

Emperor Scorpion (*Pandinus imperator*) Burrow Casts

Principle Investigator: Dan Hembree

Project Duration: 2009 – 2012

Total Burrows: 15

Subvertical Ramps (9)

ES1, ES4, ES6, ES7, ES9, ES11, ES14, ES15

Helical Burrows (4)

ES2, ES3, ES5, ES12

Branched Burrows (2)

ES8, ES10



Bags of Burrow Casts

Box	Casts Contained	Architecture
1	ES1, ES4, ES6, ES7, ES9, ES11, ES13,	SR
	ES14, ES15	BB
2	ES2, ES3, ES5, ES12	HB
	ES8	BB

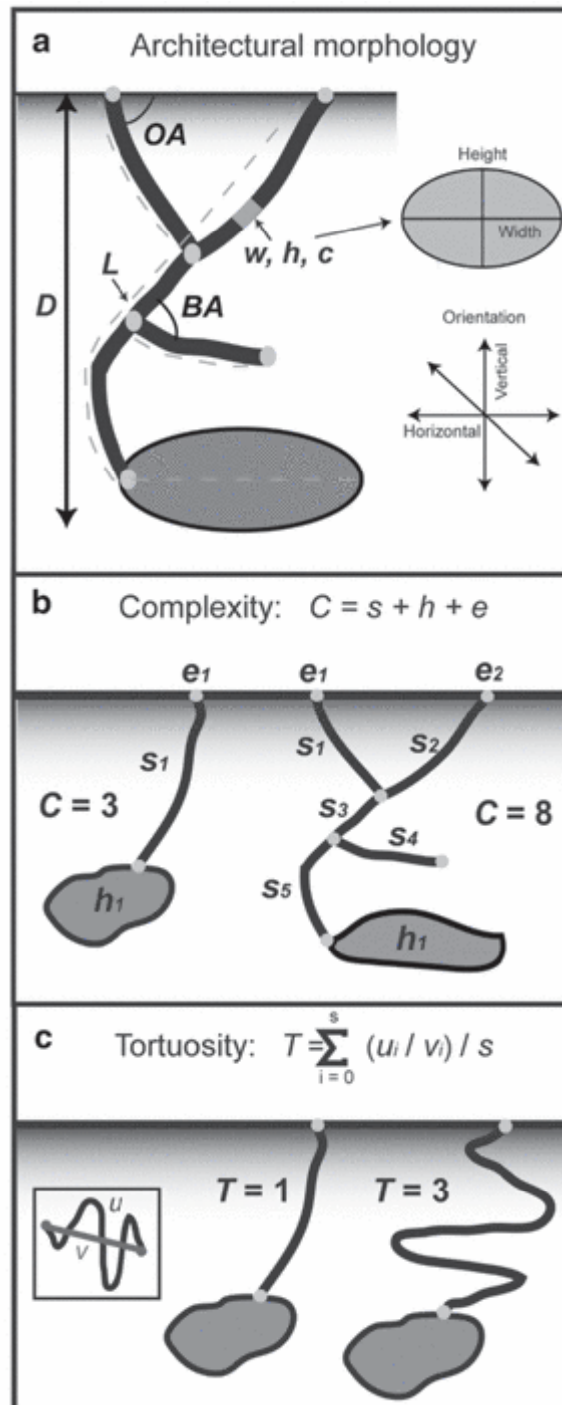
Experimental Setup

Tank size	Specimens	Sediment composition	Sediment depth	Sediment density	Sediment moisture (%)	Burrow architecture
212	1	50-25-25 % 0-C-S	55	1.1–1.4	20	None
212	1	50-25-25 % 0-C-S	55	1.1–1.4	50	SR
212	1	50-25-25 % 0-C-S	55	1.1–1.4	50	SR, HB
212	5	50-25-25 % 0-C-S	55	1.1–1.4	20	None
212	5	50-25-25 % 0-C-S	55	1.1–1.4	50	SR
212	5	50-25-25 % 0-C-S	55	1.1–1.4	70	SR, HB, BB

Sediment density values are in kgf/cm^3 , sediment depths are in cm, sediment moisture values are in percent total volume

SR subvertical ramp, *HB* helical burrow, *BB* branched burrow

Burrow Measurements



	ES1	ES4	ES6	ES7	ES9	ES11	ES13	ES14	ES15	ES2	ES3	ES5	ES12	ES8	ES10
PAST Identifier	PI1_SR	PI2_SR	PI3_SR	PI4_SR	PI5_SR	PI6_SR	PI7_SR	PI8_SR	PI9_SR	PI10_HB	PI11_HB	PI12_HB	PI13_HB	PI14_BB	PI15_BB
Architecture	SR	SR	SR	SR	SR	SR	SR	SR	SR	HB	HB	HB	HB	BB	BB
Surface openings	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maximum depth	6.5	7.5	13.0	5.0	13.0	6.0	7.0	13.0	11.0	12.5	16.0	14.0	15.0	30.0	13.0
Total length	28	12	27	18	34	29	19.5	25	14.5	34	34	29	32	80	28
Maximum width	7.6	6.8	6.2	6.3	11.6	7.1	6.3	7.1	6.4	12.0	11.3	6.4	8.3	10.6	9.9
Minimum width	6.0	4.4	4.1	3.6	3.9	3.8	4.8	5.3	4.5	7.4	5.5	4.3	4.2	4.3	3.9
Average width	6.7	6.0	4.9	5.6	8.2	6.3	5.8	6.9	5.3	9.6	8.7	5.5	6.5	6.8	6.8
Maximum height	4.4	2.9	4.8	3.6	4.2	3.8	2.7	5.8	5.4	7.1	5.4	3.4	5.9	4.4	4.9
Minimum height	2.9	1.9	2.3	2.2	1.9	1.7	1.8	4.0	1.9	3.0	3.9	2.1	2.0	2.6	2.4
Average height	3.7	2.5	3.0	2.8	2.9	2.9	2.5	5.0	3.5	3.9	4.5	2.7	4.5	3.3	3.6
Average W/H ratio	1.8	2.4	1.6	2.0	2.8	2.2	2.3	1.4	1.5	2.5	1.9	2.0	1.4	2.1	1.9
Maximum circumference	23.5	16.1	15.5	18.0	28.0	19.5	16.0	20.0	19.5	28.5	27.1	16.0	22.5	23.0	27.0
Minimum circumference	17.5	8.4	11.0	12.0	10.0	12.0	13.0	16.0	13.0	20.5	12.2	11.0	12.5	12.0	12.0
Average circumference	19.3	13.8	13.0	15.1	19.7	17.0	15.2	18.8	15.6	24.8	21.5	14.1	19.0	17.1	18.8
Maximum slope	20	40	50	20	50	20	20	35	25	30	30	50	30	40	50
Minimum slope	15	40	20	0	0	0	0	20	25	0	0	0	0	0	40
Average slope	17	40	40	13	19.3	6.7	13	27.5	25	14	24	21	18	19	47
Branching angles	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	90	90
Complexity	3	2	3	3	3	3	2	2	2	3	3	3	3	4	4
Tortuosity	1.0	1.0	1.0	1.1	1.1	1.0	1.0	1.1	1.0	1.7	1.1	1.1	1.5	1.0	1.0