Data Repository Item DR-1
Locality information
Coordinates obtained in WGS84 reference frame

Scottsboro– Scottsboro 7.5 Minute Quadrangle, Davidson Country, Tennessee. Exposures along River Trace off of TN State Highway 12 on the north bank of the Cumberland River by Gower Island. Westernmost exposure along River Trace is ~2.5 km west of Scottsboro, Nashville, TN.
Lat: 36.208089° Lon: -86.960810°

McCrory Lane– Kingston Springs 7.5 Minute Quadrangle, Davidson County, Tennessee. Exposures along the I-40E entrance ramp from McCrory Lane, ~9.2 km southeast of the Town of Kingston Springs, TN.
Lat: 36.076950° Lon: -87.015284°

Huntington Quarry– Huntington 7.5 Minute Quadrangle, Huntington County, Indiana. Active quarry operated by Irving Materials, Inc. (IMI). Quarry is located ~3.5 km east of Huntington city center, the entrance is on the north end of the quarry along Erie Stone Rd.
Lat: 40.888589° Lon: -85.460164°

Bluffton Quarry– Uniondale 7.5 Minute Quadrangle, Wells County, Indiana. Active quarry operated by Irving Materials, Inc. located on the east side on IN State Highway 116, the entrance is on E 150 N ~3.2 km north of the City of Bluffton.
Lat: 40.769756° Lon: -85.181622°

Celina, Stoneco Quarry– Erastus 7.5 Minute Quadrangle, Mercer County, Ohio. Active quarry operated by Stoneco, a division of The Shelly Company, on Karch Rd. south of OH State Highway 29, ~7.5 km west of the City of Celina.
Lat: 40.536025° Lon: -84.656393°

West Millgrove Stone Quarry– Forstoria 7.5 Minute Quadrangle, Wood County, OH. Active quarry operated by Gerken Materials Inc. on the southeast side of the Village of West Millgrove at the intersection of OH State Highway 199 and County Route 36, West Millgrove Rd.
Lat: 41.241312° Lon: -83.483836°

Supplementary Table S-1. Conodont abundance data from Scottsboro, Nashville, Tennessee

Sample range (m)*	-3.33 - -3.62	-2.23 - -2.48	-1.68 - -2.08	-1.23 - -1.68	-0.98 - -0.88	-0.78 - -0.53	-0.38 - -0.18	-0.18 - -0.05	0.26-0.41	0.91-1.21	1.60-1.75	2.05-2.20	3.35-3.55
Mass (g)	1924	4010	5328	4278	4768	2472	2045	3972	6010	4010	3006	4263	4010
Belodella silurica	2	1	3	4					1	1			
Dapsilodus obliquicostatus		5	4	2			2	4		7	2	1	
Decoriconus fragilis		1	3	10	1			5	1	6	2		
Kockelella sp.													
S_0				1									
Oulodus ? sp.								2					
Ozarkodina bohemica longa													
P_1							1						
Ozarkodina excavata													
P_1/P_2	1										1		
P_2				1				1					
S_0							1						
S_1				1								1	
S_2								1			2		
S?				4									
M				1				3					
Panderodus equicostatus	9	40	25	73			3	5	14	35	5	14	6
Panderodus unicostatus	5	26	26	40		4	2	6	2	3	2		7
Panderodus unicostatus ?		2											
Panderodus panderi	2	2	1	5						1			3
Panderodus sp.	4	1	47	79			6	28	41	48	22	20	8
Psuedooneotodus beckmanni			1	1		4					1		
Psuedooneotodus bicornis		5	1	15	3	4		3	1	1		1	
Psuedooneotodus sp.	1	2			1			5					
Walliserodus sancticlairi	1	2	4	3				2		1			
Gen. et. sp. indet.													
P_1/P_2		1									1		
S_1								1					
S_2						2							
coniform		2	1										
Fragments							2						
coniform	12	41	29	95	1		1					1	
ramiform		1	3	21	1	13	7	19	1	13	15	8	
Total	37	132	148	356	7	27	25	85	61	116	53	46	24

* the datum for sample ranges is the base of Waldron B = 0 meters

Supplementary Table S-2

Stable isotope data from Scottsboro, Nashville, TN.

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
4.3	1.01	-4.13	Lego
4.15	1.17	-4.36	Lego
4	1.14	-4.03	Lego
3.8	1.23	-4.50	Lego
3.7	1.15	-4.48	Lego
3.45	1.30	-4.59	Lego
3.35	1.25	-4.95	Lego
3.25	1.34	-4.74	Lego
3.15	1.47	-4.30	Lego
3	1.48	-4.19	Lego
2.8	1.32	-4.53	Lego
2.7	1.50	-4.04	Lego
2.6	1.42	-4.58	Lego
2.5	1.62	-4.14	Lego
2.4	1.80	-3.84	Lego
2.3	1.72	-4.02	Lego
2.2	1.55	-4.88	Lego
2.05	1.78	-4.23	Lego
1.95	1.94	-3.67	Lego
1.8	1.81	-4.26	Lego
1.7	2.14	-3.85	Wal. C
1.6	2.55	-3.44	Wal. C
1.5	2.11	-3.60	Wal. C
1.4	2.20	-3.57	Wal. C
1.3	1.86	-2.41	Wal. C
1.2	1.82	-3.51	Wal. B
1	1.91	-3.81	Wal. B
0.9	1.93	-3.89	Wal. B
0.8	1.85	-3.97	Wal. B
0.7	1.81	-3.87	Wal. B
0.6	1.82	-3.95	Wal. B
0.4	2.04	-3.77	Wal. B
0.3	2.01	-3.62	Wal. B
0.15	2.15	-3.63	Wal. B
0.05	2.15	-3.28	Wal. B
-0.03	2.42	-2.11	Wal. A
-0.18	2.70	-3.06	Wal. A
-0.28	2.51	-3.77	Wal. A
-0.38	2.78	-3.96	Wal. A
-0.48	2.46	-4.43	Wal. A
-0.58	2.68	-3.75	Wal. A
-0.73	2.75	-3.30	Wal. A
-0.83	2.82	-3.37	Wal. A
-0.93	2.88	-3.49	Wal. A
-1.03	2.42	-3.80	Wal. A
-1.13	1.97	-2.28	Wal. A
-1.18	2.46	-1.21	Wal. A
-1.23	2.13	-2.08	Laurel
-1.38	2.24	-2.37	Laurel
-1.48	1.64	-4.17	Laurel
-1.68	1.23	-4.11	Laurel
-1.88	1.31	-4.06	Laurel
-1.98	1.22	-4.14	Laurel
-2.08	1.19	-4.29	Laurel
-2.13	1.18	-4.69	Laurel
-2.33	1.11	-4.26	Laurel
-2.48	1.09	-4.25	Laurel
-2.58	1.04	-4.20	Laurel
-2.68	1.13	-3.73	Laurel
-2.78	0.97	-4.06	Laurel
-2.93	0.97	-3.97	Laurel
-3.03	0.99	-3.97	Laurel
-3.13	1.04	-4.09	Laurel
-3.33	0.83	-3.88	Laurel
-3.43	0.93	-4.18	Laurel
-3.58	0.98	-4.22	Laurel

*Datum: 0 m = base of Waldron B. For all stable isotope tables the datum

corresponds to 0 m in the stratigraphic column presented for the same locality.

Supplementary Table S-3

Stable isotope data from McCrory Lane, Nashville, TN (from Cramer et al. 2006).

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
7.65	0.83	-4.01	Lego
7.40	0.99	-4.19	Lego
7.15	0.77	-4.25	Lego
6.90	0.77	-4.42	Lego
6.65	0.92	-4.16	Lego
6.40	0.86	-4.16	Lego
6.15	0.93	-3.79	Lego
5.90	0.97	-3.89	Lego
5.65	0.83	-4.30	Lego
5.40	0.83	-4.27	Lego
5.15	1.02	-3.92	Lego
4.90	1.02	-4.35	Lego
4.65	0.98	-5.80	Lego
4.40	1.19	-4.05	Lego
4.15	1.21	-4.57	Lego
3.90	1.36	-4.36	Lego
3.65	1.36	-4.23	Lego
3.40	1.17	-4.48	Lego
3.15	1.55	-3.95	Lego
2.90	1.93	-3.34	Lego
2.65	1.63	-3.98	Lego
2.65	1.76	-4.42	Lego
2.45	2.07	-3.80	Lego
2.25	2.31	-3.38	Lego
2.15	2.43	-3.10	Wal. C
1.70	2.17	-3.33	Wal. C
1.60	2.02	-3.14	Wal. C
1.50	2.41	-2.97	Wal. C
1.40	2.16	-3.32	Wal. C
1.20	1.86	-3.71	Wal. B
1.10	1.59	-3.49	Wal. B
0.90	1.39	-4.23	Wal. B
0.70	1.61	-3.76	Wal. B
0.50	1.63	-3.52	Wal. B
0.30	1.82	-3.89	Wal. B
0.10	2.18	-3.21	Wal. B
0.00	2.30	-2.98	Wal. B
-0.05	2.31	-3.27	Wal. A
-0.1	2.60	-2.73	Wal. A
-0.3	2.10	-2.87	Wal. A
-0.6	2.63	-2.96	Wal. A
-0.8	2.59	-2.93	Wal. A
-0.9	2.82	-3.55	Wal. A
-1.25	2.42	-2.84	Laurel
-1.35	1.68	-4.05	Laurel
-1.45	1.21	-3.93	Laurel
-1.55	1.03	-4.47	Laurel
-1.65	1.44	-4.41	Laurel
-1.85	1.28	-3.55	Laurel
-2.05	1.23	-3.67	Laurel
-2.25	1.25	-3.73	Laurel
-2.45	1.32	-3.90	Laurel
-2.65	1.09	-4.38	Laurel
-2.85	1.02	-3.92	Laurel
-3.05	1.00	-4.70	Laurel
-3.35	0.94	-4.01	Laurel

*Datum: 0 m = base of Waldron B

Supplementary Table S-4

Stable isotope data from Irving Materials Quarry, Huntington, IN.

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
0.5	1.64	-6.54	"Wal. C"
0.03	1.57	-6.67	"Wal. C"
-0.5	1.68	-6.43	"Wal. B"
-1	1.87	-6.76	"Wal. B"
-1.5	1.93	-6.98	"Wal. B"
-2	2.04	-6.75	"Wal. B"
-2.5	2.43	-7.14	"Wal. B"
-3	2.57	-7.03	"Wal. B"
-3.5	2.10	-6.80	"Wal. A"
-4	1.85	-6.77	"Wal. A"
-4.5	1.79	-6.76	"Wal. A"
-5.07	1.53	-6.69	"Wal. A"
-5.5	1.28	-6.80	"Wal. A"
-6	1.51	-6.88	"Wal. A"
-6.5	1.64	-6.90	"Wal. A"
-7	2.02	-6.55	"Wal. A"
-7.5	2.21	-6.43	Limberlost
-8	2.12	-6.54	Limberlost
-8.5	2.12	-6.12	Limberlost
-9.05	2.28	-6.09	Limberlost
-9.5	3.17	-6.22	Limberlost
-10	3.71	-6.83	Limberlost
-10.5	3.52	-6.91	Limberlost
-11	3.75	-7.03	Limberlost
-11.5	4.20	-6.55	Limberlost
-12.5	4.12	-6.33	Limberlost
-13	3.67	-6.39	Limberlost
-13.5	2.86	-6.32	Laurel
-14	1.69	-6.17	Laurel
-14.5	1.17	-6.38	Laurel
-15	1.07	-6.53	Laurel
-15.5	1.12	-6.41	Laurel

*Datum: 0 m = base of "Waldron C"

Supplementary Table S-5

Stable isotope data from Irving Materials Quarry, Bluffton, IN.

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
10.05	1.39	-6.64	Louisville
9.85	1.43	-5.54	Louisville
9.65	1.15	-6.97	Louisville
9.45	1.30	-3.83	Louisville
9.25	1.15	-4.7	Louisville
9.05	1.48	-4.35	Louisville
8.85	1.40	-3.89	Louisville
8.65	1.31	-4.19	Louisville
8.45	1.32	-4.34	Louisville
8.25	1.32	-4.04	"Wal. C"
7.85	1.31	-4.39	"Wal. C"
7.65	1.32	-4.41	"Wal. C"
7.45	1.30	-4.88	"Wal. C"
7.25	1.38	-4.39	"Wal. C"
7.05	1.41	-4.59	"Wal. C"
6.85	1.57	-4.52	"Wal. B"
6.65	1.59	-4.67	"Wal. B"
6.45	1.67	-4.51	"Wal. B"
6.2	1.75	-4.15	"Wal. B"
6	1.88	-4.71	"Wal. B"
5.8	1.92	-5.1	"Wal. B"
5.6	2.08	-4.34	"Wal. B"
5.4	2.12	-4.55	"Wal. B"
5.2	1.97	-4.42	"Wal. B"
5	1.94	-4.25	"Wal. B"
4.8	1.63	-4.71	"Wal. B"
4.79	1.58	-4.78	"Wal. A"
4.5	1.61	-4.56	"Wal. A"
4.3	1.65	-3.77	"Wal. A"
3.95	1.36	-4.69	"Wal. A"
3.75	1.44	-3.9	"Wal. A"
3.55	1.48	-3.56	"Wal. A"
3.35	1.46	-4.02	"Wal. A"
2.9	1.60	-3.78	"Wal. A"
2.7	1.30	-4.12	"Wal. A"
2.5	1.35	-4.02	"Wal. A"
2.3	1.36	-3.28	"Wal. A"
2.1	1.45	-2.96	"Wal. A"
1.9	1.28	-3.82	"Wal. A"
1.7	1.40	-3.26	"Wal. A"
1.5	1.45	-3.94	"Wal. A"
1.3	1.38	-3.87	"Wal. A"
1.1	1.65	-3.04	"Wal. A"
0.9	1.74	-3.52	"Wal. A"
0.7	1.52	-3.07	"Wal. A"
0.5	1.75	-3.52	"Wal. A"
0.25	1.87	-3.04	"Wal. A"
0.015	2.28	-3.09	"Wal. A"
0.01	2.18	-3.82	"Wal. A"
-0.01	2.05	-4.32	"Wal. A"
-0.15	2.00	-4.38	"Wal. A"
-0.3	2.23	-5.04	"Wal. A"
-0.45	2.17	-4.39	"Wal. A"
-0.6	2.42	-4.49	"Wal. A"
-0.7	2.08	-4.95	Limberlost
-0.85	2.10	-4.98	Limberlost
-1	2.21	-4.89	Limberlost
-1.15	2.24	-4.66	Limberlost
-1.3	2.52	-4.42	Limberlost
-1.45	2.65	-4.5	Limberlost
-1.6	2.80	-4.58	Limberlost
-1.75	3.35	-4.65	Limberlost
-1.9	2.33	-6.42	Limberlost
-2.05	3.81	-5.11	Limberlost
-2.2	3.96	-5.22	Limberlost
-2.35	4.36	-5.05	Limberlost

*Datum: 0 m = top of the 25 cm resistant carbonate bed within "Waldron A"

Supplementary Table S-6

Stable isotope data from Stoneco Quarry, Celina, OH.

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
5.5	3.99	-6.43	unit 5
5.4	4.18	-6.41	unit 5
5.1	4.18	-6.61	unit 5
4.95	4.26	-6.51	unit 5
4.8	4.21	-6.44	unit 5
4.65	4.32	-6.46	unit 5
4.5	4.55	-6.19	unit 5
4.35	4.68	-6.10	unit 5
4.2	4.39	-6.34	unit 4
4.05	4.57	-6.34	unit 4
3.9	4.68	-6.37	unit 4
3.75	4.71	-6.00	unit 4
3.6	4.24	-6.31	unit 4
3.45	3.49	-6.95	unit 3
3.3	3.43	-6.81	unit 3
3.15	3.33	-6.78	unit 3
3	3.44	-6.96	unit 3
2.85	3.57	-6.78	unit 3
2.55	3.51	-6.92	unit 3
2.4	3.49	-6.79	unit 3
2.25	3.32	-6.84	unit 3
2.1	3.38	-6.53	unit 3
1.95	3.30	-6.79	unit 3
1.8	3.12	-6.67	unit 2
1.65	3.27	-6.36	unit 2
1.5	3.17	-6.14	unit 2
1.35	3.01	-6.42	unit 2
1.2	2.94	-6.24	unit 2
1.05	2.85	-6.11	unit 2
0.9	2.63	-6.14	unit 2
0.75	2.24	-6.07	unit 2
0.6	2.12	-6.11	unit 2
0.45	2.12	-6.28	unit 2
0.3	2.07	-6.41	unit 2
0.15	2.08	-6.43	unit 2
0.02	2.12	-6.30	unit 2
-0.15	1.99	-6.64	unit 1
-0.3	2.02	-6.72	unit 1
-0.45	1.97	-6.68	unit 1
-0.6	1.97	-6.92	unit 1
-0.75	1.96	-6.66	unit 1
-0.9	1.93	-6.79	unit 1
-1	1.89	-6.63	unit 1

*Datum: 0 m = base of unit 2

Supplementary Table S-7

Stable isotope data from Gerken Materials Quarry, West Millgrove, OH.

Meters*	$\delta^{13}C_{carb}$	$\delta^{18}O$	Unit
3	2.05	-4.77	Greenfield
2.8	2.12	-4.57	Greenfield
2.6	2.00	-4.32	Greenfield
2.4	1.87	-4.02	Greenfield
2.2	1.76	-3.95	Greenfield
2	1.60	-5.37	Cedarville
1.8	1.54	-5.55	Cedarville
1.6	1.48	-5.27	Cedarville
1.4	1.53	-5.55	Cedarville
1.2	1.48	-5.35	Cedarville
1	1.63	-5.54	Cedarville
0.8	1.67	-5.35	Cedarville
0.6	1.72	-4.73	Cedarville
0.4	1.70	-5.41	Cedarville
0.2	1.60	-5.34	Cedarville
0.01	1.65	-4.84	Cedarville

*Datum: 0 m = base of outcrop on quarry road