

Giant Vinegaroon (*Mastigoproctus giganteus*) Burrow Casts

Principle Investigator: Dan Hembree

Project Duration: 2010 – 2012

Total Burrows: 42

Vertical Shafts (5)

WS5, WS14, WS15, WS28, WS32

Subvertical Ramps (4)

WS4, WS11, WS13, WS27

J-Shaped Burrows (13)

WS3, WS7, WS10, WS12, WS18, WS26, WS29, WS34, WS35,
WS36, WS40, WS41, WS42

U-Shaped Burrows (8)

WS1, WS6, WS8, WS16, WS22, WS25, WS31, WS33

Y-Shaped Burrows (2)

WS19, WS30

Mazeworks (10)

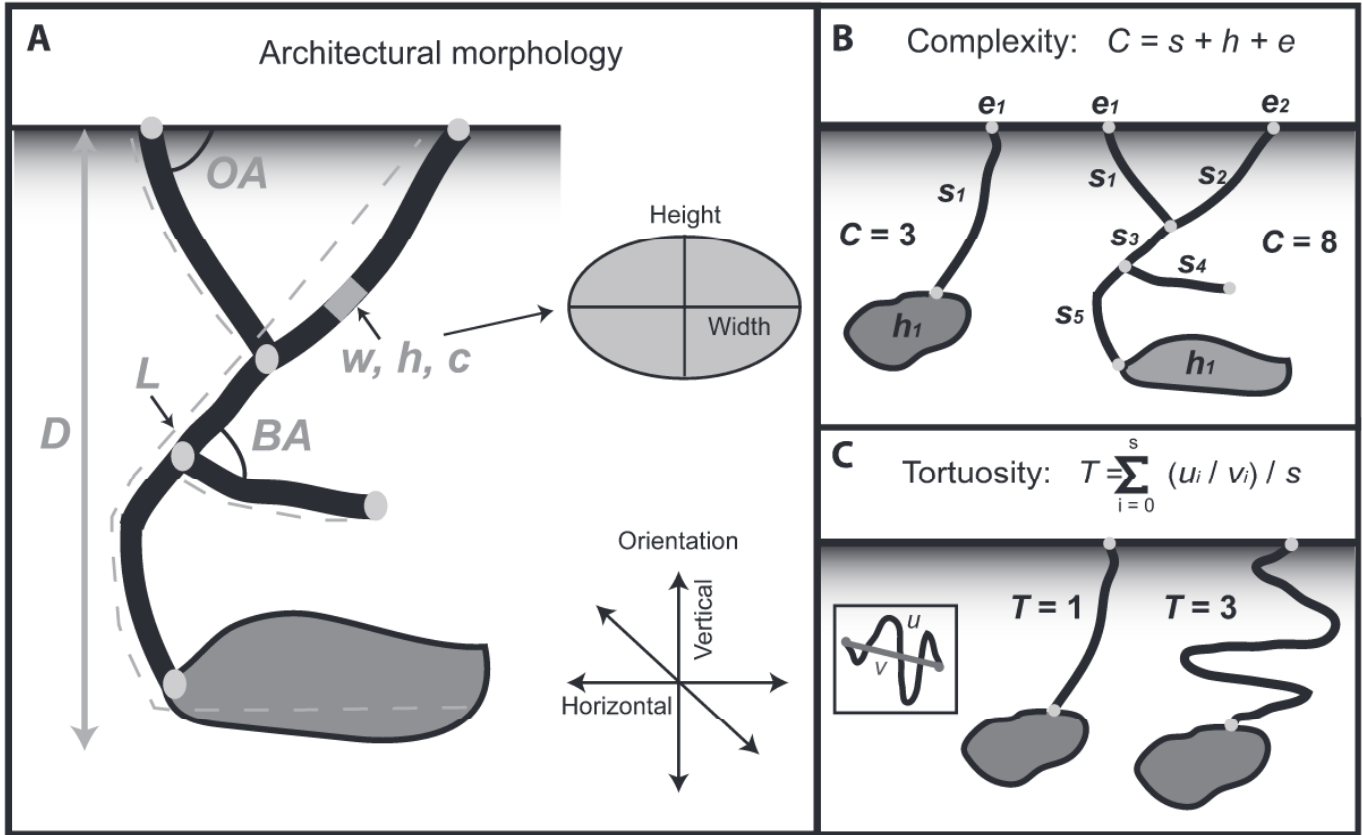
WS2, WS9, WS17, WS20, WS21, WS23, WS24, WS37, WS38, WS39



Bags of Burrow Casts

Box	Casts Contained	Architecture
1	Bag 1: WS5, WS14, WS15, WS28, WS32	VS
	Bag 2: WS4, WS11, WS13, WS27	SR
	Bag 3: WS3, WS7, WS12, WS26	JS
	Bag 4: WS22, WS25, WS6, WS31	US
	Not Bagged: WS10, WS29, WS35, WS36, WS41, WS42	JS
	WS1, WS8, WS16, WS33, WS40	US
2	WS19, WS30	YS
	WS2, WS9, WS17, WS20, WS21, WS23, WS24, WS37, WS38, WS39	MW

Burrow Measurements



Experimental Setup

Tank size	Sediment composition	Sediment depth	Sediment density	Sediment moisture	Burrow architecture
5	25%-75% organic-soil	20	1.1-1.4	30	None
5	50%-50% organic-soil	20	0.7-1.1	30	JB
5	75%-25% organic-soil	20	0.4-0.7	30	JB, UB
5	25%-75% organic-soil	20	1.1-1.4	44	UB
5	50%-50% organic-soil	20	0.7-1.1	44	UB, JB
5	75%-25% organic-soil	20	0.4-0.7	44	SR, VB, JB, UB, YB
5	25%-75% organic-soil	20	1.1-1.4	50	UB
5	50%-50% organic-soil	20	0.7-1.1	50	UB
5	75%-25% organic-soil	20	0.4-0.7	50	UB
10	25%-75% organic-soil	30	1.1-1.4	30	None
10	50%-50% organic-soil	30	0.7-1.1	30	None
10	75%-25% organic-soil	30	0.4-0.7	30	SR, UB
10	25%-75% organic-soil	30	1.1-1.4	44	UB, MW
10	50%-50% organic-soil	30	0.7-1.1	44	UB, MW
10	75%-25% organic-soil	30	0.4-0.7	44	JB, UB, MW
10	25%-75% organic-soil	30	1.1-1.4	50	UB, JB, MW
10	50%-50% organic-soil	30	0.7-1.1	50	UB, MW
10	75%-25% organic-soil	30	0.4-0.7	50	UB, MW
56	25%-75% organic-soil	50	1.1-1.4	30	JB, MW
56	50%-50% organic-soil	50	0.7-1.1	30	JB, MW
56	75%-25% organic-soil	50	0.4-0.7	30	JB, UB, MW
56	25%-75% organic-soil	50	1.1-1.4	44	UB, MW
56	50%-50% organic-soil	50	0.7-1.1	44	UB, JB, MW
56	75%-25% organic-soil	50	0.4-0.7	44	VB, UB, JB, MW
56	25%-75% organic-soil	50	1.1-1.4	50	UB, MW
56	50%-50% organic-soil	50	0.7-1.1	50	UB, MW
56	75%-25% organic-soil	50	0.4-0.7	50	UB, MW

	WS5	WS14	WS15	WS28	WS32	WS4	WS11	WS13	WS27	WS3	WS7	WS10	WS12	WS18	WS26	WS29	WS34	WS35	WS36
PAST Identifier	MG1_VS	MG2_VS	MG3_VS	MG4_VS	MG5_VS	MG6_SR	MG7_SR	MG8_SR	MG9_SR	MG10_JS	MG11_JS	MG12_JS	MG13_JS	MG14_JS	MG15_JS	MG16_JS	MG17_JS	MG18_JS	MG19_JS
Architecture	VS	VS	VS	VS	VS	SR	SR	SR	SR	JS	JS	JS	JS	JS	JS	JS	JS	JS	JS
Surface openings	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maximum depth	10.1	3.4	8.1	4.9	5.8	5.6	6.6	6.1	3.3	11.0	10.7	12.5	7.7	6.4	9.0	13.5	18.0	16.5	9.2
Total length	10.1	3.8	10.2	5.7	6.0	12.5	8.0	8.5	4.0	18.5	16.0	26.5	17.5	11.0	15.5	20.0	24.0	24.5	13.0
Maximum width	6.3	2.2	4.2	3.3	3.1	3.9	3.1	3.2	2.6	4.3	5.0	6.6	6.4	3.4	4.4	4.9	8.2	6.5	4.1
Minimum width	5.3	1.9	2.7	2.2	2.5	3.4	2.8	2.8	1.6	2.6	2.4	2.6	2.7	3.0	2.9	3.6	3.0	4.1	3.8
Average width	5.8	2.1	3.4	2.7	2.8	3.7	3.0	3.1	2.1	3.6	3.4	4.1	4.7	3.3	3.7	4.2	5.2	5.3	3.9
Maximum height	2.9	1.1	4.4	1.9	1.3	2.1	2.9	2.1	1.9	2.8	2.3	2.4	2.5	3.0	2.8	3.2	4.7	5.4	2.3
Minimum height	1.9	0.9	1.5	1.6	1.2	1.7	2.2	1.8	1.1	2.0	1.7	1.2	1.9	1.8	1.9	2.2	1.5	1.8	2.0
Average height	2.2	1.0	2.6	1.7	1.3	1.9	2.6	1.9	1.5	2.3	2.0	1.9	2.2	2.4	2.4	2.5	2.6	3.0	2.2
Average W/H ratio	2.0	2.1	1.3	1.6	2.2	1.9	1.2	1.6	1.4	1.6	1.7	2.2	2.1	1.4	1.5	1.7	2.0	1.8	1.8
Maximum circumference	17.0	7.5	14.5	9.5	8.0	11.0	12.0	10.5	8.0	12.0	12.5	16.0	17.0	10.5	12.5	13.0	23.5	23.4	12.0
Minimum circumference	15.5	7.0	8.0	7.5	7.5	10.0	11.5	9.0	6.6	9.5	8.0	7.5	10.5	8.0	9.5	11.0	9.0	11.5	10.0
Average circumference	16.3	7.3	11.0	8.3	7.7	10.5	11.8	10.0	7.3	10.9	9.9	10.8	13.9	9.3	10.9	11.8	14.5	15.5	11.2
Maximum slope	90°	90°	90°	90°	85°	30°	50°	50°	60°	80°	70°	90°	90°	60°	80°	85°	90°	90°	90°
Minimum slope	90°	70°	80°	70°	80°	10°	50°	50°	60°	40°	0°	40°	0°	30°	20°	30°	20°	40°	50°
Average slope	90°	80°	85°	80°	83°	20°	50°	50°	60°	60°	40°	65°	45°	45°	50°	58°	55°	65°	70°
Branching angles	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90°	NA	NA	NA	NA	NA	NA
Complexity	2	2	2	2	2	2	2	2	2	2	3	3	4	3	3	3	2	2	2
Tortuosity	1.0	1.0	1.2	1.0	1.0	1.3	1.1	1.0	1.0	1.2	1.3	1.3	1.7	1.3	1.4	1.3	1.2	1.3	1.3

	WS41	WS42	WS1	WS6	WS8	WS16	WS22	WS25	WS31	WS33	WS19	WS30	WS2	WS9	WS17	WS20	WS21	WS23	WS24
PAST Identifier	MG21_JS	MG22_JS	MG23_US	MG24_US	MG25_US	MG26_US	MG27_US	MG28_US	MG29_US	MG30_US	MG31_YS	MG32_YS	MG33_MWM	MG34_MWM	MG35_MWM	MG36_MWM	MG37_MWM	MG38_MWM	MG39_MW
Architecture	JS	JS	US	US	US	US	US	US	US	US	YS	YS	MW	MW	MW	MW	MW	MW	MW
Surface openings	1	1	2	2	2	2	2	2	2	2	2	2	2	4	3	6	3	3	6
Maximum depth	17.6	6.8	7.1	4.9	5.7	12.6	4.1	12.3	9.3	26.5	9.8	16.5	10.6	12.4	3.3	11.1	9.1	7.4	8.7
Total length	22.5	21.0	29.0	16.0	21.0	32.5	11.5	28.5	24.0	71.0	24.0	29.5	39.5	66	29.0	61.0	43.5	43.0	79.0
Maximum width	5.9	7.4	7.6	3.0	4.0	4.2	4.1	4.2	2.5	6.0	3.5	4.9	8.1	6.2	6.4	4.8	6.9	5.9	5.8
Minimum width	3.7	5.5	4.5	2.2	2.9	3.2	2.2	1.8	1.9	2.9	2.5	3.2	3.4	3.7	4.7	2.3	3.3	4.9	2.8
Average width	4.5	6.1	5.7	2.4	3.4	3.7	3.0	2.8	2.2	3.8	3.0	3.9	5.4	4.6	5.3	3.8	4.7	5.5	4.0
Maximum height	2.6	2.3	3.2	1.7	2.0	2.6	1.3	1.9	1.9	3.5	2.5	2.8	4.3	2.0	2.7	2.7	3.6	2.7	2.8
Minimum height	2.0	1.6	2.5	1.3	1.5	1.7	1.2	1.2	1.1	1.9	1.6	1.5	1.5	1.7	1.8	1.3	2.0	2.2	1.8
Average height	2.2	1.9	2.8	1.6	1.7	2.1	1.2	1.6	1.6	2.6	2.0	2.4	2.9	1.9	2.2	2.1	2.4	2.5	2.2
Average W/H ratio	2.0	3.2	2.0	1.5	2.0	1.8	2.5	1.8	1.4	1.5	1.5	1.6	1.9	2.4	2.4	1.8	2.0	2.2	1.8
Maximum circumference	15.5	18.0	19.0	9.5	11.0	13.0	11.0	12.0	8.0	16.0	11.5	14.0	26.5	14.5	16.5	14.0	16.5	16.5	17.0
Minimum circumference	10.5	13.5	13.5	7.5	9.5	10.5	8.0	7.5	6.5	11.0	9.0	10.5	10.0	9.0	13.0	8.5	11.0	13.5	9.5
Average circumference	12.1	15.4	15.9	8.3	10.5	11.5	9.3	9.4	7.2	13.4	10.6	12.3	17.0	11.3	14.8	12.1	13.8	15.0	12.3
Maximum slope	85°	45°	70°	50°	50°	90°	60°	90°	90°	90°	90°	65°	90°	80°	30°	90°	50°	70°	80°
Minimum slope	30°	0°	0°	0°	0°	0°	0°	0°	0°	0°	50°	25°	0°	0°	0°	30°	0°	0°	0°
Average slope	58°	23°	47°	33°	30°	48°	33°	58°	53°	47°	70°	50°	35°	45°	17.5°	60°	32°	30°	48°
Branching angles	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90°	45°	90°	80	75°	70°	90°	60°	80°
Complexity	3	2	5	3	3	3	5	5	3	3	5	6	7	10	6	14	6	6	15
Tortuosity	1.2	1.1	2.4	1.6	1.4	1.6	2.5	6.1	5.7	2.2	1.1	1.1	1.7	1.4	1.6	1.3	1.6	1.6	1.4

	WS38	WS39
PAST Identifier	VG41_MWVG42_MW	
Architecture	MW	MW
Surface openings	4	6
Maximum depth	12.3	9.8
Total length	64.5	79.8
Maximum width	5.8	6.2
Minimum width	3.5	2.8
Average width	4.8	4.3
Maximum height	2.8	3.7
Minimum height	1.7	2.0
Average height	2.0	2.7
Average W/H ratio	2.4	1.6
Maximum circumference	17.0	19.0
Minimum circumference	10.5	10.0
Average circumference	13.6	13.8
Maximum slope	90°	90°
Minimum slope	0°	0°
Average slope	41°	44°
Branching angles	75°	75°
Complexity	9	18
Tortuosity	1.3	1.3