

Field evidence of interpopulation variation in oocyte size of a marine invertebrate under contrasting temperature and food availability

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Table S1. Primers used in the PCR amplification for each loci on *Spirobranchus cariniferus*.

Locus	Name	Sequence (5' -> 3')	Reference
18S	18e	CTGGTTGATCCTGCCAGT	(Hillis & Dixon 1991)
	18P	TAATGATCCTTCCGCAGGTTACCT	(Halanych et al. 1995)
28S	28SC1	ACCCGCTGAATTTAAGCA	(Dayrat et al. 2001)
	28SC2	TGAACTCTCTCTCAAAGTTCTTTTC	(Dayrat et al. 2001)
Cytochrome b	Cytb424F	GGWTAYGTWYTWCCWTGRGGWCARAT	(Boore & Brown 2000)
	cobr825	AARTAYCAYTCNGGYTTRATRTG	(Burnette et al. 2005)
Sequencing primers	18h	AGGGTTCGATTCCGGAGAGGGAGCCTGAGAAA	(Hillis & Dixon 1991)
	Uni1304F	TTAGTTGGTGGAGCGATT	(Larsen et al. 2005)

Table S2. Reference sequences used for the three alignments.

Organism	18S	28S	Cytochrome b
<i>Galeolaria caespitosa</i>	AB106257	AF185151 EU184080	EU184052 EU184043
<i>Galeolaria hystrix</i>	JX144795-801	DQ317139 EU256550	JX144860
<i>Galeolaria gemineoa</i>			FJ646535-836
<i>Pomatoceros lamarckii</i>	DQ140404	EU195354	
<i>Pomatoceros taeniata</i>	DQ317120	DQ317143 EU195353	
<i>Pomatoceros triqueter</i>	DQ317121 DQ140405	DQ317144 EU195348	
<i>Spirobranchus corniculatus</i>	DQ140410 EU195381	EU195366	
<i>Spirobranchus lima</i>	DQ317130	EU256547 DQ317149	
<i>Spirobranchus cariniferus</i>	JX144802-819		JX144862-872; JX144874-878
<i>Spirobranchus latiscapus</i>	JX144820-825		JX144879

Table S3: Design of *Spirobranchus cariniferus* experiments.

Measure	Location	Experimental design
<i>Do East and West Coast populations of Spirobranchus belong to the same species?</i>		
Larval survivorship and competence	East: Glendowie West: Mill Bay	Spawning females: East (n=5), West (n=6). Spawning males: East (n=5), West (n=4). Two cross-fertilization trials: (1) East oocytes, West sperm. (2) West oocytes, East sperm
<i>Do East and West Coast populations differ in oocyte size and lipid content?</i>		
Oocyte size	East: Glendowie, Kawakawa, Te Kouma, Arkles, Whiritoa West: Hillsborough, Green Bay, Whatipu, Muriwai, Mill Bay	Oocyte diameter: n=100 per site (10 females per site × 10 oocytes per female)
Lipid content	East: Glendowie West: Mill Bay	Lipids extracted from: n=5 oocyte samples per site (1130-1350 oocytes per sample)
<i>What are the consequences of maternal provisioning for offspring performance?</i>		
Oocyte diameter (day 0 of the experiment)	East: Glendowie (smallest oocytes) West: Mill Bay (largest oocytes) Green Bay (intermediate oocytes)	Oocyte diameter: n=20 oocytes per site
Trochophore diameter	East: Glendowie (smallest oocytes) West: Mill Bay (largest oocytes) Green Bay (intermediate oocytes)	Trochophore diameter: n=30 per site (1 culture beaker per site × 30 trochophores per beaker)
Larval body length Survivorship Time to competence Juvenile size	East: Glendowie (smallest oocytes) West: Mill Bay (largest oocytes) Green Bay (intermediate oocytes)	Experiment: 5 culture beakers per site Larval body length: n=6 per beaker Survivorship: n=3 subsamples per beaker Time to competence: n=10 larvae per beaker at days 7, 9, 11 Juvenile size: n=3-9 juveniles per beaker
<i>Is oocyte size in S. cariniferus influenced by phenotypic responses of the female parent?</i>		
Female size (body mass)	East: Glendowie, Kawakawa, Te Kouma, Arkles, Whiritoa West: Hillsborough, Green Bay, Whatipu, Muriwai, Mill Bay	n= 6 largest females per site
Seasonal oocyte size	East: Glendowie (smallest oocytes) West: Mill Bay (largest oocytes) Green Bay (intermediate oocytes)	Early summer: n=100 oocytes per site (10 oocytes per female X 10 females per site) Late summer: n=20 oocytes in total per site (from pooled group of >20 females per site)

Table S4. Species delimitation plugin statistics as shown in Geneious (Drummond et al. 2011, Masters et al. 2011).

	18S	28S	Cytochrome b
Closest Group	<i>Spirobranchus laticapus</i> <i>Pomatoceros taeniata</i>	<i>S.lima</i>	<i>S. laticapus</i>
Monophyletic?	yes	yes	yes
Intra Dist	4.17E-04	8.85E-06	0.008
Inter Dist - Closest	0.022	0.088	0.408
Intra/Inter	0.02	1.0E-05	0.02
P ID(Strict)	0.99 (0.94, 1.0)	1.00 (0.95, 1.0)	0.99 (0.94, 1.0)
P ID(Liberal)	1.00 (0.97, 1.0)	1.00 (0.98, 1.0)	1.00 (0.97, 1.0)
Av(MRCA-tips)	0.0015	2.83E-05	0.0140
P(Randomly Distinct)	<0.05	<0.05	<0.05
Clade Support	100	100	100
Rosenberg's P(AB)	1.4E-09	0.01	1.35E-03

Figure S1. Phylogenetic tree reconstruction of sequences from the 18S locus from *Spirobranchus cariniferus* and other Sabellidae mined from Genbank. DNA sequences were obtained from our East Coast (Glendowie) or West Coast (Mill Bay) samples or from Genbank.



Figure S2. Phylogenetic tree reconstruction of sequences from the 28S locus from *Spirobranchus cariniferus* and other Sabellidae mined from Genebank.

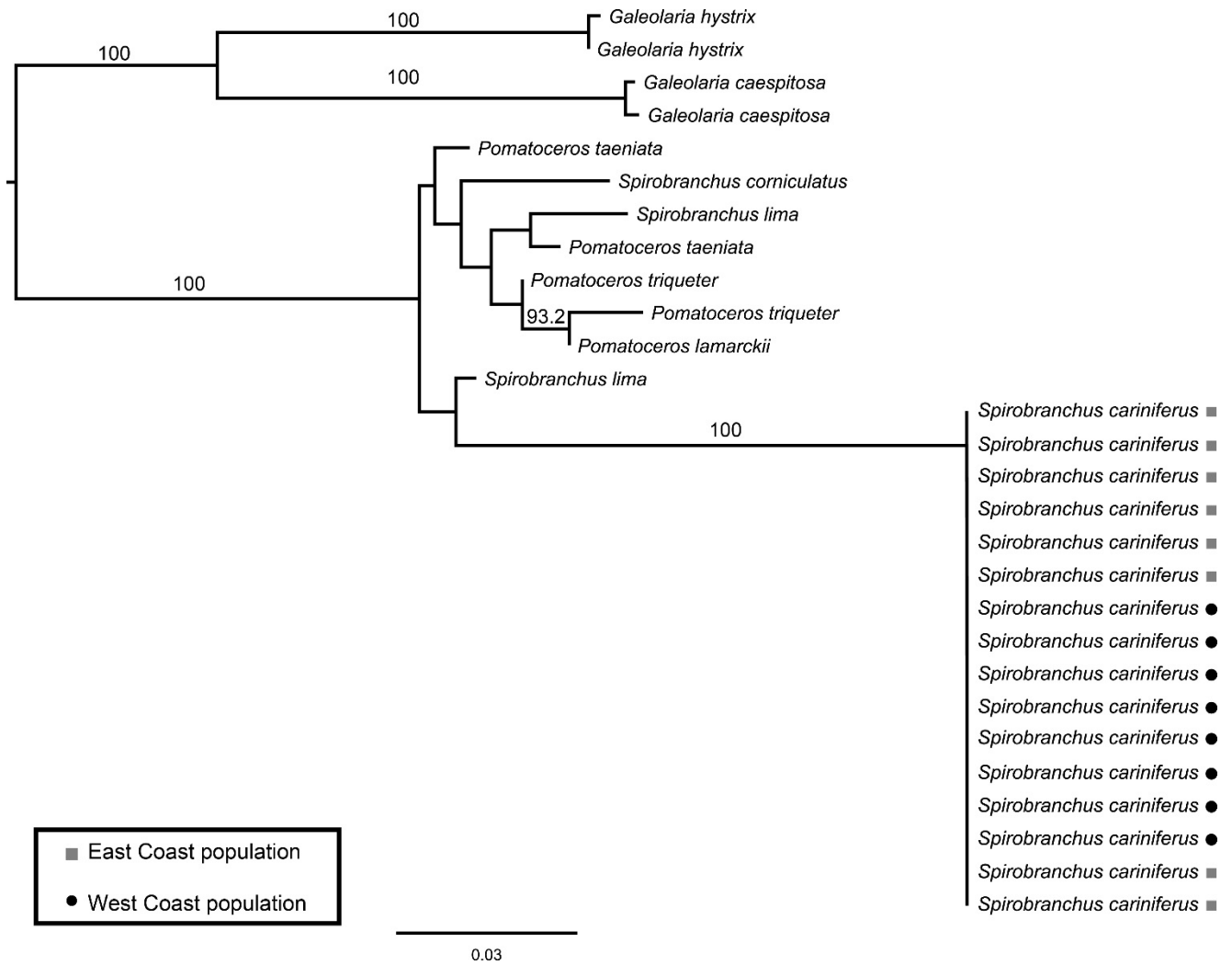
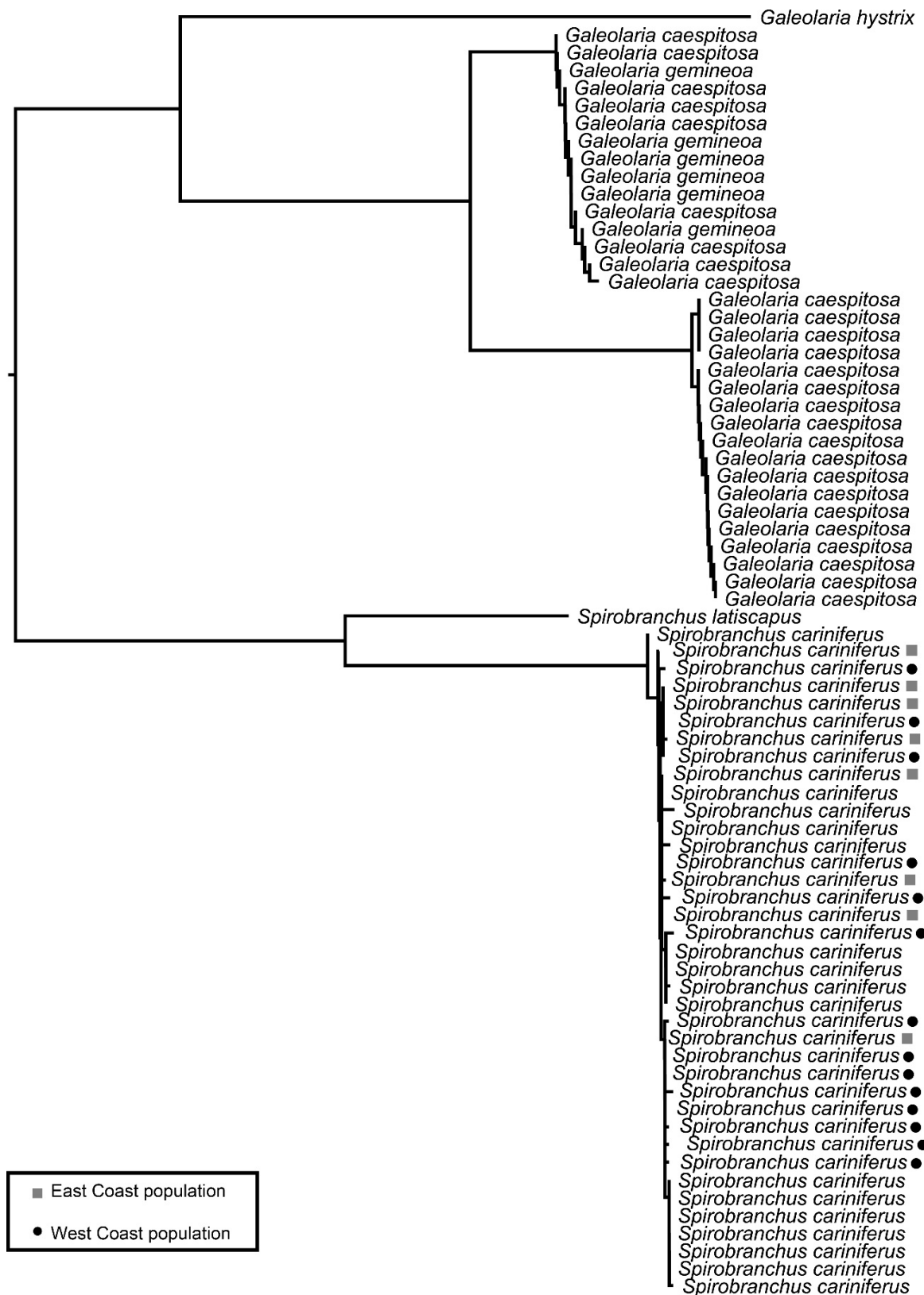


Figure S3. Phylogenetic tree reconstruction of partial sequences from the cytochrome b locus from *Spirobranchus cariniferus* and other Sabellidae mined from Genbank. DNA sequences were obtained from our East Coast (Glendowie) or West Coast (Mill Bay) samples or from Genbank.



Literature Cited – Supplementary Material

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