

Supplementary Material

Cosmopolitan abyssal lineages? A systematic study of East Pacific deep-sea squat lobsters (Decapoda: Galatheoidea: Munidopsidae)

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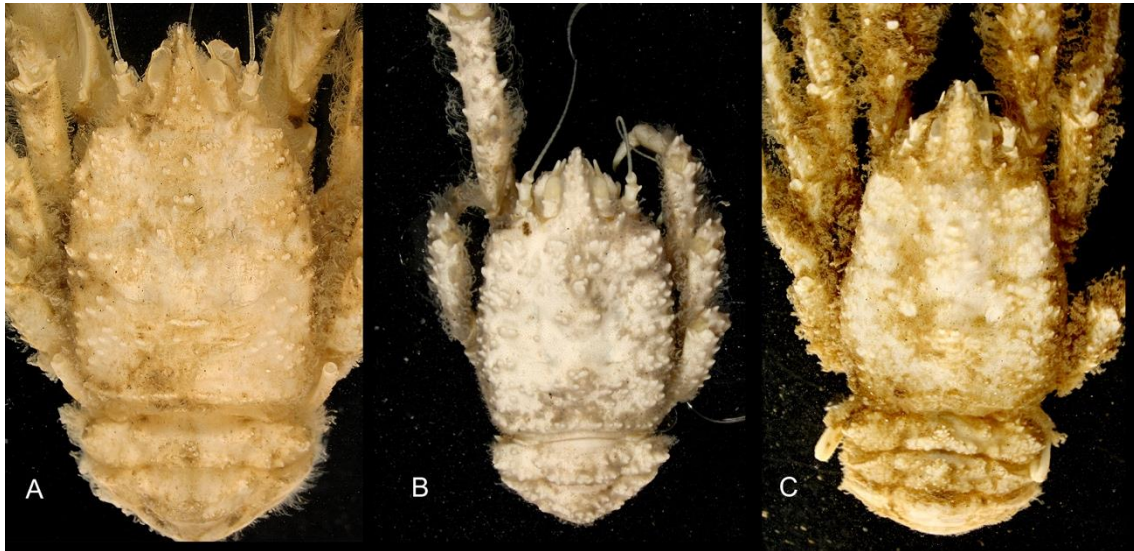


Figure S1. A-C. *Munidopsis aspera* (Henderson, 1885). A. Magellan Strait (SIO-BIC C11873). B. California (SIO-BIC C11953). C. California (SIO-BIC C12524).



Figure S2. A. *Munidopsis carinipes* Faxon, 1893, Costa Rica (SIO-BIC C13869) B, *Munidopsis quadrata* Faxon, 1893, California (SIO-BIC C638). C, *Munidopsis quadrata* Faxon, 1893, California (SIO-BIC C11814).

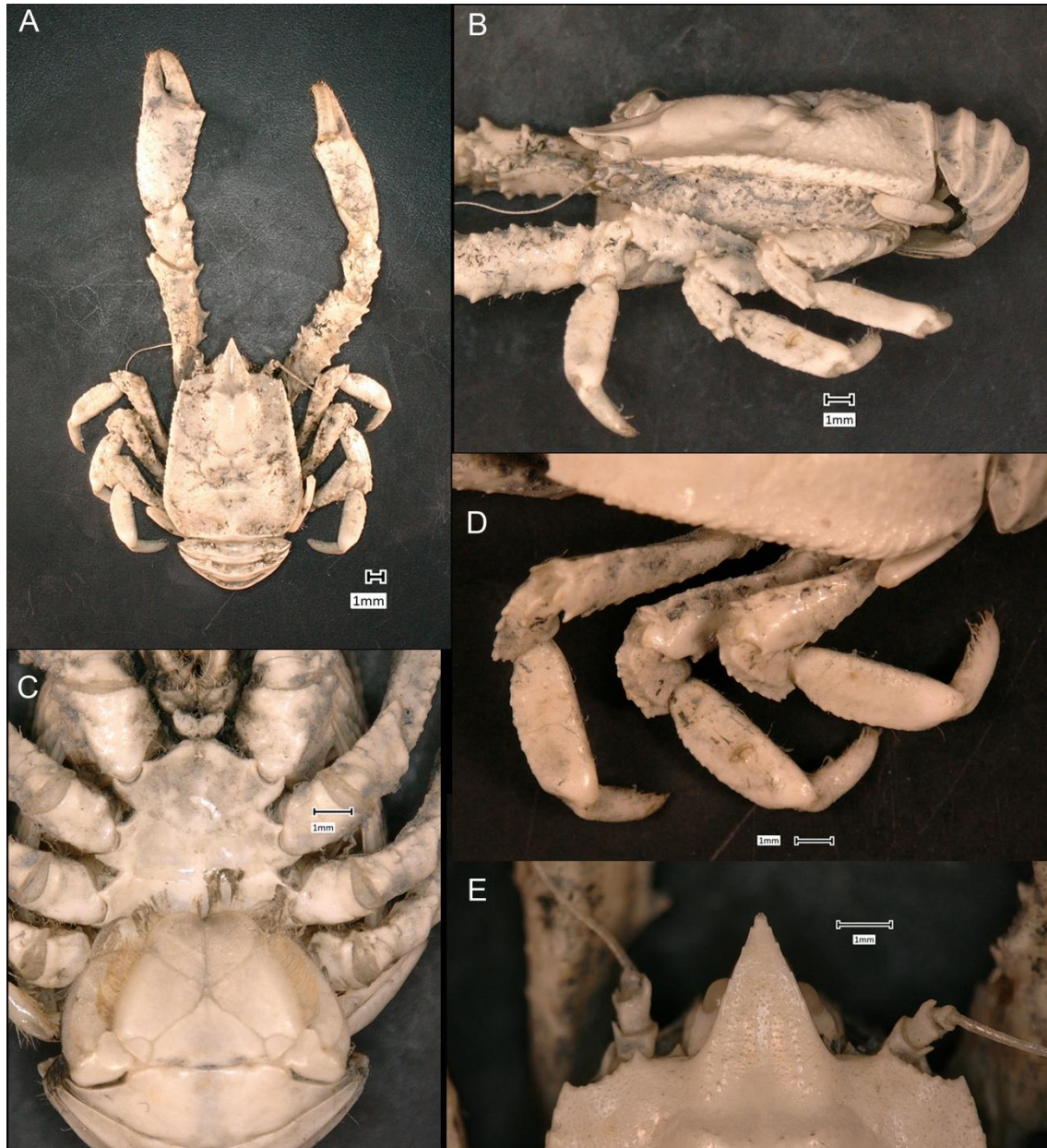


Figure S3. *Munidopsis girguisi* sp. nov., California, Holotype (MCZ IZ-73856).



Figure S4. *Munidopsis nautilus* sp. nov., Galapagos, Holotype (MCZ IZ-70119).

Table S1.

Code or identifier	Taxa	COI	16S	28S
NMV J56394	<i>Agononida rubrizonata</i>	KM281849	KM281831	
Fo124	<i>Alainius crosnieri</i>	AY351051	AY351239	OM832970
Allo14641	<i>Allogalathea elegans</i>	GU392204	GU392161	ON858089
MNHN-IU-2014-13654	<i>Allomunida magnicheles</i>	OM641846	OM744239	OM832971
MNHN-IU-2013-4128	<i>Anomoeomunida caribensis</i>	OM641848	OM744240	
UF37156	<i>Coralliogalathea humilis</i>	MK049291	MK049310	MK049336
MNHN-IU-2013-17396	<i>Fennerogalathea ensifera</i>	KY230479	KY230489	MK049340
-	<i>Galacantha diomedeeae</i>	JN166758		
MCZ146406	<i>Galacantha diomedeeae</i>		ON858070	ON858149
NIWA 28088	<i>Galacantha quiquei</i>	JN166754	JN166744	
NIWA 28060a	<i>Galacantha rostrata</i>	JN166755	JN166751	
ULLZ 10852	<i>Galacantha spinosa</i>	JN166769	JN166752	
ULLZ 8023	<i>Galacantha spinosa</i>	JN166768	JN166753	
MV J56403a	<i>Galacantha subspinosa</i>	JN166760	JN166745	
MV J56403c	<i>Galacantha subspinosa</i>	JN166761	JN166750	
MV J56403d	<i>Galacantha subspinosa</i>	JN166762	JN166747	
MV J56403e	<i>Galacantha subspinosa</i>	JN166757	JN166749	
Galathea 100b	<i>Galathea strigosa</i>	MK049302	MK049304	OM832972
SIO-BIC C11027 1	<i>Janetogalathea californiensis</i>	ON886837	ON858021	ON858090
SIO-BIC C11027 2	<i>Janetogalathea californiensis</i>	ON886838	ON858022	ON858091
SIO-BIC C14023	<i>Janetogalathea californiensis</i>	ON886870	ON858051	ON858120
MCZ139642	<i>Janetogalathea californiensis</i>	ON886887	ON858067	ON858145
isolate 255	<i>Lauriea siagiani</i>	KX929633	KX929696	ON858139
MNHN-IU-2016-7125	<i>Leiogalathea achates</i>	MK140857	MK140893	MN839912
MNHN-IU-2013-18858	<i>Leiogalathea agassizii</i>	MK140854	MK140890	MN839908
MNHN-IU-2015-350	<i>Leiogalathea anchises</i>	MK140839	MK140874	MN839896
MNHN-IU-2013-17425	<i>Leiogalathea ascanius</i>	MK140837	MK140872	MN839894
MNHN-IU-2017-3949	<i>Leiogalathea camilla</i>	MN839802	MN839829	MN839933
MNHN-IU-2013-17431	<i>Leiogalathea dido</i>	MK140835	MK140869	MN839893
MNHN-IU-2013-17429	<i>Leiogalathea evander</i>	MK140830	MK140864	MN839890
MCZ153344_1	<i>Leiogalathea evander</i>	ON886893	ON858075	ON858154
MNHN-IU-2013-17404	<i>Leiogalathea juturna</i>	MK140829	MK140863	MN839889
MNHN-IU-2014-13395	<i>Leiogalathea pallas</i>	MK140852	MK140888	MN839905
MNHN-IU-2014-13720	<i>Leiogalathea paris</i>	MK140832	MK140866	MN839891
MNHN-IU-2014-13697	<i>Leiogalathea priam</i>	MK140840	MK140875	MN839897
MNHN-IU-2014-13711	<i>Leiogalathea sinon</i>	MK140834	MK140868	MN839892
MNHN-IU-2014-13744	<i>Leiogalathea turnus</i>	MK140844	MK140880	MN839899
MCZ153281	<i>Leiogalathea turnus</i>		ON858074	ON858153
isolate 95	<i>Macrothea bouchardi</i>	KX929544	KX929492	ON858144
-	<i>Munida iris</i>	MK138923	MK141718	KF182622
MCZ162070	<i>Munida quadrispina</i>	ON886895	ON858077	ON858156
MNHN-IU-2016-9650	<i>Munida stimpsoni</i>	OM641854	OM744246	OM832973
MSUB52BUR	<i>Munida subrugosa</i>	AY700174	AY700161	AY596099
ULLZ 10848	<i>Munidopsis abbreviata</i>	JN166771	JN166724	
SIO-BIC C13922	<i>Munidopsis agassizii</i>	ON886860	ON858041	ON858110
-	<i>Munidopsis albatrossae</i>	DQ677692		
SIO-BIC C11088	<i>Munidopsis alvisca</i>		ON858023	ON858092
SIO-BIC C12783	<i>Munidopsis alvisca</i>	ON886848	ON858031	ON858100
SIO-BIC C12790	<i>Munidopsis alvisca</i>	ON886849	ON858032	ON858101
MCZ146329	<i>Munidopsis alvisca</i>		ON858068	ON858147
MCZ146393	<i>Munidopsis alvisca</i>	ON886890	ON858069	ON858148
MCZ149986	<i>Munidopsis alvisca</i>		ON858071	ON858150
MNHN-IU-2016-2446	<i>Munidopsis amapa</i>	OL685171	OL681876	ON858143
-	<i>Munidopsis antonii</i>	DQ677677		
-	<i>Munidopsis antonii</i>	DQ677678		
-	<i>Munidopsis antonii</i>	DQ677679		
-	<i>Munidopsis antonii</i>	DQ677680		
-	<i>Munidopsis antonii</i>	DQ677681		
-	<i>Munidopsis antonii</i>	DQ677682		
-	<i>Munidopsis aries</i>	DQ677691		
MNHN-IU-2010-268	<i>Munidopsis arietina</i>	ON886886		
SIO-BIC C13912	<i>Munidopsis aspera</i>	ON886858		
SIO-BIC C13913	<i>Munidopsis aspera</i>	ON886859		
SIO-BIC C11873	<i>Munidopsis aspera</i>	ON886844	ON858026	ON858095
SIO-BIC C12688	<i>Munidopsis aspera</i>	ON886847	ON858030	ON858099

Code or identifier	Taxa	COI	16S	28S
SIO-BIC C13951	<i>Munidopsis aspera</i>	ON886864	ON858045	ON858114
SIO-BIC C14144	<i>Munidopsis aspera</i>	ON886872	ON858053	ON858122
SIO-BIC C14820	<i>Munidopsis bairdii</i>	ON886877	ON858060	ON858130
MNHN-IU-2014-23830	<i>Munidopsis balconi</i>	OL685172	OL681877	ON858142
MNHN-IU-2014-13823	<i>Munidopsis barbarae</i>	MG979478	MG979471	ON858167
MNHN-IU-2014-13822	<i>Munidopsis barbarae</i>	MG979479	MG979472	ON858166
SIO-BIC C13948	<i>Munidopsis barrerae</i>	ON886863	ON858044	ON858113
-	<i>Munidopsis bermudezi</i>	KX016541		
-	<i>Munidopsis bracteosa</i>	DQ677684		
-	<i>Munidopsis bracteosa</i>	DQ677685		
-	<i>Munidopsis bracteosa</i>	DQ677686		
-	<i>Munidopsis bracteosa</i>	DQ677687		
-	<i>Munidopsis bracteosa</i>	DQ677688		
-	<i>Munidopsis bracteosa</i>	DQ677689		
SIO-BIC C11150	<i>Munidopsis carinipes</i>	ON886841	ON858024	ON858093
SIO-BIC C13869	<i>Munidopsis carinipes</i>	ON886854	ON858037	ON858106
-	<i>Munidopsis cascadia</i>	DQ677694		
MCZ153121	<i>Munidopsis cascadia</i>	ON886892	ON858073	ON858152
MCZ153482	<i>Munidopsis comarge</i>	ON886894	ON858076	ON858155
-	<i>Munidopsis comarge</i>	JN166772		
NIWA 53792	<i>Munidopsis comarge</i>	JN166772	JN166732	
MNHN-IU-2016-2560	<i>Munidopsis corniculata</i>	MG979480	MG979473	ON858169
MNHN-IU-2013-19128	<i>Munidopsis corniculata</i>	MG979481	MG979474	ON858168
SIO-BIC C13902	<i>Munidopsis cortesi</i>	ON886856	ON858039	ON858108
MV J55009a	<i>Munidopsis crenatirostris</i>	JN166780		
MV J55009b	<i>Munidopsis crenatirostris</i>	JN166779	JN166742	
MV J55009c	<i>Munidopsis crenatirostris</i>	JN166782	JN166743	
MV J56397	<i>Munidopsis crenatirostris</i>	JN166778	JN166733	
MV J56399	<i>Munidopsis crenatirostris</i>	JN166783	JN166736	
MV J57252	<i>Munidopsis crenatirostris</i>	JN166781	JN166738	
MCZ25820	<i>Munidopsis cubensis</i>	ON886897	ON858079	ON858158
-	<i>Munidopsis curvirostra</i>	FJ581768		
-	<i>Munidopsis curvirostra</i>	FJ581769		
-	<i>Munidopsis curvirostra</i>	FJ581770		
-	<i>Munidopsis curvirostra</i>	KX016542		
-	<i>Munidopsis curvirostra</i>	KX016543		
-	<i>Munidopsis curvirostra</i>	KX016544		
-	<i>Munidopsis curvirostra</i>	KX016545		
MV J55128	<i>Munidopsis cylindrophthalma</i>	JN166784	JN166737	
MV J56121	<i>Munidopsis dasypus</i>	JN166774	JN166727	
MV J57250a	<i>Munidopsis dasypus</i>	JN166777	JN166729	
MV J57250b	<i>Munidopsis dasypus</i>	JN166773	JN166730	
-	<i>Munidopsis dasypus</i>	JN166776		
MCZ73764	<i>Munidopsis depressa</i>	ON886899	ON858080	ON858160
SIO-BIC C14014	<i>Munidopsis depressa</i>	ON886869	ON858050	ON858119
MBM189200	<i>Munidopsis dispar</i>	MT901051	MT896787	
MBM286629	<i>Munidopsis dispar</i>	MT901052	MT896788	
MBM286630	<i>Munidopsis dispar</i>	MT901053	MT896789	
ULLZ 7810	<i>Munidopsis erinacea</i>	JN166767	JN166731	
-	<i>Munidopsis exuta</i>	DQ677690		
SIO-BIC C14003	<i>Munidopsis girguisi</i>	ON886867	ON858048	ON858117
SIO-BIC C14008	<i>Munidopsis girguisi</i>	ON886868	ON858049	ON858118
MCZ73852	<i>Munidopsis girguisi</i>	ON886900	ON858081	ON858161
MCZ73856	<i>Munidopsis girguisi</i>	ON886902	ON858083	ON858163
SIO-BIC C12819	<i>Munidopsis granosicorum</i>	ON886851	ON858034	ON858103
MNHN-IU-2016-6103	<i>Munidopsis granulens</i>	MG979486	ON858086	ON858170
MBM189201	<i>Munidopsis guochuani</i>	MT901054	MT896790	
MBM286647	<i>Munidopsis guochuani</i>	MT901055	MT896791	
MBM286648_1	<i>Munidopsis guochuani</i>	MT901056	MT896792	
MBM286648_2	<i>Munidopsis guochuani</i>	MT901057	MT896793	
MBM286648_3	<i>Munidopsis guochuani</i>	MT901058	MT896794	
SIO-BIC C11142	<i>Munidopsis hendersoniana</i>	ON886839		
SIO-BIC C12809	<i>Munidopsis hendersoniana</i>	ON886884	ON858065	ON858137
MCZ153106	<i>Munidopsis hendrickxi</i>	ON886891	ON858072	ON858151
-	<i>Munidopsis hirsuta</i>	DQ677693		
SIO-BIC C14102	<i>Munidopsis hystrix</i>	ON886871	ON858052	ON858121

Code or identifier	Taxa	COI	16S	28S
MCZ146311	<i>Munidopsis hystrix</i>	ON886889		ON858146
MCZ73853	<i>Munidopsis hystrix</i>	ON886901	ON858082	ON858162
MCZ139982	<i>Munidopsis hystrix</i>	ON886888		
-	<i>Munidopsis kensleyi</i>	JN166775		
MV J62313	<i>Munidopsis kensleyi</i>	JN166775	JN166728	
-	<i>Munidopsis kensmithi</i>	DQ677706		
-	<i>Munidopsis kensmithi</i>	DQ677707		
-	<i>Munidopsis kensmithi</i>	DQ677708		
-	<i>Munidopsis kensmithi</i>	DQ677709		
MBM189188	<i>Munidopsis kexueae</i>	MT901050	MT896786	
SIO-BIC C14280	<i>Munidopsis latirostris</i>		ON858054	ON858123
-	<i>Munidopsis lauensis</i>	EF157850		
-	<i>Munidopsis lauensis</i>	EF157851		
-	<i>Munidopsis lauensis</i>	EF157852		
-	<i>Munidopsis lauensis</i>	EF157853		
-	<i>Munidopsis lauensis</i>	KF498843		
-	<i>Munidopsis lauensis</i>	KF498844		
-	<i>Munidopsis lauensis</i>	KF498845		
-	<i>Munidopsis lauensis</i>	KF498846		
-	<i>Munidopsis lauensis</i>	KF498847		
-	<i>Munidopsis lauensis</i>	OL958457		
-	<i>Munidopsis lauensis</i>	OL958456		
-	<i>Munidopsis lauensis</i>	OL958455		
-	<i>Munidopsis lauensis</i>	OL958454		
-	<i>Munidopsis lauensis</i>	OL958453		
SIO-BIC C12477	<i>Munidopsis lauensis</i>		ON858028	ON858097
SIO-BIC C14707	<i>Munidopsis lauensis</i>	ON886880		ON858133
SIO-BIC C14558	<i>Munidopsis lentigo</i>	ON886879		ON858132
SIO-BIC C14558_1	<i>Munidopsis lentigo</i>	ON886876		ON858129
SIO-BIC C13903	<i>Munidopsis aff nitida</i>	ON886857	ON858040	ON858109
-	<i>Munidopsis livida</i>	KX016546		
ULLZ 10851	<i>Munidopsis longimanus</i>	JN166770	JN166741	
SIO-BIC C5747	<i>Munidopsis mandelai</i>	ON886882	ON858063	ON858135
SIO-BIC C13957	<i>Munidopsis margarita</i>	ON886865	ON858046	ON858115
-	<i>Munidopsis myojinensis</i>	EF143603		
-	<i>Munidopsis myojinensis</i>	EF157849		
MCZ70119	<i>Munidopsis nautilus</i>	ON886898		ON858159
SIO-BIC C11154	<i>Munidopsis opalescens</i>	ON886842		
UCN G7	<i>Munidopsis opalescens</i>	JN166759	JN166740	
-	<i>Munidopsis penescabra</i>	KX016547		
-	<i>Munidopsis penescabra</i>	KX016548		
MNHN-IU-2016-2365	<i>Munidopsis pholidota</i>	OL685170	OL681875	ON858141
SIO-BIC C14546	<i>Munidopsis piipa</i>	ON886874	ON858058	ON858127
Mp9	<i>Munidopsis polymorpha</i>	ON886904	ON858085	ON858165
-	<i>Munidopsis polymorpha</i>	DQ860146		
-	<i>Munidopsis polymorpha</i>	JQ622397		
SIO-BIC C13890	<i>Munidopsis producta</i>	ON886855	ON858038	ON858107
SIO-BIC C11025	<i>Munidopsis quadrata</i>	ON886836		
SIO-BIC C11814	<i>Munidopsis quadrata</i>	ON886881	ON858062	ON858134
-	<i>Munidopsis quadrata</i>	DQ882093		
UCN G1	<i>Munidopsis quadrata</i>	JN166766	JN166734	
SIO-BIC C14821	<i>Munidopsis recta</i>	ON886878	ON858061	ON858131
-	<i>Munidopsis recta</i>	DQ677698	EF428964	
-	<i>Munidopsis recta</i>	DQ677695		
-	<i>Munidopsis recta</i>	DQ677696		
-	<i>Munidopsis recta</i>	DQ677697		
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-	<i>Munidopsis recta</i>	DQ677699		
-	<i>Munidopsis recta</i>	DQ677700		
-	<i>Munidopsis recta</i>	DQ677701		
-	<i>Munidopsis recta</i>	DQ677702		
MNHN-IU-2013-3367	<i>Munidopsis robusta</i>	MG979484	MG979477	
SIO-BIC C13941	<i>Munidopsis scabra</i>	ON886862	ON858043	ON858112
SIO-BIC C14535	<i>Munidopsis scabra</i>	ON886873	ON858057	ON858126
-	<i>Munidopsis scotti</i>	DQ677703		
-	<i>Munidopsis scotti</i>	DQ677704		

Code or identifier	Taxa	COI	16S	28S
-	<i>Munidopsis scotti</i>	DQ677705		
-	<i>Munidopsis segonzaci</i>	DQ677683		
MNHN-IU-2013-18964	<i>Munidopsis senticosa</i>	MG979483	MG979476	ON858173
MNHN-IU-2013-18962	<i>Munidopsis senticosa</i>	MG979482	MG979475	ON858172
SIO-BIC C12523	<i>Munidopsis sericea</i>	ON886846	ON858029	ON858098
SIO-BIC C11171	<i>Munidopsis similis</i>	ON886843	ON858025	ON858094
SIO-BIC C13964	<i>Munidopsis similis</i>	ON886866	ON858047	ON858116
MCZ162084	<i>Munidopsis similis</i>	ON886896	ON858078	ON858157
-	<i>Munidopsis similis</i>	KX016549		
-	<i>Munidopsis similis</i>	KX016550		
-	<i>Munidopsis similis</i>	KX016551		
SIO-BIC C13830	<i>Munidopsis</i> sp	ON886853	ON858036	ON858105
NA 2011 UCN G8	<i>Munidopsis</i> sp (aspera)	JN166763	JN166735	
MNHN-IU-2013-18901	<i>Munidopsis squamosa</i>	OL685169	OL681874	ON858140
SIO-BIC C12466	<i>Munidopsis starmer</i>	ON886845	ON858027	ON858096
SIO-BIC C9639	<i>Munidopsis testuda</i>	ON886883	ON858064	ON858136
-	<i>Munidopsis tiburon</i>	DQ677673		
SIO-BIC C11145	<i>Munidopsis trifida</i>	ON886840		
SIO-BIC C12813	<i>Munidopsis trifida</i>	ON886850	ON858033	ON858102
SIO-BIC C13822	<i>Munidopsis trifida</i>	ON886852	ON858035	ON858104
SIO-BIC C13936	<i>Munidopsis trifida</i>	ON886861	ON858042	ON858111
SIO-BIC C14547	<i>Munidopsis trifida</i>	ON886875	ON858059	ON858128
UCN G10	<i>Munidopsis trifida</i>	JN166765	JN166726	
UCN G9	<i>Munidopsis trifida</i>	JN166764	JN166725	
MNHN-IU-2016-2873	<i>Munidopsis turgida</i>	MG979487	ON858087	ON858174
-	<i>Munidopsis verrilli</i>	MH717896	MH717896	
-	<i>Munidopsis verrucosus</i>	DQ677710		
-	<i>Munidopsis vrijenhoeki</i>	DQ677674		
-	<i>Munidopsis vrijenhoeki</i>	DQ677675		
-	<i>Munidopsis vrijenhoeki</i>	DQ677676		
SIO-BIC C14287	<i>Munidopsis yaquinensis</i>		ON858055	ON858124
SIO-BIC C14337	<i>Munidopsis yaquinensis</i>		ON858056	ON858125
Paralithodes camtschaticus	<i>Paralithodes camtschaticus</i>	AB211303	AB178279	AB193824
PC-2010 isolate PAR148	<i>Paramunida aff setigera</i>	GU814872	HM173420	GU814810
Petrolisthes armatus	<i>Petrolisthes armatus</i>	MF490061	KY857068	KF182661
MNHN-IU-2016-7003	<i>Phylladiorhynchus paula</i>	MZ219755	MZ144705	OM833034
MCZ74091	<i>Pleuroncodes planipes</i>	ON886903	ON858084	ON858164
USNM 1292530	<i>Porcellana sayana</i>	MG596256	MG596259	
MNHN-IU-2014-20070	<i>Sadayoshia acropora</i>	ON886885	ON858066	ON858138
S175	<i>Sadayoshia tenuirostris</i>	KX929594	KX929689	
-	<i>Shinkaia crosnieri</i>	EU420129	EU420129	