Supplementary Tables

Table S1. Estimated fixed effects coefficients and *t*-tests for the linear model of logit-transformed valve gape during the field deployment, using 10-minute interval subsampled data. The model estimated the valve opening based on field site (high shore, low shore, tidepool) and mussel origin (wave-exposed or wave-protected site). A random effect for individual mussels and a first order autoregressive correlation structure were included to account for repeated observations of the same mussel. The reference level (i.e. Intercept) for Site was the tidepool location and the reference level for Origin was wave-protected mussels. The estimated variance among random intercepts was 0.0006, residual variance was 2.16, and the correlation parameter estimate $\boldsymbol{\phi = 0.97}$.

Predictor	**Value**	**S.E.**	**d.f.**	***t***	***P***
Intercept	-2.33	0.07	65226	-34.2	**<0.001**
Site, Low	0.69	0.10	17	7.0	**<0.001**
Site, High	0.51	0.09	17	5.7	**<0.001**
Origin, Exposed	0.19	0.07	17	2.8	**0.013**

Table S2. Estimated fixed effects coefficients and *t*-tests for the linear model of total time spent gaping (minutes) wider than a 20% threshold during a high tide interval, versus maximum body temperature on the previous low tide, mussel origin (wave-protected or wave-exposed), site (High shore or Low shore), and offshore wave height. The values for wave height and body temperature were centered and scaled by one standard deviation. A random effect for individual mussels was included. The reference level was the wave-exposed origin mussels located at the High shore site. The estimated standard deviation among random intercepts was 41.2 and the residual standard deviation was 117.

Predictor	**Value**	**S.E.**	**d.f.**	***t***	***P***
Intercept	389.0	10.42	608	37.3	**<0.001**
Max. Temperature	-9.3	6.46	608	-1.4	0.153
Wave height	55.2	6.77	608	8.2	**<0.001**
Site, Low shore	118.2	10.87	21	10.9	**<0.001**
Origin, wave-protected	24.0	9.99	21	2.4	**0.026**
Max. Temperature × Wave height	23.0	6.10	608	3.8	**<0.001**
Wave height × Site	42.0	7.23	608	5.8	**<0.001**
Max. Temperature × Origin	-12.7	5.84	608	-2.2	**0.031**

Supplementary figures

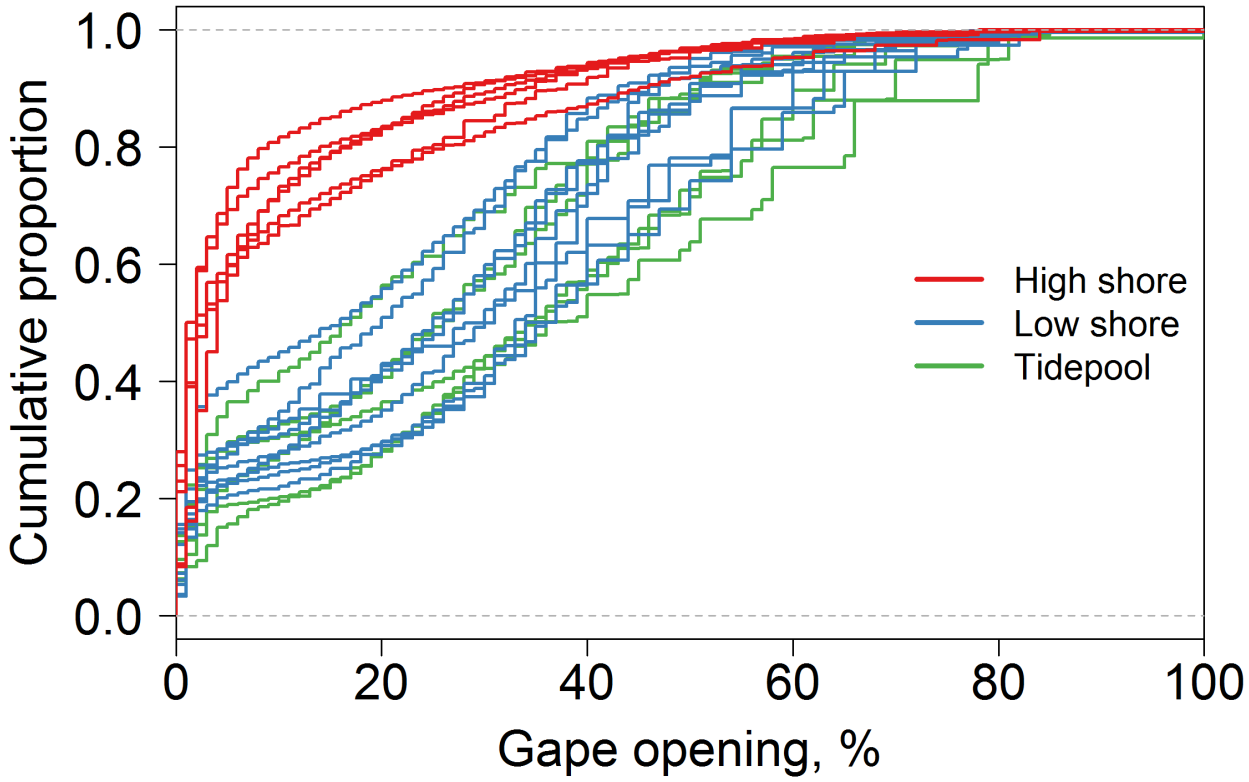

Figure S1. Empirical cumulative distributions for the percent valve gape opening of each mussel in the experiment. The cumulative proportion on the ordinate axis represents a total of 530 h of observations from July 15 to August 6 2015. Only records for mussels with missing data gaps shorter than 50 h were included here, yielding six mussels from the high shore location, nine mussels from the low shore location, and six mussels from the tidepool location in the dataset.

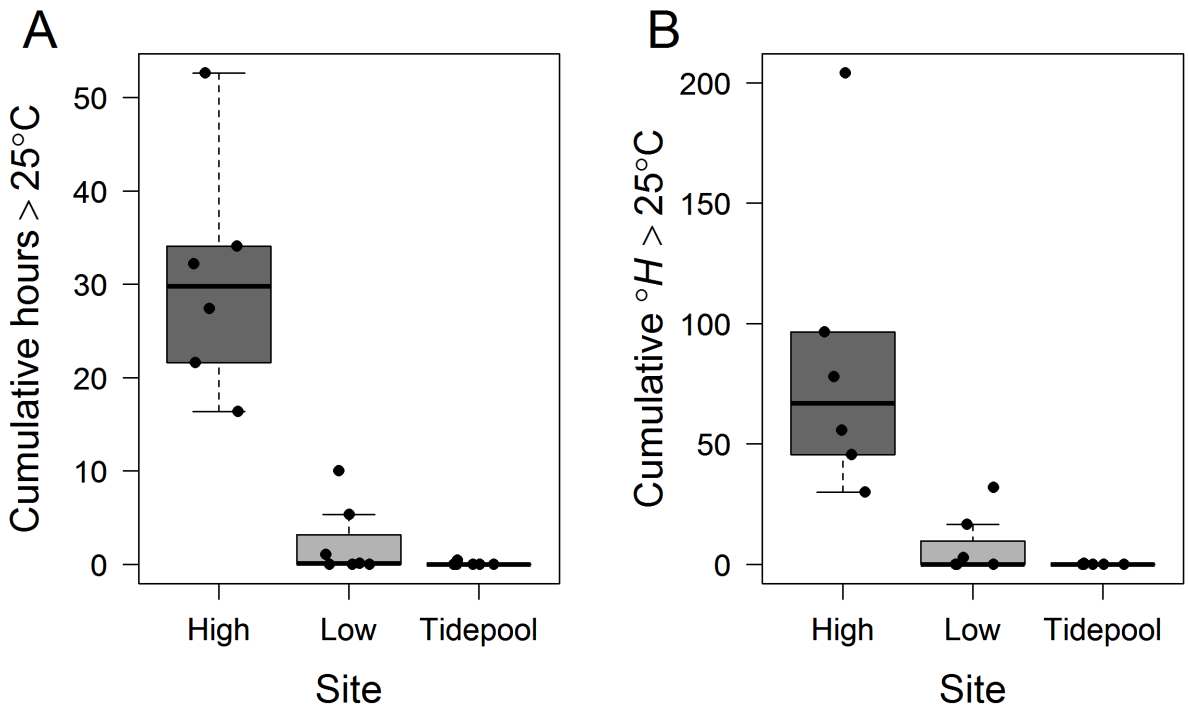

Figure S2. Boxplots of cumulative hours spent above 25°C (A), and cumulative degree hours, °*H*, above 25° (B) for mussels at the three field locations that had temperature data available for every day of the deployment. Black points represent calculated values for individual mussels (n = 6 at High site, n = 7 at Low site, n = 6 at Tidepool site).

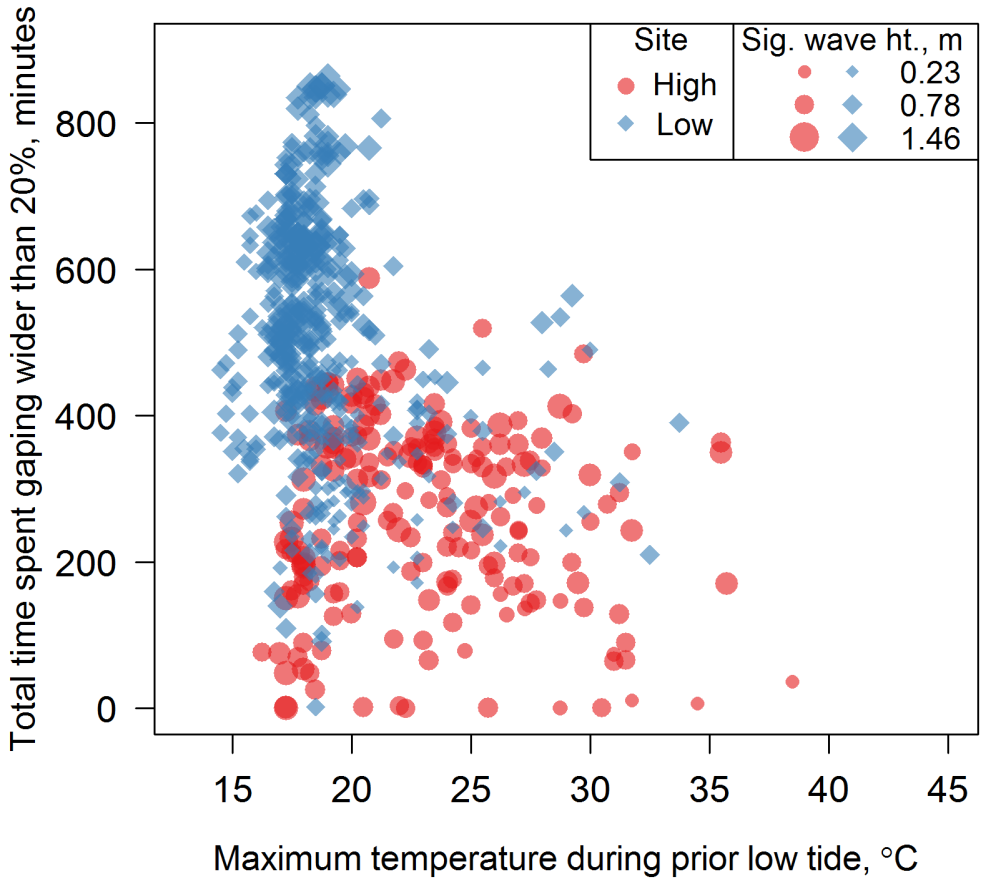

Figure S3. Total time mussels spent gaping wider than 20% during a high tide interval, versus maximum body temperature during the prior low tide. Point sizes are scaled by offshore significant wave height during the high tide interval.