

## Supplementary Material

**Table S1.** List of locations sampled, detailing date, latitude, longitude, sample type and Koppen-Classification.

Location	Date	Latitude	Longitude	Type	Koppen-classification
Darwin B	17/1/18	12°22'42.8"S	130°50'30.8"E	Beach	Tropical
Darwin R	3/2/18	12°27'06.3"S	130°49'12.0"E	River	Tropical
Cooktown B	3/2/18	15°27'33.3"S	145°15'00.9"E	Beach	Tropical
Cooktown R	3/2/18	15°27'37.8"S	145°14'57.6"E	River	Tropical
Cairns B	15/1/18	16°55'03.9"S	145°46'50.2"E	Beach	Tropical
Cairns R	17/1/18	16°56'28.1"S	145°46'33.3"E	River	Tropical
Townsville B	18/1/18	19°14'39.5"S	146°48'39.6"E	Beach	Tropical
Townsville R	3/2/18	19°16'29.3"S	146°49'52.0"E	River	Tropical
Mackay B	16/2/18	21°06'37.6"S	149°13'33.4"E	Beach	Subtropical
Mackay R	16/2/18	21°08'29.3"S	149°11'53.4"E	River	Subtropical
Rockhampton B1	1/3/18	23°15'17.8"S	150°49'44.5"E	Beach	Subtropical
Rockhampton B2	11/1/18	23°16'01.7"S	150°49'42.2"E	Beach	Subtropical
Bundaberg R1	16/1/18	24°45'41.8"S	152°23'14.6"E	River	Subtropical
Bundaberg R2	16/1/18	24°51'53.9"S	152°20'37.1"E	River	Subtropical
Gold Coast B	1/3/18	28°09'45.0"S	153°31'09.5"E	Beach	Subtropical
Gold Coast R	26/12/17	28°10'44.1"S	153°32'30.1"E	River	Subtropical
Coffs Harbour R	1/2/18	30°17'46.9"S	153°08'12.7"E	River	Subtropical
Coffs Harbour B	1/2/18	30°18'17.4"S	153°08'34.9"E	Beach	Subtropical
Port Macquarie B	1/2/18	31°25'39.5"S	152°55'03.1"E	Beach	Subtropical
Port Macquarie R	18/1/18	31°25'40.3"S	152°54'28.6"E	River	Subtropical
Sydney R	1/2/18	33°83'97" S	151°25'24" E	River	Subtropical
Sydney B	18/1/18	33°91'00" S	151°25'91" E	Beach	Subtropical
Jervis Bay B	17/1/18	35°00'46.0"S	150°41'38.5"E	Beach	Temperate
Jervis Bay R	15/1/18	35°01'13.8"S	150°40'19.9"E	River	Temperate
Marimbula R	17/1/18	36°53'29.1"S	149°54'40.6"E	River	Temperate
Marimbula B	18/1/18	36°53'52.4"S	149°54'53.9"E	Beach	Temperate
Hobart B	1/2/18	42°51'05.7"S	147°31'16.2"E	Beach	Temperate
Hobart R	1/2/18	42°53'20.9"S	147°20'17.6"E	River	Temperate

**Table S2.** Primers used in study.

Host Organism	Target Gene	Primer Sequences	qPCR Conditions	Efficiency	Quantification limit	Ref
All Bacteria	16S rRNA	Forward: 5' CGGTGAATACGTTTCYCGG 3' Reverse: 5' AAGGAGGTGATCCRGCCGCA 3' Probe: 5' CTTGTACACACCGCCCGTC 3'	95°C for 3 min; 40 cycles of: 95°C for 30 sec, 56°C for 1 min	99.4 %	10 <sup>2</sup> copies/reaction	(Suzuki et al. 2000)
All <i>Vibrio</i>	16S rRNA	Forward: 5' GGCGTAAAGCGCATGCAGGT 3' Reverse: 5' GAAATTCTACCCCCCTCTACAG 3'	95°C for 3 min; 40 cycles of: 95°C for 15 sec, 60°C for 1 min	100.6%	10 <sup>1</sup> copies/reaction	(Thompson et al. 2004a)
<i>Vibrio cholerae</i>	<i>ompW</i>	Forward: 5' AACATCCGTGGATTTGGCATCTG 3' Reverse: 5' GCTGGTTCCTCAACGCTTCTG 3'	95°C for 3 min; 40 cycles of: 95°C for 15 sec, 60°C for 1 min	96.7%	10 <sup>1</sup> copies/reaction	(Gubala & Proll 2006)
<i>Vibrio cholerae</i>	<i>ctxA</i>	Forward: 5' TTTGTTAGGCACGATGATGGAT 3' Reverse: 5' ACCAGACAATATAGTTTGACCCACTAAG 3' Probe: 5' FAM - TGTTCACCTCAATTAGTTTGAGAAGTGCCC - TAMRA	94°C for 2 min; 45 cycles of: 94°C for 10s, 63°C for 30s	97%	10 <sup>1</sup> copies/reaction	(Blackstone et al., 2007)
<i>Vibrio vulnificus</i>	<i>vohA</i>	Forward: 5' AACATCCGTGGATTTGGCATCTG 3' Reverse: 5' GCTGGTTCCTCAACGCTTCTG 3'	95°C for 3 min; 40 cycles of: 95°C for 15 sec, 56°C for 1 min	98.5%	10 <sup>1</sup> copies/reaction	(Siboni et al. 2016)
<i>Vibrio parahaemolyticus</i>	<i>tdhS</i>	Forward: 5' GTAAAGGTCTCTGACTTTTGGAC 3' Reverse: 5' TGGAATATGAACCTTCATCTTCACC 3'	95°C for 3 min; 40 cycles of: 95°C for 15 sec, 50°C for 1 min	102%	10 <sup>2</sup> copies/reaction	(Rizvi & Bej 2010)