

Marbled Salamander (*Ambystoma opacum*) Burrow Casts

Principle Investigator: Nicle Dzenowski

Project Duration: 2010 – 2012

Total Burrows: 21

*Subvertical Ramps (19)**

MS1-1-1, MS1-2-1, MSB1, MS2-1-1, MS2-1-1, MS3-1-1, MS3-1-2, MS4-1-2, MS4-2-1, MS4-2-2A, MS4-2-2B, MS4-3-1, MS4-3-2, MS2-2-1, MS2-2-2, MS3-2-1, MS3-2-2, MS4-1-1A, MS4-1-1B

Branching Ramps (2)

MS2-3-1, MS2-3-2

Extra Burrows (2)

*Missing MS3-1-1, MS3-3-2



Bags of Burrow Casts

Bag #	Casts Contained	Architecture
1	MS1-1-1, MS1-2, 1, MSB1, MS2-1-1, MS2-1-1, MS3-1-1	SR
2	MS3-1-2, MS4-1-2, MS4-2-1, MS4-2-2A, MS4-2-2B, MS4-3-1, MS4-3-2	SR
3	MS2-2-1, MS2-2-2, MS3-2-1, MS3-2-2, MS4-1-1A	SR
4	MS4-1-1B MS2-3-1, MS2-3-2	SR BR

Experimental Setup

Experimental Parameters. A) Experiment 1. B) Experiment 2. C) Experiment 3.

Basic Morphology Experiments

Soil Composition	Soil Moisture	Aquaria Size	Experimental Period
75% Coconut Fiber & 25% Soil	74%	38, 114, & 246 L	7 days
75% Coconut Fiber & 25% Soil	74%	38, 114, & 246 L	14 days

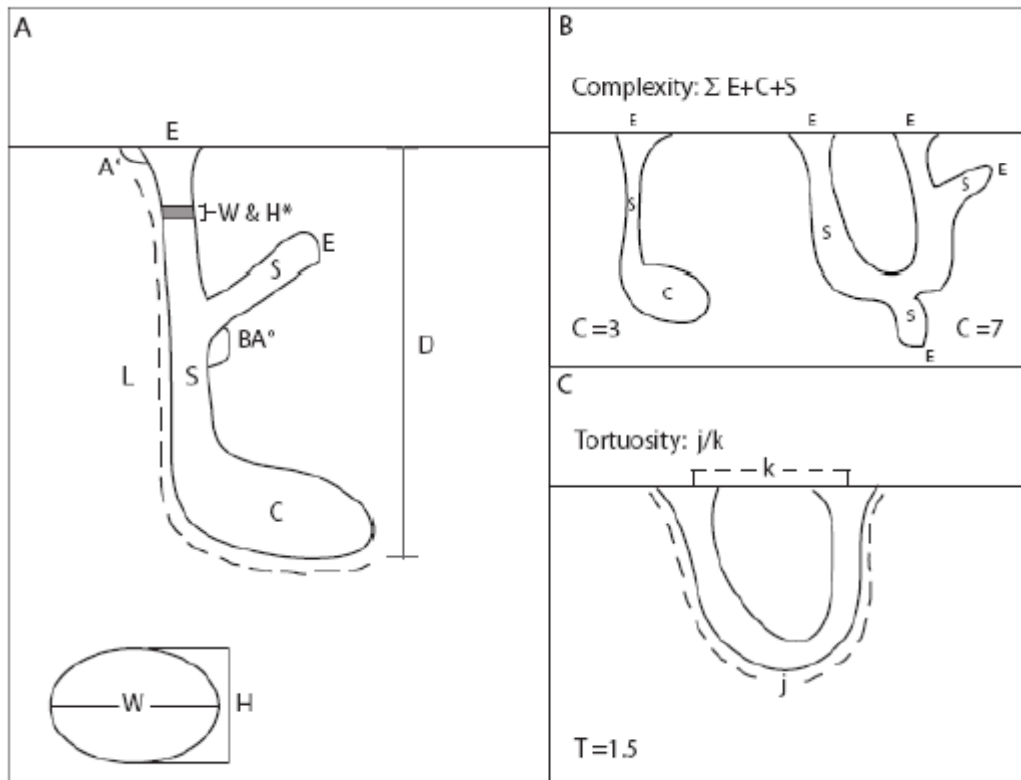
Variation in Soil Composition

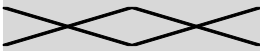
Soil Composition	Soil Moisture	Aquaria Size	Experimental Period
50% Coconut Fiber & 50% Soil	74%	38, 114, & 246 L	14 days
50% Coconut Fiber, 25% Soil, 25% Sand	74%	38, 114, & 246 L	14 days

Variation in Soil Moisture

Soil Composition	Soil Moisture	Aquaria Size	Experimental Period
75% Coconut Fiber & 25% Soil	54%	38, 114, & 246 L	14 days
75% Coconut Fiber & 25% Soil	94%	38, 114, & 246 L	14 days

Burrow Measurements



	MS1-1-1	MS1-2-1	MSB1	MS2-1-1	MS2-1-2	MS3-1-1	MS3-1-2	MS3-3-1	MS3-3-2	MS4-1-2	MS4-2-1
PAST Identifier	AO1_SR	AO2_SR	AO3_SR	AO4_SR	AO5_SR	AO6_SR	AO7_SR			AO8_SR	AO9_SR
Architecture	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
Surface Openings	1	1	1	1	1	1	1	1	1	1	1
Maximum depth	5.0	9.1	5.5	7.1	5.8	7.1	10.2	5.0	3.5	4.6	5.5
Total Length	6.0	14.0	18.8	10.0	16.5	10.4	16.5	13.0	10.0	13.0	10.0
Maximum width	3.8	3.8	3.3	3.7	3.4	3.1	3.4	3.2	2.8	2.9	3.4
Minumum width	2.4	1.8	2.4	2.9	2.6	2.8	2.3	2.1	2.3	1.5	2.4
Average width	3.4	3.0	3.3	3.5	3.0	3.0	2.7	2.7	2.5	2.5	3.1
Maximum height	3.2	4.5	5.4	2.6	2.0	2.5	2.0	2.1	2.2	2.3	1.9
Minimum height	2	1.0	1.4	2.1	1.2	1.3	1.2	1.8	1.5	1.4	1.3
Average height	2.4	2.6	2.7	2.4	1.6	1.9	1.7	1.9	1.9	1.9	1.7
Average W/H ratio	1.4	1.2	1.2	1.5	1.9	1.6	1.6	1.4	1.3	1.3	1.8
Max circumference	13.5	12.1	12.8	10.4	8.4	8.1	9.0			8.8	8.1
Min circumference	9.2	4.6	6.2	7.9	6.5	5.5	6.5			3.6	2.8
Avg circumference	10.1	8.7	8.4	9.5	7.4	6.7	7.9			6.9	6.7
Maximum slope	26	83	30	37	55	45	40	20	22	41	30
Minimum slope	26	83	30	37	55	45	40	20	22	41	30
Average slope	26	83	30	37	55	45	40	20	22	41	30
Branching angles	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Complexity	2	2	2	2	2	2	2	2	2	2	2
Tortuosity	1.1	1.5	1.3	1.3	1.5	1.1	1.1	1.4	1.3	1.9	1.0

	MS4-2-2A	MS4-2-2B	MS4-3-1	MS4-3-2	MS2-2-1	MS2-2-2	MS3-2-1	MS3-2-2	MS4-1-1A	MS4-1-1B	MS2-3-1	MS2-3-2
PAST Identifier	AO10_SR	AO11_SR	AO12_SR	AO13_SR	AO14_SR	AO15_SR	AO16_SR	AO17_SR	AO18_SR	AO19_SR	AO20_BR	AO21_BR
Architecture	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR	BR	BR
Surface Openings	1	1	1	1	1	1	1	1	1	1	1	1
Maximum depth	14.3	4.5	4.4	9.8	7.5	5.2	7.7	7.6	14.6	8.1	4.5	6.8
Total Length	17.0	5.5	10.0	9.7	9.5	12.0	11.0	15.0	24.0	14.0	20.0	9.0
Maximum width	2.5	3.1	3.1	3.3	3.4	4.0	3.5	3.8	3.4	3.9	3.4	3.8
Minumum width	1.8	2.4	2.4	1.9	2.6	2.6	1.8	1.9	1.5	1.7	1.5	2.6
Average width	2.1	2.7	2.9	2.7	2.9	3.2	2.5	3.0	2.5	2.8	2.4	3.3
Maximum height	1.6	2.2	2.8	2.4	2.6	2.6	2.2	3.0	3.6	3.6	2.7	3.1
Minimum height	1.3	1.3	2.0	1.5	1.1	1.8	1.5	1.4	1.2	1.2	0.9	1.4
Average height	1.5	1.6	2.3	1.9	1.9	2.3	1.7	2.0	1.9	2.3	1.7	2.0
Average W/H ratio	1.4	1.7	1.3	1.4	1.5	1.4	1.5	1.5	1.3	1.2	1.4	1.7
Max circumference	5.9	7.9	8.8	9.1	9.1	10.0	11.5	10.1	9.4	11.3	10.1	10.0
Min circumference	4.7	6.1	6.1	5.4	5.5	7.1	5.3	5.4	4.3	4.4	4.1	7.4
Avg circumference	5.5	7.1	7.8	7.1	7.2	8.7	7.5	7.6	6.4	7.4	7.4	8.1
Maximum slope	11	25	45	78	27	48	63	55	90	83	31	43
Minimum slope	11	25	45	78	27	48	63	55	5	83	31	43
Average slope	11	25	45	78	27	48	63	55	51	83	31	43
Branching angles	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	90
Complexity	2	2	2	2	3	3	3	3	3	3	4	4
Tortuosity	1.1	0.9	1.4	1.0	1.2	1.3	1.1	1.4	1.3	1.4	2.1	1.2