

## Supplementary materials

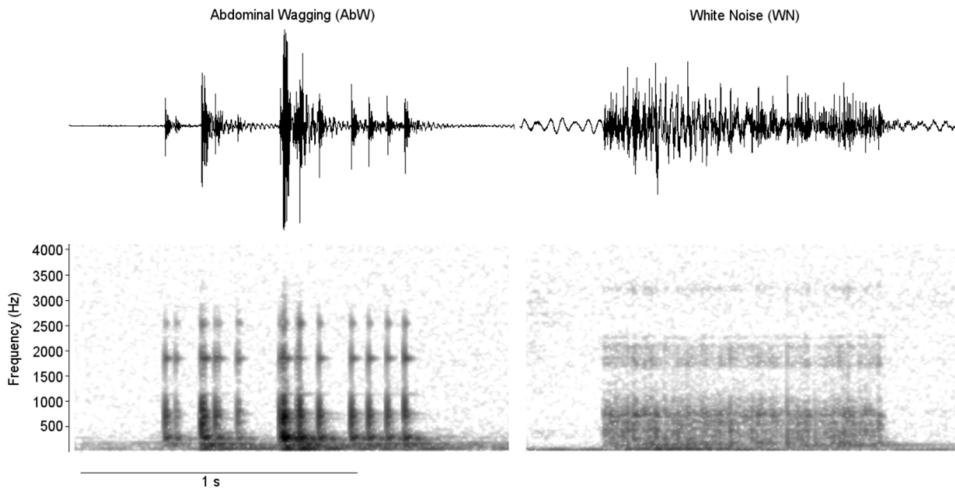
### Materials and methods

Feature	Colony phase	Control	White Noise	Abdominal Wagging	Kruskal Wallis test	sig.	N
Number of Cells	Pre-emergence	46.36±13.76	39.00±17.52	41.73±15.92	X <sup>2</sup> =2.600	p=0.272	11 vs 11 vs 11
	Post-emergence	81.56±56.01	74.22±36.34	76.89±55.30	X <sup>2</sup> =0.292	p=0.864	9 vs 9 vs 9
Number of Pupae	Pre-emergence	5.00±5.85	3.18±5.06	3.55±3.61	X <sup>2</sup> =1.590	p=0.451	11 vs 11 vs 11
	Post-emergence	17.56±25.96	10.44±11.60	17.55±18.88	X <sup>2</sup> =0.585	p=0.746	9 vs 9 vs 9
Number of Larvae	Pre-emergence	16.27±8.27	16.36±8.23	18.55±8.81	X <sup>2</sup> =0.502	p=0.788	11 vs 11 vs 11
	Post-emergence	23.11±9.74	18.22±5.54	23.11±7.46	X <sup>2</sup> =2.836	p=0.805	9 vs 9 vs 9
Number of females	Pre-emergence	2.73±1.55	1.82±0.87	2.18±1.32	X <sup>2</sup> =2.213	p=0.331	11 vs 11 vs 11
	Post-emergence	14.67±10.82	10.44±4.88	10.00±5.39	X <sup>2</sup> =0.434	p=0.805	9 vs 9 vs 9

**Table S1** Comparison of demographic features of colonies allocated to the three treatments. Colonies allocated to the different experimental groups did not differ for any demographic parameter considered.

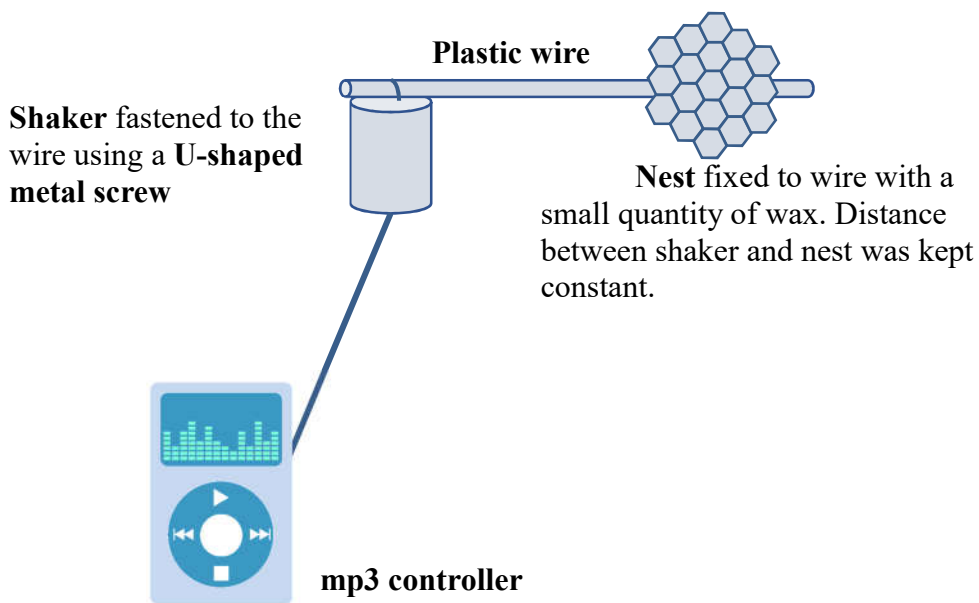
	AbW performed by foundresses			AbW track		
	Mean ± SD	minimum value	Maximum value	Mean ± SD	minimum value	Maximum value
Duration of event (seconds)	0.61 ± 0.41	0.04	2.61	0.91 ± 0.05	0.47	1.10
Dominant frequency (Hz)	48.10 ± 26.59	32	128	69.82 ± 27.29	64	192
Number of pulses	7.27 ± 4.26	2	31	11.79 ± 0.53	11	13
Duration of pulses (seconds)	0.03 ± 0.01	0.004	0.064	0.03 ± 0.01	0.015	0.071

**Table S2** Temporal and spectral parameters of AbW performed by foundresses, as recorded in a preliminary experiment on 7 colonies, and features of AbW playback track as re-recorded on the nests on which it was played back.

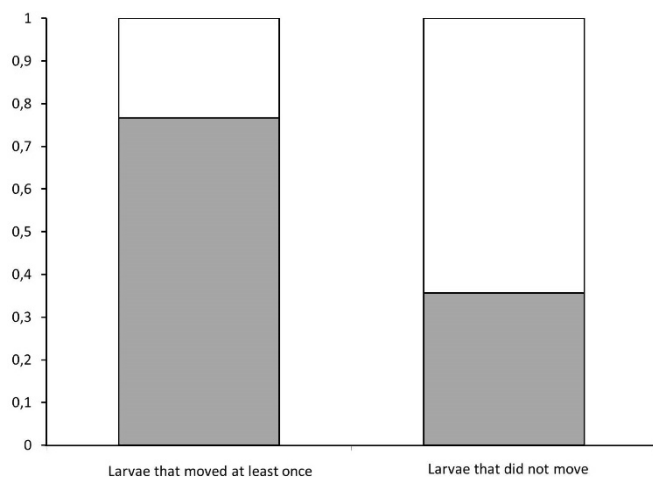


**Figure S1.** Oscillogram (above) and spectrogram (below) of the two playback tracks of AbW (left) and WN (right).

*Experimental apparatus*



**Figure S2** Experimental apparatus used to play back vibration tracks on the nest.

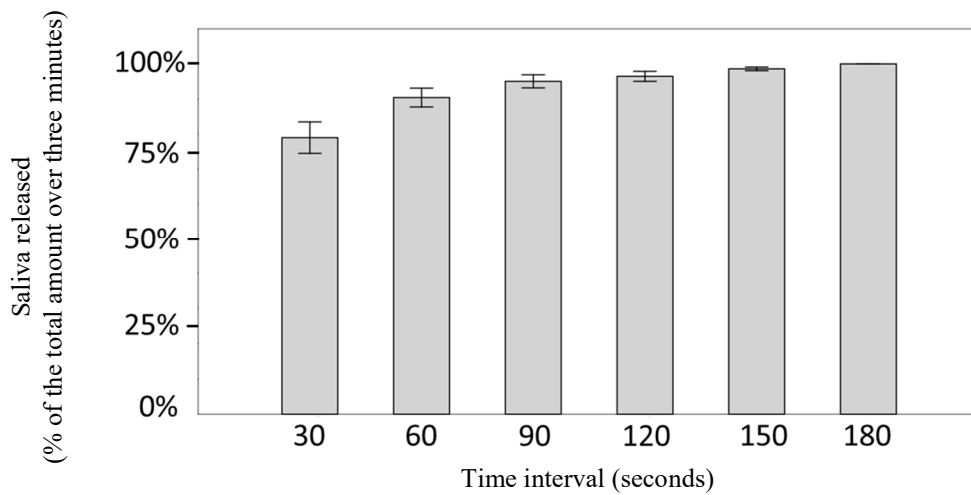


**Figure S3.** Larvae that performed at least one body movement were more likely to receive at least one food delivery than larvae that did not (Chi-square corrected for continuity=5.22, df=1, p=0.0223). The histogram reports that percentage of larvae that receive a food visit (grey) in the two groups. Data from an additional experiment, 94 larvae from 13 colonies were observed during the feeding context for 15 minutes each.

Behavioural response experiment					
Season	Larval size	Treatment			Total
		C	WN	AbW	
Pre-emergence	Medium	18	13	23	54
	Large	13	22	14	49
	<i>Total</i>	<i>31</i>	<i>35</i>	<i>37</i>	<b><i>103</i></b>
Post-emergence	Medium	11	7	6	24
	Large	25	24	27	76
	<i>Total</i>	<i>36</i>	<i>31</i>	<i>33</i>	<b><i>100</i></b>
Total	Medium	29	20	29	78
	Large	38	46	41	125
	<i>Total</i>	<b><i>67</i></b>	<b><i>66</i></b>	<b><i>70</i></b>	<b><i>203</i></b>
Saliva release experiment					
Season	Larval size	Treatment			Total
		C	WN	AbW	
Pre-emergence	Medium	27	17	16	60
	Large	18	21	24	73
	<i>Total</i>	<i>45</i>	<i>38</i>	<i>40</i>	<b><i>123</i></b>

<b>Post-emergence</b>	Medium	10	18	12	40
	Large	43	35	41	119
	<i>Total</i>	53	53	53	<b>159</b>
<b>Total</b>	Medium	37	35	28	100
	Large	61	56	65	182
	<i>Total</i>	<b>98</b>	<b>91</b>	<b>93</b>	<b>282</b>

**Table S3.** Sample sizes of larvae of each category tested in the behavioural response and saliva release experiments.



**Figure S4** Percentage of saliva (mean  $\pm$  standard error) released in 30, 60, 90, 120, 150 and 180 seconds without vibrational stimulation.

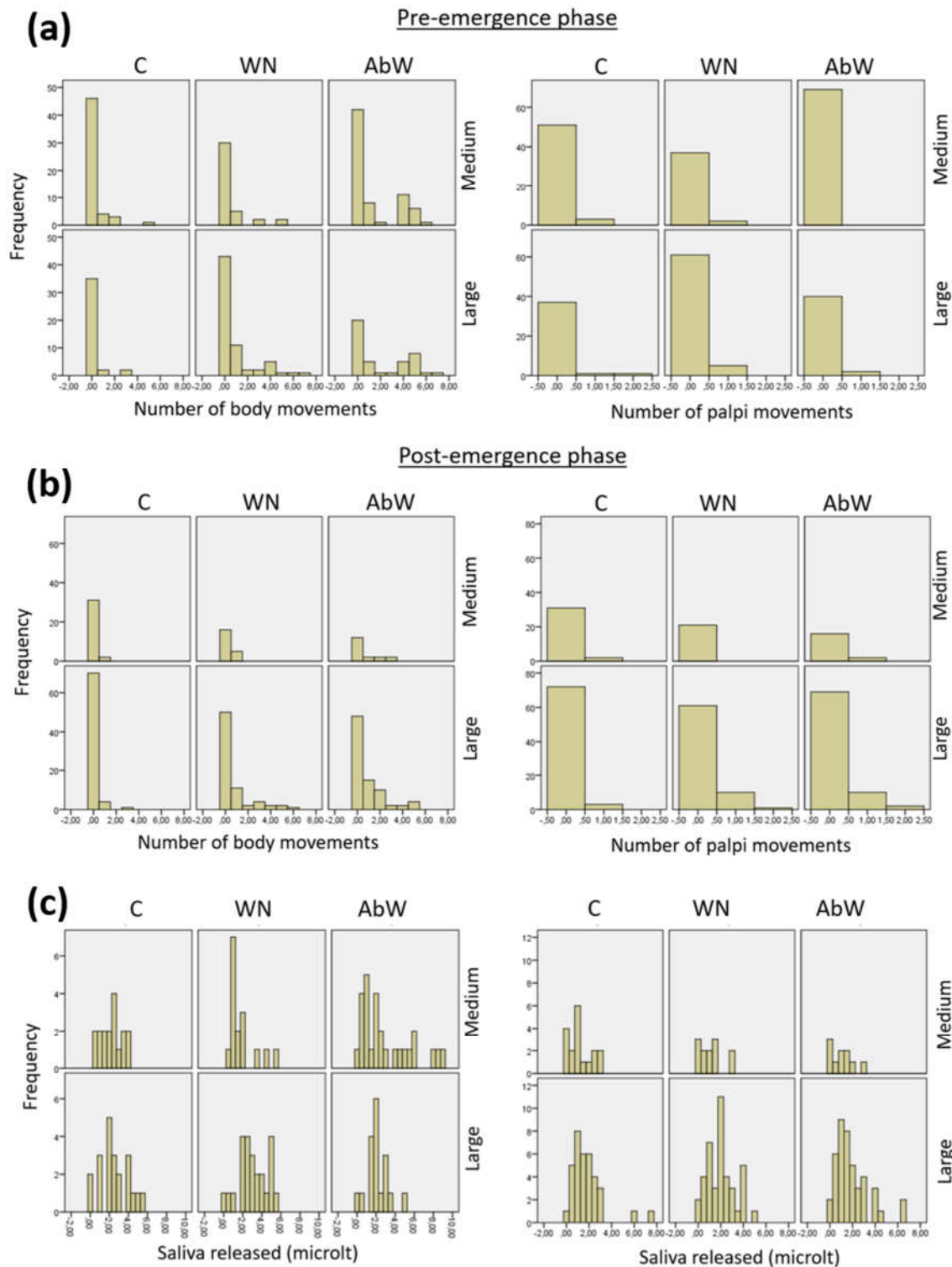
## Results

body movements			
Source	Wald Chi-Square	Type III df	p-value
(Intercept)	0.367	1	0.545
Treatment	<b>44.409</b>	<b>2</b>	<b>&lt;0.001</b>
Colony phase	<b>4.755</b>	<b>1</b>	<b>0.029</b>
Larval size	<b>4.274</b>	<b>1</b>	<b>0.039</b>
Colony phase x Treatment	3.712	2	0.156
Treatment x Larval size	1.232	2	0.54
Colony phase x Larval size	0.026	1	0.873
palpi movements			
Source	Wald Chi-Square	Type III df	p-value
(Intercept)	<b>68.368</b>	<b>1</b>	<b>&lt;0.001</b>
Treatment	0.068	2	0.967
Colony phase	1.432	1	0.231
Larval size	3.540	1	0.060
Colony phase x Treatment	0.530	2	0.767
Treatment x Larval size	0.932	2	0.627
Colony phase x Larval size	0.067	1	0.796

**Table S4** Influence of treatment, colony phase and larval size on binary logistic distribution of body movements (above) and palpi movements (below). Results from Generalized Estimating Equation. Significant explanatory variables in bold.

Source	Wald Chi-Square	Type III df	p-value
(Intercept)	<b>610.074</b>	<b>1.000</b>	<b>&lt;0.001</b>
Treatment	0.250	2.000	0.883
Colony phase	<b>17.180</b>	<b>1.000</b>	<b>&lt;0.001</b>
Larval size	<b>11.251</b>	<b>1.000</b>	<b>0.001</b>
Treatment x Colony phase	0.472	2.000	0.790
Colony phase x Larval size	2.715	1.000	0.099
Treatment x Larval size	2.887	2.000	0.236

**Table S5** Influence of treatment, colony phase and larval size on amount of larval saliva release in 60 seconds. Results from Generalized estimating equation. Significant explanatory variables in bold.



**Fig. S5.** Frequency histogram of the values assumed by (a) the number of body and palpi movements according to treatment and larval size, for the pre-emergence phase, (b) the number of body and palpi movements according to treatment and larval size, for the post-emergence phase and (c) by the amount of saliva released (microlit) according to treatment and larval size, for the pre-emergence period, left, and for the post-emergence period, right.

**Audio 1.** Audio track of Abdominal wagging used for playback experiments

[Click here to Download Audio 1](#)

**Audio 2** Audio track of White noise used for playback experiments

[Click here to Download Audio 2](#)



**Movie 1.** An example of the behavioural responses recorded in larvae