ST 1

Taken for 21/12/84 MARCOLA BEACH

To Twin Dead Trees. PATTERN A

DISTANCE	REMARKS
M.	Weather clr sky S. SW wind. 4-5
0	0
2	
4	
6	
8	
10	
12	
14	
16	
18	
20	0 0 0 0 0 0
22	0 0 0 0 0 0

ST2

Date 22/12/84 Levels

From Mercoola B. TDTrees.

taken for Cor sky & breeze

To

PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
Pied size.	6.90 mm						
Samples	1. ϕ	ϕ ϕ ϕ	ϕ ϕ				
	2 ϕ	ϕ ϕ ϕ	ϕ ϕ				
	3 ϕ	ϕ 1 ϕ	ϕ ϕ				
	4 ϕ	ϕ ϕ ϕ	ϕ ϕ				
	5 ϕ	ϕ ϕ ϕ	ϕ ϕ				
Prey size	3.14 mm						
	20 samples along 4m transect at 20cm intervals No prey items transect in area of snail tracks						
	Sand temp 1500 32.2						

ST3

Date 23/12/84 Levels taken for

From To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL
5m	intervals for		DUNE		
	X 10 cases		40 cm apart		46
			2 rows of 5		
	5 =	0			
	10 =	0			
	15 =	0			
	20 =	0			
	25 =	0			
	30 =	1, 1, 1,		6.0, 5.68, 3.12	
	35 =	1,	3.34		
	40 =	0			
	45 =	0			
	50 =	1,	5.72		
	55 =	0			
	60 =	1, 1,	7.8, 6.08		

DISTANCE	REMARKS
50	1, 1, 3.44 5.0
45	0
40	0
35	0
30	1, 4.91
25	ø
20	ø
15	ø

ST4

Date 24/12/84 Levels taken for

From Transects 20 m apart measured from S. drive To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL
50	ϕ		each mark		x 5 samples.
48	1	6.46			
46	ϕ				
44	1	4.42			
42	ϕ				
40	ϕ				
38	ϕ				
36	ϕ				
34	ϕ				
32	ϕ				
30	ϕ				
25	ϕ				
52	1, 1	5.2	5.67.		
54	1	6.16 ~~6.05~~			

DISTANCE		REMARKS
* 29.46		* ÷ 40m position where sand surface wet.
22.85		
II		
52	1	5.54
50	1	4.35
48	1, 1	3.81 3.85
46	2,	10.52 46
44	ϕ	
42	ϕ	
40	ϕ	
38	ϕ	
36	ϕ	
34	ϕ	
32	ϕ	
30	ϕ	

III

54 ϕ
52 ϕ
50 ϕ
48
46
44
42 ϕ
40
38
36
34
32
30

Date _____ Levels

From _____

Taken for _____

To _____ PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS

Snails

1) An individual prey item may be a patch w.r.t time spent eating. ie time spent removing flesh may return less food.
∴ as prey density increases total handling time may vary.

2) An individual prey item may be a patch w.r.t search time following encounter, and escape response by prey. ∴ as prey density increases local search should decrease. (time)

3) Prey occurring in patches overall directionality should increase with increasing density of prey in patch but will be dependant on patch size, patch density and prey density in patches.

4) Within a patch prey density may vary giving within patch patchyness.

∴ may have overall patch changes in directionality, within patch changes and prey patch changes.

∴ Must estimate abundance and distribution of prey.
Method: within $10\,m^2$ random $1\,m^2$ with random axes (10×10)

Assessment Mechanisms

1) Hunger ≡ time since last capture
≡ overall prey density ?
≡ habitat quality.

2) time spent searching without encounter, or between encounters
≡ patch density (& sheer terms)
??

ST6

Date ______ Levels taken for ______

From ______ To ______ PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS

3) Chemoreception = patch density ??

* Need – reactive distance
 – probability of capture given encounter (will depend on time of ARS.)

ST7

Date 27/12/84 Levels taken for

From 1648 To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL
40s	one pipi moved 1.3 cm by snail a dist of 2 cm.				
	snail in search pttn				
2.05	washed away				
		↔			
0	S				
2 22	washed away.				
		↔			
0	S				
2 13	W.A.				
		↔			
0					
48	WA. Moved S cont search.				
141	W A S moved				
2 47	stop moving				
3 25	start "				
4 18	Wave.				
4 40	"	MA			
		↔			

DISTANCE 1700	REMARKS
0	S
1.11	W. MA.
3 54	W. MAD 3.0
5.50	M. MAU 1.0
7.18	NO MAU 0.5
9.22	W MAU 0.5 close to edge wt sand.
10.57	Sm W N. Move.
1435	Sm W N.M.
1515	W MAD 0.5
1550	W MAU 1.0
2009	Stop Press detection.
2047	W MAD 1.0.
2340	Sm W NM.
2508	Press det tim?
2757	Press det amplified
2803	W. MAD 3m
	FINISH

STE

Date 31/12/84 Levels taken for

From To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
Dist prey moved			~ 10 cm.		0755		
Size prey	~ 5mm.						
PE ~	2 cm						
PM ~	6 cm						
PS ~	4 mm.						

ST 9

Date 5/3/85 Levels

From 3 Car Pk → 300 ↑ 200

taken for 15/4/85

To Pollamundra rocket ship ÷ 150m out PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
	1 Pollinicus conicus (15.06mm) with bivalve (in 38)					÷ 150m	Pollinicus conicus found measuring 25.20 mm.
	Date 6/3/85						
	No of predators searching & carrying prey. 3-m creek area.						
1404	P.S. 11.61 4 Ma. 2.26, 2.54, 2.28, 2.5ϕ						
1408	P.S. 9.92 N.P.						
1412	P.S. 8.96 1 Ma 1.81						
1416	P.S. 10.64 3 Ma 3.04, 2.67, 2.18						

Date [redacted] Levels

From

taken for

To

ST10

PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
	[redacted] secs						
1218	P. serrulatus offered prey						
	15 secs and rejected						
	16.41 mm		prey Ic 3.30				
1220	P. conicus 46.4 & 23.0 secs						
	10.12 mm		3.02 mm	3.20 mm			
1230	P. conicus		30.2 sec.	36.5 sec.	37.15		
	10.65	3.15	3.13	3.28			

Date 9/4/84 Levels

From Rocketship.

taken for

To

PATTERN A

ST 11

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
1143		~~1m~~ 57.2s					
1153		1m 4s					
		17.8s		rejected.			
P. sanctus		11.55m		1.c.	3.45		
	prey.				3.21.		

ST12

Date 20th April, 1965 Levels

From Rocket ship Falkeranda.

taken for

To

PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL
Procedure	: Determination of excitation time in Polinices sp when presented with a prey item. also no of prey items accepted before either rejection or burrowing. Prey = 1. Coronata				
Time		Prey sz	Tm.ex.	A or R	Predator
1205		3.17	38.4	A	P.S.
1207		3.90	145.2	A	11.17 mm
1210		Burrowed			
1215		2.65	15	A	P.S 11.05
		3.55	acting strangely stopped.		
1222		2.61			
1230		2.64	28.4	A	Ps 13.45
1232		3.95	123.6	A	
1235		2.42	39.0	A	
1237		3.46	would not accept or capture then burrowed		

DISTANCE	REMARKS
1139	Determination of time of start of search. 10 pace line marked with flags. Sighting and time of snails recorded.
1141	exposed. 1151 exposed
1142	— " — 1151 ½ exp
1145	— " —
1150	— " —
1150	— " —
1200	Stop none seen searching while stage covered.

ST13

Date 20 apiL 1985 Levels taken for

From continuation from prev. page. To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
Time		Prey 53	Tm evol	Acc R	Pred		Initially wouldn't accept No 3, kept turning away, but then dos probing and accepted prey then commenced burrowing.
1247		3·25	42s	A	Pc		
1249		2·12	40.2	A	9.05mm		
1255		3·47	50·2	→			
							Burrowed immediately after No 2.
1308		2·69	18.9	A	Pc 7.83		
1311		3·9	32·0	A			
		·			Pc 8·76		Burrowed immediately after No 3
1316		3·35	33.2	A			
1318		2·3	26.2	A			
1320		3·64	39.2	A			
					* already PIT		Burrowed after No 1
1326		3·36	38.2	A	Pc 10.18 → 3·2mm		
1333		3·43	1-6.6	A	Pc 9.81		On first prey attack but moved right over top & missed item. Captured on second presentation.
1336		3·24	48 8	A			

Date 15/5/85 Levels

From Rocketship.

taken for Weather 7/8 stiff breeze. ST 14

To

PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
	Preliminary trial of effect of capture on prey item + evacuation time.						
1131	S1	3.71	✓				Notes
	Centre not captured	3.74	✓				✓ – prey item recovered and moved around dish
		3.02	x				
		2.98	✓				x – did not recover
		3.71	x				approx min time 15mins.
	S2	3.75	7.4	PC	63.6 ✓		Prey items captured and wasted – moved v. quickly whereas several of the centre specimens took some time.
		4.16	9.1	PC	40.6 ✓		
	captured wasted	3.5	6.55	PC	64.2 ✓		
		3.23	10.0	PC	64.4 ✓		
	S3	3.69	9.7	PC	39.6 x		
	captured not wasted	3.36	6.4	PC	42.2 x		
		3.36	6.86	PC	44.0 x		
		4.11	7.91	PC	83.8 x		
Finish	1219						

Time start 1120 finish

Date 16/05/85 Levels

From Rocketship

ST15

taken for Continuation of effect of

To capture on prey & eval time of pred. PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL		DISTANCE	REMARKS
Time	GP	Prey Size	Pred Size	Time eval	Recovery time		Notes	S1 = control S2 = washed after capture S3 = not washed — " —
1120	S1	3.95	—	—	↘ 11.24	(4)		Weather = 8/8 Cl Breeze.
1121	S2	3.71	7.41	46.8	↘ 1128	(7)		
1125	S3	3.16	10.41	82.6	x			CCC S1 and S2 revived many almost immediately (within 30secs) especially S2.
1130	S1	3.40	—	—	↘ 1136	(6)		
1131	S2	4.84	8.30	35.6	↘ 1134	(3)		
1135	S3	3.36	10.18	29.2	x			
1139	S1	2.64	—	—	↘ 1142	(3)		
1140	S2	3.35	8.42	40.2	↘ 1147	(7)		
1144	S3	3.05	8.47	46.2	x			
1149	S1	2.55	—	—	↘ 1152	(3)		
1150	S2	2.75	7.56	36.8	↘ 1153	(3)		
1154	S3	3.31	7.02	30.4	↘ 1157	(3)		
1159	S1	2.74	—	—	↘ 1203	(4)		
1200	S2	3.58	9.25	49.8	↘ 1207	(7)		
1204	S3	2.55	10.82	65.0				
	3 remaining by 1215		S3 no movement					

Date 16/05/85 (continuation) Levels taken for ST 16

From To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	
Time	GP	Prism size	Pred size	Time end	Recovery time	
1224	S1	4.1	–	–	↓ 1227	(3)
1225	S2	3.24	9.31	33.4	↓ 1231	(4)
1229	S3	4.62	10.62	29.6	X	
1232	S1	2.61	–	–	↓ 1237	(5)
1234	S2	3.12	8.86	49.0	↓ 1241	(7)
1238	S3	4.3	10.34	36.8	X	
1242	S1	3.31	–	–	↓ 1243	(1)
1243	S2	3.95	6.0	103.0	↓ 1248	(5)
1249	S3	4.25	8.6	71.0	X	
1253	S1	4.74	–	–	↓ 1258	
1254	S2	3.76	8.8	69.2	↓ 1258	
1259	S3	3.39	7.08	40.8	X	
1302	S1	3.2	–	–	↓ 1302	(0)
1303	S2	2.66	7.45	46.6	↓ 1308	(5)
1307	S3	2.67	8.0	47.0	X	

Finish 1315

no movement from any S3

DISTANCE	REMARKS		
	S1	S2	S3
total No	15	15	15
No Rec	13	15	1

Prism totals for 15/16 April 1985

ST17

Date 17/6/85 Levels taken for

From Mercoola. To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
		Detection of prey. in 6 cms				56m	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
		Track 					
		Pipi Sampling 28/06/85 Treading Technique 1320-1500					
	58m	1 0 0 0 0					
		0 0 0 0 0			1 P1	38 M	Ø Ø Ø 1 Ø 1 ag
		0 0 0 0 0			1 ag		Ø Ø Ø Ø Ø 1 P.1
		0 0 0 0 0					Ø 1 Ø Ø Ø
							Ø Ø Ø 1 Ø
	62m	0 0 0 0 0					
		0 0 0 0 0				33m	Ø 1 1 Ø Ø 1 ag
		0 0 0 0 0					Ø Ø 1 Ø Ø
		0 0 0 0 0					Ø Ø 2 Ø Ø 2 ag
							Ø 1 1 Ø Ø 1 gst
	63m	0 0 0 0 0					
		0 0 0 0 0				33	Ø Ø Ø Ø Ø 1 P1
		0 0 0 0 0					Ø Ø Ø Ø Ø
		0 0 0 0 0					Ø Ø Ø Ø Ø
							Ø Ø Ø Ø 1 ag.

35·81
31·85
35·19
28·75
21·76
8·85
9·00
9·11
9·00
8·51

ST18

Date 13/7/85 Levels taken for

From Rowes Bay 3rd C.P. To PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
1215 P.C appra		10.00					found attempting to burrow with hermit crab (still alive).

ST 19

Date 2/05/85 Levels taken for

From 3 C.P. To

PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
	Start	13.28					
	5 burrowed	in 5 mins					

ST20

Date _____ Levels

taken for _____

From _____

To _____ PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS
Time	DIST (cm)	angle	PSize	PDens	Notes		
1049	2	020	8·60	2	Stopped → increased sp reached person & attack.		
1058	3	000	14.25	1	No react.		
1058	2	340	"	1	Stopped turned towards		
1103	4	000	12·60	1	No react		
"	3	000	"	1	Stopped momentarily		
"	1	020	"	1	attack		

Date _____ Levels taken for _____

From _____ To _____ PATTERN A

BACK SIGHT	INTER-MEDIATE	FORE SIGHT	RISE	FALL	REDUCED LEVEL	DISTANCE	REMARKS

THE PROBLEM

Pdanicus sp hunt for prey at low tide. Although prey are patchily distributed, during a foraging period Pdanicus will remain within patch as the size of patches are large in comparison with the straight line distance moved by Pdanicus - (up to ± 10 m) Prey are randomly dist in patch. During search prior to encounters Pdanicus moves with high directionality, (undirected search)

Detection of prey is a combination of mechanoreception and chemoreception.

On approaching a prey item a number of possible outcomes exists.

1) Prey detects approach of predator and moves away.

2) Prey detects predator and commences moving, predator detects prey and

3) attacks with either

i) capture

ii) miss

iii) capture but prey escapes

3) predator stops/ turns toward prey but no further action.

4) Prey does not move and if directly enc by pred may be captured.