

REPORT ON THE
List of Fishes and Benthic Macroinvertebrates Collected from the Actual Survey during the Program Deep-Sea Fisheries Resources Exploration in the Southeast Asian Waters (2008– 2011)

Samutprakarn, Thailand, December 2012



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- I. **List of Fishes and Benthic Macroinvertebrates Collected from Fishery Resources Exploration on the Continental Slopes at Lingayen Gulf aboard M/V DA-BFAR, 11-25 may 2008, the Philippines.**

Table 1 List of crustaceans collected from beam trawl, Deep sea trap, and otter trawl during 11-25 May 2008

	Survey Station											Total number (ind.)	Size range (mm)	Total Weight (g)	
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521				BTR522
Subphylum Crustacia															
Class Malacostraca															
Order: Decapoda															
Suborder: Dendrobranchia															
Family Aristeidae															
<i>Aristeus virilis</i>	1	5						2	1				4	7	20
<i>Aristeus</i> sp.			3												3
<i>Aristaeonorpha</i> sp.															1
<i>Parathempomadius</i> sp.								1							1
Family Solenoceridae															
<i>Hymenopenaeus</i> sp.	1				3										4
Family Penaeidae															
<i>Metapenaeopsis</i> sp.					1		29								29
<i>Parapenaeus</i> sp.					20		3								23
<i>Penaeopsis</i> sp.															2
<i>Penaeidae</i> sp.								2							2
Family Sergestidae															
<i>Acetes</i> sp.											2				2
<i>Sergestioidea</i> sp.										1			2		3
Family Solenoceridae															
<i>Solanocera</i> sp.							3		3	2	1		1	1	11
Suborder Pleocyemata															
Family Goneplacidae															
<i>Goneplax</i> sp.							1								1
Family Homolodromiidae															
<i>Homolodromia</i> sp.															2
<i>Homolodromiidae</i> sp.										1			1		1
Family Raninidae															
<i>Raninoides</i> sp.					2										2
Family Calappidae															
<i>Calappidae</i> sp. (Box crabs)					12		3								15
Family Majidae															
<i>Cyrtomeia</i> sp.					1										10
<i>Pleistacantha</i> sp.															6
<i>Platymaia fimbriata</i>										1					1
<i>Platymaia</i> sp.												1			4
<i>Pugettia</i> sp.															1
<i>Majidae</i> sp.															1

Remarks: TRA = Deep Sea Trap; BTR = Beam Trawl; OTR = Otter Trawl

Table 1 (continued)

	Survey Station														Total number (ind.)	Size range (mm)	Total Weight (g)	
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524				OTR525
Family Leucosiidae																		
<i>Randallia</i> sp. (purse crabs)						1			2					1				30
Family Lithodidae																		
Lithodidae sp. (King crabs)					1	1		1										105
Family Ophioporidae																		
<i>Acanthephyra armata</i>								1	1	1		5						23
<i>Acanthephyra</i> sp.								6			3							75
Family Scyllaridae																		
Scyllaridae (slipper lobster)					1													270
Family Galatheididae																		
Galatheididae sp.1								6						21				55
Galatheididae sp.2								2						2				10
Galatheididae sp.3								5										5
Galatheididae sp.4					15	15			6	1								106
Family Glypheidae																		
Glypheidae sp.1					2													40
Glypheidae sp.2					4													30
Glypheidae sp.3					3													30
Family Glyphocrangonidae																		
<i>Glyphocrangon</i> sp.1											2							5
<i>Glyphocrangon</i> sp.2										1								5
<i>Glyphocrangon</i> sp.3						8	14	8	8		4	5						60
Family Nephropidae																		
<i>Metanephrops sinensis</i>					1													45
<i>Nephropsis</i> sp.1									3		3	5						75
<i>Nephropsis</i> sp.2										1	1							2
<i>Nephropsis</i> sp.3														1				27
<i>Metanephrops</i> sp.1			2	2				1						1				120
<i>Metanephrops</i> sp.2								1										100
Nephropidae sp.1																		2
Nephropidae sp.2																		70
Nephropidae sp.3														1				30
Nephropidae sp.4																		5
Nephropidae sp.5																		2
Nephropidae sp.6																		5
Family Nematocarcinidae																		
<i>Nematocarcinus</i> sp.1								13										55
<i>Nematocarcinus</i> sp.2								3	2									15
<i>Nematocarcinus</i> sp.3								11						1				81

Table 1 (continued)

	Survey Station														Total number (ind.)	Size range (mm)	Total Weight (g)
	BTR511 BTR512 BTR513 BTR514 BTR515 BTR516 BTR517 BTR518 BTR519 BTR520 TRA521 BTR522 BTR523 BTR524 OTR525																
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524			
Family Pandalidae																	
<i>Heterocarpus hayashii</i>	329	1	12		17	11	6	3		22				1	407	200-600	2840
<i>Heterocarpus dorsalis</i>			1					18	18	76	1	4	5	4	129	200-650	1562
<i>Heterocarpus gibbosus</i>			4										6		10	300-500	80
<i>Heterocarpus woodmasoni</i>	9		168				3	8		17				1	180	100-650	393
<i>Heterocarpus laevigatus</i>				1			5		1						27	350-800	675
<i>Heterocarpus</i> sp.1				1											6	200-450	30
<i>Heterocarpus</i> sp.2				1											1	200	2
<i>Heterocarpus</i> sp.3				1											1	150	4
<i>Heterocarpus</i> sp.4								5	2						7	150-300	15
<i>Plesionika grandis</i>						3			2						3	350-500	10
<i>Plesionika</i> sp. 1							1		1						18	150-400	124
<i>Plesionika</i> sp.2							1								1	400	3
<i>Plesionika</i> sp.3								7		8					26	250-550	105
Pandalidae sp.1	4		6		2						1	1		1	5	150-300	17
Pandalidae sp.2											1		4		5	100-250	6
Pandalidae sp.3									1						1	200	2
Family Palinuridae																	
<i>Panulirus</i> sp.									4			2		3	9	1,200-2,700	590
Family Polychelidae																	
Polychelidae								2	10	4	1	1	4	1	23	100-300	71
Family Pylocheilidae																	
Pylocheles sp.											3	2	1	6	6	-	15
Unclassified Decapods																	
Order: Isopoda																	
Isopods	10				3					41		1			55	200-1,300	1791
Total no. of specimens	352	11	208	8	88	15	74	78	97	158	28	29	114	14	1,328		11,536

Table 2 List of deep sea fishes collected from beam trawl, Deep sea trap, and otter trawl during 11-25 May 2008.

	Survey Station													Total number (ind.)	FL range (mm)	Total weight (g)		
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523				BTR524	OTR525
Order																		
Albuliformes																		
Family Halosauridae																		
<i>Halosaurus</i> sp.					1											1	225	75
<i>Androvandia</i> sp.														3	216-407	95		
Order																		
Anguilliformes																		
Family Colocongridae																		
Colocongridae sp.1							1									1	214	50
Colocongridae sp.2													2			3	326-443	740
Colocongridae sp.3														1	538	890		
Family Congridae																		
<i>Gnathophis</i> sp.					2		1	5	1							9	41-420	334
<i>Leptocephalus larva</i> sp.														1	213	5		
Family Moringidae																		
<i>Moringidae</i> sp.1		1												1	420	80		
Family Nattastomatidae																		
Nattastomatidae sp.1														1	691	55		
Nattastomatidae sp.2														1	170	1		
<i>Venefica multiporosa</i>													1			1	720	120
Family Nemichthyidae																		
<i>Nemichthys</i> sp.1														1	860	30		
Family Synphobranchidae																		
Synphobranchidae sp.1																8	470-705	2,650
Synphobranchidae sp.2														1	510	210		
Family Ophichthidae																		
Ophichthidae sp.1																1	455	100
Ophichthidae sp.2																1	710	1,100
Ophichthidae sp.3								9								9	378-615	955
Ophichthidae sp.4														1	421	48		
Order																		
Ateleopodiformes																		
Family Ateleopodidae																		
<i>Ateleopus</i> sp.														2	813-827	2,000		
Order																		
Aulopiformes																		
Family Chlorophthalmidae																		
<i>Chlorophthalmus</i> sp.																4	68-150	60

Remarks: TRA = Deep Sea Trap; BTR = Beam Trawl; OTR = Otter Trawl

Table 2 (continued)

	Survey Station														Total number	FL range (mm)	Total weight (g)		
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524				OTR525	
Order																			
Beryciformes																			
Family Diretmidae																			
<i>Diretmichthys</i> sp.															5		5	133-215	1050
Family Trachichthyidae																			
<i>Hoplostethus</i> sp.								1										184	110
Order																			
Carcharhiniformes																			
Family Scyllorhinidae																			
<i>Apristurus verweyi</i>							1											268	55
<i>Apristurus</i> sp.			1															245	70
<i>Cephaloscyllium fasciatum</i>	3				2													170-653	3,277
Order																			
Gadiformes																			
Family Bathygadidae																			
Bathygadidae sp.1							1											325	145
Bathygadidae sp.2									1									312	80
Family Bregmacerotidae																			
<i>Bregmaceros japonicus</i>							1						1					47-75	5
Family Macrouridae																			
<i>Caelorrinchus</i> sp.1	1																	118-178	65
<i>Caelorrinchus</i> sp.2		2																38-115	32
<i>Caelorrinchus</i> sp.3									1				7					125-423	1,225
<i>Caelorrinchus</i> sp.4															3			257-297	300
<i>Cetorurus</i> sp.								1										386	160
Macrouridae sp.1	1	3																195-290	280
Macrouridae sp.2	2																	194-202	45
Macrouridae sp.3																		165-340	310
Macrouridae sp.4																		108-150	25
Macrouridae sp.5			1															222	40
Macrouridae sp.6							1				2							125-150	30
Macrouridae sp.7							6											115-345	488
Macrouridae sp.8								2										144-172	18
Macrouridae sp.9								1										161	3
Macrouridae sp.10								3										300-321	340
Macrouridae sp.11										5								161-355	722
Macrouridae sp.12											1	1						213-336	121
Macrouridae sp.13											1							185	10
Macrouridae sp.14												1						355	210
Macrouridae sp.15													2					310-433	490
Macrouridae sp.16													4		1			85-285	269

Table 2 (continued)

	Survey Station											Total number	FL range (mm)	Total weight (g)				
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521				BTR522	BTR523	BTR524	OTR525
Order																		
Lampridiformes																		
Family Trachipteridae																		
Trachipteridae sp.														1		1	559	120
Order																		
Lophiiformes																		
Family Chaunacidae																		
<i>Chaunax</i> sp.1		1					2	1	1				4			9	88-229	284
<i>Chaunax</i> sp.2																4	51-260	650
Family Lophiidae																		
<i>Lophiomus setigerus</i>							1	1	1							2	81-98	25
<i>Lophiodes gracillimanus</i>													2			2	190-268	410
Family Ogcocephalidae																		
<i>Dibranchius</i> sp.1																1	74	5
<i>Dibranchius</i> sp.2							1									1	44	2
<i>Halicmetus</i> sp.1							3						2			5	58-60	14
<i>Halicmetus</i> sp.2													2			2	39-64	2
<i>Halicmetus</i> sp.3													1			1	55	1
<i>Halieutopsis micropa</i>												1				1	89	15
<i>Halieutopsis</i> sp.1									1				2	1		7	44-643	23
<i>Halieutopsis</i> sp.2									1							1	52	4
<i>Halieutopsis</i> sp.3												1	3			4	62-99	24
<i>Malthopsis</i> sp.1																1	76-193	55
Order																		
Myctophiformes																		
Family Myctophidae																		
<i>Lampanyctus</i> sp.1														1		2	46-122	7
<i>Benthosema</i> sp.1													1			1	42	1
Myctophidae sp.1																2	48-80	7
Myctophidae sp.2																1	108	3
Myctophidae sp.3													1			1	48	2
Family Neoscopelidae																		
Neoscopelidae sp.1													1			5	150-231	440
Neoscopelidae sp.2																5	125-207	110
Neoscopelidae sp.3																10	128-167	315
Order																		
Myxiniformes																		
Family Myxinidae																		
<i>Eptatretus</i> sp.1																15	333-670	3,630
<i>Eptatretus</i> sp.2																1	407	150

Table 2 (continued)

	Survey Station														Total number	FL range (mm)	Total weight (g)				
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524				OTR525			
Order																					
Ophidiiformes																					
Family Aphyoniidae																					
Aphyoniidae sp.1				1														1	90	5	
Aphyoniidae sp.2																		1	167	40	
Family Ophidiidae																					
Ophidiidae sp.1		1											1					3	113-220	90	
Ophidiidae sp.2				1														1	276	130	
Ophidiidae sp.3				1								4						7	122-254	168	
Ophidiidae sp.4					2													2	123-164	75	
Ophidiidae sp.5					1			2				1						1	133-210	140	
Order																					
Osmeriformes																					
Family Microstomatidae																					
Microstomatidae sp.1									1									1	388	45	
Microstomatidae sp.2													2					2	165-172	45	
Order																					
Perciformes																					
Family Cepolidae																					
Owstonia sp.																			1	53	10
Family Champsodontidae																					
<i>Champsodon guentheri</i>																			9	50-116	38
Family Epigonidae																					
<i>Epigonus atherinoides</i>																			4	170-205	285
<i>Epigonus macrops</i>																			1	125	21
Family Nomeidae																					
<i>Cubiceps</i> sp.																			1	116	20
Family Notograptidae																					
<i>Notograpthus</i> sp.1																			1	595	360
<i>Notograpthus</i> sp.2																			1	397	80
Family Percophidae																					
<i>Bembrops caudimacula</i>																			3	74-223	105
<i>Bembrops</i> sp.																			2	42-43	8
Family Trichiuidae																					
<i>Benthodesmus tenuis</i>																			1	691-950	640
Family A Type A																			2	230-255	540

Table 2 (continued)

	Survey Station													Total number	FL range (mm)	Total weight (g)			
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523				BTR524	OTR525	
Order																			
Pleuronectiformes																			
Family Cynoglossidae																			
<i>Cynoglossus</i> sp.				1															1
<i>Poecilopsetta colorata</i>					1														1
Order																			
Polymixiiformes																			
Family Polymixiidae																			
<i>Polymixia</i> sp.1					4														4
<i>Polymixia</i> sp.2									1										1
Order																			
Rajiformes																			
Family Anacanthobatidae																			
<i>Anacanthobatis</i> sp.										1									1
Order																			
Scorpaeniformes																			
Family Scorpaenidae																			
<i>Setarches cf. guentheri</i>		1				5		4		1									11
Order																			
Squaliformes																			
Family Etmopteridae																			
<i>Etmopterus cf. molleri</i>						1								1					2
Family Squalidae																			
<i>Deania quadrispinosa</i>										1									3
<i>Squalus megalops</i>																			1
Squalidae sp.		1																	1
Order																			
Stephanoberyciformes																			
Family Barbouriidae																			
<i>Barbourisia rufa</i>														1					1
Order																			
Stomiiformes																			
Family Idiacanthidae																			
Idiacanthidae sp.																		1	1
Family Chauliodontidae																			
<i>Chauliodus</i> sp.										1									2
Family Gonostomatidae																			
<i>Gonostoma</i> sp.																	1	3	4

Table 2 (continued)

	Survey Station															Total number	FL range (mm)	Total weight (g)
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524	OTR525			
Family Malacostidae																		
Malacostidae sp.1															1	1	191	25
Malacostidae sp.2															4	4	165-227	135
Malacostidae sp.3															1	1	141	5
Family Stenoptychidae																		
<i>Polypnus stereope</i>		17	139													1	50-83	1,430
<i>Polypnus</i> sp.																1	75	5
Family Stomiidae																		
Stomiidae sp.		2														2	-	40
Order																		
Zeiformes																		
Family Macrocyttidae																		
<i>Zenion hololepis</i>															1	1	346	5
Total no. of specimens	14	27	168	10	26	11	13	35	22	24	15	10	11	47	40	473	33,805	

Table 3 List of molluscs collected from beam trawl, Deep sea trap, and otter trawl during 11-25 May 2008

	Survey Station													Total number (ind.)	Sampling Depth (m)		
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523			BTR524	OTR525
Class Bivalvia																	
Subclass: Anomalodesmata																	
Order: Pholadomyoidea																	
Family Cuspidariidae							1									1	607-678
<i>Cuspidaria</i> sp.																	
Family Poromyidae									2							3	450-678
<i>Celomya</i> sp.																	
Family Verticordiidae																1	990-1,227
Verticordiidae sp.																	
Subclass: Heterodonta																	
Order: Myoidea																	
Family Anomalodesmacea										2						2	553-571
Order: Veneroidea																	
Family Tellinidae																	
<i>Aloha</i> sp.													1			1	489-509
<i>Astarte</i> sp.																1	489-509
<i>Baraytona</i> sp.														8		8	489-509
<i>Capulus</i> sp.													30+			30+	489-509
<i>Eosipho</i> sp.														1		1	489-509
<i>Leptochiton</i> sp.														2		2	489-509
<i>Mitra</i> sp.														1		1	489-509
<i>Xenophora</i> sp.													15			15	553-571
Tellinidae sp.														5		5	489-608
Subclass: Pteriomorpha																	
Order: Arcoidea																	
Family Arcoidae																1	553-571
<i>Arca</i> sp.																	
Arcoidae sp.																1	587-608
Order: Mytiloidea																	
Family Mytilidae																	
<i>Amygdalum</i> sp.														3		3	489-608
<i>Dacorys</i> sp.														3		3	489-509
<i>Fusinus</i> sp.														6		6	489-509
Order: Ostreoida																	
Family Propeamussidae																	
<i>Propeamussium</i> sp.																7	302-452
Order: Pterioidea																	
Family Pectinidae																	
<i>Daerydium</i> sp.																9	553-571
Pectinidae sp.																2	283-253

Remarks: TRA = Deep Sea Trap; BTR = Beam Trawl; OTR = Otter Trawl

Table 3 (continued)

	Survey Station												Total number (ind.)	Sampling Depth (m)	
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522			BTR523
Class Bivalvia (cont.)															
Unclassified Bivalve							1								1
Class Cephalopoda															
Order Octopoda															
Family Octopodidae					1				1						3
<i>Octopus</i> sp.															
Order Sepioida															
Family Sepioidae															
<i>Heteroteuthis</i> sp.						2									2
Order Teuthida															
Family Ctenopterygidae															
<i>Ctenopteryx sicula</i>												1			1
Family Histioteuthidae															
<i>Histoteuthis meleagroteuthis</i>															1
Family Mastigoteuthidae															
<i>Mastigoteuthis cordiformis</i>								1			3				4
Family Octopoteuthidae															
<i>Octopoteuthis</i> sp.												1			1
Family Ommastrephidae															
<i>Ornithoteuthis volatilis</i>															1
<i>Sthenoteuthis eulatanensis</i>															7
Family Pyroteuthidae															
<i>Pyroteuthis</i> sp.															1
Class Gastropoda															
Clade: Euctenidiacea															
Family Dorididae															
<i>Platydoris</i> sp.							2								2
Clade: Littorinimorpha															
Family Cassidae															
<i>Cassis</i> sp.							2								2
<i>Echinophora</i> sp.								1							1
Family Naticidae															
<i>Eunatica</i> sp.															4
<i>Natica</i> sp.															1
Family Xenophoridae															
<i>Xenophora</i> sp.															3
															1
															2
															9
															450-608

Table 3 (continued)

	Survey Station												Total number (ind.)	Sampling Depth (m)	
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522			BTR523
Clade: Neogastropoda															
Family Buccinidae															
<i>Nassa</i> sp.				6											
<i>Kanamarua</i> sp.								1							
Buccinidae sp.					2										
Family Cancellariidae															
<i>Admete</i> sp.			1												1
Family Coralliophiliidae															
<i>Babelomurex</i> sp.									1						1
Family Fasciolaridae															
<i>Fusus</i> sp.			7	2	2	2	2		3						16
<i>Fusolirius</i> sp.				1											1
<i>Granulifusus</i> sp.					2										2
Fasciolaridae sp.									1						1
Family Melongenidae															
<i>Melongenida</i> sp.								1							1
Family Muricidae															
<i>Traphon</i> sp.									1						1
<i>Babelomurex</i> sp.												1			1
Family Olividae															
<i>Analda</i> sp.		9													9
Family Turridae															
<i>Admete</i> sp.										1					1
<i>Astarte</i> sp.											1				1
<i>Baithytoma</i> sp.												1			7
<i>Cerithium</i> sp.		6											7		8
<i>Dacrydium</i> sp.														30+	30+
<i>Dentalium</i> sp.1												21			21
<i>Dentalium</i> sp.2												2			2
<i>Gemmula</i> sp.1													2		6
<i>Gemmula</i> sp.2				1											253-886
<i>Gemmula</i> sp.3			148	3	1										152
<i>Gemmula</i> sp.4			1	4	20+										25+
<i>Granulifusus</i> sp.													20		85
<i>Gymnobeles</i> sp.1													1		1
<i>Gymnobeles</i> sp.2			2												2
<i>Gymnobeles</i> sp.3			1												1
<i>Gymnobeles</i> sp.4			1												1
<i>Oerropota</i> sp.													5		5
													3		3

Table 3 (continued)

	Survey Station										Total number (ind.)	Sampling Depth (m)			
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520			TRA521	BTR522	BTR523
Family Turridae (cont.)															
<i>Splendrellia</i> sp.		2	5												
<i>Spergo</i> sp.						1									
<i>Ooconys</i> sp.											1				
<i>Veprecula</i> sp.													3		
<i>Trophon</i> sp.												1			
Turridae sp.1												6			
Turridae sp.2									1						
Turridae sp.3										1					
Turridae sp.4											2				
Turridae sp.5												1			
Turridae sp.6								3							
Turridae sp.7													12		
Turridae sp.8			5		1										
Turridae sp.9				2											
Turridae sp.10						2			2				5		
Family Volutidae															
<i>Alofta</i> sp.						2				1					
Clade: Nudipleura															
Nudibranchia sp.	2									1					
Clade: Vetigastropoda															
Family Fissurellidae															
<i>Emerginula</i> sp.													2		
Family Trochidae															
<i>Astarte</i> sp.												1			
<i>Calliostoma</i> sp.						1					2		2		
<i>Ginebisu</i> sp.											1				
<i>Hybochirus</i> sp.								5							
<i>Kanamarua</i> sp.													1		
<i>Propeamussium</i> sp.															
<i>Vexillum isasi</i>													1		
Trochidae sp.															1
Clade: ???															
Family Scaphandridae															
<i>Scaphander</i> sp.													1		
Family Vasidae															
<i>Vasidae</i> sp.															1

Table 3 (continued)

	Survey Station														Total number (ind.)	Sampling Depth (m)		
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524			OTR525	
Class Polyplacophora																		
Order Chitonida																		
Family Ischnochitonidae																		
<i>Lepidozona</i> sp.				1			3										4	253-342
Order Lepidopleurida																		
Family Leptochitonidae																		
<i>Leptochiton</i> sp.		1							2	11	2						1	450-452
<i>Lepidochiton</i> sp.								2									15	553-678
Class Scaphopoda																		
Order Dentaliida																		
Family Dentaliidae																		
<i>Dentalium</i> sp.								9	12	13							34	553-678
Dentaliidae sp.1			11														11	450-452
Dentaliidae sp.2			2														2	450-452
Dentaliidae sp.3								7									7	553-571
Order ????																		
Family Pentaliidae																		
Pentaliidae sp.			2														2	450-452
Total no. of specimens	2	3	209	14	22	0	44+	53	45	86	2	12	33	176+	12	713+		

Table 4 List of benthic-invertebrate collected from beam trawl, Deep sea trap, and otter trawl during 11-25 May 2008

	Survey Station													Total number (ind.)	Sampling Depth (m)		
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523			BTR524	OTR525
Phylum Annelida																	
Annelid (Segmented worms)	1					1	3	2	2					5		14	302-678
Phylum Cnidaria																	
Class: Anthozoa																	
Subclass Alcyonaria																	
Soft corals		2	3	2	2	4	24	4	5			2	2	2		48	253-1227
Order Pennatulacea					4											4	283-253
Sea pens																	
Order Gorgonacea																	
Sea fans							17	6	6	1						26	489-922
Sea feathers	2		1											2		3	472-1227
Subclass Zoantharia																	
Sea anemones	6	3	2	2	29	2	7	3	1			4	6			34	302-1227
Hard corals	1	1	6	29		4	128	138	44	20	5	15				391	283-1227
Class: Hydrozoa																	
Hydroids																2	996-1227
Class: Scyphozoa																	
Jellyfish						1										2	267-434
Phylum Echinodermata																	
Subphylum Crinozoa																	
Class: Crinoidea																	
Subclass Articulata																	
Sea lilies (Crinoid)						1	29	5	22	1	46	17				121	267-1227
Crinoid					21											21	283-253
Subphylum Asterozoa																	
Class: Asteroidea																	
Sea stars (Asteroid)	7	8	10	2	2	2	11	24	11	10	5	4				94	253-1227
Class: Ophiuroidea																	
Brittle stars (Ophiuroid)	2	19	41	130	2	59	18	19	10	14	272	33	2			621	253-1227
Subphylum Echinozoa																	
Class: Echinozoidea																	
Sea urchins (Echinoid)	2	4	11	201	14	159	16	52	12	31	33	19	2			556	253-1227
Class: Holothuroidea																	
Molpadida sp.						44										44	302-343
Sea cucumbers (Holothuria)	6	11	2	4			10	15	9	5	2	12	4			80	253-1227

Remarks: TRA = Deep Sea Trap; BTR = Beam Trawl; OTR = Otter Trawl

Table 4 (continued)

	Survey Station														Total number (ind.)	Sampling Depth (m)	
	TRA511	BTR512	BTR513	BTR514	BTR515	TRA516	BTR517	BTR518	BTR519	BTR520	TRA521	BTR522	BTR523	BTR524			OTR525
Phylum Porifera																	
Sponges				254			85	98	5	30		2	8	22	2		506
Sponge spicules								5	5								5
Phylum Sipuncula																	
Sipunculid (Peanut worms)				1													1
Phylum Chordata																	
Tunicate	1		1	46	4	84	22	17					43	26			244
Total no. of specimens	1	27	48	79	694	22	445	383	289	152	0	84	377	180	36		2817

**II. Fishery Resources Exploration on the Continental slopes at Brunei Darussalam
Waters aboard M.V. SEAFDEC 2 (2008-2011)**

Table 5 List of deep-sea fishes collected from beam trawl, otter trawl, and deep sea trap at Brunei Darussalam (2008-2011)

No. Order	Family/Subfamily	Genus	Species	Depth of captured (m)	Diagnostic description	Reference no.
1	Anguilliformes	Congridae	<i>Conger</i> sp.	276-374	Body moderate elongate, preanal length less than 40%. End of branchiostegal rays not protrude freely through gill opening. Lip well develop and maxillary and mandibular teeth in two rows.	seafdec00103
2	Beryciformes	Holocentridae	<i>Ostichthys japonicus</i>	118	No long strong spine on postero-ventral corner of preopercle. Dorsal fin with 12 spines. Groove formed by both nasal bones V shaped, trac : 3.5. Last dorsal spine longer than penultimate dorsal spine	seafdec00071
3		Trachichthyidae	<i>Gephyroberyx</i> sp.			BN009
4		Trachichthyidae	<i>Hoplostethus cf. crassispinus</i>	276-374		BN010
5	Gadiformes	Moridae	<i>Physiculus japonicus</i>	206	First dorsal fin notched. 2nd dorsal fin without notched. Pelvic fin 5 soft rays moderate in length. Origin of anal fin below origin of second dorsal fin, dorsal fin not elongated into filament. Body pale brown, lower jaw with burble.	seafdec00136
6		Macrouridae	<i>Coryphaenoides</i> sp.	276-374		BN013
7	Lophiiformes	Lophiidae	<i>Lophiodes miacanthus</i>	116	3rd dorsal fin spine is shorter than head length, extending past origin of the soft-rayed portion of the dorsal fin; humeral spine bifurcate; (sp. Key) – anterior gill slit extending dorsally over origin of pectoral fin.	seafdec00057
8		Lophiidae	<i>Lophiodes</i> sp.		Anterior end of gill slit not extending over origin of pectoral fin. Humeral spine simple. Spinous dorsal fin < 5. Third cephalic dorsal fin spine very short (1.4% of SL)	seafdec00053
9		Ogcocephalidae	<i>Halieutaea</i> sp.1	127	Body depressed and tough, sparsely concave with bony tubercles or strong spines (fam. key); margins of pectoral, caudal and anal fins is black; redish in color with small dark spots on dorsal portion of the body	seafdec00056
10		Ogcocephalidae	<i>Halieutaea</i> sp.2	127	Body strongly depressed, forming disc. Body not soft. Occipital region not deep. Ventral side with many small spines. Margins of pectoral, caudal and fins black.	seafdec00074
11		Chaunacidae	<i>Chaunax abei</i>	206	Ridge of caudal fin, anal fin and dorsal fin are slightly black, no large yellow spots before dorsal fin when fresh, nasal cavity is V-shape	seafdec00133
12	Myctophiformes	Neosopelidae	<i>Neosopelus microchir</i>	276-374		BN021
13	Ophidiiformes	Ophidiidae	<i>Sirembo cf. imberbis</i>	101-276	No barbels in snout; origin of pelvic fin below the eye with single soft ray, D 85, A 63, pectoral 25, C 10, Gill rakers 12	seafdec00075
14		Ophidiidae	<i>Neobythites</i> sp.	101-276		seafdec00107

Table 5 (continued)

No. Order	Family/Subfamily	Genus	Species	Depth of captured (m)	Diagnostic description	Reference no.
15 Perciformes	Ariommatidae	Ariomma	<i>indica</i>	127	Gill rankers (upper+lower): 9+15. Two dorsal fin (different from Cetrolophidae). Anal fin with 15 rays, body avoid and distinctly compressed (different from Nomeidae). First dorsal fin and margin of caudal fin dark. Pelvic fins short (not reading anus).	seafdec00047
16	Nemipteridae	<i>Nemipterus</i>	<i>rifilum</i>		A line drawn upwards from posterior edge of suborbital reaching the dorsal profile at or behind origin of dorsal fin. Caudal fin often with filamentous extension(s). Total gill rakers on first gill arch 10 to 16	seafdec00052
17	Priacanthidae	<i>Priacanthus</i>	<i>macrocanthus</i>	102-111	Caudal fin truncate, slightly shallowly emarginate. Dark and yellow spots scattered on dorsal, anal and caudal fins. Pelvic fin moderately, reaching to origin of anal fin when depressed.	seafdec00069
18	Priacanthidae	<i>Pristigenys</i>	<i>niphonia</i>	116	SL less than 2 times. Dorsal fin notched. Body scales margined with many minute spines. Four broad transverse reddish bands on body when fresh.	seafdec00081
19	Serranidae	<i>Epinephelus</i>	<i>areolatus</i>	118	Caudal fin truncate, darked large or small dots densely distributed on body	seafdec00051
20	Serranidae	<i>Chelidopera</i>	sp.	112	Under sub-family – Serraninae characterized by 10 dorsal spines; body with distinct dark blotch (red in color); pectoral and caudal fin emarginate – with one dorsal fin (D X, 10); A III, 16, Pectoral 15, Pelvic 6, C 16, LL 44	seafdec00076
21	Serranidae	<i>Chelidoperca</i>	<i>hirundinacea</i>	112	Body and fins without black spots. Cross section of anterior part of body circular. Body with indistinct dark blotch above pectoral fin or without it. Caudal fin emarginate, scales cover up to anterior part of interorbital region. Interorbital region with 2 rows of sensory canal pores.	seafdec00083
22	Serranidae	<i>Plectranthias</i>	<i>japonicus</i>	213	Caudal fin rounded and without dark blotches. Dorsal fin deeply notched	seafdec00092
23	Serranidae	<i>Epinephelus</i>	<i>areolatus</i>		Dorsal fin with 11 spines, dorsal fin with 16 soft-ray palatine with teeth. Dark dot on body large and forming reticulation. Posterior margin of caudal fin white.	seafdec00126
24	Lutjanidae	<i>Pristipomoides</i>	<i>zonatus</i>	213	Meristic characters are divided two group, first group have a total gill ranker on first arch 27-33, 17-23 and lateral line scale 67-74, 57-67. The species side of body have oblique red and yellow bar	seafdec00055
25	Apogonidae	<i>Neamia</i>	sp.	100	Jaws without enlarged canine teeth. Two separate dorsal fins	seafdec00084
26	Cepolidae	<i>Owstoma</i>	sp.	111-121	Body no ribbon like, dorsal, anal and caudal fins not continuous. Body rather deep and not slender and not tapering posterior. Maybe have big light brown blotches on base of caudal fins	seafdec00086
27	Cepolidae	<i>Sphenenthias</i>	spp.	111-121		BN034-2
28	Chamsodontidae	<i>Chamsodon</i>	<i>longipinnis</i>	116	Abdomen with scales or scales only around pelvic fin base. Upper half of first dorsal fin black; P, 14-16, posterior end of maxilla extending part posterior marginal.	seafdec00146

Table 5 (continued)

No.	Order	Family/Subfamily	Genus	Species	Depth of captured (m)	Diagnostic description	Reference no.
29	Perciformes	Nemipteridae	<i>Parascalopsis</i>	<i>tosensis</i>	118-162	This species absent suborbital spine. No canine teeth in jaw. 6 rows scale of preopercular.	seafdec00110
30		Uranoscopidae	<i>Uranoscopus</i>	<i>chinesis</i>	206	Cleithral spine strong. Cleithral with stout spine, 2 separate dorsal fins. Pale small spots scattered on dorsal side of body. Preopercle with 4 or more spines on ventral margin	seafdec00147
31		Mullidae	<i>Upeneus</i>	<i>asymmeiricus</i>	107-109		BN036
32		Synodontidae	<i>Saurida</i>	<i>longimanus</i>	102		BN005
33		Centrolophidae	<i>Psenopsis</i>	<i>anomala</i>			BN050
34	Pleuronectiformes	Citharidae	<i>Citharoides</i>	<i>macrolepidotus</i>	118	Pectoral fin with one spine and 5 soft rays; branchiostegal membranes on both sides separated from each other; eyes on left side of the body pair of black blotches near posterior end of dorsal and anal fin bases	seafdec00116
35		Bothidae	<i>Arnoglossus</i>	<i>cf. macrolophus</i>	101	Anterior/first 4 dorsal fin rays extremely elongated filamentously (sp. key); Lateral line absent on the blind side; mouth moderate or not reaching posterior edge of lower eye; base of pelvic fin on ocular side notably longer than that on blind side; HL/SL > or = 0.222 (this case 0.2739); HL-20mm, SL 73	seafdec00117
36		Bothidae	<i>Arnoglossus</i>	sp.	206	First ray of pelvic fin on eyed side on or near isthmus. Teeth present on both sides of jaw. Lateral line absent or weakly developed on blind side	seafdec00139
37		Poecilopsettidae	<i>Poecilopsetta</i>	<i>plinthus</i>	206-374	Eye on roght side of body. Pelvic fin without spines, pectoral fin distinct and present on blind side. Lateral line rudimentary indistinct or blind side. Lateral line scales less than 70. Upper jaw length 3.4-3.9 times to head length	seafdec00125
38		Samaridae	<i>Samaricus</i>	<i>cf. latus</i>	116	Pelvic fin without spines, pectoral fin distinct, four soft rays but absent on blind side. Eye on right side of body. Soft rays of anterior part of dorsal fin and pelvic fin not elongated in to filament.	seafdec00130
39		Soleidae	<i>Aseraggodes</i>	<i>kobensis</i>	109-160		seafdec00093
40		Soleidae	<i>Heteromycteris</i>	<i>japonicus</i>	127	Mouth hooked. Blackish brown and white small spots scattered on ocular side, eyes on the right side of the body, D 71, A 54	seafdec00120
41		Soleidae	<i>Zebrias</i>	sp.	116	Snout not forming a distinct hook, no pore at base of dorsal fin. Caudal fin joined to dorsal and anal fin, pectoral fin present	seafdec00127
42		Soleidae	<i>Aseraggodes</i>	sp.	116	No pores at bases of dorsal-anal fin. Caudal fin separated from dorsal and anal fin. Pectoral fin absent. First dorsal fin ray not prolong	seafdec00131

Table 5 (continued)

No. Order	Family/Subfamily	Genus	Species	Depth of captured (m)	Diagnostic description	Reference no.
43	Scorpeaniformes	Dactylopteridae	<i>Daicocus peterseni</i>		Free spine between elongated 1st free spine and spinous dorsal fin	seafdec00050
44		Hoplichthyidae	<i>Hoplichthys langsdorffii</i>	112	Body with spiny scutes along side. Pelvic fin jugular. Ventral side of lower jaw with many spines. Snout slightly long	seafdec00082
45		Peristediidae	<i>Satyrichthys rieffeli</i>	109-158	Preopercular spine long well visible in dorsal view. Head large, with long preopercular spine and long flattened rostral process. Filamentous barb moderately long 15% of standard length. Anal-fin rays 17: mostly reddish with dark spots on head and dorsal	seafdec00060
46		Platycephalidae	<i>Kumococius rodericensis</i>	112	Interorbital region narrow. Spines on head strong. Head depressed, but not extremely so. Supraocular and infraorbital ridges with countable spines. Interopercular flap present. 2nd and 4th membranes of 1st dorsal fin with a black spot distally. Postocular ridge smooth. Infraorbital ridge only with several strong spine.	seafdec00114
47		Scorpeanidae	<i>Monous quincarinatus</i>	109-158	Skin at gill opening broadly connected to isthmus (sublam. Synanceiidae). Pectoral fins with lowermost 1-3 rays free and independently mobile. Only lowermost pectoral fin ray free and relatively mobile. First dorsal fin spine equal to or longer than second dorsal fin widely separated	seafdec00061
48		Scorpeanidae	<i>Thysanichthys crossotus</i>		Three anal spines. 1st anal spines not extremely short. Dorsal fin with 11 soft rays. Paratine with teeth	
49		Scorpeanidae	<i>Hoplasebastes armatus</i>	116	Lateral line as internal canall. Pectoral fin without lowermost free ray	seafdec00062
50		Scorpeanidae	<i>Neomerinthe megalopsis</i>	116	Paratine teeth present on roof of mouth	seafdec00063
51		Tetraogodae	<i>Neocentropogon japonicus</i>			seafdec00065
52		Triglidae	<i>Pterygotrigla</i> sp.		Pectoral fins with 3 free lower soft rays. Body and tail coverage with scales. Bony plates only along base of first dorsal fin. Scales small, more than 60 rows along lateral line	seafdec00066
53		Triglidae	<i>Pterygotrigla cf. hemisticta</i>		Cleithral spine is long, large spot on 1st dorsal fin (sp. key) and small dark brown spots scattered on upper half of the body; (family) there is three separated pectoral fin (used in walking?) w/ bony plate in the head.	seafdec00077
54	Squaliformes	Squatinae	<i>Squatina nebulosa</i>	118-374	Outer corner of pectoral fin about 120 degree. Dermal fold between nasal barbals distinctly concave (can be seen when viewed from dorsal side)	seafdec00100
55	Tetraodontiformes	Tetraodontidae	<i>Canthigaster inframacula</i>		Body compressed in cross section and lateral line present. A large black blotch present ventrally on body.	seafdec00155

Table 5 (continued)

No. Order	Family/Subfamily	Genus	Species	Depth of captured (m)	Diagnostic description	Reference no.
56	Tetraodontiformes	Tetraodontidae	<i>Chelodon</i> sp.			seafdec00156
57	Zeiformes	Caproidae	<i>Antigonia capros</i>	213	Similar families of the morphology including the Grammicolepidae and Zeidae, but both families difference numbers of dorsal spines. This in the Caproids have only genus in subfamily of the Pacific Ocean and meristic character difference such as pectoral and second dorsal fin numbers.	seafdec00091
58		Zeidae	<i>Cyrtopsis rosea</i>	206	With spiny plates on ventral ridges of body between pelvic and anal fin, upper edge of pectoral fin base at same level as lower end of eye. Anal fin spine immovable	seafdec00135

III. Study on Impact of Fishing to Deep-Sea Ecosystem aboard M.V. SEAFDEC 2 at Brunei Darussalam Waters during 15 September – 25 October 2010.

Plate 1.

Research Vessel: M.V. SEAFDEC 2

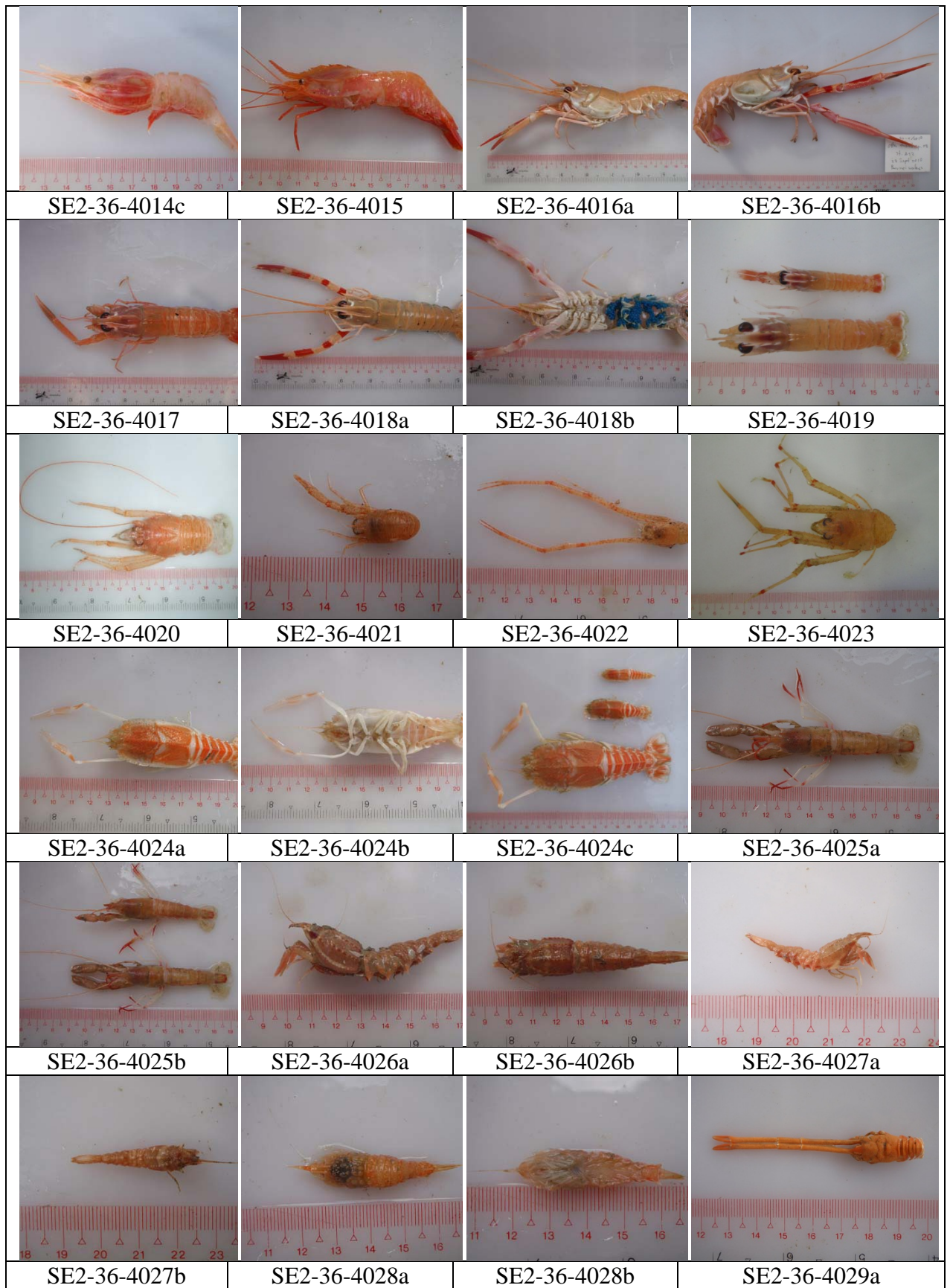
Survey Area: EEZ of Brunei Darussalam Waters

Sampling Gear: Beam Trawl, Otter Trawl, and Trap

Sampling Period: 20 September to 19 October 2010

Sampling Depth: 100-370m






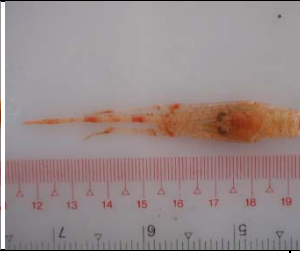












			
SE2-36-4029b	SE2-36-4030a	SE2-36-4030b	SE2-36-4030c
			
SE2-36-4031	SE2-36-4032	SE2-36-4033	SE2-36-4034
			
SE2-36-4035a	SE2-36-4035b	SE2-36-4036a	SE2-36-4036b
			
SE2-36-4037	SE2-36-4038		

Plate 2.

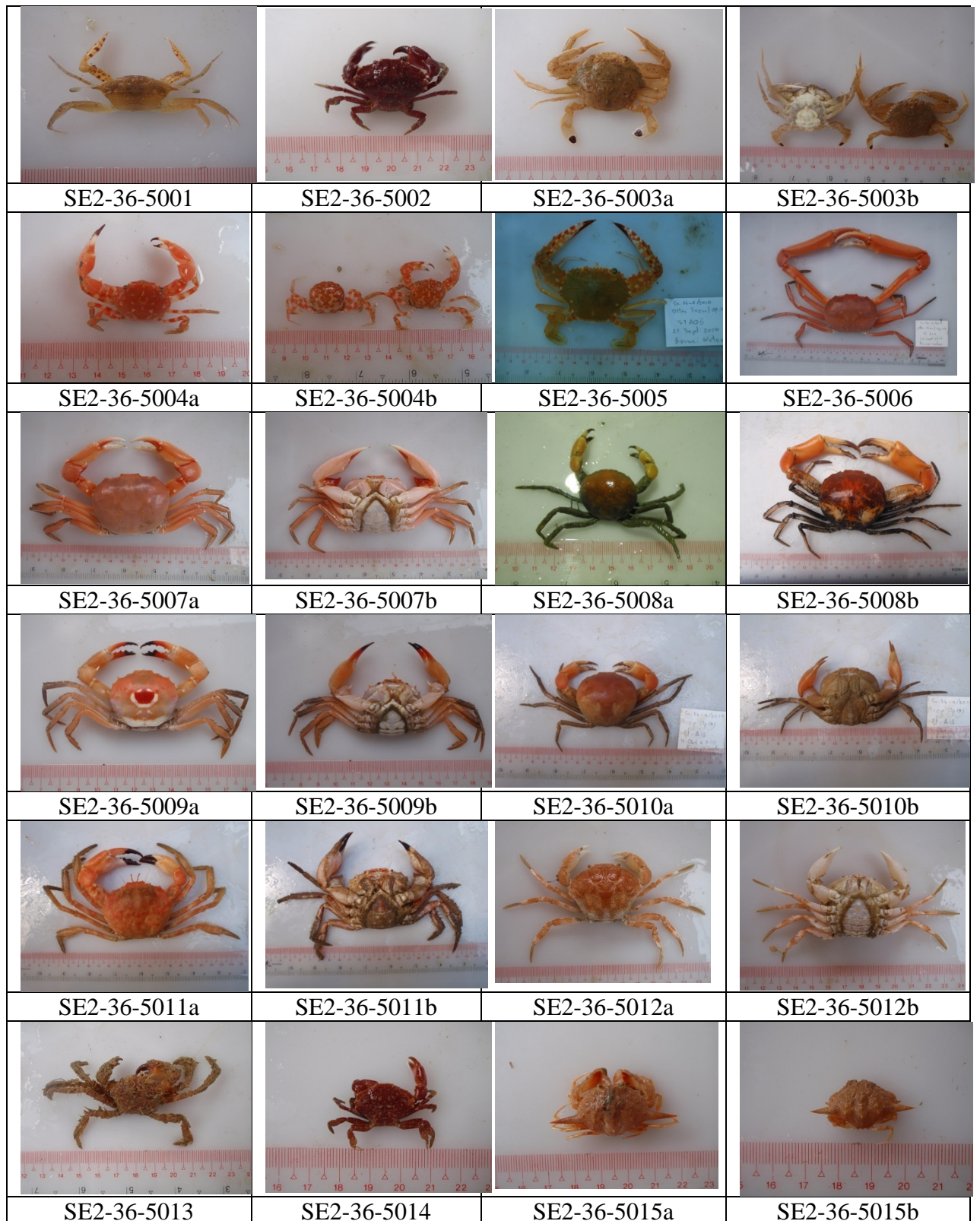
Research Vessel: M.V. SEAFDEC 2

Survey Area: EEZ of Brunei Darussalam Waters

Sampling Gear: Beam Trawl and Traps

Sampling Period: 20 September to 19 October 2010

Sampling Depth: 100-370m





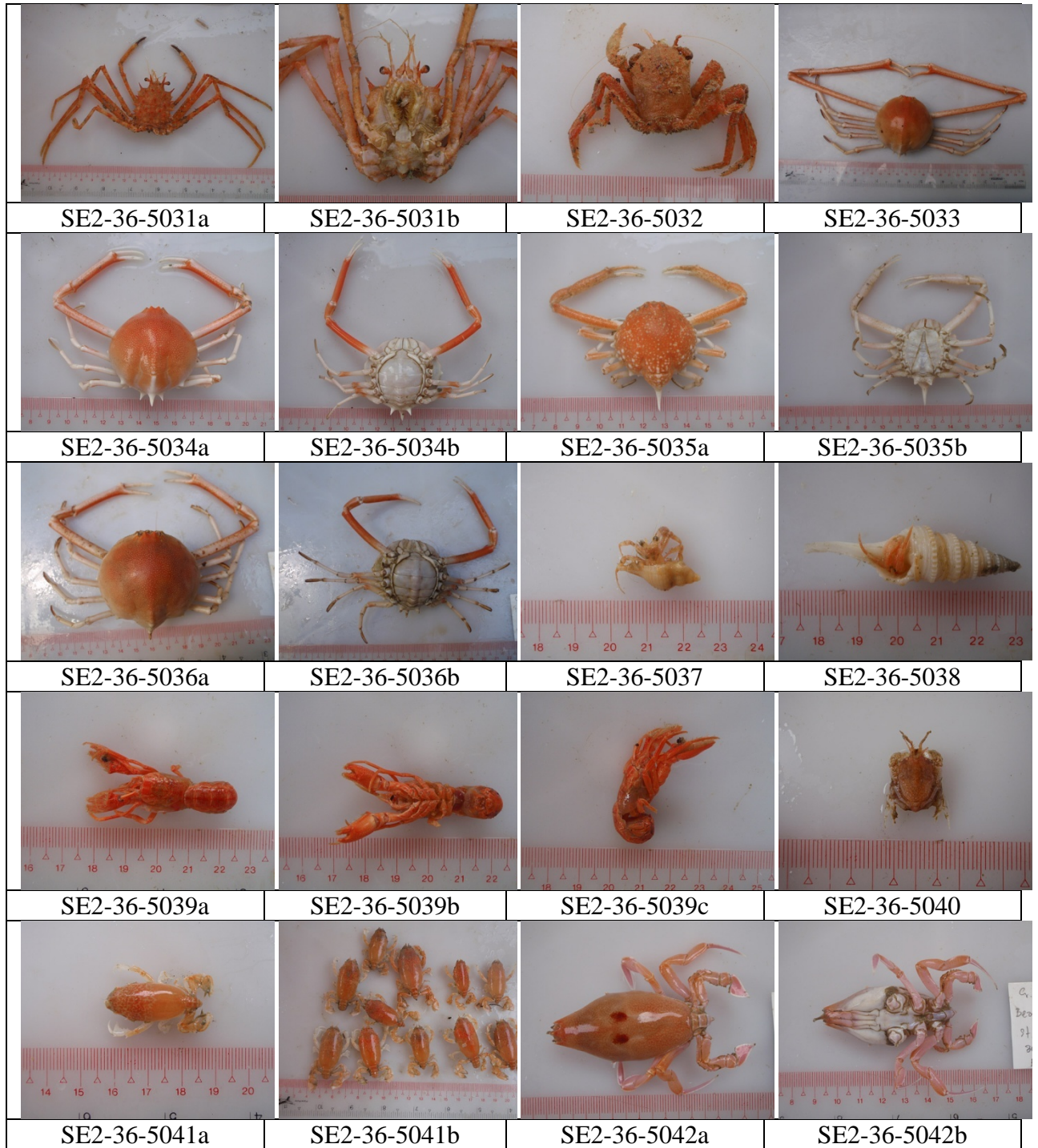


Plate 3.

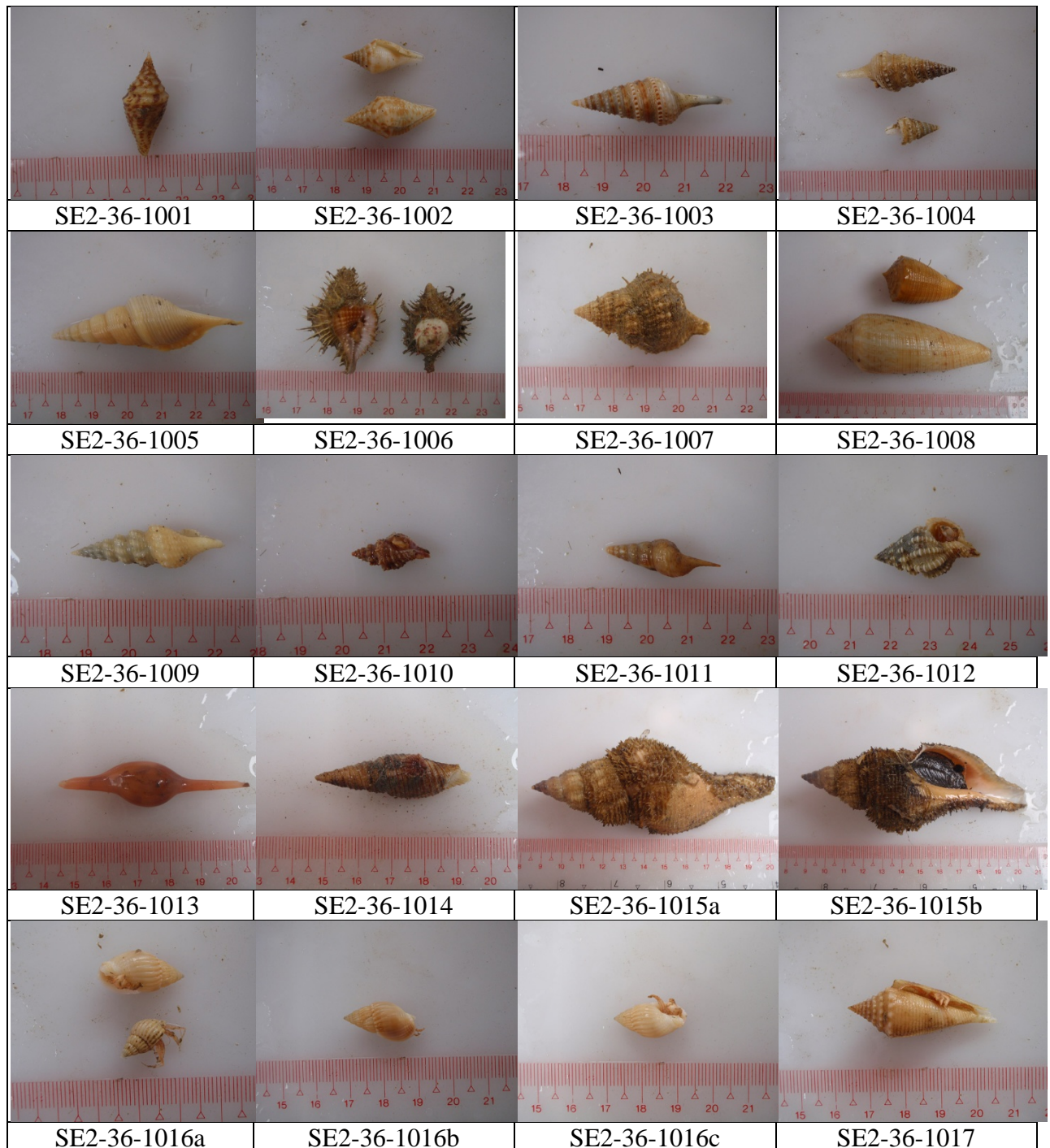
Research Vessel: M.V. SEAFDEC 2

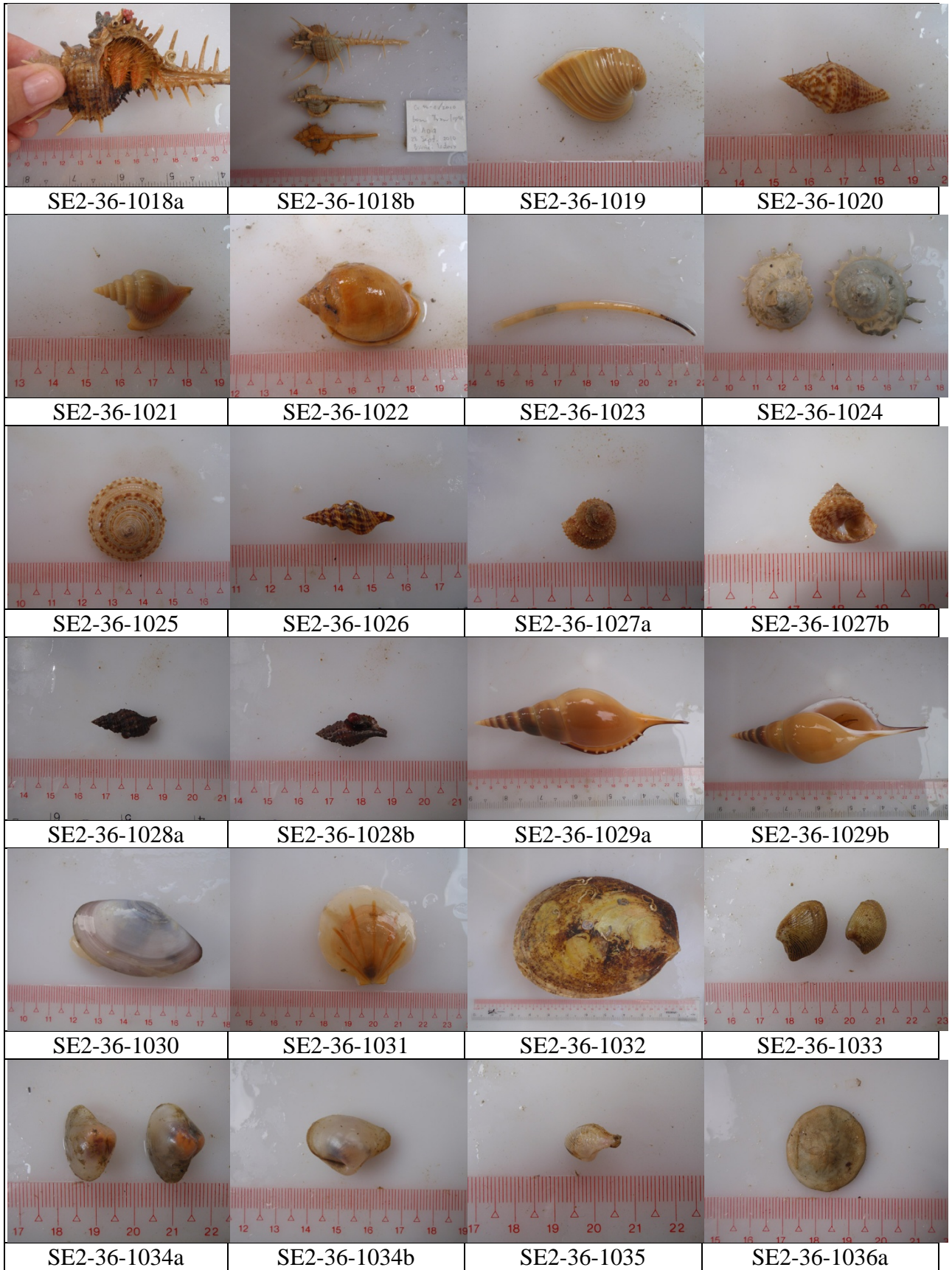
Survey Area: EEZ of Brunei Darussalam Waters

Sampling Gear: Beam Trawl

Sampling Period: 20 September to 19 October 2010

Sampling Depth: 100-370m







			
SE2-36-1036b	SE2-36-1037		

Plate 4.

Research Vessel: M.V. SEAFDEC 2

Survey Area: EEZ of Brunei Darussalam Waters

Sampling Gear: Beam Trawl and Agassiz Trawl

Sampling Period: 20 September to 19 October 2010

Sampling Depth: 100-370m



Plate 5.

Research Vessel: M.V. SEAFDEC 2

Survey Area: EEZ of Brunei Darussalam Waters

Sampling Gear: Beam Trawl, Otter Trawl, and Agassiz Trawl

Sampling Period: 20 September to 19 October 2010

Sampling Depth: 100-370m

