Supplementary Materials

Table S1. Criteria used to exclude loci in heterologous microsatellites by locus and locality.

| Criteria | Locus | Locality | | | | | | | | | | | |
		PAI (34)	PLA (34)	PAR (54)	IQQ (46)	CAL (51)	CQB (56)	THNo (51)	THNc (43)	CBCc (54)	CBCo (49)	NWZ (50)	Average
Missing data	Tt29	0.03	0	0	0	0	0	0.02	0	0.02	0	0.02	0.01
	Tt48	0.26	0.09	0.02	0.30	0.04	0	0.19	0.12	0.59	0.06	0.56	**0.20**
	Tt62	0	0.03	0.02	0	0.08	0.02	0	0	0.02	0	0	0.01
	Tt133	0	0.06	0.02	0	0.04	0.02	0.02	0	0.02	0	0.02	0.02
	TmurA 101	0	0.03	0	0	0	0	0	0	0.02	0	0	0
	TmurA 104	0.09	0.09	0.02	0	0.02	0	0.09	0.02	0	0	0	0.03
	TmurA 115	0.09	0.21	0.04	0	0.06	0	0.12	0.06	0.04	0.04	0.04	0.06
Homozygote excess	Tt29	-0.11	-0.13	-0.03	0.01	-0.01	0.06	0.10	0.09	0.06	0.01	0.12	0.02
	Tt48	0.12	-0.03	0.04	0.32	0.01	0.09	0.42	0.02	0.45	0.01	0.54	**0.18**
	Tt62	0.02	-0.09	-0.04	0.05	-0.08	-0.07	0.05	-0.13	0.04	-0.03	0.10	-0.02
	Tt133	0	0.13	0.19	0.04	0.22	0.05	0.03	0.06	-0.08	0.33	0.29	0.11
	TmurA 101	0.08	0.15	0.08	0.19	0.13	0.03	0.13	0.15	-0.02	0.11	0.07	0.10
	TmurA 104	0.09	0.09	0.07	0.04	-0.03	0.01	0.14	0.07	0.01	0.04	-0.01	0.05
	TmurA 115	0.23	0.15	0.04	0.06	0.05	0.02	0.11	0.08	0	0.05	0.10	0.08
Null alleles	Tt29	0	0	0	0	0	0.02	0.02	0.04	0.02	0	0.05	0.01
	Tt48	0.04	0	0.01	0.14	0	0.03	0.05	0.18	0.19	0	0.21	0.08
	Tt62	0	0	0	0.02	0	0	0	0.02	0.02	0	0.04	0.01
	Tt133	0	0.05	0.08	0	0.09	0.02	0.02	0.01	0	0.14	0.13	0.05
	TmurA 101	0.03	0.06	0.04	0.09	0.06	0.01	0.06	0.06	0	0.05	0.02	0.04
	TmurA 104	0.04	0.03	0.03	0.01	0	0	0.03	0.06	0	0.01	0	0.02
	TmurA 115	0.10	0.06	0	0.03	0.02	0	0.03	0.05	0	0.02	0.04	0.03

PAI: Paita. PLA: Punta Lobos Afuera; PAR: Paracas; IQQ: Iquique; CAL: Caldera; CQB: Coquimbo; THNc: costal Talcahuano; THNo: oceanic Talcahuano; CBCc: costal Calbuco; CBCo: oceanic Calbuco; NWZ: New Zealand. Number inside parentheses correspond to sample size by location.

Table S2. Summary statistics of genetic diversity for *Trachurus murphyi* in South Pacific Ocean

Locus	Parameter	Locality										
		PAI	PLA	PAR	IQQ	CAL	CQB	THNc	THNo	CBCc	CBCo	NWZ
Tt29	N	33	34	54	46	51	56	42	51	53	49	49
	NA	9	10	12	10	10	12	13	12	14	11	12
	HO	0.788	0.882	0.741	0.761	0.765	0.714	0.714	0.667	0.736	0.673	0.653
	HE	0.7	0.773	0.715	0.758	0.75	0.756	0.777	0.733	0.775	0.676	0.733
	F	-0.125	-0.141	-0.036	-0.004	-0.02	0.055	0.081	0.09	0.051	0.004	0.11
	HW	0.651	0.881	0.885	0.709	0.952	0.982	**0.000**	0.349	0.954	0.002	0.322
Tt62	N	34	33	53	46	47	55	43	51	53	49	50
	NA	15	12	13	14	16	14	15	10	16	12	15
	HO	0.882	0.909	0.887	0.826	0.936	0.909	0.977	0.824	0.83	0.878	0.78
	HE	0.883	0.826	0.848	0.859	0.862	0.842	0.856	0.857	0.861	0.844	0.855
	F	0.001	-0.101	-0.046	0.038	-0.086	-0.079	-0.141	0.039	0.035	-0.039	0.087
	HW	0.954	0.976	0.411	0.025	1.000	**0.000**	0.195	0.071	0.037	**0.000**	0.251
Tt133	N	34	32	53	46	49	55	42	51	53	49	49
	NA	28	20	26	35	31	31	26	27	30	23	22
	HO	0.912	0.75	0.698	0.87	0.673	0.855	0.833	0.824	0.943	0.551	0.571
	HE	0.901	0.843	0.854	0.898	0.848	0.893	0.872	0.84	0.864	0.806	0.798
	F	-0.012	0.111	0.183	0.032	0.206	0.043	0.044	0.019	-0.091	0.316	0.284
	HW	0.959	0.018	**0.000**	0.686	**0.000**	**0.000**	1.000	**0.000**	0.434	**0.000**	**0.000**
TmurA101	N	34	33	54	46	51	56	43	51	53	49	50
	NA	19	27	31	26	25	25	26	25	28	28	30
	HO	0.853	0.818	0.87	0.761	0.824	0.893	0.791	0.824	0.943	0.837	0.88
	HE	0.914	0.943	0.941	0.927	0.935	0.912	0.913	0.932	0.918	0.928	0.932
	F	0.067	0.132	0.075	0.179	0.119	0.021	0.134	0.117	-0.027	0.098	0.056
	HW	0.266	0.019	0.083	0.017	0.67	0.004	0.734	0.005	0.978	0.996	0.001
TmurA104	N	31	31	53	46	50	56	39	50	54	49	50
	NA	22	23	26	25	24	26	26	27	26	26	26
	HO	0.871	0.871	0.887	0.913	0.98	0.946	0.897	0.82	0.944	0.918	0.96
	HE	0.94	0.938	0.945	0.942	0.939	0.949	0.949	0.945	0.941	0.945	0.937
	F	0.074	0.071	0.061	0.031	-0.043	0.003	0.054	0.132	-0.004	0.029	-0.025
	HW	0.044	0.853	0.106	0.765	0.946	0.254	0.842	0.038	0.24	0.094	0.887
TmurA115	N	31	27	52	46	48	56	38	48	52	47	48
	NA	27	24	32	29	30	31	31	30	31	32	33
	HO	0.742	0.815	0.923	0.891	0.917	0.946	0.895	0.854	0.962	0.915	0.875
	HE	0.946	0.939	0.955	0.942	0.951	0.954	0.954	0.95	0.951	0.953	0.959
	F	0.216	0.132	0.034	0.053	0.036	0.008	0.062	0.101	-0.011	0.04	0.087
	HW	0.003	0.041	0.395	0.048	0.614	0.014	0.048	0.212	0.148	0.797	0.001

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