

Table S1. PCR amplification options.

Name	5'→3'	Originator	Program
LCO 1490	GGTCAACAAATCATAAAGATATTGG	Folmer <i>et al.</i> , 1994	95° C 60 s, 35× (95° C 15 s, 45° C 15 s, 72° C 30s), 72° C 7 min
HCO 2198	TAAACTTCAGGGTGACCAAAAAATCA	Folmer <i>et al.</i> , 1994	
16S arL	CGCCTGTTTAACAAAAACAT	Palumbi <i>et al.</i> 2002	95° C 3 min, 40× (94° C 15 s, 52° C 15 s, 72° C 30s), 72° C 7 min
16S R	CCGRTYTGAAGTCAGCTCACG	Puslednik & Serb, 2008	
28S C1	ACCCGCTGAATTTAAGCAT	Dayrat et al. 2001	95° C 3 min, 40× (94° C 15 s, 50° C 15 s, 72° C 30s), 72° C 7 min
28S C2	TGAACTCTCTCTTCAAAGTTCTTTTC	Lê et al, 1993	

Table S2. GenBank accession numbers and references for all sequences used in this study.

Species name	Voucher	Locality	COI	16S	28S
<i>Aldisa sanguinea</i> (J. G. Cooper, 1863)	CASIZ:182031	USA: California	MF958435	MF958309	MF958394
<i>Aldisa smaragdina</i> Ortea, Pérez & Llera, 1982	NHMUK20030797	Canary Islands	KF992175	KJ022806	KJ023043
<i>Cadlina bellburnellae</i> sp. nov.	ZMMU:Op-870	Kuril isl., Iturup	PP554331	PP555223	PP555211
<i>Cadlina bellburnellae</i> sp. nov.	ZMMU:Op-871	Kuril isl., Iturup	PP554332	PP555225	PP555212
<i>Cadlina bellburnellae</i> sp. nov.	ZMMU:Op-872	Kuril isl., Iturup	PP554333	PP555224	PP555213
<i>Cadlina flavomaculata</i> MacFarland, 1905	AM C203860	USA: California	EF534041	EF535109	-
<i>Cadlina flavomaculata</i> MacFarland, 1905	CASIZ:182923	USA: California	EU982715	EU982764	-
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-844	Kuril isl., Urup	PP554311	PP555216	PP555196
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-845	Kuril isl., Urup	PP554316	PP555222	-
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-846	Kuril isl., Chirpoy	PP554315	PP555217	PP555197
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-847	Kuril isl., Urup	PP554312	PP555218	-
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-848	Kuril isl., Urup	PP554317	PP555219	PP555198
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-849	Kuril isl. Urup	PP554313	PP555220	-
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-856	Kuril isl., Urup	PP554318	PP555221	PP555199
<i>Cadlina franklinae</i> sp. nov.	ZMMU:Op-857	Kuril isl., Urup	PP554314	-	PP555200
<i>Cadlina jannanicholsae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-689	USA: Washington	MN224063	MN224091	MN224125
<i>Cadlina jannanicholsae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	CASIZ:188599A	Canada: British Columbia	KM219678	KJ653679	KP340350
<i>Cadlina jannanicholsae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	-	Canada: British Columbia	AF249803	AF249231	-
<i>Cadlina japonica</i> Baba, 1937	KSNHM-M10746	Japan	MN224051	MN224077	-
<i>Cadlina japonica</i> Baba, 1937	KSNHM-M10746	Japan	MN224052	MN224078	MN224113
<i>Cadlina japonica</i> Baba, 1937	NIBRIV0000865973	South Korea	MT420432	MT425045	MT425037
<i>Cadlina japonica</i> Baba, 1937	NIBRIV0000865974	South Korea	MT420433	MT425046	MT425038
<i>Cadlina japonica</i> Baba, 1937	NIBRIV0000865975	South Korea	MT420434	MT425047	MT425039

<i>Cadlina kamchatica</i> Korshunova, Picton, Sanamyan & Martynov, 2015	ZMMU:Op-446	Russia: Kamchatka	MN224053	MN224079	MN224114
<i>Cadlina kamchatica</i> Korshunova, Picton, Sanamyan & Martynov, 2015	ZMMU:Op-453	Russia: Kamchatka	MN224054	MN224080	MN224115
<i>Cadlina kamchatica</i> Korshunova, Picton, Sanamyan & Martynov, 2015	AC17-28	Russia: Bering Sea	KX938361	KX938357	-
<i>Cadlina kamchatica</i> Korshunova, Picton, Sanamyan & Martynov, 2015	AC17-29	Russia: Bering Sea	KX938362	KX938358	-
<i>Cadlina klasmalmergi</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-687	USA: Washington	MN224065	MN224093	MN224127
<i>Cadlina klasmalmergi</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-688	Canada: British Columbia	MN224066	MN224094	MN224128
<i>Cadlina klasmalmergi</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	CASIZ:182929	Canada: British Columbia	EU982719	EU982769	-
<i>Cadlina klasmalmergi</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	CAS:CASIZ	Canada: British Columbia	EU982720	-	-
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-840	Kuril isl., Urup	PP554319	PP555230	PP555190
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-841	Kuril isl., Urup	PP554320	PP555231	-
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-842	Kuril isl., Urup	PP554321	PP555232	PP555191
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-843	Kuril isl., Urup	PP554322	PP555233	-
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-852	Kuril isl., Kunashir	PP554323	PP555234	PP555192
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-853	Kuril isl., Iturup	PP554324	PP555235	PP555193
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-854	Kuril isl., Iturup	PP554325	PP555236	PP555194
<i>Cadlina koltzovi</i> sp. nov.	ZMMU:Op-855	Kuril isl., Iturup	PP554326	PP555237	PP555195
<i>Cadlina koreana</i> Do, Jung, Kil & Kim, 2020	NIBRIV0000865970	South Korea	MT420429	MT425042	MT425034
<i>Cadlina koreana</i> Do, Jung, Kil & Kim, 2020	NIBRIV0000865971	South Korea	MT420430	MT425043	MT425035
<i>Cadlina koreana</i> Do, Jung, Kil & Kim, 2020	SMU00060	South Korea	MT420431	MT425044	MT425036
<i>Cadlina laevis</i> (Linnaeus, 1767)	-	Scotland	AY345034	AY345034	-
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-677	Russia: White sea	MN224057	MN224084	MN224119

<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-678.1	Russia: White sea	MN224047	MN224085	MN224120
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-678.2	Russia: White sea	PP554297	PP555214	PP555184
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-679	Russia: Barents sea	MN224058	MN224086	MN224121
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-608	Norway	MN224049	MN224081	MN224116
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-609	Norway	PP554298	PP555215	PP555185
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-680	Sweden	MN224059	MN224087	MN224122
<i>Cadlina laevis</i> (Linnaeus, 1767)	-	Sweden	AJ223258	AJ225182	-
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-675	Ireland	MN224055	MN224082	MN224117
<i>Cadlina laevis</i> (Linnaeus, 1767)	ZMMU:Op-676	Ireland	MN224056	MN224083	MN224118
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-858	Kuril isl., Iturup	PP554305	PP555247	PP555205
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-859	Kuril isl., Iturup	PP554307	PP555243	PP555206
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-860	Kuril isl., Iturup	PP554309	PP555246	PP555208
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-861	Kuril isl., Iturup	PP554306	PP555245	-
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-862	Kuril isl., Iturup	PP554308	PP555248	PP555207
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-863	Kuril isl., Iturup	PP554304	PP555244	PP555204
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-864	Kuril isl., Iturup	PP554310	PP555242	PP555209
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-865	Kuril isl., Iturup	PP554300	PP555239	PP555202
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-866	Kuril isl., Kunashir	PP554299	PP555238	PP555201
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-867	Kuril isl., Iturup	PP554302	PP555241	-
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-868	Kuril isl., Kunashir	PP554303	-	PP555210
<i>Cadlina lomonosovi</i> sp. nov.	ZMMU:Op-869	Kuril isl., Kunashir	PP554301	PP555240	PP555203
<i>Cadlina luarna</i> (Er. Marcus & Ev. Marcus, 1967)	CASIZ	Costa Rica	EU982717	EU982767	-
<i>Cadlina luarna</i> (Er. Marcus & Ev. Marcus, 1967)	CASIZ:175437	Costa Rica	EU982718	EU982768	-
<i>Cadlina luteomarginata</i> MacFarland, 1966	CASIZ	USA: California	EU982721	EU982771	-
<i>Cadlina modesta</i> MacFarland, 1966	CASIZ:175444	USA: California	MF958437	MF958310	-
<i>Cadlina modesta</i> MacFarland, 1966	CASIZ	USA: California	EU982722	EU982772	-
<i>Cadlina modesta</i> MacFarland, 1966	CASIZ:182930	USA: California	EU982723	EU982773	-
<i>Cadlina pellucida</i> (Risso, 1826)	CASIZ:175448	Portugal	EU982724	EU982774	MF958396
<i>Cadlina paninae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-683	Russia: Matua	MN224060	MN224088	-
<i>Cadlina paninae</i> Korshunova, Fletcher, Picton,	ZMMU:Op-684	Russia: Matua	MN224061	MN224089	MN224123

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<i>Cadlina paninae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-685	Russia: Matua	MN224062	MN224090	MN224124
<i>Cadlina rumia</i> Er. Marcus, 1955	CASIZ:175456	Panama	EU982725	EU982775	-
<i>Cadlina sparsa</i> (Odhner, 1921)	CASIZ: 182932	USA: California	EU982726	EU982776	-
<i>Cadlina sylviaearleae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	ZMMU:Op-686	USA: Washington	MN224064	MN224092	MN224126
<i>Cadlina sylviaearleae</i> Korshunova, Fletcher, Picton, Lundin, Kashio, N. Sanamyan, K. Sanamyan, Padula, Schrödl & Martynov, 2020	11BIOAK-0009	USA: Alaska	KF643619	-	-
<i>Cadlina</i> sp.	CASIZ:175547	South Africa	EU982727	EU982777	-
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	ZMMU:Op-445	Russia: Sea of Japan	MN224067	MN224095	MN224129
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	ZMMU:Op-455	Russia: Sea of Japan	MN224068	MN224096	MN224130
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	AC7-14	Russia: Sea of Japan	KX610757	KX938354	-
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	AC16-30	Russia: Sea of Japan	KX610756	KX938355	-
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	AC16-31	Russia: Sea of Japan	KX610758	KX938356	-
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	NIBRIV0000865972	South Korea	MT420435	MT425048	MT425040
<i>Cadlina umiushi</i> Korshunova, Picton, Sanamyan & Martynov, 2015	SMU00070	South Korea	MT420436	MT425049	MT425041
<i>Cadlina vavilovi</i> sp. nov.	MIMB 42230	Kuril isl., Iturup	MZ711326	MZ713213	MZ713231
<i>Cadlina vinogradovi</i> sp. nov.	ZMMU:Op-838	Kuril isl., Urup	PP554327	PP555226	PP555186
<i>Cadlina vinogradovi</i> sp. nov.	ZMMU:Op-839	Kuril isl., Urup	PP554330	PP555227	PP555187
<i>Cadlina vinogradovi</i> sp. nov.	ZMMU:Op-850	Kuril isl., Iturup	PP554328	PP555228	PP555188
<i>Cadlina vinogradovi</i> sp. nov.	ZMMU:Op-851	Kuril isl., Iturup	PP554329	PP555229	PP555189