

ERRATUM

V. Thiagarajan · T. Harder · Jian-Wen Qiu
Pei-Yuan Qian

**Energy content at metamorphosis and growth rate
of the early juvenile barnacle *Balanus amphitrite***

Published online: 28 November 2003
© Springer-Verlag 2003

Marine Biology (2003) 143:543–554

Due to an unfortunate error the Tukey's groups were not underlined in Tables 3, 4 and 5. The correct tables are printed below.

The online version of the original article can be found at <http://dx.doi.org/10.1007/s00227-003-1077-9>

V. Thiagarajan · T. Harder · J.-W. Qiu · P.-Y. Qian (✉)
Department of Biology,
The Hong Kong University of Science and Technology (HKUST),
Clear Water Bay, Kowloon, SAR Hong Kong, China
E-mail: boqianpy@ust.hk
Tel.: + 852-23587331
Fax: + 852-23581559

Present address: J.-W. Qiu
Department of Biology, Hong Kong Baptist University,
224 Waterloo Road, SAR Hong Kong, China

Table 3 *Balanus amphitrite*. Results of one-way ANCOVA and Tukey's multiple comparison test showing the effect of early juvenile energy content (four levels) on the magnitude of growth increments up to days 2, 5 and 10 under different temperature–food combinations in experiment 2 and in experiment 3. Growth increment and initial juvenile size served as dependent variable and covariate, respectively. Data were log-transformed to meet ANOVA assumptions. In the Tukey's test results, values are arranged

from left to right in descending order, and those not significantly different ($\alpha=0.05$) are connected by line. In experiment 3, batches 1 and 2 were pooled for the analysis due to insignificant interaction between larval batches (*HJ* high-energy juvenile; *MJ* medium-energy juvenile; *LJ* low-energy juvenile; *WJ* natural-energy juveniles from wild; *NA* data not available due to 100% mortality)

Source	df	Day 2				Day 5				Day 10				
		MS	F	P	Tukey's test	MS	F	P	Tukey's test	MS	F	P	Tukey's test	
Experiment 2														
18°C/zero														
Energy	3	0.591	2.35	0.1	<u>HJ LJ MJ WJ</u>	0.052	3.18	0.06	<u>LJ WJ HJ MJ</u>	NA	NA	NA		
Initial size	1	0.359	1.43	0.24		0.030	2.4	0.13						
Error	19	0.251				0.016								
18°C/10 ²														
Energy	3	0.119	1.44	0.26	<u>HJ LJ WJ MJ</u>	0.010	2.4	0.09	<u>WJ HJ MJ LJ</u>	0.049	15.45	<0.01	<u>HJ MJ LJ WJ</u>	
Initial size	1	0.098	1.19	0.28		0.006	1.55	0.22		0.011	3.6	0.07		
Error	19	0.082				0.004				0.003				
18°C/10 ⁴														
Energy	3	0.501	2.07	0.13	<u>WJ LJ HJ MJ</u>	0.021	1.31	0.29	<u>WJ LJ MJ HJ</u>	0.008	1.1	0.37	<u>WJ HJ LJ MJ</u>	
Initial size	1	0.177	2.44	0.13		0.000	0.02	0.88		0.006	0.9	0.35		
Error	19	0.072				0.015				0.007				
24°C/zero														
Energy	3	0.498	17.51	<0.01	<u>HJ LJ WJ MJ</u>	0.248	97.55	<0.01	<u>HJ LJ MJ WJ</u>	NA	NA	NA		
Initial size	1	0.018	0.66	0.45		0.049	19.43	<0.01						
Error	19	0.028				0.002								
24°C/10 ²														
Energy	3	0.916	11.74	<0.01	<u>MJ HJ LJ WJ</u>	0.039	19.83	<0.01	<u>MJ HJ LJ WJ</u>	0.003	1.79	0.18	<u>MJ HJ WJ LJ</u>	
Initial size	1	0.059	0.76	0.39		0.029	13.51	<0.05		0.001	0.55	0.46		
Error	19	0.007				0.002				0.009				
24°C/10 ⁴														
Energy	3	0.076	5.31	<0.01	<u>MJ HJ LJ WJ</u>	0.030	45.15	<0.01	<u>MJ HJ LJ WJ</u>	0.003	1.65	0.21	<u>MJ HJ LJ WJ</u>	
Initial size	1	0.003	0.26	0.61		0.001	0.01	0.99		0.001	0.48	0.49		
Error	19	0.014				0.001				0.002				
30°C/zero ^a														
Energy	3	133.4	14.08	<0.01	<u>LJ MJ HJ WJ</u>	342.9	65.35	<0.01	<u>MJ HJ LJ WJ</u>	NA	NA	NA		
Initial size	1	20.0	2.11	0.16		38.3	7.3	<0.05						
Error	19	9.5				5.2								
30°C/10 ²														
Energy	3	0.127	14.65	<0.01	<u>HJ MJ LJ WJ</u>	0.024	14.37	<0.01	<u>MJ HJ LJ WJ</u>	0.010	4.98	<0.05	<u>HJ MJ WJ LJ</u>	
Initial size	1	0.001	0.22	0.63		0.001	0.71	0.71		0.012	5.9	0.06		
Error	19	0.008				0.001				0.002				
30°C/10 ⁴														
Energy	3	0.139	27.53	<0.05	<u>HJ MJ LJ WJ</u>	0.014	10.68	<0.01	<u>HJ MJ LJ WJ</u>	0.002	2.67	0.07	<u>HJ MJ WJ LJ</u>	
Initial size	1	0.001	0.02	0.87		0.001	0.06	0.06		0.001	1.15	0.29		
Error	19	0.005				0.001				0.001				
Experiment 3														
Energy	3	0.112	3.57	0.06	<u>WJ HJ MJ LJ</u>	0.040	4.48	<0.01	<u>HJ MJ WJ LJ</u>	0.014	2.46	0.07	<u>WJ MJ HJ LJ</u>	
Initial size	1	0.001	0.02	0.87		0.011	1.32	0.25		0.017	2.93	0.09		
Error	43	0.027				0.008				0.005				

^adata were ranked before analysis

Table 4 *Balanus amphitrite*. Summary of ANOVA and multiple comparison test showing the effect of temperature (three levels: 18°C, 24°C and 30°C) at different levels of food concentrations on the growth increment up to days 2, 5 and 10 of different juvenile categories (*HJ* high-energy juvenile; *MJ* medium-energy juvenile; *LJ* low-energy juvenile; *WJ* natural-energy juveniles from wild).

Food concentration	Day 2						Day 5						Day 10					
	MS effect	MS error	$F_{2,15}$	Tukey's test			MS effect	MS error	$F_{2,15}$	Tukey's test			MS effect	MS error	$F_{2,15}$	Tukey's test		
HJ																		
Zero cells ^a	213.0	3.060	69.59**	30°C	24°C	18°C	169.0	8.792	19.22**	30°C	24°C	18°C	NA	NA	NA			
10^2 cells ml ⁻¹	0.604	0.017	36.03**	30°C	24°C	18°C	0.403	0.003	113.71**	30°C	24°C	18°C	0.192	0.001	99.53**	30°C	24°C	18°C
10^4 cells ml ⁻¹	0.702	0.022	32.02**	30°C	24°C	18°C	0.744	0.010	73.35**	30°C	24°C	18°C	0.548	0.002	358.71**	30°C	24°C	18°C
MJ																		
Zero cells	3.187	0.044	71.99**	30°C	24°C	18°C	1.347	0.011	117.64**	30°C	24°C	18°C	NA	NA	NA			
10^2 cells ml ⁻¹	1.394	0.064	21.61**	30°C	24°C	18°C	0.671	0.002	321.51**	30°C	24°C	18°C	0.314	0.001	224.21**	24°C	30°C	18°C
10^4 cells ml ⁻¹	1.328	0.075	17.64**	30°C	24°C	18°C	0.762	0.003	230.96**	30°C	24°C	18°C	0.654	0.007	87.36**	30°C	24°C	18°C
LJ																		
Zero cells	1.651	0.124	13.29**	30°C	24°C	18°C	0.663	0.005	130.82**	30°C	24°C	18°C	NA	NA	NA			
10^2 cells ml ⁻¹	0.313	0.035	8.781**	30°C	24°C	18°C	0.707	0.004	165.65**	30°C	24°C	18°C	0.334	0.004	74.54**	24°C	30°C	18°C
10^4 cells ml ⁻¹	0.265	0.009	28.44**	30°C	24°C	18°C	0.422	0.005	77.82**	30°C	24°C	18°C	0.542	0.002	224.92**	30°C	24°C	18°C
WJ																		
Zero cells	1.052	0.342	3.07(ns)	24°C	30°C	18°C	0.185	0.010	18.41**	30°C	24°C	18°C	NA	NA	NA			
10^2 cells ml ⁻¹	0.583	0.108	5.39*	30°C	24°C	18°C	0.194	0.003	60.49**	30°C	24°C	18°C	0.481	0.003	148.73**	24°C	30°C	18°C
10^4 cells ml ⁻¹	0.116	0.021	5.32*	30°C	24°C	18°C	0.306	0.003	77.38**	30°C	24°C	18°C	0.456	0.002	162.61**	30°C	24°C	18°C

^adata were ranked before analysis

Data were log-transformed to meet ANOVA assumptions. In the Tukey's test results, values are arranged from left to right in descending order, and those not significantly different ($\alpha=0.05$) are connected by line (ns, $P>0.05$; *, $P<0.01$; **, $P<0.001$; NA data not available due to 100% mortality)

Table 5 *Balanus amphitrite*. Summary of ANOVA and Tukey's multiple comparison results showing the effect of food concentration (three levels: zero, 10^2 and 10^4 cells ml⁻¹) on the growth increment of different juvenile categories (*HJ* high-energy juvenile; *MJ* medium-energy juvenile; *LJ* low-energy juvenile; *WJ* natural-energy juveniles from wild) at different temperatures up to days 2, 5 and 10.

Temperature	Day 2						Day 5						Day 10					
	MS effect	MS error	$F_{2,15}$	MS effect	MS error	$F_{2,15}$	MS effect	MS error	$F_{1,10}$	MS effect	MS error	$F_{1,10}$						
(A) HJ																		
18°C	0.637	0.051	12.41*	10^4	10^2	zero	1.120	0.016	69.84*	10^2	10^4	zero	0.001	0.003	0.01(ns)	10^4	10^2	
24°C	0.272	0.005	46.32*	10^4	10^2	zero	0.434	0.002	211.61*	10^4	10^2	zero	0.083	0.001	139.59*	10^4	10^2	
30°C	0.353	0.003	95.44*	10^4	10^2	zero	0.679	0.001	753.75*	10^4	10^2	zero	0.195	0.001	176.71*	10^4	10^2	
(B) MJ																		
18°C	1.690	0.168	10.05*	10^4	10^2	zero	1.468	0.014	99.76*	10^4	10^2	zero	0.003	0.011	0.33(ns)	10^4	10^2	
24°C	2.303	0.008	265.12*	10^2	10^4	zero	1.771	0.001	1155.51*	10^4	10^2	zero	0.060	0.001	49.44*	10^4	10^2	
30°C	0.217	0.007	30.4*	10^4	10^2	zero	0.575	0.001	999.84*	10^4	10^2	zero	0.244	0.001	389.51*	10^4	10^2	
(C) LJ																		
18°C	1.050	0.139	7.5*	10^4	10^2	zero	0.827	0.011	73.84*	10^4	10^2	zero	0.043	0.004	10.27*	10^4	10^2	
24°C	0.660	0.025	25.98*	10^4	10^2	zero	0.846	0.002	358.37*	10^4	10^2	zero	0.093	0.003	26.33*	10^4	10^2	
30°C	0.038	0.003	10.21*	10^4	10^2	zero	0.566	0.001	476.06*	10^4	10^2	zero	0.253	0.002	98.68*	10^4	10^2	
(D) WJ																		
18°C	2.929	0.196	14.89*	10^4	10^2	zero	1.233	0.007	157.06*	10^4	10^2	zero	0.148	0.003	46.48*	10^4	10^2	
24°C	0.823	0.118	6.94*	10^4	10^2	zero	175.5	8.800	19.94*	10^4	10^2	zero	0.046	0.003	14.50*	10^4	10^2	
30°C	1.527	0.156	9.73*	10^4	10^2	zero	1.412	0.003	452.57*	10^4	10^2	zero	0.234	0.002	88.51*	10^4	10^2	

and 10. In the Tukey's test results, values are arranged from left to right in descending order and those not significantly different ($\alpha=0.05$) are connected by line (ns, $P>0.05$; *, $P<0.01$; **, $P<0.001$). On Day-10, only 2 levels (10^2 and 10^4 cells ml⁻¹) of food concentration were used since 100% mortality occurred in all concentrations involving zero cells