to cases where a non-predatory genesis produced similar evidence, and so use of the criteria, as in the present study, is conservative (see Ausich and Gurrola, 1979; Kitchell et al., 1981; Smith et al., 1985; Alexander, 1986, 1989; Elliot and Bounds, 1987; Vermeij, 1987; Kelley, 1988; Kowalewski et al., 1998; Dietl et al., 2000; Leighton, 2001, 2002, 2003, 2011; Alexander and Dietl, 2003 for detailed explanations as to why these criteria are appropriate and examples of their use).

Repair frequency was calculated conservatively; only repaired individuals were considered to have experienced predation, and the repair frequency equals the number of repaired individuals out of the total population for that clade in that unit. A specimen with two scars was only counted once, so as to avoid the possibility of counting two scars from the same attack twice. As drill holes can be distinguished more easily, drilling frequency was counted as the number of predatory drill holes out of the total population for that clade in each unit. Our analyses were restricted to either articulated specimens or to a designated valve (pedicle valves for brachiopods, left valves for bivalves) in the case of disarticulated specimens, so no corrections to the predation metrics were necessary. As noted in Leighton (2011), corrections to adjust for disarticulation may be inappropriate in cases in which the two valves are not symmetrical (such as is the case for brachiopods) because there is typically a preference for one valve on the part of the predator. In addition, because of the high rate of articulation for both brachiopods (87%) and bivalves (97%), a correction for disarticulated specimens would not have had a major impact. Chi-square tests were performed to test for differences between higher taxa and morphological divisions; the raw data, rather than percentages, were used for the statistical tests, and a Bonferroni Correction was applied to the p-values to account for multiple comparisons.

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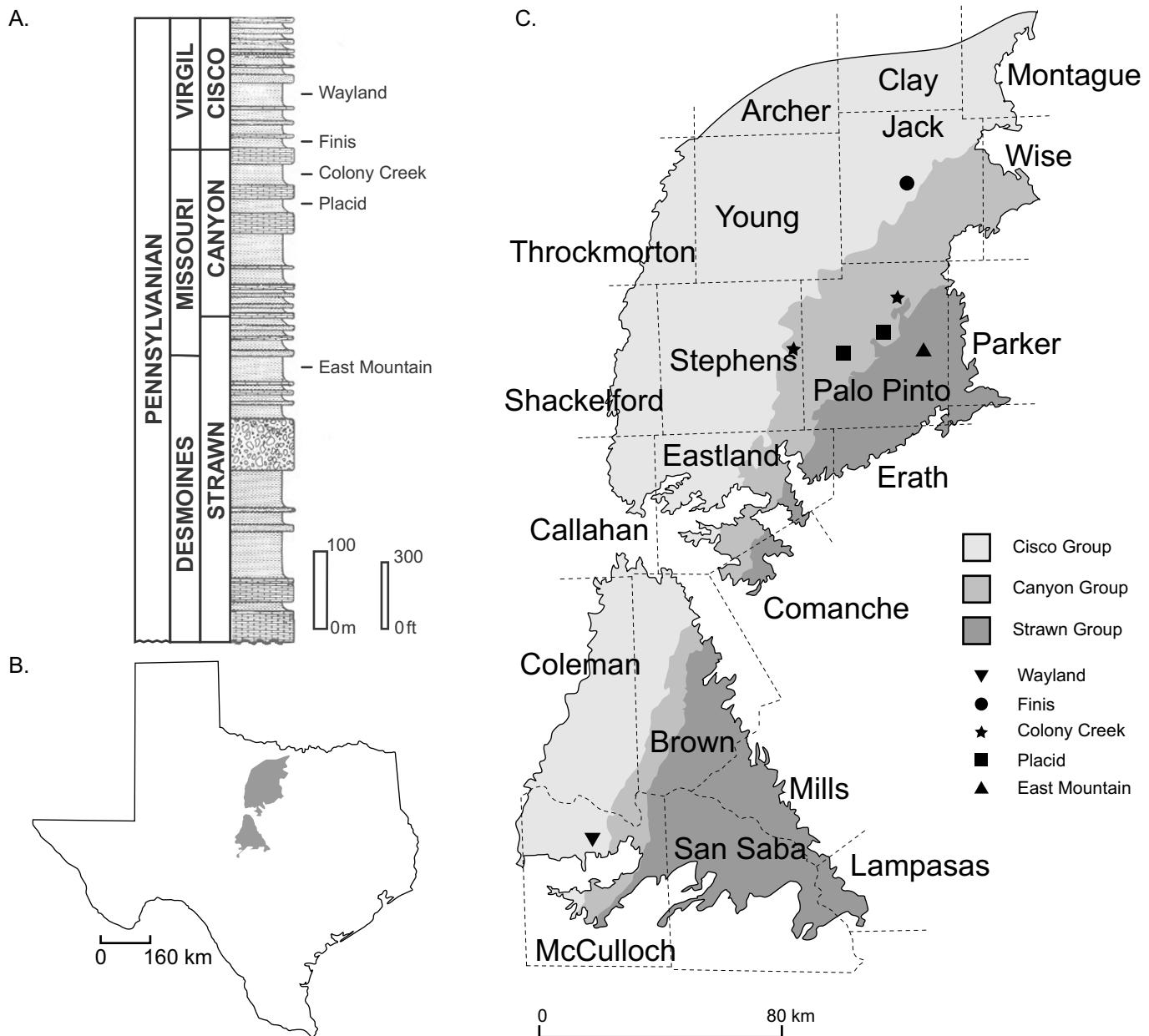


Figure DR1. A. Stratigraphic column indicating shale horizons from which samples were collected; B. map indicating general location of Pennsylvanian outcrop in North Central Texas (gray shading); C. locality map of sample sites from Wayland Shale (inverted triangle), Finis Shale (circle), Colony Creek Shale (star), Placid shale (square), and East Mountain Shale (triangle). Some localities are too close together to be distinguished on the map.

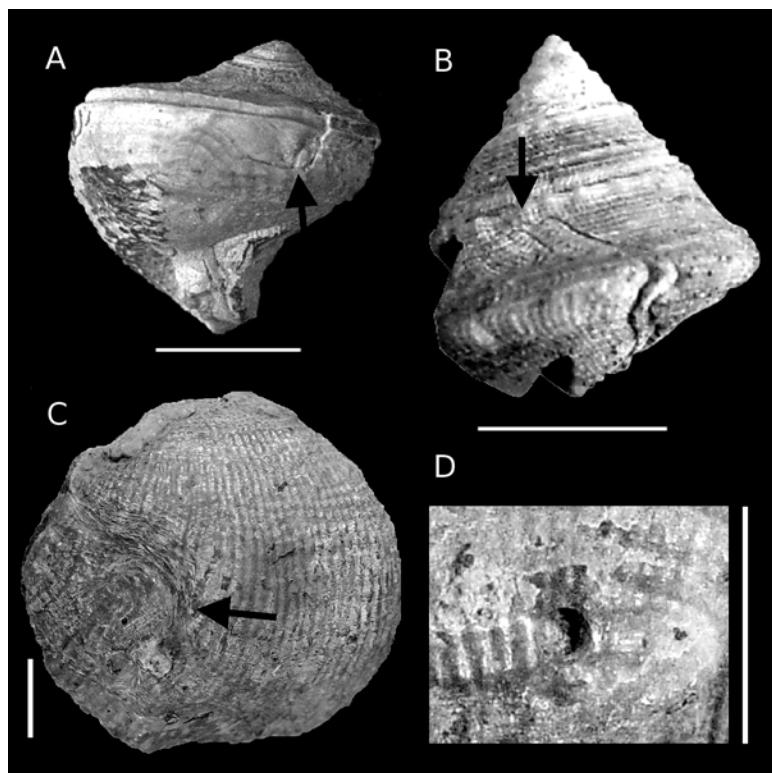


Figure DR2. Examples of predatory traces. Repair scars (arrow) on A. *Glabrocingulum*, B. *Phymatopleura*, C. *Reticulatia*. D. Close-up of complete drill hole. Scale bar = 1 cm in all images.

Table DR1. Summary by Unit

	Clade	Abundance	Drills	Drill %	Crushes	Crush %
Wayland	Straporolus	86	1	1.16%	24	27.91%
	High-Spired Gpods	27	0	0.00%	4	14.81%
	Pleurotomarin	741	0	0.00%	184	24.83%
	Bellerophontid	313	0	0.00%	32	10.22%
	TOTAL GASTROPOD	1167	1	0.09%	244	20.91%
	TOTAL BIVALVE	199	0	0.00%	4	2.01%
	Chonetidines	7	0	0.00%	0	0.00%
	Sm Strophomenata	61	2	3.28%	19	31.15%
	Lg Strophomenata	32	1	3.13%	4	12.50%
	Rhynchonellata	273	0	0.00%	8	2.93%
Finis	TOTAL BRACHIOPOD	373	3	0.80%	31	8.31%
	TOTAL	1739	4	0.23%	279	16.04%
	Straporolus	142	2	1.41%	22	15.49%
	High-Spired Gpods	38	0	0.00%	1	2.63%
	Pleurotomarin	456	0	0.00%	111	24.34%
	Bellerophontid	41	0	0.00%	3	7.32%
	TOTAL GASTROPOD	677	2	0.30%	137	20.24%
	TOTAL BIVALVE	259	0	0.00%	4	1.54%
	Chonetids	450	0	0.00%	69	15.33%
	Sm Strophomenata	726	20	2.75%	330	45.45%
Colony Cre	Lg Strophomenata	44	6	13.64%	24	54.55%
	Rhynchonellata	1128	8	0.71%	25	2.22%
	TOTAL BRACHIOPOD	2348	34	1.45%	448	19.08%
	TOTAL	3284	36	1.10%	589	17.94%
	Straporolus	51	0	0.00%	15	29.41%
	High-Spired Gpods	181	0	0.00%	8	4.42%
	Pleurotomarin	1151	0	0.00%	131	11.38%
	Bellerophontid	216	0	0.00%	40	18.52%
	TOTAL GASTROPOD	1599	0	0.00%	194	12.13%
	TOTAL BIVALVE	112	0	0.00%	3	2.68%
Placid	Chonetids	27	0	0.00%	4	14.81%
	Sm Strophomenata	6	0	0.00%	0	0.00%
	Lg Strophomenata	7	1	14.29%	3	42.86%
	Rhynchonellata	751	2	0.27%	10	1.33%
	TOTAL BRACHIOPOD	791	3	0.38%	17	2.15%
	TOTAL	2502	3	0.12%	214	8.55%
	Straporolus	64	0	0.00%	14	21.88%
	High-Spired Gpods	86	0	0.00%	6	6.98%
	Pleurotomarin	130	0	0.00%	25	19.23%
	Bellerophontid	41	0	0.00%	4	9.76%

	TOTAL GASTROPOD	321	0	0.00%	49	15.26%
	TOTAL BIVALVE	24	0	0.00%	0	0.00%
	Chonetids	19	0	0.00%	5	26.32%
	Sm Strophomenata	5	0	0.00%	1	20.00%
	Lg Strophomenata	25	1	4.00%	6	24.00%
	Rhynchonellata	217	0	0.00%	7	3.23%
	TOTAL BRACHIOPOD	266	1	0.38%	19	7.14%
	TOTAL	611	1	0.16%	68	11.13%
EMS	Straporolus	28	0	0.00%	7	25.00%
	High-Spired Gpods	9	0	0.00%	1	11.11%
	Pleurotomarin	464	0	0.00%	59	12.72%
	Bellerophontid	235	0	0.00%	9	3.83%
	TOTAL GASTROPOD	736	0	0.00%	76	10.33%
	TOTAL BIVALVE	124	0	0.00%	3	2.42%
	Chonetids	647	8	1.24%	7	1.08%
	Sm Strophomenata	5	2	40.00%	1	20.00%
	Lg Strophomenata	18	2	11.11%	2	11.11%
	Rhynchonellata	107	1	0.93%	3	2.80%

TOTAL SUMMARY

	Clade	Abundance	Drills	Drill %	Crushes	Crush %
All Units	Straporolus	371	3	0.81%	82	22.10%
	High-Spired Gpods	341	0	0.00%	20	5.87%
	Pleurotomarin	2942	0	0.00%	510	17.34%
	Bellerophontid	846	0	0.00%	88	10.40%
	TOTAL GASTROPOD	4500	3	0.07%	700	15.56%
	TOTAL BIVALVE	718	0	0.00%	14	1.95%
	Chonetids	1150	8	0.70%	85	7.39%
	Sm Strophomenata	803	24	2.99%	351	43.71%
	Lg Strophomenata	126	11	8.73%	39	30.95%
	Rhynchonellata	2476	11	0.44%	53	2.14%
	TOTAL BRACHIOPOD	4555	54	1.19%	528	11.59%
	TOTAL	9773	57	0.58%	1242	12.71%

Table DR2. Summary by Genera

Unit	Locality	Genus	Abundance	CompDrill	TotDrills	%Drills	%Success	Repairs	% Repairs
Wayland	Fife	<i>Straporallus</i>	86	0	1	1.2%	0.0%	24	27.9%
Finis	Jacksboro Flats	<i>Straporallus</i>	37	0	0	0.0%		8	21.6%
Finis	NE Jacksboro Spillway	<i>Straporallus</i>	45	1	1	2.2%	100.0%	5	11.1%
Finis	SW Jacksboro Spillway	<i>Straporallus</i>	60	1	1	1.7%	100.0%	9	15.0%
Colony Creek	Colony Creek 180	<i>Straporallus</i>	12	0	0	0.0%		5	41.7%
Colony Creek	East Brownwood Lake	<i>Straporallus</i>	22	0	0	0.0%		5	22.7%
Colony Creek	West Brownwood Lake	<i>Straporallus</i>	17	0	0	0.0%		5	29.4%
Placid	337 Outcrop	<i>Straporallus</i>	53	0	0	0.0%		11	20.8%
Placid	P-Road 36	<i>Straporallus</i>	11	0	0	0.0%		3	27.3%
Mineral Wells	Long 180 Outcrop	<i>Straporallus</i>	28	0	0	0.0%		7	25.0%
		<i>Straporallus</i>	371	2	3	0.8%	66.7%	82	22.1%
		Sessile Gastropods	371	2	3	0.8%	66.7%	82	22.1%
Finis	Jacksboro Flats	<i>Goniasma</i>	2	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Goniasma</i>	1	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Goniasma</i>	56	0	0	0.0%		4	7.1%
		<i>Goniasma</i>	59	0	0	0.0%		4	6.8%
Wayland	Fife	<i>Ianthinopsis</i>	7	0	0	0.0%		1	14.3%
Finis	Jacksboro Flats	<i>Ianthinopsis</i>	13	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Ianthinopsis</i>	7	0	0	0.0%		1	14.3%
Colony Creek	Colony Creek 180	<i>Ianthinopsis</i>	43	0	0	0.0%		4	9.3%
Colony Creek	East Brownwood Lake	<i>Ianthinopsis</i>	4	0	0	0.0%		2	50.0%
Colony Creek	West Brownwood Lake	<i>Ianthinopsis</i>	30	0	0	0.0%		0	0.0%
Placid	337 Outcrop	<i>Ianthinopsis</i>	10	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Ianthinopsis</i>	10	0	0	0.0%		1	10.0%
Mineral Wells	Long 180 Outcrop	<i>Ianthinopsis</i>	8	0	0	0.0%		1	12.5%
		<i>Ianthinopsis</i>	132	0	0	0.0%		10	7.6%
Wayland	Fife	<i>Leptoptygma</i>	1	0	0	0.0%		1	100.0%
Finis	Jacksboro Flats	<i>Leptoptygma</i>	1	0	0	0.0%		0	0.0%
Finis	NE Jacksboro Spillway	<i>Leptoptygma</i>	2	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Leptoptygma</i>	1	0	0	0.0%		0	0.0%
Colony Creek	Colony Creek 180	<i>Leptoptygma</i>	1	0	0	0.0%		0	0.0%
		<i>Leptoptygma</i>	6	0	0	0.0%		1	16.7%
Wayland	Fife	<i>Meekospira</i>	17	0	0	0.0%		1	5.9%
Finis	Jacksboro Flats	<i>Meekospira</i>	5	0	0	0.0%		0	0.0%
Finis	NE Jacksboro Spillway	<i>Meekospira</i>	1	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Meekospira</i>	4	0	0	0.0%		0	0.0%
Colony Creek	Colony Creek 180	<i>Meekospira</i>	2	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Meekospira</i>	99	0	0	0.0%		2	2.0%
Placid	337 Outcrop	<i>Meekospira</i>	4	0	0	0.0%		0	0.0%
		<i>Meekospira</i>	132	0	0	0.0%		3	2.3%
Finis	NE Jacksboro Spillway	<i>Orthonema</i>	1	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Orthonema</i>	5	0	0	0.0%		1	20.0%
Mineral Wells	Long 180 Outcrop	<i>Orthonema</i>	1	0	0	0.0%		0	0.0%
		<i>Orthonema</i>	7	0	0	0.0%		1	14.3%
Wayland	Fife	<i>Palaeostylus</i>	1	0	0	0.0%		1	100.0%
Colony Creek	Colony Creek 180	<i>Palaeostylus</i>	1	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Palaeostylus</i>	1	0	0	0.0%		0	0.0%
		<i>Palaeostylus</i>	3	0	0	0.0%		1	33.3%
Placid	P-Road 36	<i>Stegocoelia (Taosia)</i>	1	0	0	0.0%		0	0.0%
		<i>Stegocoelia (Taosia)</i>	1	0	0	0.0%		0	0.0%
Wayland	Fife	<i>Streptacis</i>	1	0	0	0.0%		0	0.0%
		<i>Streptacis</i>	1	0	0	0.0%		0	0.0%
		High-spired Gastropods	341	0	0	0.0%		20	5.9%
Wayland	Fife	<i>Glabrocingulum</i>	312	0	0	0.0%		55	17.6%
Finis	Jacksboro Flats	<i>Glabrocingulum</i>	114	0	0	0.0%		28	24.6%
Finis	NE Jacksboro Spillway	<i>Glabrocingulum</i>	40	0	0	0.0%		7	17.5%

Finis	SW Jacksboro Spillway	<i>Glabrocingulum</i>	81	0	0	0.0%	20	24.7%
Colony Creek	Colony Creek 180	<i>Glabrocingulum</i>	142	0	0	0.0%	19	13.4%
Colony Creek	East Brownwood Lake	<i>Glabrocingulum</i>	510	0	0	0.0%	17	3.3%
Colony Creek	West Brownwood Lake	<i>Glabrocingulum</i>	250	0	0	0.0%	21	8.4%
Placid	337 Outcrop	<i>Glabrocingulum</i>	53	0	0	0.0%	5	9.4%
Placid	P-Road 36	<i>Glabrocingulum</i>	19	0	0	0.0%	4	21.1%
Mineral Wells	Long 180 Outcrop	<i>Glabrocingulum</i>	425	0	0	0.0%	48	11.3%
		<i>Glabrocingulum</i>	1946	0	0	0.0%	224	11.5%
Wayland	Fife	<i>Phymatopleura</i>	17	0	0	0.0%	9	52.9%
Finis	Jacksboro Flats	<i>Phymatopleura</i>	25	0	0	0.0%	7	28.0%
Finis	NE Jacksboro Spillway	<i>Phymatopleura</i>	15	0	0	0.0%	7	46.7%
Finis	SW Jacksboro Spillway	<i>Phymatopleura</i>	24	0	0	0.0%	11	45.8%
Colony Creek	Colony Creek 180	<i>Phymatopleura</i>	34	0	0	0.0%	19	55.9%
Colony Creek	East Brownwood Lake	<i>Phymatopleura</i>	46	0	0	0.0%	18	39.1%
Colony Creek	West Brownwood Lake	<i>Phymatopleura</i>	28	0	0	0.0%	8	28.6%
Placid	337 Outcrop	<i>Phymatopleura</i>	12	0	0	0.0%	5	41.7%
Placid	P-Road 36	<i>Phymatopleura</i>	3	0	0	0.0%	2	66.7%
Mineral Wells	Long 180 Outcrop	<i>Phymatopleura</i>	25	0	0	0.0%	9	36.0%
		<i>Phymatopleura</i>	229	0	0	0.0%	95	41.5%
Wayland	Fife	<i>Shansiella</i>	1	0	0	0.0%	1	100.0%
Placid	P-Road 36	<i>Shansiella</i>	1	0	0	0.0%	0	0.0%
Mineral Wells	Long 180 Outcrop	<i>Shansiella</i>	2	0	0	0.0%	1	50.0%
		<i>Shansiella</i>	4	0	0	0.0%	2	50.0%
Wayland	Fife	<i>Trepostira</i>	332	0	0	0.0%	88	26.5%
Finis	Jacksboro Flats	<i>Trepostira</i>	30	0	0	0.0%	5	16.7%
Finis	NE Jacksboro Spillway	<i>Trepostira</i>	11	0	0	0.0%	1	9.1%
Finis	SW Jacksboro Spillway	<i>Trepostira</i>	38	0	0	0.0%	4	10.5%
Colony Creek	Colony Creek 180	<i>Trepostira</i>	43	0	0	0.0%	4	9.3%
Colony Creek	East Brownwood Lake	<i>Trepostira</i>	11	0	0	0.0%	0	0.0%
Colony Creek	West Brownwood Lake	<i>Trepostira</i>	4	0	0	0.0%	0	0.0%
Placid	337 Outcrop	<i>Trepostira</i>	33	0	0	0.0%	6	18.2%
Mineral Wells	Long 180 Outcrop	<i>Trepostira</i>	12	0	0	0.0%	1	8.3%
		<i>Trepostira</i>	514	0	0	0.0%	109	21.2%
Wayland	Fife	<i>Worthenia</i>	79	0	0	0.0%	31	39.2%
Finis	Jacksboro Flats	<i>Worthenia</i>	39	0	0	0.0%	11	28.2%
Finis	NE Jacksboro Spillway	<i>Worthenia</i>	11	0	0	0.0%	3	27.3%
Finis	SW Jacksboro Spillway	<i>Worthenia</i>	28	0	0	0.0%	7	25.0%
Colony Creek	Colony Creek 180	<i>Worthenia</i>	39	0	0	0.0%	12	30.8%
Colony Creek	East Brownwood Lake	<i>Worthenia</i>	30	0	0	0.0%	9	30.0%
Colony Creek	West Brownwood Lake	<i>Worthenia</i>	14	0	0	0.0%	4	28.6%
Placid	337 Outcrop	<i>Worthenia</i>	4	0	0	0.0%	2	50.0%
Placid	P-Road 36	<i>Worthenia</i>	5	0	0	0.0%	1	20.0%
		<i>Worthenia</i>	249	0	0	0.0%	80	32.1%
		<i>Pleurotomari Gastropod</i>	2942	0	0	0.0%	510	17.3%
Colony Creek	Colony Creek 180	<i>Bellerophon</i>	10	0	0	0.0%	2	20.0%
Colony Creek	East Brownwood Lake	<i>Bellerophon</i>	82	0	0	0.0%	25	30.5%
Colony Creek	West Brownwood Lake	<i>Bellerophon</i>	27	0	0	0.0%	8	29.6%
Placid	337 Outcrop	<i>Bellerophon</i>	2	0	0	0.0%	1	50.0%
Placid	P-Road 36	<i>Bellerophon</i>	2	0	0	0.0%	1	50.0%
Mineral Wells	Long 180 Outcrop	<i>Bellerophon</i>	18	0	0	0.0%	2	11.1%
		<i>Bellerophon</i>	141	0	0	0.0%	39	27.7%
Wayland	Fife	<i>Euphemites</i>	108	0	0	0.0%	8	7.4%
Finis	Jacksboro Flats	<i>Euphemites</i>	29	0	0	0.0%	1	3.4%
Finis	SW Jacksboro Spillway	<i>Euphemites</i>	3	0	0	0.0%	1	33.3%
Colony Creek	Colony Creek 180	<i>Euphemites</i>	40	0	0	0.0%	2	5.0%
Colony Creek	East Brownwood Lake	<i>Euphemites</i>	10	0	0	0.0%	1	10.0%
Colony Creek	West Brownwood Lake	<i>Euphemites</i>	2	0	0	0.0%	0	0.0%
Placid	337 Outcrop	<i>Euphemites</i>	17	0	0	0.0%	1	5.9%
Placid	P-Road 36	<i>Euphemites</i>	18	0	0	0.0%	1	5.6%
Mineral Wells	Long 180 Outcrop	<i>Euphemites</i>	35	0	0	0.0%	1	2.9%

		Euphemites	262	0	0	0.0%	16	6.1%	
Wayland	Fife	<i>Knightites</i>	6	0	0	0.0%	2	33.3%	
Colony Creek	Colony Creek 180	<i>Knightites</i>	2	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Knightites</i>	3	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Knightites</i>	7	0	0	0.0%	1	14.3%	
Placid	337 Outcrop	<i>Knightites</i>	2	0	0	0.0%	0	0.0%	
Mineral Wells	Long 180 Outcrop	<i>Knightites</i>	147	0	0	0.0%	5	3.4%	
		<i>Knightites</i>	167	0	0	0.0%	8	4.8%	
Wayland	Fife	<i>Pharkidonotus</i>	199	0	0	0.0%	22	11.1%	
Finis	NE Jacksboro Spillway	<i>Pharkidonotus</i>	4	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Pharkidonotus</i>	5	0	0	0.0%	1	20.0%	
Colony Creek	Colony Creek 180	<i>Pharkidonotus</i>	5	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Pharkidonotus</i>	13	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Pharkidonotus</i>	15	0	0	0.0%	1	6.7%	
Mineral Wells	Long 180 Outcrop	<i>Pharkidonotus</i>	35	0	0	0.0%	1	2.9%	
		<i>Pharkidonotus</i>	276	0	0	0.0%	25	9.1%	
		Bellerophontid Gastropods	846	0	0	0.0%	88	10.4%	
		GASTROPODA	4500	2	3	0.1%	66.7%	700	15.6%
Wayland	Fife	<i>Astartella</i>	89	0	0	0.0%	3	3.4%	
Finis	Jacksboro Flats	<i>Astartella</i>	53	0	0	0.0%	1	1.9%	
Finis	NE Jacksboro Spillway	<i>Astartella</i>	37	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Astartella</i>	6	0	0	0.0%	0	0.0%	
Colony Creek	Colony Creek 180	<i>Astartella</i>	8	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Astartella</i>	36	0	0	0.0%	2	5.6%	
Colony Creek	West Brownwood Lake	<i>Astartella</i>	14	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Astartella</i>	10	0	0	0.0%	0	0.0%	
Placid	P-Road 36	<i>Astartella</i>	2	0	0	0.0%	0	0.0%	
Mineral Wells	Long 180 Outcrop	<i>Astartella</i>	63	0	0	0.0%	3	4.8%	
		<i>Astartella</i>	318	0	0	0.0%	9	2.8%	
Colony Creek	East Brownwood Lake	<i>Aviculopecten</i>	1	0	0	0.0%	0	0.0%	
Mineral Wells	Long 180 Outcrop	<i>Aviculopecten</i>	9	0	0	0.0%	0	0.0%	
		<i>Aviculopecten</i>	10	0	0	0.0%	0	0.0%	
Wayland	Fife	<i>Nuculopsis</i>	89	0	0	0.0%	1	1.1%	
Finis	Jacksboro Flats	<i>Nuculopsis</i>	29	0	0	0.0%	0	0.0%	
Finis	NE Jacksboro Spillway	<i>Nuculopsis</i>	12	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Nuculopsis</i>	9	0	0	0.0%	0	0.0%	
Colony Creek	Colony Creek 180	<i>Nuculopsis</i>	9	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Nuculopsis</i>	20	0	0	0.0%	1	5.0%	
Colony Creek	West Brownwood Lake	<i>Nuculopsis</i>	11	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Nuculopsis</i>	2	0	0	0.0%	0	0.0%	
Placid	P-Road 36	<i>Nuculopsis</i>	6	0	0	0.0%	0	0.0%	
Mineral Wells	Long 180 Outcrop	<i>Nuculopsis</i>	12	0	0	0.0%	0	0.0%	
Mineral Wells	Methodist Church	<i>Nuculopsis</i>	13	0	0	0.0%	0	0.0%	
		<i>Nuculopsis</i>	212	0	0	0.0%	2	0.9%	
Finis	Jacksboro Flats	<i>Palaeoneilo</i>	1	0	0	0.0%	0	0.0%	
Mineral Wells	Methodist Church	<i>Palaeoneilo</i>	9	0	0	0.0%	0	0.0%	
		<i>Palaeoneilo</i>	10	0	0	0.0%	0	0.0%	
Wayland	Fife	<i>Paleyoldia</i>	1	0	0	0.0%	0	0.0%	
Finis	Jacksboro Flats	<i>Paleyoldia</i>	35	0	0	0.0%	1	2.9%	
Finis	NE Jacksboro Spillway	<i>Paleyoldia</i>	1	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Paleyoldia</i>	34	0	0	0.0%	1	2.9%	
Mineral Wells	Long 180 Outcrop	<i>Paleyoldia</i>	3	0	0	0.0%	0	0.0%	
		<i>Paleyoldia</i>	74	0	0	0.0%	2	2.7%	
Wayland	Fife	<i>Phestia</i>	16	0	0	0.0%	0	0.0%	
Finis	Jacksboro Flats	<i>Phestia</i>	11	0	0	0.0%	1	9.1%	
Finis	NE Jacksboro Spillway	<i>Phestia</i>	7	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Phestia</i>	13	0	0	0.0%	0	0.0%	
Colony Creek	Colony Creek 180	<i>Phestia</i>	3	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Phestia</i>	9	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Phestia</i>	1	0	0	0.0%	0	0.0%	

Mineral Wells	Long 180 Outcrop	<i>Phestia</i>	2	0	0	0.0%	0	0.0%
Mineral Wells	Methodist Church	<i>Phestia</i>	10	0	0	0.0%	0	0.0%
		<i>Phestia</i>	72	0	0	0.0%	1	1.4%
Wayland	Fife	<i>Pterites</i>	1	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Pterites</i>	2	0	0	0.0%	0	0.0%
Finis	NE Jacksboro Spillway	<i>Pterites</i>	1	0	0	0.0%	0	0.0%
		<i>Pterites</i>	4	0	0	0.0%	0	0.0%
Wayland	Fife	<i>Schizodus</i>	3	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Schizodus</i>	2	0	0	0.0%	0	0.0%
Finis	NE Jacksboro Spillway	<i>Schizodus</i>	1	0	0	0.0%	0	0.0%
Mineral Wells	Methodist Church	<i>Schizodus</i>	3	0	0	0.0%	0	0.0%
		<i>Schizodus</i>	9	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Septimyalina</i>	1	0	0	0.0%	0	0.0%
Finis	SW Jacksboro Spillway	<i>Septimyalina</i>	1	0	0	0.0%	0	0.0%
		<i>Septimyalina</i>	2	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Volsellina</i>	1	0	0	0.0%	0	0.0%
Placid	P-Road 36	<i>Volsellina</i>	2	0	0	0.0%	0	0.0%
		<i>Volsellina</i>	3	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Wilkingia</i>	2	0	0	0.0%	0	0.0%
Placid	337 Outcrop	<i>Wilkingia</i>	2	0	0	0.0%	0	0.0%
		<i>Wilkingia</i>	4	0	0	0.0%	0	0.0%
		BIVALVIA	718	0	0	0.0%	14	1.9%
Finis	NE Jacksboro Spillway	<i>Antiquatonia</i>	1	0	0	0.0%	0	0.0%
Wayland	Fife	<i>Antiquitonaria</i>	2	0	0	0.0%	0	0.0%
Colony Creek	East Brownwood Lake	<i>Antiquitonaria</i>	1	0	0	0.0%	1	100.0%
Colony Creek	West Brownwood Lake	<i>Antiquitonaria</i>	1	0	0	0.0%	0	0.0%
		<i>Antiquitonaria</i>	5	0	0	0.0%	1	20.0%
Wayland	Fife	<i>Derbyia</i>	1	0	0	0.0%	0	0.0%
Colony Creek	Colony Creek 180	<i>Derbyia</i>	1	0	0	0.0%	0	0.0%
Placid	337 Outcrop	<i>Derbyia</i>	1	0	0	0.0%	0	0.0%
Placid	P-Road 36	<i>Derbyia</i>	2	0	0	0.0%	1	50.0%
Mineral Wells	Long 180 Outcrop	<i>Derbyia</i>	3	0	0	0.0%	1	33.3%
		<i>Derbyia</i>	8	0	0	0.0%	2	25.0%
Wayland	Fife	<i>Linoprotuctus</i>	2	0	0	0.0%	0	0.0%
Finis	Jacksboro Flats	<i>Linoprotuctus</i>	12	0	0	0.0%	7	58.3%
Finis	NE Jacksboro Spillway	<i>Linoprotuctus</i>	7	0	0	0.0%	3	42.9%
Finis	SW Jacksboro Spillway	<i>Linoprotuctus</i>	8	0	0	0.0%	3	37.5%
Placid	337 Outcrop	<i>Linoprotuctus</i>	1	0	0	0.0%	0	0.0%
Placid	P-Rd 36	<i>Linoprotuctus</i>	13	0	0	0.0%	3	23.1%
Mineral Wells	Long 180 Outcrop	<i>Linoprotuctus</i>	1	0	0	0.0%	1	100.0%
		<i>Linoprotuctus</i>	44	0	0	0.0%	17	38.6%
Finis	SW Jacksboro Spillway	<i>Parajuresania</i>	2	0	0	0.0%	0	0.0%
Placid	337 Outcrop	<i>Parajuresania</i>	1	0	0	0.0%	0	0.0%
Placid	P-Rd 36	<i>Parajuresania</i>	4	1	1	25.0% 100.0%	2	50.0%
Mineral Wells	Methodist Church	<i>Parajuresania</i>	1	0	0	0.0%	0	0.0%
Mineral Wells	Long 180 Outcrop	<i>Parajuresania</i>	6	1	2	33.3% 50.0%	0	0.0%
		<i>Parajuresania</i>	14	2	3	21.4% 66.7%	2	14.3%
Wayland	Fife	<i>Pulchratia</i>	17	0	0	0.0%	2	11.8%
Finis	Jacksboro Flats	<i>Pulchratia</i>	2	0	0	0.0%	1	50.0%
Finis	NE Jacksboro Spillway	<i>Pulchratia</i>	6	2	6	100.0% 33.3%	6	100.0%
Finis	SW Jacksboro Spillway	<i>Pulchratia</i>	3	0	0	0.0%	1	33.3%
Colony Creek	Colony Creek 180	<i>Pulchratia</i>	1	0	0	0.0%	0	0.0%
Colony Creek	East Brownwood Lake	<i>Pulchratia</i>	1	1	1	100.0% 100.0%	0	0.0%
Placid	P-Rd 36	<i>Pulchratia</i>	3	0	0	0.0%	0	0.0%
		<i>Pulchratia</i>	33	3	7	21.2% 42.9%	10	30.3%
Wayland	Fife	<i>Reticulatia</i>	10	0	1	10.0% 0.0%	2	20.0%
Finis	Jacksboro Flats	<i>Reticulatia</i>	1	0	0	0.0%	1	100.0%
Finis	SW Jacksboro Spillway	<i>Reticulatia</i>	2	0	0	0.0%	2	100.0%
Colony Creek	Colony Creek 180	<i>Reticulatia</i>	1	0	0	0.0%	1	100.0%
Colony Creek	West Brownwood Lake	<i>Reticulatia</i>	1	0	0	0.0%	1	100.0%

Mineral Wells	Methodist Church	<i>Reticulatia</i>	7	0	0	0.0%	0	0.0%	
		<i>Reticulatia</i>	22	0	1	4.5%	0.0%	7	31.8%
		Large NCCC Brachiopods	126	5	11	8.7%	45.5%	39	31.0%
Colony Creek	East Brownwood Lake	<i>Fimbrinia</i>	1	0	0	0.0%	0	0.0%	
Mineral Wells	Methodist Church	<i>Fimbrinia</i>	1	0	0	0.0%	0	0.0%	
		<i>Fimbrinia</i>	2	0	0	0.0%	0	0.0%	
Wayland	Fife	<i>Heterolosia</i>	3	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Heterolosia</i>	1	0	0	0.0%	0	0.0%	
		<i>Heterolosia</i>	4	0	0	0.0%	0	0.0%	
Wayland	Fife	<i>Hystriculina</i>	14	0	0	0.0%	4	28.6%	
Finis	Jacksboro Flats	<i>Hystriculina</i>	292	6	7	2.4%	85.7%	143	49.0%
Finis	NE Jacksboro Spillway	<i>Hystriculina</i>	41	2	2	4.9%	100.0%	19	46.3%
Finis	SW Jacksboro Spillway	<i>Hystriculina</i>	96	1	1	1.0%	100.0%	26	27.1%
Colony Creek	East Brownwood Lake	<i>Hystriculina</i>	1	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Hystriculina</i>	1	0	0	0.0%	1	100.0%	
Placid	P-Road 36	<i>Hystriculina</i>	2	0	0	0.0%	0	0.0%	
		<i>Hystriculina</i>	447	9	10	2.2%	90.0%	193	43.2%
Wayland	Fife	<i>Retaria</i>	44	2	2	4.5%	100.0%	15	34.1%
Finis	Jacksboro Flats	<i>Retaria</i>	191	2	8	4.2%	25.0%	103	53.9%
Finis	NE Jacksboro Spillway	<i>Retaria</i>	44	2	2	4.5%	100.0%	3	6.8%
Finis	SW Jacksboro Spillway	<i>Retaria</i>	61	0	0	0.0%	36	59.0%	
Colony Creek	East Brownwood Lake	<i>Retaria</i>	1	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Retaria</i>	3	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Retaria</i>	1	0	0	0.0%	0	0.0%	
Placid	P-Road 36	<i>Retaria</i>	1	0	0	0.0%	0	0.0%	
Mineral Wells	Long 180 Outcrop	<i>Retaria</i>	3	2	2	66.7%	100.0%	0	0.0%
Mineral Wells	Methodist Church	<i>Retaria</i>	1	0	0	0.0%	1	100.0%	
		<i>Retaria</i>	350	8	14	4.0%	57.1%	158	45.1%
		Small NCCC Brachiopods	803	17	24	3.0%	70.8%	351	43.7%
Wayland	Fife	<i>Chonetinella</i>	2	0	0	0.0%	0	0.0%	
Finis	Jacksboro Flats	<i>Chonetinella</i>	23	0	0	0.0%	3	13.0%	
Finis	NE Jacksboro Spillway	<i>Chonetinella</i>	40	0	0	0.0%	4	10.0%	
Finis	SW Jacksboro Spillway	<i>Chonetinella</i>	47	0	0	0.0%	11	23.4%	
Colony Creek	Colony Creek 180	<i>Chonetinella</i>	8	0	0	0.0%	0	0.0%	
Colony Creek	East Brownwood Lake	<i>Chonetinella</i>	7	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Chonetinella</i>	6	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Chonetinella</i>	9	0	0	0.0%	3	33.3%	
		<i>Chonetinella</i>	142	0	0	0.0%	21	14.8%	
Mineral Wells	Methodist Church	<i>Mesolobus</i>	533	1	7	1.3%	14.3%	4	0.8%
		<i>Mesolobus</i>	533	1	7	1.3%	14.3%	4	0.8%
Wayland	Fife	<i>Neochonetes</i>	5	0	0	0.0%	0	0.0%	
Finis	Jacksboro Flats	<i>Neochonetes</i>	93	0	0	0.0%	10	10.8%	
Finis	NE Jacksboro Spillway	<i>Neochonetes</i>	86	0	0	0.0%	16	18.6%	
Finis	SW Jacksboro Spillway	<i>Neochonetes</i>	161	0	0	0.0%	25	15.5%	
Colony Creek	Colony Creek 180	<i>Neochonetes</i>	1	0	0	0.0%	1	100.0%	
Colony Creek	East Brownwood Lake	<i>Neochonetes</i>	3	0	0	0.0%	1	33.3%	
Colony Creek	West Brownwood Lake	<i>Neochonetes</i>	2	0	0	0.0%	2	100.0%	
Placid	337 Outcrop	<i>Neochonetes</i>	8	0	0	0.0%	1	12.5%	
Placid	P-Road 36	<i>Neochonetes</i>	2	0	0	0.0%	1	50.0%	
Mineral Wells	Methodist Church	<i>Neochonetes</i>	114	1	1	0.9%	100.0%	3	2.6%
		<i>Neochonetes</i>	475	1	1	0.2%	100.0%	60	12.6%
		Chonetidine Brachiopods	1150	2	8	0.7%	25.0%	85	7.4%
Wayland	Fife	<i>Cleiothyridina</i>	2	0	0	0.0%	0	0.0%	
Finis	Jacksboro Flats	<i>Cleiothyridina</i>	5	0	0	0.0%	2	40.0%	
Finis	NE Jacksboro Spillway	<i>Cleiothyridina</i>	7	0	0	0.0%	1	14.3%	
Finis	SW Jacksboro Spillway	<i>Cleiothyridina</i>	3	0	1	33.3%	0.0%	1	33.3%
Colony Creek	Colony Creek 180	<i>Cleiothyridina</i>	1	0	0	0.0%	0	0.0%	
Mineral Wells	Methodist Church	<i>Cleiothyridina</i>	86	0	0	0.0%	1	1.2%	

		Cleiothyridina	104	0	1	1.0%	0.0%	5	4.8%
Wayland	Fife	<i>Composita</i>	99	0	0	0.0%		3	3.0%
Finis	Jacksboro Flats	<i>Composita</i>	28	3	3	10.7%	100.0%	0	0.0%
Finis	NE Jacksboro Spillway	<i>Composita</i>	22	2	3	13.6%	66.7%	3	13.6%
Finis	SW Jacksboro Spillway	<i>Composita</i>	6	0	0	0.0%		0	0.0%
Colony Creek	Colony Creek 180	<i>Composita</i>	2	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Composita</i>	9	0	0	0.0%		0	0.0%
Colony Creek	West Brownwood Lake	<i>Composita</i>	10	0	0	0.0%		0	0.0%
Placid	337 Outcrop	<i>Composita</i>	29	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Composita</i>	19	0	0	0.0%		1	5.3%
Mineral Wells	Eas Long 180 outcrop	<i>Composita</i>	5	0	0	0.0%		0	0.0%
Mineral Wells	Methodist Church	<i>Composita</i>	7	0	0	0.0%		1	14.3%
		Composita	236	5	6	2.5%	83.3%	8	3.4%
Wayland	Fife	<i>Crurithyris</i>	9	0	0	0.0%		0	0.0%
Finis	Jacksboro Flats	<i>Crurithyris</i>	198	1	1	0.5%	100.0%	1	0.5%
Finis	NE Jacksboro Spillway	<i>Crurithyris</i>	39	0	0	0.0%		1	2.6%
Finis	SW Jacksboro Spillway	<i>Crurithyris</i>	22	0	0	0.0%		1	4.5%
Colony Creek	Colony Creek 180	<i>Crurithyris</i>	76	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Crurithyris</i>	339	1	1	0.3%	100.0%	9	2.7%
Colony Creek	West Brownwood Lake	<i>Crurithyris</i>	276	0	0	0.0%		0	0.0%
Placid	337 Outcrop	<i>Crurithyris</i>	77	0	0	0.0%		1	1.3%
Placid	P-Road 36	<i>Crurithyris</i>	3	0	0	0.0%		1	33.3%
Mineral Wells	Long 180 Outcrop	<i>Crurithyris</i>	1	1	1	100.0%	100.0%	0	0.0%
		Crurithyris	1040	3	3	0.3%	100.0%	14	1.3%
Wayland	Fife	<i>Eridmatus</i>	41	0	0	0.0%		2	4.9%
Finis	Jacksboro Flats	<i>Eridmatus</i>	83	0	0	0.0%		2	2.4%
Placid	P-Road 36	<i>Eridmatus</i>	31	0	0	0.0%		2	6.5%
Mineral Wells	Long 180 Outcrop	<i>Eridmatus</i>	1	0	0	0.0%		0	0.0%
		Eridmatus	156	0	0	0.0%		6	3.8%
Wayland	Fife	<i>Hustedia</i>	51	0	0	0.0%		0	0.0%
Finis	Jacksboro Flats	<i>Hustedia</i>	53	0	0	0.0%		0	0.0%
Finis	NE Jacksboro Spillway	<i>Hustedia</i>	23	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Hustedia</i>	19	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Hustedia</i>	1	0	0	0.0%		0	0.0%
Placid	337 Outcrop	<i>Hustedia</i>	18	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Hustedia</i>	1	0	0	0.0%		0	0.0%
		Hustedia	166	0	0	0.0%		0	0.0%
Wayland	Fife	<i>Neospirifer</i>	29	0	0	0.0%		3	10.3%
Finis	SW Jacksboro Spillway	<i>Neospirifer</i>	1	0	0	0.0%		0	0.0%
Colony Creek	Colony Creek 180	<i>Neospirifer</i>	3	0	1	33.3%	0.0%	1	33.3%
Placid	337 Outcrop	<i>Neospirifer</i>	1	0	0	0.0%		1	100.0%
Placid	P-Road 36	<i>Neospirifer</i>	4	0	0	0.0%		0	0.0%
Mineral Wells	Long 180 Outcrop	<i>Neospirifer</i>	2	0	0	0.0%		0	0.0%
		Neospirifer	40	0	1	2.5%	0.0%	5	12.5%
Wayland	Fife	<i>Phricidothyris</i>	2	0	0	0.0%		0	0.0%
Finis	Jacksboro Flats	<i>Phricidothyris</i>	11	0	0	0.0%		0	0.0%
Finis	NE Jacksboro Spillway	<i>Phricidothyris</i>	2	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Phricidothyris</i>	8	0	0	0.0%		0	0.0%
		Phricidothyris	23	0	0	0.0%		0	0.0%
Wayland	Fife	<i>Punctospirifer</i>	31	0	0	0.0%		0	0.0%
Finis	Jacksboro Flats	<i>Punctospirifer</i>	3	0	0	0.0%		0	0.0%
Finis	NE Jacksboro Spillway	<i>Punctospirifer</i>	11	0	0	0.0%		0	0.0%
Finis	SW Jacksboro Spillway	<i>Punctospirifer</i>	11	0	0	0.0%		0	0.0%
Colony Creek	Colony Creek 180	<i>Punctospirifer</i>	1	0	0	0.0%		0	0.0%
Colony Creek	East Brownwood Lake	<i>Punctospirifer</i>	3	0	0	0.0%		0	0.0%
Colony Creek	West Brownwood Lake	<i>Punctospirifer</i>	1	0	0	0.0%		0	0.0%
Placid	337 Outcrop	<i>Punctospirifer</i>	23	0	0	0.0%		0	0.0%
Placid	P-Road 36	<i>Punctospirifer</i>	6	0	0	0.0%		0	0.0%
Mineral Wells	Long 180 Outcrop	<i>Punctospirifer</i>	5	0	0	0.0%		1	20.0%
		Punctospirifer	95	0	0	0.0%		1	1.1%
Finis	Jacksboro Flats	<i>Rhipidomella</i>	209	0	0	0.0%		5	2.4%

Finis	NE Jacksboro Spillway	<i>Rhipidomella</i>	89	0	0	0.0%	3	3.4%	
Finis	SW Jacksboro Spillway	<i>Rhipidomella</i>	267	0	0	0.0%	5	1.9%	
Colony Creek	Colony Creek 180	<i>Rhipidomella</i>	26	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Rhipidomella</i>	1	0	0	0.0%	0	0.0%	
Placid	337 Outcrop	<i>Rhipidomella</i>	4	0	0	0.0%	1	25.0%	
Placid	P-Road 36	<i>Rhipidomella</i>	1	0	0	0.0%	0	0.0%	
		<i>Rhipidomella</i>	597	0	0	0.0%	14	2.3%	
Wayland	Fife	<i>Rhynchopora</i>	2	0	0	0.0%	0	0.0%	
		<i>Rhynchopora</i>	2	0	0	0.0%	0	0.0%	
Wayland	Fife	<i>Wellerella</i>	7	0	0	0.0%	0	0.0%	
Finis	NE Jacksboro Spillway	<i>Wellerella</i>	2	0	0	0.0%	0	0.0%	
Finis	SW Jacksboro Spillway	<i>Wellerella</i>	6	0	0	0.0%	0	0.0%	
Colony Creek	West Brownwood Lake	<i>Wellerella</i>	2	0	0	0.0%	0	0.0%	
		<i>Wellerella</i>	17	0	0	0.0%	0	0.0%	
		Rhynchonellate Brachiopoc	2476	8	11	0.4%	72.7%	53	2.1%
		BRACHIOPODA	4555	32	54	1.2%	59.3%	528	11.6%
		TOTAL FOR ALL TAXA	9773	34	57	0.6%	59.6%	1242	12.7%