

Fig. S1. Neighbor-joining tree of COI sequences from *Pentaceros japonicus* and *P. wheeleri* (Pentacerotidae), which showed low interspecific Kimura-2-parameter distance (< 2%). Sequences from DNA database were shown with their accession numbers.

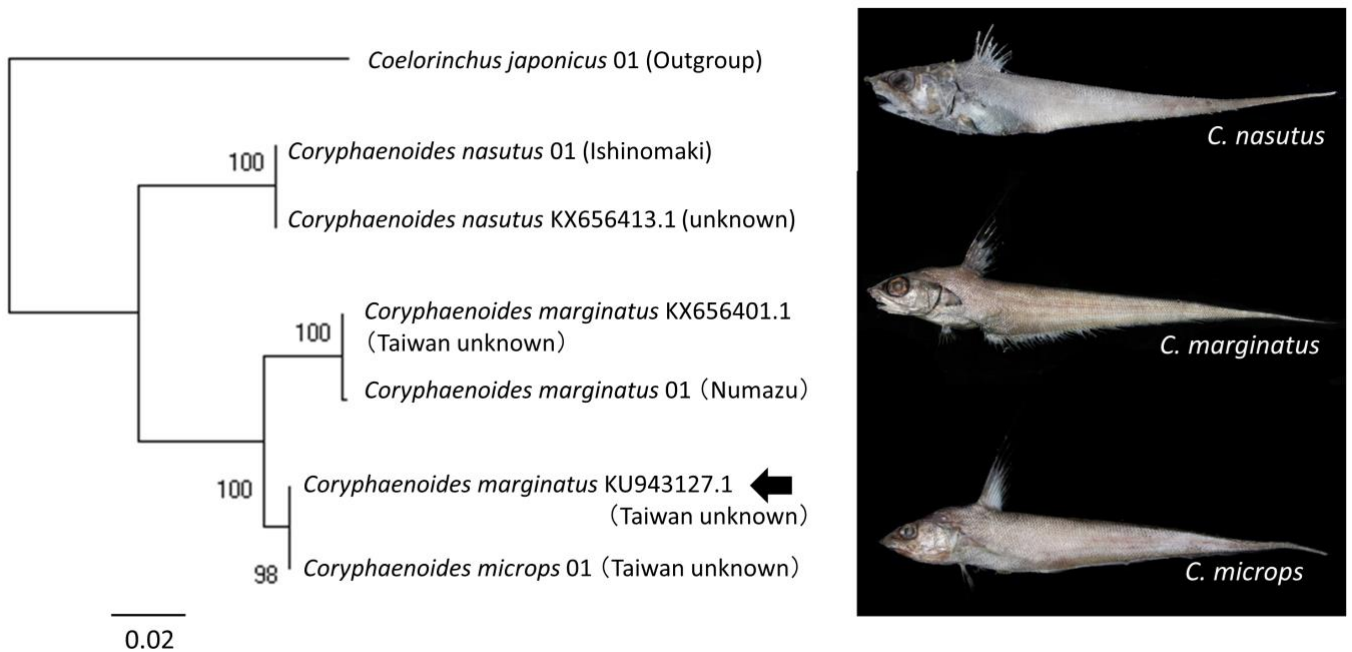


Fig. S2. Neighbor-joining tree of COI sequences from *Coryphaenoides nasutus*, *C. marginatus* and *C. microps* (Macrouridae). Sequences were shown with the locations of fishing port where sample was landed. Sequences from DNA database were shown with their accession numbers. KU943127.1 (Black arrow) was included in *C. microps* clade and indicated possible misidentification.

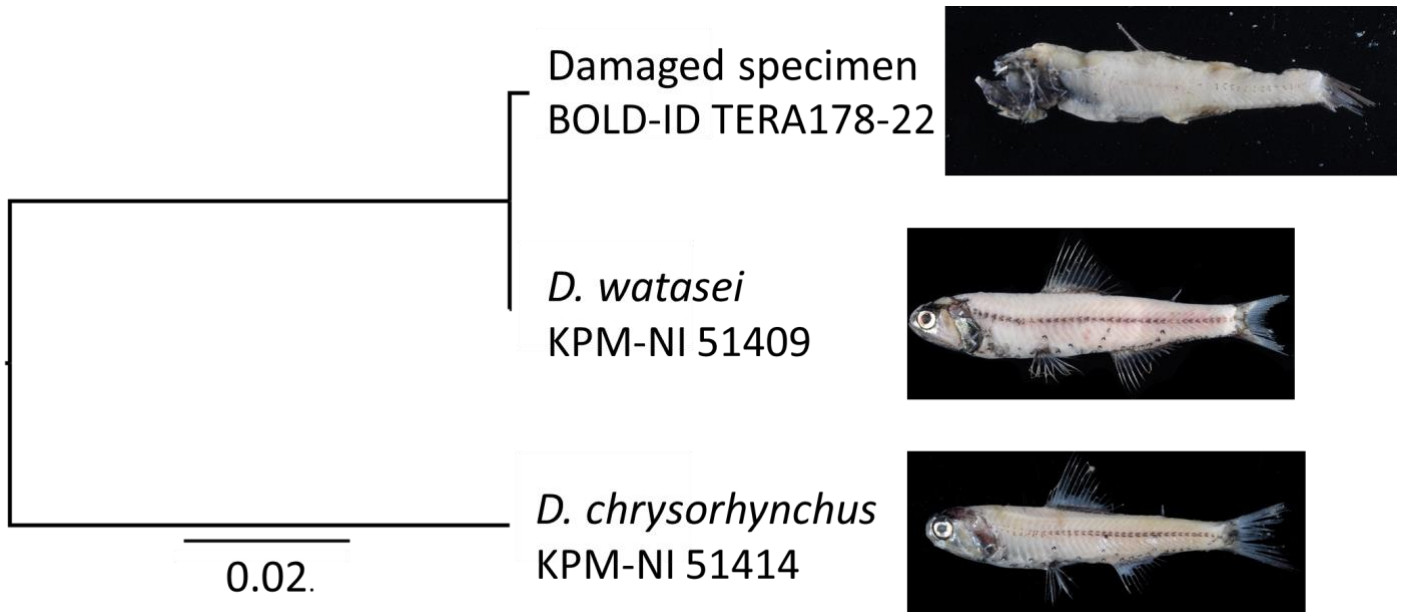


Fig. S3. Neighbor-joining tree of COI sequences from Damaged *Myctophidae* specimen, *Diaphus watasei* and *D. chrysorhynchus* (Myctophidae). Sequences were shown with the locations of fishing port where sample was landed. Sequences from DNA database were shown with their accession numbers. This tree indicated that this damaged specimen was identified as *D. watasei*.

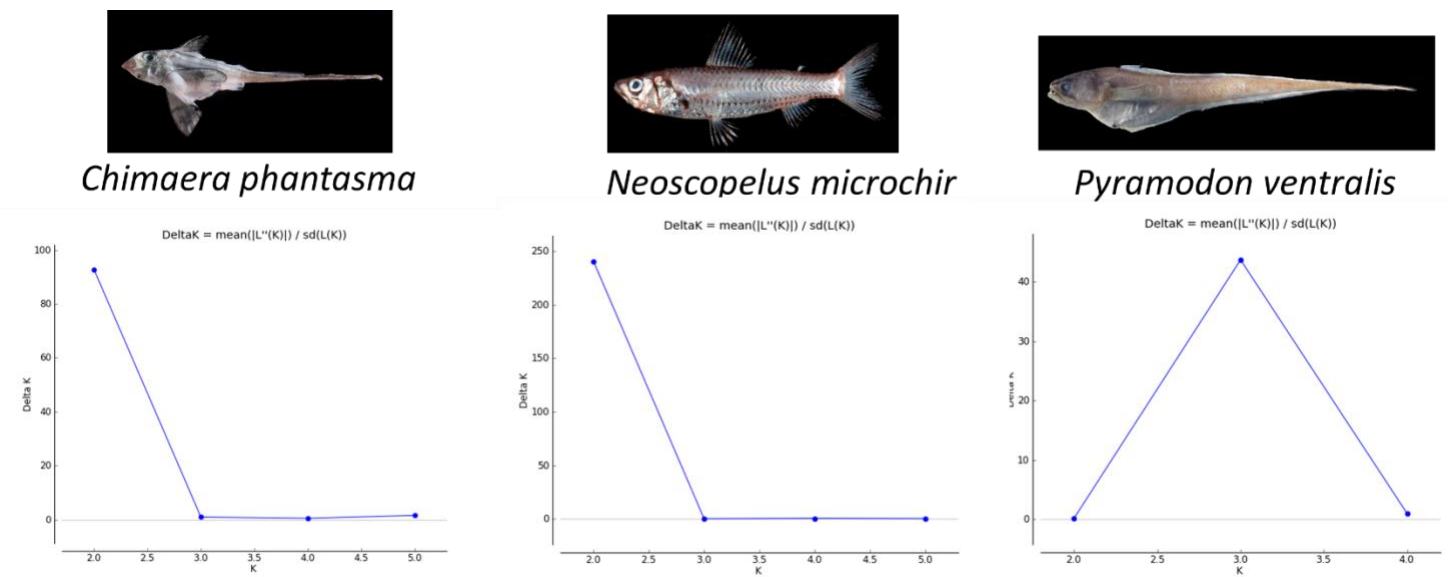


Fig. S4. Result of $K = 2$ or $K = 3$ and delta K plot for *Chimaera phantasma*, *Neoscopelus microchir* and *Pyramodon ventralis*.

Table. S1. Voucher and sequence information for 123 species.

Family	Morphological identification	BOLD identification	Closest matching BIN (within 2%)	Voucher ID	Field ID	BOLD ID	Accession No.
Chimaeridae	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KAUM-I 134084	<i>Chimaera phantasma</i> 1	Teramura-A161	LC632353
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52531	<i>Chimaera phantasma</i> 2	Teramura-A122	LC632354
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56433	<i>Chimaera phantasma</i> 3	Teramura-A123	LC632355
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	-	<i>Chimaera phantasma</i> 5	Teramura-A125	LC632357
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52367	<i>Chimaera phantasma</i> 6	Teramura-A126	LC632358
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	-	<i>Chimaera phantasma</i> 7	Teramura-A127	LC632359
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52525	<i>Chimaera phantasma</i> 8	Teramura-A128	LC632360
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52529	<i>Chimaera phantasma</i> 9	Teramura-A129	LC632361
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52366	<i>Chimaera phantasma</i> 10	Teramura-A130	LC632362
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52528	<i>Chimaera phantasma</i> 11	Teramura-A131	LC632363
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52532	<i>Chimaera phantasma</i> 12	Teramura-A132	LC632364
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52527	<i>Chimaera phantasma</i> 13	Teramura-A133	LC632365
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	-	<i>Chimaera phantasma</i> 14	Teramura-A134	LC632366
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56439	<i>Chimaera phantasma</i> 15	Teramura-A135	LC632367
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56434	<i>Chimaera phantasma</i> 16	Teramura-A136	LC632368
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KAUM-I 134105	<i>Chimaera phantasma</i> 17	Teramura-A137	LC632369
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52281	<i>Chimaera phantasma</i> 18	Teramura-A138	LC632373
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 52530	<i>Chimaera phantasma</i> 19	Teramura-A139	LC632374
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 47883	<i>Chimaera phantasma</i> 20	Teramura-A140	LC632375
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56438	<i>Chimaera phantasma</i> 24	Teramura-A141	LC632376
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56436	<i>Chimaera phantasma</i> 25	Teramura-A142	LC632377
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 59927	<i>Chimaera phantasma</i> 26	Teramura-A143	LC632378
	<i>Chimaera phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 56437	<i>Chimaera phantasma</i> 27	Teramura-A144	LC632379
	<i>Chimaera cf. phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 48103	<i>Chimaera phantasma</i> 21	Teramura-A145	LC632370
	<i>Chimaera cf. phantasma</i>	<i>Chimaera phantasma</i>	Case III	KPM-NI 48059	<i>Chimaera phantasma</i> 22	Teramura-A146	LC632371
	<i>Chimaera cf. phantasma</i>	<i>Chimaera phantasma</i>	Case III	-	<i>Chimaera phantasma</i> 23	Teramura-A147	LC632372
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 51352	<i>Hydrolagus mitsukurii</i> 1	Teramura-A01	-
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 51822	<i>Hydrolagus mitsukurii</i> 2	Teramura-A162	ON398629
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 51823	<i>Hydrolagus mitsukurii</i> 3	Teramura-A163	ON398623
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 51824	<i>Hydrolagus mitsukurii</i> 4	Teramura-A164	ON398621
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	-	<i>Hydrolagus mitsukurii</i> 5	Teramura-A165	ON398626
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 52282	<i>Hydrolagus mitsukurii</i> 6	Teramura-A166	ON398630
	<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	-	<i>Hydrolagus mitsukurii</i> 7	Teramura-A167	ON398628
<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 52320	<i>Hydrolagus mitsukurii</i> 8	Teramura-A168	ON398627	
<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	-	<i>Hydrolagus mitsukurii</i> 9	Teramura-A169	ON398622	
<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 52319	<i>Hydrolagus mitsukurii</i> 10	Teramura-A170	ON398624	
<i>Hydrolagus mitsukurii</i>	New sequence	Case IV	KPM-NI 52321	<i>Hydrolagus mitsukurii</i> 11	Teramura-A171	ON398625	
<i>Hydrolagus barbouri</i>	<i>Hydrolagus barbouri</i>	Case I	KPM-NI 58758		Teramura-A02	ON398619	
Squalidae	<i>Etmopterus mollerii</i>	<i>Etmopterus cf. decacuspoidatus</i>	Case II/Case III	KPM-NI 52973		Teramura-A03	ON398607
	<i>Zameus squamulosus</i>	<i>Zameus squamulosus</i>	Case I	KPM-NI 48008		Teramura-A04	ON398695
	<i>Deania calcea</i>	<i>Deania calcea / Deania quadrispinosa</i>	Case II/Case III	KPM-NI 47881		Teramura-A05	ON398599
Dalatiidae	<i>Dalatias licha</i>	<i>Dalatias licha</i>	Case I	KPM-NI 52259		Teramura-A06	ON398596
Pseudotriakidae	<i>Pseudotriakis microdon</i>	<i>Pseudotriakis microdon</i>	Case I	KPM-NI 52371		Teramura-A07	ON398675
Congridae	<i>Macrocephenchelys brevirostris</i>	<i>Congriscus sp. EXB91 / Congriscus megastomus</i>	Case III	KPM-NI 48056		Teramura-A09	ON398644
	<i>Acromycter nezumi</i>	New sequence	Case IV	KPM-NI 51368		Teramura-A10	ON398527
Nettastomatidae	<i>Nettastoma parviceps</i>	<i>Nettastoma parviceps</i>	Case I	KPM-NI 52213		Teramura-A11	ON398655
Synaphobranchidae	<i>Simenchelys parasitica</i>	<i>Simenchelys parasitica</i>	Case I	KPM-NI 52509		Teramura-A12	ON398687
	<i>Synaphobranchus kaupii</i>	<i>Synaphobranchus kaupii / Lyophis brunneus</i>	Case II/Case III	KPM-NI 52507		Teramura-A13	ON398691
Notacanthidae	<i>Notacanthus chemnitzii</i>	<i>Notacanthus chemnitzii</i>	Case II	KPM-NI 52510		Teramura-A14	ON398656
Argentinidae	<i>Argentina kagoshimae</i>	<i>Argentina kagoshimae</i>	Case I	KPM-NI 51421		Teramura-A15	ON398530
Stomiidae	<i>Sigmops gracilis</i>	<i>Sigmops gracilis / Sigmops sp. SepS-16-3</i>	Case III	KPM-NI 63017		Teramura-A16	ON398686
	<i>Diplophos orientalis</i>	New sequence	Case IV	KPM-NI 53030		Teramura-A17	ON398604
	<i>Polyipnus stereope</i>	<i>Polyipnus stereope</i>	Case I	KPM-NI 53031		Teramura-A18	ON398670
	<i>Polyipnus spinifer</i>	New sequence	Case IV	KPM-NI 63018		Teramura-A19	ON398669

	<i>Polyipnus cf. spinifer</i>	New sequence	Case IV	KPM-NI 48129		Teramura-A20	ON398666
	<i>Polyipnus notatas</i>	New sequence	Case IV	NMMB-P 30365		Teramura-A21	ON398668
	<i>Polyipnus matsubaraei</i>	<i>Polyipnus matsubaraei</i> / <i>Polyipnus sp.</i> SepW-22-11/ <i>Polyipnus ruggeri</i>	Case III	KPM-NI 63019		Teramura-A22	ON398667
	<i>Polymetme corythaeola</i>	<i>corythaeola</i> / <i>Polymetme elongata</i>	Case III	KPM-NI 52238		Teramura-A23	ON398671
	<i>Chauliodus sloani</i>	<i>Chauliodus sloani</i>	Case II	KPM-NI 63021		Teramura-A24	ON398545
	<i>Stomias affinis</i>	<i>Stomias affinis</i>	Case II	KPM-NI 47960		Teramura-A25	ON398689
	<i>Borostomias pacificus</i>	New sequence	Case IV	KPM-NI 63022		Teramura-A26	ON398537
	<i>Astronesthes indopacifica</i>	<i>Astronesthes formosana</i> / <i>Idiacanthus antrostomus</i> / <i>Astronesthes sp.</i>	Case III	KPM-NI 48065		Teramura-A27	ON398532
	<i>Astronesthes indica</i>	New sequence	Case I	KPM-NI 63023		Teramura-A28	ON398531
	<i>Astronesthes splendida</i>	New sequence	Case I	KPM-NI 63024		Teramura-A29	ON398533
	<i>Photonectes albipennis</i>	<i>Photonectes albipennis</i> / <i>Photostomias sp.</i>	Case III	KPM-NI 63025		Teramura-A30	ON398663
	<i>Leptostomias multifilis</i>	New sequence	Case IV	KPM-NI 63026		Teramura-A31	ON398638
	<i>Bathophilus longipinnis</i>	<i>longipinnis</i> / <i>Bathophilus digitatus</i>	Case II/Case III	KPM-NI 51769		Teramura-A32	ON398534
	<i>Photostomias guernei</i>	<i>Photostomias guernei</i> <i>Idiacanthus</i>	Case II	KPM-NI 63034		Teramura-A33	ON398664
	<i>Idiacanthus fasciola</i>	<i>antrostomus</i> / <i>Idiacanthus fasciola</i>	Case II/Case III	KPM-NI 52264		Teramura-A34	ON398631
Synodontidae	<i>Harpadon microchir</i>	<i>Harpadon microchir</i>	Case I	KPM-NI 51350	<i>Harpadon microchir</i> 1	Teramura-A35	ON398611
	<i>Harpadon microchir</i>	<i>Harpadon microchir</i>	Case I	KPM-NI 56407	<i>Harpadon microchir</i> 2	Teramura-A158	ON398610
	<i>Harpadon microchir</i>	<i>Harpadon microchir</i>	Case I	-	<i>Harpadon microchir</i> 3	Teramura-A159	ON398612
	<i>Harpadon microchir</i>	<i>Harpadon microchir</i>	Case I	KPM-NI 48083	<i>Harpadon microchir</i> 4	Teramura-A160	ON398613
	<i>Chlorophthalmus</i>						
Chlorophthalmidae	<i>Chlorophthalmus albatrossis</i>	<i>albatrossis</i> / <i>Chlorophthalmus borealis</i> <i>Chlorophthalmus acutifrons</i>	Case III	KPM-NI 51360		Teramura-A36	ON398580
	<i>Chlorophthalmus acutifrons</i>	<i>Chlorophthalmus acutifrons</i> / <i>Chlorophthalmus punctatus</i>	Case III	KPM-NI 51379		Teramura-A37	ON398579
	<i>Chlorophthalmus sp.</i>	<i>Chlorophthalmus sp.</i>	Case I	KPM-NI 63020		Teramura-A38	ON398578
	<i>Chlorophthalmus nigromarginatus</i>	<i>Chlorophthalmus nigromarginatus</i> / <i>Chlorophthalmus acutifrons</i>	Case III	KPM-NI 49660		Teramura-A39	ON398581
Paralepididae	<i>Lestidium prolixum</i>	<i>Lestidium prolixum</i>	Case I	KPM-NI 51400		Teramura-A40	ON398639
	<i>Lestrolepis japonica</i>	<i>Lestrolepis nigroventralis</i>	Case III	KPM-NI 51398		Teramura-A41	ON398640
Neoscopelidae	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	KPM-NI 52226	<i>Neoscopelus microchir</i> 1	Teramura-A42	-
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 2	Teramura-A172	ON398650
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 3	Teramura-A173	ON398651
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 4	Teramura-A174	ON398652
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 5	Teramura-A175	ON398653
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 6	Teramura-A176	ON398649
	<i>Neoscopelus microchir</i>	<i>Neoscopelus microchir</i>	Case II	-	<i>Neoscopelus microchir</i> 7	Teramura-A177	ON398654
Myctophidae	<i>Benthoosema pterotum</i>	<i>Benthoosema pterotum</i>	Case II	KPM-NI 51405		Teramura-A43	ON398536
	<i>Dasyscopelus obtusirostris</i>	<i>Dasyscopelus obtusirostris</i> / <i>Dasyscopelus brachygnathum</i>	Case II/Case III	KPM-NI 63039		Teramura-A44	ON398598
	<i>Dasyscopelus asper</i>	<i>Dasyscopelus asper</i>	Case II	KPM-NI 53106		Teramura-A45	ON398597
	<i>Nannobranchium nigrum</i>	New sequence	Case IV	KPM-NI 63038		Teramura-A46	ON398647
	<i>Lampanyctus jordani</i>	New sequence	Case IV	KPM-NI 51362		Teramura-A47	ON398635
	<i>Lampanyctus sp.</i> (<i>Namitogehadaka</i>)	New sequence	Case IV	Submitting		Teramura-A48	ON398634
	<i>Diaphus watasei</i>	<i>Diaphus watasei</i> / <i>Ceratoscopelus warmingii</i>	Case II/Case III	KPM-NI 51409		Teramura-A49	ON398602

	<i>Diaphus chryisorhynchus</i>	<i>Diaphus watasei/Diaphus chryisorhynchus/Diaphus suborbitalis/Diaphus fragilis</i>	Case III	KPM-NI 51414		Teramura-A50	ON398600
	<i>Diaphus suborbitalis</i>	<i>Diaphus suborbitalis</i>	Case I	KPM-NI 51404		Teramura-A51	-
	<i>Diaphus garmani</i>	<i>Diaphus garmani</i>	Case I	KPM-NI 51782		Teramura-A52	ON398601
Polymixiidae	<i>Polymixia sazonomi</i>	<i>Polymixia sp./Polymixia japonica/Polymixia busakhini</i>	Case III	KPM-NI 52326		Teramura-A53	ON398673
	<i>Polymixia japonica</i>	<i>Polymixia japonica</i>	Case I	KPM-NI 52231		Teramura-A54	ON398672
Moridae	<i>Laemonema longipes</i>	<i>Laemonema longipes</i>	Case I	KPM-NI 52501		Teramura-A55	ON398632
	<i>Laemonema modestum</i>	New sequence	Case IV	KPM-NI 52326		Teramura-A56	ON398633
Macrouridae	<i>Ventrifossa garmani</i>	<i>Ventrifossa garmani/Ventrifossa longibarbata</i>	Case III	KPM-NI 51427		Teramura-A57	ON398694
	<i>Coryphaenoides marginatus</i>	<i>Coryphaenoides marginatus</i>	Case II	KPM-NI 50146		Teramura-A59	ON398592
	<i>Coryphaenoides macrpes</i>	<i>Coryphaenoides marginatus</i>	Case III	KPM-NI 48026		Teramura-A60	ON398591
	<i>Coryphaenoides nasutus</i>	<i>Coryphaenoides nasutus</i>	Case I	KPM-NI 56444		Teramura-A61	ON398593
	<i>Coelorinchus macrochir</i>	New sequence	Case IV	KPM-NI 52328		Teramura-A62	ON398587
	<i>Coelorinchus kishinouyei</i>	<i>Coelorinchus kishinouyei</i>	Case I	KPM-NI 51342		Teramura-A63	ON398586
	<i>Coelorinchus jordani</i>	<i>Coelorinchus kishinouyei</i>	Case III	KPM-NI 47915		Teramura-A64	ON398584
	<i>Coelorinchus multispinulosus</i>	<i>Coelorinchus multispinulosus</i>	Case II	KPM-NI 51450		Teramura-A65	ON398588
	<i>Coelorinchus kamoharai</i>	<i>Coelorinchus multispinulosus</i>	Case III	KPM-NI 51377		Teramura-A66	ON398585
	<i>Coelorinchus japonicus</i>	<i>Coelorinchus japonicus/Coelorinchus macrorhynchus</i>	Case III	KPM-NI 51459		Teramura-A67	ON398583
	<i>Coelorinchus anatirostris</i>	<i>Coelorinchus anatirostris</i>	Case I	KPM-NI 52278		Teramura-A68	ON398582
Ophidiidae	<i>Coelorinchus tokiensis</i>	New sequence	Case IV	KPM-NI 50151		Teramura-A69	ON398589
	<i>Homostolus acer</i>	<i>Homostolus acer</i>	Case II	KPM-NI 47935		Teramura-A70	ON398616
	<i>Neobythites sivicolus</i>	<i>Neobythites sivicola/Neobythites sp.</i>	Case III	KPM-NI 53038		Teramura-A71	ON398648
	<i>Glyptophidium japonicum</i>	New sequence	Case IV	KPM-NI 47966		Teramura-A72	ON398609
	<i>Hoplobrotula armata</i>	<i>Hoplobrotula armata/Sirembo imberbis/Neobythites unimaculatus</i>	Case III	KPM-NI 47903		Teramura-A73	ON398617
	<i>Pyramodon ventralis</i>	New sequence	Case IV	KPM-NI 52524	<i>Pyramodon ventralis</i> 1	Teramura-A74	ON398677
	<i>Pyramodon ventralis</i>	New sequence	Case IV	NMMB-P 30769	<i>Pyramodon ventralis</i> 2	Teramura-A152	ON398676
	<i>Pyramodon ventralis</i>	New sequence	Case IV	NMMB-P 29917	<i>Pyramodon ventralis</i> 3	Teramura-A153	ON398682
	<i>Pyramodon ventralis</i>	New sequence	Case IV	-	<i>Pyramodon ventralis</i> 4	Teramura-A154	ON398681
	<i>Pyramodon ventralis</i>	New sequence	Case IV	NMMB-P 30768	<i>Pyramodon ventralis</i> 5	Teramura-A155	ON398680
	<i>Pyramodon ventralis</i>	New sequence	Case IV	-	<i>Pyramodon ventralis</i> 6	Teramura-A156	ON398679
	<i>Pyramodon ventralis</i>	New sequence	Case IV	-	<i>Pyramodon ventralis</i> 7	Teramura-A157	ON398678
Bythitidae	<i>Abythites lepidogenys</i>	New sequence	Case IV	KPM-NI 50135		Teramura-A75	ON398540
Lophiidae	<i>Lophiodes insidiator</i>	<i>Lophiodes naresi</i>	Case III	KPM-NI 56369		Teramura-A76	ON398642
	<i>Lophiodes insidiator</i>	<i>Lophiodes naresi</i>	Case III	KPM-NI 53100		Teramura-A77	ON398641
Chaunacidae	<i>Chaunax sp.</i>	<i>Chaunax fimbriatus/Chaunax penicillatus</i>	Case III	KPM-NI 51534		Teramura-A78	ON398546
	<i>Chaunax penicillatus</i>	<i>Chaunax penicillatus/Chaunax fimbriatus/Chaunax pictus</i>	Case III	-		Teramura-A79	ON398548
	<i>Chaunax abei</i>	<i>Chaunax abei/Chaunax sp.</i>	Case III	KPM-NI 51532		Teramura-A80	ON398547
Ogcocephalidae	<i>Dibranchus japonicus</i>	<i>Halieutaea stellata</i>	Case III	KPM-NI 52370		Teramura-A81	ON398603
Ceratiidae	<i>Cryptopsaras couesii</i>	<i>Cryptopsaras couesii</i>	Case II	KPM-NI 52523		Teramura-A82	ON398594
Trachichthyidae	<i>Hoplostethus japonicus</i>	<i>Hoplostethus japonicus</i>	Case I	KPM-NI 47872		Teramura-A83	ON398618
	<i>Gephyroberyx japonicus</i>	<i>Gephyroberyx darwnii/Gephyroberyx japonicus</i>	Case III	KPM-NI 47946		Teramura-A84	ON398608
Parazenidae	<i>Cyttopsis rosea</i>	<i>Cyttopsis rosea</i>	Case II	KPM-NI 52239		Teramura-A86	ON398595
Zeidae	<i>Zenopsis filamentosa</i>	New sequence	Case IV	KPM-NI 51348		Teramura-A87	ON398697

Macroramphosidae	<i>Macroramphosus sagifue</i>	<i>Macroramphosus gracilis</i> / <i>Macroramphosus scolopax</i> / <i>Macroramphosus sagifue</i>	Case III	KPM-NI 51440	Teramura-A88	ON398645
Sebastidae	<i>Sebastes flammeus</i>	New sequence	Case IV	KPM-NI 49658	Teramura-A89	ON398684
	<i>Helicolenus hilgendorfi</i>	<i>Helicolenus hilgendorfi</i> / <i>Helicolenus barathri</i> / <i>Helicolenus percoides</i>	Case IV	KPM-NI 52292	Teramura-A90	ON398614
Scorpaenidae	<i>Setarches guentheri</i>	<i>Setarches guentheri</i>	Case I	KPM-NI 51444	Teramura-A91	ON398685
Triglidae	<i>Lepidotrigla microptera</i>	<i>Lepidotrigla microptera</i>	Case I	KPM-NI 52284	Teramura-A92	ON398637
	<i>Lepidotrigla guentheri</i>	<i>Lepidotrigla guentheri</i> / <i>Lepidotrigla hime</i> / <i>Lepidotrigla longimana</i>	Case III	KPM-NI 49664	Teramura-A93	ON398636
	<i>Peristedion orientale</i>	<i>Peristedion orientale</i> / <i>Peristedion nierstraszi</i> / <i>Peristedion liorhynchus</i>	Case II/Case III	KPM-NI 51432	Teramura-A94	ON398662
Acropomatidae	<i>Synagrops japonicus</i>	<i>Synagrops japonicus</i> / <i>Synagrops bellus</i>	Case III	KPM-NI 51433	Teramura-A95	ON398690
	<i>Acropoma japonicum</i>	<i>Acropoma japonicum</i> / <i>Acropoma leobergi</i> / <i>Acropoma argentistingma</i>	Case III	KPM-NI 48132	Teramura-A97	ON398528
Ostracoberycidae	<i>Ostracoberyx dorygenys</i>	<i>Ostracoberyx dorygenys</i>	Case I	KPM-NI 52522	Teramura-A98	ON398657
	<i>Epigonus denticulatus</i>	<i>Epigonus denticulatus</i> / <i>Epigonus telescopus</i> / <i>Howella sherboni</i> / <i>Brinkmannella ellongata</i>	Case III	KPM-NI 51441	Teramura-A99	ON398606
Emmelichthyidae	<i>Emmelichthys struhsakeri</i>	<i>Emmelichthys struhsakeri</i>	Case I	KPM-NI 51372	Teramura-A100	ON398605
Pentacerotidae	<i>Pentaceros japonicus</i>	<i>Pentaceros japonicus</i> / <i>Pentaceros wheeleri</i>	Case III	KPM-NI 52234	Teramura-A101	ON398660
	<i>Pentaceros wheeleri</i>	<i>Pentaceros japonicus</i> / <i>Pentaceros wheeleri</i>	Case III	KPM-NI 52286	Teramura-A102	ON398661
Cepolidae	<i>Owstonia totomiensis</i>	New sequence	Case IV	KPM-NI 47901	Teramura-A104	ON398659
	<i>Owstonia kamoharai</i>	<i>Owstonia kamoharai</i> / <i>Owstonia psilos</i>	Case III	Submitting	Teramura-A105	ON398658
Nomeidae	<i>Psenes pellucidus</i>	<i>Psenes pellucidus</i>	Case I	KPM-NI 53109	Teramura-A106	ON398674
Tetragonuridae	<i>Tetragonurus pacificas</i>	New sequence	Case IV	NMMB-P 29945	Teramura-A107	ON398693
Zaproridae	<i>Zaprora silenus</i>	<i>Zaprora silenus</i>	Case I	KPM-NI 56445	Teramura-A109	ON398696
	<i>Bothrocara molle</i>	<i>Bothrocara molle</i> / <i>Bothrocara zestum</i> / <i>Bothrocara brunneum</i>	Case III	KPM-NI 52500	Teramura-A110	ON398538
	<i>Lycodes hubbsi</i>	<i>Lycodes hubbsi</i>	Case I	KPM-NI 52505	Teramura-A111	ON398643
Champsodontidae	<i>Champsodon pantolepis</i>	<i>Champsodon pantolepis</i> / <i>Champsodon</i> sp.	Case III	KPM-NI 63366	Teramura-A112	ON398542
	<i>Champsodon snyderi</i>	<i>Champsodon snyderi</i> / <i>Champsodon guentheri</i> / <i>Champsodon capensis</i> / <i>Champsodon nudivittis</i>	Case III	KPM-NI 51374	Teramura-A113	ON398543
Gempylidae	<i>Ruvettus pretiosus</i>	<i>Ruvettus pretiosus</i>	Case I	KPM-NI 50114	Teramura-A114	ON398683
Trichiuridae	<i>Benthodesmus tenuis</i>	<i>Benthodesmus tenuis</i> / <i>Benthodesmus elongatus</i>	Case III	KPM-NI 47894	Teramura-A115	ON398535
Caproidae	<i>Antigonia capros</i>	<i>Antigonia capros</i> / <i>Antigonia rubescens</i>	Case II/Case III	KPM-NI 60021	Teramura-A116	ON398529

Bothidae	<i>Chascanopsetta lugubris</i>	<i>Chascanopsetta lugubris/Chascanopsetta prognatha</i>	Case III	KPM-NI 51807	Teramura-A117	ON398544
Pleuronectidae	<i>Tanakius kitaharai</i>	<i>Tanakius kitaharai</i>	Case I	KPM-NI 52242	Teramura-A118	ON398692
	<i>Pleuronichthys japonicus</i>	<i>Pleuronichthys japonicus/Pleuronichthys cornutus</i>	Case III	KPM-NI 51375	Teramura-A119	ON398665
	<i>Hippoglossoides pinetorum</i>	<i>Hippoglossoides pinetorum/Cleisthenes herzensteini/Glyptocephalus stelleri</i>	Case III	KPM-NI 52508	Teramura-A120	ON398615
Tetraodontidae	<i>Sphoeroides pachygaster</i>	<i>Sphoeroides pachygaster/Lagocephalus lagocephalus</i>	Case III	KPM-NI 51809	Teramura-A121	ON398688

Table S2. MIG-seq samples of *C. phantasma*, *N. microchir* and *P. ventralis* calculated by our sample

Species	Sample location (No. of individual)	Number of read	Number of SNPs
<i>Chimaera phantasma</i>	South China Sea (2),	2430-7371	129
	Suruga Bay (6),		
	Sagami Bay (8)		
<i>Neoscopelus microchir</i>	South China Sea (5),	1632-7437	304
	Enshunada Sea (13)		
<i>Pyramodon ventralis</i>	Taiwan* (2),	3100-5899	416
	South China Sea (1), Suruga Bay (3)		

* It is not clear whether the South China Sea or the East China Sea

Table S3. 35 species from the Japanese waters novel to the NCBI and the BOLD database

Family	Species
Somniosidae	<i>Zameus squamulosus</i>
Centrophoridae	<i>Deania calcea</i>
Dalatiidae	<i>Dalatias licha</i>
Argentinidae	<i>Argentina kagoshimae</i>
Sternoptychidae	<i>Polyipnus stereope</i> <i>Polyipnus spinifer</i>
Phosichthyidae	<i>Polymetme corythaeola</i>
Stomiidae	<i>Stomias affinis</i> <i>Photonectes albipennis</i> <i>Bathophilus longipinnis</i> <i>Photostomias guernei</i> <i>Idiacanthus fasciola</i>
Chlorophthalmidae	<i>Chlorophthalmus</i> sp.2 (Bake-aomeeso)
Paralepididae	<i>Lestrolepis japonica</i>
Myctophidae	<i>Lampanyctus jordani</i> <i>Diaphus chrysorhynchus</i> <i>Diaphus suborbitalis</i> <i>Diaphus garmani</i>
Moridae	<i>Laemonema longipes</i>
Ophidiidae	<i>Homostolus acer</i> <i>Neobythites sivicolus</i> <i>Hoplobrotula armata</i>
Bythitidae	<i>Abythites lepidogenys</i>
Lophiidae	<i>Lophiodes insidiator</i>
Berycidae	<i>Gephyroberyx japonicus</i>
Parazenidae	<i>Cyttopsis rosea</i>
Triglidae	<i>Lepidotrigla guentheri</i>
Peristediidae	<i>Peristedion orientale</i>
Ostracoberycidae	<i>Ostracoberyx dorygenys</i>
Emmelichthyidae	<i>Emmelichthys struhsakeri</i>
Cepolidae	<i>Cepola schlegeli</i>
Zaproridae	<i>Zaprora silenus</i>
Zoarcidae	<i>Bothrocara molle</i>
Champsodontidae	<i>Champsodon snyderi</i>
Pleuronectidae	<i>Pleuronichthys japonicus</i>

Table S4. Intra-genetic distance of *C. phantasma*, *N. microchir* and *P. ventralis* calculated by our sample

Species	Maximum intraspecific K2P distance (%)	Minimum intraspecific K2P distance (%)
<i>Chimaera phantasma</i>	3.8	0
<i>Neoscopelus microchir</i>	10.0	0
<i>Pyramodon ventralis</i>	7.4	0