

**Supplemental Table S2.** PCR primers and associated references for mitochondrial, nuclear, and chloroplast genes and non-coding regions.

Genetic Marker	Primer	Fragment size	Publication
ITS2 rDNA	<b>ITSintfor2</b> 5'-GAATTGCAGAACTCCGTG-3'	300-350 bp	LaJeunesse and Trench 2000
	<b>ITS2CLAMP</b> 5'-CGCCCGCCGCGCCCGCGCCCGTCCCGC CGCCCGCGCCCGGGATCCATATGCTTAAGTTCAGCGGGT-3'		
D1/D2 LSU rDNA	<b>28S-F</b> 5'-CCCGCTGAATTTAAGCATATAAGTAAGCGG-3'	620-650 bp	Zardoya et al. 1995
	<b>28S-R</b> 5'-GTTAGACTCCTTGGTCCGTGTTTCAAGA-3'		
cp23S rDNA	<b>23S1</b> 5'-GGCTGTAACATAACGGTCC-3'	600 bp	Zang et al. 2000
	<b>23S2</b> 5'- CCATCGTATTGA ACCCAGC-3'		
<i>cox 1</i>	<b>Dinocox1F:</b> 5'-AAAAATTGTAATCATAAACGCTTAGG-3'	1000 bp	Lin et al. 2008
	<b>Dinocox1R:</b> 5'-TGTTGAGCCACCTATAGTAAACATTA-3'		
<i>cob</i>	<b>Dinocob1F</b> 5'-ATGAAATCTCATTTACAWWCATATCCTTGTCC-3'	950 bp	Zhang et al. 2005
	<b>Dinocob1R</b> 5'-TCTCTTGAGGKAATTGWKMACCTATCCA-3'		
<i>psbA<sup>ncr</sup></i>	<b>7.4-Forw</b> 5'- GCATGAAAGAAATGCACACAACCTTCCC -3'	800-900 bp	Moore et al. 2003
	<b>7.8-Rev</b> 5'- GGTCTCTTATTCCATCAATATCTACTG -3'		
mt- ORF	<b>FATP6.1</b> 5'-TTTGGGSATTCGTTTTCAGCAG-3'	850 bp	Flot and Tillier 2007
	<b>RORF</b> 5'-SCCAATATGTAAACASCATGTCA-3'		

**Supplemental Table S3.** *Cladocopium* microsatellite loci used in this study and corresponding allele size ranges, repeat motifs, annealing temperatures, and references.

Locus name	Allele size ranges	Repeat motif	Melting temp °C	Dye	Publication
C1.05	235-293	complex	55	FAM	Bay et al., 2009 <sup>(69)</sup>
Spl_1	118-223	TA	50	HEX	Wham et al., 2014 <sup>(70)</sup>
Spl_33	192-232	CAT	50	HEX	Wham et al., 2014
Sgr_21	128-154	TCA	53	HEX	Wham et al., 2014
Sgr_37	109-216	TA	52	PET	Wham et al., 2014
Sgr_40	170-209	TAG	54	HEX	Wham et al., 2014
SgrSpl_22	87-140	TAA/TCA	51	PET	Wham et al., 2014
SgrSpl_25	105-137	AAG/TGA	49	FAM	Wham et al., 2014

**Supplemental Table S4.** Cell size differences between *Cladocopium pacificum* and *C. latusorum* from *Pocillopora* host samples obtained in Palau. The mean length and width of ovate sells are listed based off of individual measurements of 55-110 cells per sample.

Species	Sample	Mean length ( $\mu\text{m}$ )	95% conf.	Mean width ( $\mu\text{m}$ )	95% conf.
<i>C. pacificum</i>	Ort2_43	<b>10.49</b>	0.13	<b>9.36</b>	0.14
<i>C. pacificum</i>	Pal09_471	<b>10.63</b>	0.17	<b>9.62</b>	0.16
<i>C. pacificum</i>	Ort2_21	<b>10.31</b>	0.13	<b>9.32</b>	0.14
<i>C. pacificum</i>	Pal09_608	<b>10.52</b>	0.12	<b>9.51</b>	0.16
<i>C. pacificum</i>	Ort1_3	<b>10.61</b>	0.17	<b>9.54</b>	0.18
<i>C. latusorum</i>	Ort1_52	<b>11.00</b>	0.15	<b>9.86</b>	0.15
<i>C. latusorum</i>	Pal09_313	<b>10.82</b>	0.17	<b>9.76</b>	0.19
<i>C. latusorum</i>	Ort2_30	<b>10.97</b>	0.20	<b>9.79</b>	0.20
<i>C. latusorum</i>	Pal09_620	<b>11.16</b>	0.15	<b>9.93</b>	0.15
<i>C. latusorum</i>	Ort1_56	<b>10.54</b>	0.18	<b>9.75</b>	0.18