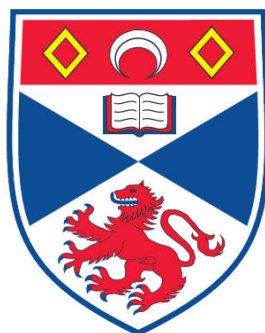


RESOLVING ANT-PLANT CONFLICTS : MECHANISMS AND FUNCTIONS OF FLORAL ANT-REPELLENCE

(APPENDIX)

Jonathan G. Pattrick

A Thesis Submitted for the Degree of MPhil
at the
University of St. Andrews



2012

Full metadata for this item is available in
Research@StAndrews:FullText
at:

<http://research-repository.st-andrews.ac.uk/>

Please use this identifier to cite or link to this item:

<http://hdl.handle.net/10023/3214>

This item is protected by original copyright

6. Appendix

6.1. Olfactometer raw data

Treatment					
Controls (initial setup)					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	N/A	300	23	26/05/2010	11.10
2	N/A	197	*	26/05/2010	*
3	N/A	173	*	26/05/2010	*
4	N/A	252	*	26/05/2010	*
5	N/A	50	*	26/05/2010	*
6	N/A	194	*	26/05/2010	12.45
7	N/A	295	*	26/05/2010	14.43
8	N/A	176	*	26/05/2010	*
9	N/A	161	*	26/05/2010	*
10	N/A	142	*	26/05/2010	*
11	N/A	300	*	26/05/2010	*
12	N/A	261	*	26/05/2010	*
13	N/A	177	*	26/05/2010	17.00
14	N/A	119	*	31/05/2010	12.10
15	N/A	288	*	31/05/2010	*
16	N/A	199	*	31/05/2010	12.45

Treatment					
Controls (final setup)					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	N/A	169	*	29/06/2010	10.32
2	N/A	124	26	29/06/2010	10.58
3	N/A	138	*	29/06/2010	11.16
4	N/A	135	*	29/06/2010	11.28
5	N/A	300	*	29/06/2010	11.42
6	N/A	0	*	29/06/2010	11.54
7	N/A	300	*	29/06/2010	12.07
8	N/A	28	*	29/06/2010	12.20
9	N/A	184	26	29/06/2010	12.32
10	N/A	124	*	29/06/2010	12.47
11	N/A	133	*	29/06/2010	12.59
12	N/A	104	27	29/06/2010	15.39
13	N/A	171	*	29/06/2010	15.56
14	N/A	215	28	29/06/2010	16.09
15	N/A	141	*	29/06/2010	16.**
16	N/A	126	*	29/06/2010	16:35
17	N/A	136	29	29/06/2010	16:52

Treatment					
2ul ~8% Formic Acid					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Left	300	22	16/07/2010	15.15
2	Left	116	22	16/07/2010	15.31
3	Left	300	23	16/07/2010	15.51
4	Right	300	23	16/07/2010	16.07
5	Left	143	23	16/07/2010	16.26
6	Right	300	23	16/07/2010	16.42
7	Right	300	24	16/07/2010	16.59
8	Left	209	25	19/07/2010	14.55
9	Left	300	25	19/07/2010	15.14
10	Right	0	25	19/07/2010	15.32
11	Left	0	25	19/07/2010	15.50
12	Right	0	25	19/07/2010	16.05
13	Left	21	25	19/07/2010	16.25
14	Right	278	24	19/07/2010	16.43
15	Right	49	24	19/07/2010	16.59
16	Right	0	24	19/07/2010	17.16

Treatment					
2ul formic acid					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	Time
1	Left	16	27	01/07/2010	10.35
2	Left	32	*	01/07/2010	10.55
3	Left	45	*	01/07/2010	11.14
4	Right	300	*	01/07/2010	11.31
5	Right	300	*	01/07/2010	11.51
6	Right	275	*	01/07/2010	12.10
7	Right	219	*	01/07/2010	12.27
8	Right	298	*	01/07/2010	12.47
9	Right	300	27	01/07/2010	13.04
10	Left	0	*	01/07/2010	13.34
11	Right	275	26	02/07/2010	10.20
12	Left	0	*	02/07/2010	10.40
13	Right	108	*	02/07/2010	10.54
14	Left	0	*	02/07/2010	11.09
15	Left	24	*	02/07/2010	11.43
16	Left	22	*	02/07/2010	11.59

Treatment					
Sul Formic acid					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Right	178	25	09/07/2010	15.57
2	Right	163	*	09/07/2010	16.13
3	Left	77	*	09/07/2010	16.29
4	Right	282	25	09/07/2010	16.44
5	Left	98	21	14/07/2010	10.49
6	Right	142	21	14/07/2010	11.07
7	Right	192	21	14/07/2010	11.25
8	Right	300	21	14/07/2010	10.18
9	Left	13	21	15/07/2010	10.42
10	Right	224	21	15/07/2010	10.59
11	Left	40	22	15/07/2010	11.18
12	Left	300	22	15/07/2010	11.37
13	Left	94	22	15/07/2010	11.58
14	Left	0	22	15/07/2010	12.13
15	Right	208	22	15/07/2010	12.37
16	Left	48	22	15/07/2010	12.58

Treatment					
<i>Centranthus ruber</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Right	149	20	12/07/2010	10.35
2	Left	2	20	12/07/2010	10.56
3	Right	0	20	12/07/2010	11.15
4	Left	263	20	12/07/2010	11.38
5	Right	83	21	12/07/2010	12.06
6	Left	0	21	12/07/2010	12.22
7	Left	0	21	12/07/2010	12.38
8	Right	0	21	12/07/2010	12.55
9	Left	116	22	12/07/2010	15.25
10	Right	209	23	12/07/2010	15.45
11	Left	116	*	12/07/2010	16.00
12	Left	300	24	12/07/2010	16.17
13	Right	109	*	12/07/2010	16.31
14	Right	156	25	12/07/2010	16.47
15	Right	300	25	12/07/2010	17.04
16	Left	77	25	12/07/2010	17.20

Treatment					
<i>Sambucus nigra</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	Time
1	Left	138	28	02/07/2010	15.14
2	Right	159	*	02/07/2010	15.29
3	Right	145	*	02/07/2010	15.49
4	Left	132	*	02/07/2010	16.07
5	Right	294	*	02/07/2010	16.27
6	Right	176	29	02/07/2010	16.47
7	Left	74	29.5	02/07/2010	17.03
8	Right	274	25	05/07/2010	11.36
9	Left	130	*	05/07/2010	12.20
10	Right	194	*	05/07/2010	12.37
11	Right	195	25	05/07/2010	12.54
12	Left	150	26	05/07/2010	15.47
13	Left	45	*	05/07/2010	16.06
14	Left	213	*	05/07/2010	16.24
15	Right	186	26	05/07/2010	16.41
16	Left	80	26	05/07/2010	16.58

Treatment					
<i>Hesperis matronalis</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Left	0	24	17/06/2010	10.53
2	Right	199	*	17/06/2010	11.17
3	Right	300	*	17/06/2010	11.50
4	Right	300	*	17/06/2010	12.12
5	Left	300	*	17/06/2010	12.33
6	Left	148	*	17/06/2010	12.55
7	Right	168	27	24/06/2010	10.51
8	Left	278	*	24/06/2010	11.11
9	Right	116	26	24/06/2010	11.34
10	Right	183	*	24/06/2010	11.54
11	Right	276	*	24/06/2010	12.10
12	Left	111	*	24/06/2010	12.28
13	Left	163	*	24/06/2010	12.45

Treatment					
<i>Armeria maritima</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	Time
1	Left	42	21	13/07/2010	10.07
2	Right	163	*	13/07/2010	10.27
3	Right	207	*	13/07/2010	10.44
4	Left	134	22	13/07/2010	10.58
5	Right	271	22	13/07/2010	11.18
6	Right	129	22	13/07/2010	11.33
7	Left	140	22	13/07/2010	11.56
8	Right	231	22	13/07/2010	12.21
9	Right	208	22	13/07/2010	12.37
10	Left	0	22	13/07/2010	12.53
11	Left	0	23	13/07/2010	15.34
12	Right	300	*	13/07/2010	15.50
13	Left	300	23	13/07/2010	16.07
14	Right	212	23	13/07/2010	16.23
15	Left	172	23	13/07/2010	16.41
16	Left	119	23	13/07/2010	16.58

Treatment					
<i>Buddleja davidii</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Left	50	24	19/07/2010	10.34
2	Right	117	24	19/07/2010	10.51
3	Left	0	*	19/07/2010	11.07
4	Left	103	24	19/07/2010	11.23
5	Right	300	23	19/07/2010	12.03
6	Left	300	24	19/07/2010	12.18
7	Left	96	*	19/07/2010	12.36
8	Right	300	*	19/07/2010	12.51
9	Right	140	23.5	19/07/2010	13.05

Treatment					
<i>Linaria purpurea</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Left	300	23	20/07/2010	11.55
2	Right	300	23	20/07/2010	12.09
3	Left	81	24	20/07/2010	12.26
4	Right	215	24	20/07/2010	12.41
5	Right	108	24	20/07/2010	12.58
6	Right	190	25	20/07/2010	14.51
7	Right	300	25	20/07/2010	15.11
8	Left	0	25	20/07/2010	15.28
9	Left	20	25	20/07/2010	15.42
10	Right	274	26	20/07/2010	15.58
11	Left	251	26	20/07/2010	16.13
12	Right	300	26	20/07/2010	16.41
13	Right	288	26	20/07/2010	16.56
14	Left	118	26	20/07/2010	17.12
15	Left	138	27	20/07/2010	17.43
16	Left	43	23	26/07/2010	13.04

Treatment					
<i>Digitalis purpurea</i>					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Right	168	24	06/07/2010	11.22
2	Right	185	*	06/07/2010	12.03
3	Right	0	25	06/07/2010	12.21
4	Left	134	24	06/07/2010	12.36
5	Left	300	25	06/07/2010	12.53
6	Left	191	*	06/07/2010	13.**
7	Right	204	24	06/07/2010	15.16
8	Right	217	25	06/07/2010	15.33
9	Left	117	23	09/07/2010	10.25
10	Left	89	24	09/07/2010	10.47
11	Right	300	24	09/07/2010	11.06
12	Left	1	24	09/07/2010	11.32
13	Right	0	24	09/07/2010	11.52
14	Left	172	24	09/07/2010	12.12
15	Right	162	24	09/07/2010	12.32

Treatment					
4-methoxybenzaldehyde					
Replicate no.	Treatment side	Time in LHS of olfactometer (s)	Temperature (°C)	Date	(Approx) Time
1	Left	222	22	11/08/2010	10.43
2	Left	27	22	11/08/2010	11.13
3	Right	258	23	11/08/2010	12.16
4	Right	105	22	11/08/2010	12.43
5	Left	0	23	12/08/2010	11.05
6	Right	300	23	12/08/2010	11.36
7	Left	0	23	12/08/2010	12.13
8	Right	300	23	12/08/2010	12.36
9	Right	225	23	13/08/2010	10.02
10	Left	11	23	13/08/2010	10.28
11	Right	274	23	13/08/2010	12.08
12	Right	300	23	13/08/2010	12.34
13	Left	84	23	19/08/2010	10.08
14	Left	0	23	19/08/2010	10.34
15	Right	0	23	19/08/2010	11.36
16	Left	0	23	19/08/2010	12.05

6.2. Pollen Viability Raw data

<i>Formica aquilonia</i>				
Replicate set	Pollen application time	# Germinated grains	# Grains not germinated	# grains missed
1	1319	40	10	0
2	1418	0	50	0
3	1438	32	18	3
4	1630	9	41	1
5	1725	24	26	3
6	1737	39	11	5

<i>Bombus pascuorum</i>				
Replicate set	Pollen application time	# Germinated grains	# Grains not germinated	# grains missed
1	1321	40	10	0
2	1425	37	13	0
3	1433	35	15	10
4	1626	14	36	7
5	1721	32	18	10
6	1733	31	19	7

<i>Apis mellifera</i>				
Replicate set	Pollen application time	# Germinated grains	# Grains not germinated	# grains missed
1	1325	41	9	0
2	1416	37	13	0
3	1431	23	27	2
4	1623	19	31	12
5	1718	33	17	14
6	1735	35	15	0

Control				
Replicate set	Pollen application time	# Germinated grains	# Grains not germinated	# grains missed
1	1327	37	13	0
2	1421	39	11	7
3	1437	42	8	2
4	1620	31	19	2
5	1728	34	16	52
6	1730	39	11	1