Supplementary Table S1. LEfSe analysis for each seawater. ASVs (relative abundance > 0.1% in at least one sample) between September and others (average value of March, May, December).

Taxonomic classification		Months	LDA score (log 10)	p value
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Crocinitomicaceae.Fluviicola	2.92	Others	2.90	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Crocinitomicaceae.Fluviicola.Fluviicolahefeinensis	2.92	Others	2.90	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.unclassifiedGammaproteobacteria.unclassifiedGammaproteobacteria.Thiolapillus.Thiolapillusbrandeum	3.20	Others	2.98	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.unclassifiedGammaproteobacteria.unclassifiedGammaproteobacteria.Thiolapillus	3.20	Others	3.00	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.unclassifiedGammaproteobacteria	3.20	Others	3.00	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.unclassifiedGammaproteobacteria.unclassifiedGammaproteobacteria	3.20	Others	3.01	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Colwelliaceae.Colwellia.Colwelliaaestuarii	3.00	Others	3.04	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Saccharospirillaceae	3.08	Others	3.07	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Saccharospirillaceae.Reinekea.Reinekeaaestuarii	3.08	Others	3.07	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Saccharospirillaceae.Reinekea	3.08	Others	3.07	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Oceanospirillaceae.Neptunomonas.Neptunomonasnaphthovorans	3.31	Others	3.11	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriosplendidus	3.28	Others	3.12	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Algibacter.Algibacteraestuarii	3.30	Others	3.12	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Alteromonadaceae.Glaciecola.Glaciecolachathamensis	3.15	Others	3.15	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Alteromonadaceae.Glaciecola	3.26	Others	3.16	0.04
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Polaribacter.Polaribacterlacunae	3.51	Others	3.16	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Amylibacter.Amylibactercionae	2.80	Others	3.16	0.04
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Polaribacter.Polaribacteratrinae	3.58	Others	3.25	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Amylibacter	3.60	Others	3.27	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Algibacter	3.58	Others	3.32	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Oceanospirillaceae.Oleispira.Oleispiraantarctica	3.62	Others	3.37	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Oceanospirillales.Oceanospirillaceae.Oleispira	3.62	Others	3.37	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Colwelliaceae.Colwellia	3.69	Others	3.46	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonascarrageenovora	3.98	Others	3.70	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nereida	4.56	Others	4.16	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nereida.Nereidaignava	4.56	Others	4.16	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Lentibacter	4.55	Others	4.17	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Lentibacter.Lentibacteralgarum	4.55	Others	4.17	0.05
Bacteria.Bacteroidetes	5.11	Others	4.52	0.05
Bacteria.Bacteroidetes.Flavobacteriia	5.11	Others	4.56	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae	5.09	Others	4.56	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Aurantivirga.Aurantivirgaprofunda	4.89	Others	4.57	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Aurantivirga	4.89	Others	4.57	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales	5.11	Others	4.57	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales	5.34	Others	4.80	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Alteromonadaceae.Aestuariibacter	5.25	Others	4.91	0.05

Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Alteromonadaceae.Aestuariibacter.Aestuariibacterhalophilus	5.25	Others	4.91	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Alteromonadaceae	5.29	Others	4.93	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Ruegeria.Ruegeriaconchae	2.78	September	2.75	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Roseicyclus.Roseicyclusmahoneyensis	2.85	September	2.75	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Roseicyclus	2.85	September	2.76	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibrioowensii	2.82	September	2.76	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Mesoflavibacter.Mesoflavibactersabulilitoris	2.89	September	2.77	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasrubra	2.89	September	2.81	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Roseovarius.Roseovariuscrassostreae	2.85	September	2.82	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasprofundi	2.92	September	2.82	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasspongiae	2.82	September	2.84	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter.Erythrobactergaetbuli	2.92	September	2.85	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Mesonia	3.04	September	2.86	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Mesonia.Mesoniamobilis	3.04	September	2.87	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Muricauda.Muricaudabeolgyonensis	3.30	September	2.89	0.03
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibrioponticus	2.92	September	2.90	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibrioplantisponsor	2.89	September	2.91	0.03
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriocampbellii	3.14	September	2.92	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Citreicella	3.14	September	2.93	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter.Erythrobacterlutimaris	3.08	September	2.93	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Pseudomonadales.Moraxellaceae.Psychrobacter.Psychrobactermarincola	3.06	September	2.93	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Paracoccus.Paracoccus_uc	3.17	September	2.93	0.03
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Muricauda	3.30	September	2.93	0.03
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Bizionia.Bizioniahallyeonensis	3.08	September	2.94	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Citreicella.Citreicellathiooxidans	3.14	September	2.94	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Hyphomicrobiaceae.Devosia	3.41	September	2.95	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Colwelliaceae.Thalassotalea.Thalassotalealoyana	3.28	September	2.96	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Hyphomicrobiaceae.Devosia.Devosialimi	3.41	September	2.97	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Pelagibaca.Pelagibacabermudensis	3.17	September	2.99	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Dokdonia.Dokdonialutea	3.12	September	2.99	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Kiloniellales.Kiloniellaceae.Kiloniella.Kiloniellalitopenaei	3.30	September	2.99	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Rhodobacter.Rhodobactercapsulatus	3.26	September	3.00	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Dokdonia	3.12	September	3.00	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Kiloniellales.Kiloniellaceae	3.30	September	3.01	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Kiloniellales.Kiloniellaceae.Kiloniella	3.30	September	3.01	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Kiloniellales	3.30	September	3.01	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibrioxuii	3.27	September	3.02	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriofortis	3.30	September	3.04	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Sulfitobacter.Sulfitobacterdubius	3.28	September	3.04	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriocommunis	3.06	September	3.05	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Oceanicola.Oceanicolalitoreus	3.16	September	3.05	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Hyunsoonleella	3.06	September	3.06	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Cohaesibacteraceae.Cohaesibacter.Cohaesibactermarisflavi	3.37	September	3.06	0.01

Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Colwelliaceae.Thalassotalea.Thalassotaleafusca	3.34	September	3.07	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Oceanicola	3.38	September	3.08	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nioella.Nioellaaestuarii	3.10	September	3.08	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Gilvibacter	3.35	September	3.08	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Altererythrobacter.Altererythrobacterishigakiensis	3.34	September	3.09	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Salinimicrobium.Salinimicrobiumsoli	3.33	September	3.09	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonaspradzensis	3.30	September	3.09	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Hyunsoonleella.Hyunsoonleellaudonensis	3.06	September	3.09	0.04
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Salinimicrobium	3.33	September	3.10	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Gilvibacter.Gilvibactersediminis	3.35	September	3.10	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nioella	3.10	September	3.11	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Hyphomicrobiaceae	3.66	September	3.11	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Altererythrobacter	3.34	September	3.12	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriopelagius	3.42	September	3.12	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Crocinitomicaceae.Salinirepens.Salinirepensamamiensis	3.40	September	3.13	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Mesoflavibacter.Mesoflavibacterzeaxanthinifaciens	3.45	September	3.14	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Pseudotenacibaculum	3.33	September	3.14	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Crocinitomicaceae.Salinirepens	3.40	September	3.14	0.05
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Pseudotenacibaculum.Pseudotenacibaculumhaliotis	3.33	September	3.14	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Celeribacter.Celeribactermanganoxidans	3.00	September	3.15	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Donghicola.Donghicolatyrosinivorans	3.47	September	3.17	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter.Erythrobactercitreus	3.39	September	3.17	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Cohaesibacteraceae.Cohaesibacter	3.53	September	3.18	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodospirillales.Rhodospirillaceae.Thalassospira	3.56	September	3.19	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Croceitalea.Croceitaleaeckloniae	3.14	September	3.19	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Croceitalea	3.14	September	3.20	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhizobiales.Cohaesibacteraceae	3.53	September	3.21	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodospirillales.Rhodospirillaceae.Thalassospira.Thalassospiratepidiphila	3.56	September	3.22	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasluteoviolacea	3.54	September	3.22	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Marivita.Marivitabyunsanensis	3.26	September	3.22	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Pelagibaca.Pelagibacaabyssi	3.47	September	3.24	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Mesoflavibacter	3.55	September	3.25	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriomaritimus	3.56	September	3.25	0.02
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Prochloraceae	3.54	September	3.27	0.02
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Prochloraceae.Prochlorococcus.Prochlorococcusmarinus	3.54	September	3.27	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodospirillales.Rhodospirillaceae	3.76	September	3.29	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Cellvibrionales.Halieaceae.Luminiphilus	3.57	September	3.30	0.05
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Prochloraceae.Prochlorococcus	3.54	September	3.30	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodospirillales	3.76	September	3.31	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Rhodobacter	3.54	September	3.31	0.01
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Formosa	3.69	September	3.32	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Ahrensia.Ahrensiakielensis	3.62	September	3.32	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Ahrensia	3.62	September	3.34	0.04

Bacteria.Bacteroidetes.Saprospiria.Saprospirales.Haliscomenobacteraceae.Phaeodactylibacter.Phaeodactylibacterxiamenensis	3.58	September	3.34	0.02
Bacteria.Bacteroidetes.Saprospiria.Saprospirales.Haliscomenobacteraceae.Phaeodactylibacter	3.58	September	3.35	0.02
Bacteria.Bacteroidetes.Flavobacteriia.Flavobacteriales.Flavobacteriaceae.Formosa.Formosaalgae	3.69	September	3.36	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Cellvibrionales.Halieaceae.Luminiphilus.Luminiphilussyltensis	3.57	September	3.36	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Pelagibaca	3.65	September	3.36	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Pseudomonadales.Moraxellaceae.Psychrobacter.Psychrobacterceler	3.63	September	3.36	0.03
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriorumoiensis	3.76	September	3.38	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Shimia.Shimiaisoporae	3.99	September	3.38	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Yangia	3.65	September	3.39	0.01
Bacteria.Bacteroidetes.Saprospiria	3.58	September	3.39	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Shimia	3.99	September	3.39	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Yangia.Yangiapacifica	3.65	September	3.39	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasarctica	3.75	September	3.40	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Colwelliaceae.Thalassotalea	3.62	September	3.44	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Celeribacter.Celeribacterbaekdonensis	3.76	September	3.46	0.04
Bacteria.Proteobacteria.Gammaproteobacteria.Pseudomonadales.Moraxellaceae	3.74	September	3.48	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter.Erythrobacterseohaensis	3.78	September	3.51	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Celeribacter	3.88	September	3.51	0.04
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Aestuariicoccus	3.81	September	3.52	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Leisingera.Leisingeracaerulea	4.07	September	3.53	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nautella	3.90	September	3.56	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Nautella.Nautellaitalica	3.90	September	3.57	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Aestuariicoccus.Aestuariicoccusmarinus	3.81	September	3.61	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriotasmaniensis	3.94	September	3.62	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriochagasii	3.98	September	3.63	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasnigrifaciens	4.02	September	3.66	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Pseudomonadales.Moraxellaceae.Psychrobacter	3.74	September	3.67	0.03
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Donghicola.Donghicolaeburneus	3.97	September	3.67	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Pseudomonadales	3.74	September	3.67	0.03
Bacteria.Bacteroidetes.Saprospiria.Saprospirales.Haliscomenobacteraceae	3.58	September	3.70	0.02
Bacteria.Bacteroidetes.Saprospiria.Saprospirales	3.58	September	3.71	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasagarivorans	4.11	September	3.74	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter.Erythrobacterflavus	4.05	September	3.75	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Donghicola	4.09	September	3.76	0.03
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonasarabiensis	4.06	September	3.79	0.02
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibrioshilonii	4.08	September	3.79	0.02
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Marivita.Marivitageojedonensis	4.22	September	3.81	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Marivita	4.26	September	3.87	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Phaeobacter.Phaeobacteritalicus	4.25	September	3.90	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas.Pseudoalteromonastetraodonis	4.25	September	3.93	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Vibrionales.Vibrionaceae.Vibrio.Vibriokanaloae	4.26	September	3.94	0.04

Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Synechococcaceae.Synechococcus.Synechococcusrubescens	4.55	September	4.05	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Erythrobacter	4.33	September	4.06	0.02
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Synechococcaceae	4.55	September	4.12	0.05
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales.Synechococcaceae.Synechococcus	4.55	September	4.14	0.05
Bacteria.Cyanobacteria.Cyanophyceae	4.59	September	4.16	0.05
Bacteria.Cyanobacteria	4.59	September	4.16	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Marivivens.Marivivensdonghaensis	4.49	September	4.18	0.01
Bacteria.Cyanobacteria.Cyanophyceae.Synechococcales	4.59	September	4.20	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Rhodobacterales.Rhodobacteraceae.Marivivens	4.49	September	4.21	0.01
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae	4.84	September	4.36	0.05
Bacteria.Proteobacteria.Gammaproteobacteria.Alteromonadales.Pseudoalteromonadaceae.Pseudoalteromonas	4.83	September	4.37	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Citromicrobium.Citromicrobiumbathyomarinum	4.83	September	4.52	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae.Citromicrobium	4.83	September	4.54	0.01
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales	4.97	September	4.68	0.05
Bacteria.Proteobacteria.Alphaproteobacteria.Sphingomonadales.Erythrobacteraceae	4.96	September	4.68	0.02

Supplementary Table S2. Summary of potential pathogenic bacteria and their hosts.

Class	Species	Host	Reference
Betaproteobacteria	*Comamonas testosteroni*		[1]
Epsilonproteobacteria	*Arcobacter cryaerophilus*	human, terrestrial animal (poultry, porcine, bovine, sheep feces), clams	[2-4]
Flavobacteriia	*Formosa algae*	macroalgae	[5]
Flavobacteriia	*Tenacibaculum discolor*		[6]
Flavobacteriia	*Tenacibaculum soleae*	fish (*Trachurus trachurus*)	[7]
Gammaproteobacteria	*Acinetobacter johnsonii*	human; fish (rainbow trout)	[8, 9]
Gammaproteobacteria	*Acinetobacter venetianus*	whiteleg shrimp	[10]
Gammaproteobacteria	*Aeromonas hydrophila*		[11]
Gammaproteobacteria	*Coxiella burnetii*	human	[12]
Gammaproteobacteria	*Moritella viscosa*	fish (salmonid)	[13]
Gammaproteobacteria	*Photobacterium damselae*		[14]
Gammaproteobacteria	*Photobacterium iliopiscarium*	fish	[15]
Gammaproteobacteria	*Photobacterium rosenbergii*	sponges	[15]
Gammaproteobacteria	*Photobacterium swingsii*	fish (torafugu), octopus (*Octopus vulgaris*)	[16]
Gammaproteobacteria	*Pseudoalteromonas arctica*	red alga (*Agarophyton vermiculophyllum*)	[17]
Gammaproteobacteria	*Pseudoalteromonas elyakovii*	macroalga	[5]
Gammaproteobacteria	*Pseudoalteromonas espejiana*	jellyfish (*Aurelia aurita*)	[18]
Gammaproteobacteria	*Pseudoalteromonas marina*	red algae (*Pyropia yezoensis*)	[19]
Gammaproteobacteria	*Pseudoalteromonas nigrifaciens*	sea cucumber (*Apostichopus japonicus*)	[20]
Gammaproteobacteria	*Pseudoalteromonas tetraodonis*	fish	[21-23]
Gammaproteobacteria	*Shewanella baltica*	fish (*Danio rerio*)	[24]
Gammaproteobacteria	*Vibrio aestuarianus*	oyster	[25]
Gammaproteobacteria	*Vibrio alfacsensis*	fish	[26]
Gammaproteobacteria	*Vibrio brasiliensis*	shrimp (*Litopenaeus vannamei*)	[27, 28]
Gammaproteobacteria	*Vibrio campbellii*	shrimp (*Litopenaeus vannamei*)	[29]
Gammaproteobacteria	*Vibrio chagasii*	oyster (*Crassostrea gigas*), fish (salmonids)	[30, 31]
Gammaproteobacteria	*Vibrio crassostreae*	oyster	[32]
Gammaproteobacteria	*Vibrio diabolicus*	clam (*Gomphina aequilatera*)	[33]
Gammaproteobacteria	*Vibrio fluvialis*	Human	[34]
Gammaproteobacteria	*Vibrio fortis*	fish (seahorses)	[35]
Gammaproteobacteria	*Vibrio gigantis*	human, oyster (*Crassostrea gigas*)	[36]
Gammaproteobacteria	*Vibrio harveyi*	fish (*Seriola lalandi* and *S. dumerili*)	[37]
Gammaproteobacteria	*Vibrio jasicida*	moth (*Galleria mellonella*)	[38]
Gammaproteobacteria	*Vibrio kanaloae*	lobster (*Jasus verreauxi*)	[39]
Gammaproteobacteria	*Vibrio lentus*	clam (*Scapharca broughtonii*), fish (*Dicentrarchus labrax*), octopus (*Octopus vulgaris*)	[40, 41]
Gammaproteobacteria	*Vibrio mediterranei*	mussel (*Pinna nobilis*), manila clams, brine shrimp	[42, 43]
Gammaproteobacteria	*Vibrio nereis*	shrimp	[44]
Gammaproteobacteria	*Vibrio ordalii*	fish (salmonids)	[45]
Gammaproteobacteria	*Vibrio owensii*	coral	[46]
Gammaproteobacteria	*Vibrio pelagius*	fish (*Scophthalmus maximus*)	[47]
Gammaproteobacteria	*Vibrio pomeroyi*	clams	[48]

Gammaproteobacteria	*Vibrio proteolyticus*	shrimp (*Artemia* spp.), human	[49, 50]
Gammaproteobacteria	*Vibrio sagamiensis*	fish (turbot, sole)	[51]
Gammaproteobacteria	*Vibrio scophthalmi*	fish (*Paralichthys olivaceus*)	[52]
Gammaproteobacteria	*Vibrio splendidus*	oyster (*Crassostrea gigas*)	[53, 54]
Gammaproteobacteria	*Vibrio tapetis*	clams	[48]
Gammaproteobacteria	*Vibrio tasmaniensis*	oyster	[55]
Gammaproteobacteria	*Vibrio vulnificus*	human	[56]
Gammaproteobacteria	*Vibrio xuii*	fish (turbot, sole)	[14]

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